

**Engine Code - PG, 49 States and Canada, m.y. 1989 to present**

**California m.y. 1989 - 1990**

**Basic throttle adjustment**

- [checking/adjusting](#)

**Bypass valve adjustment**

- [checking](#)

**Control unit**

- [component layout](#)

**Deceleration fuel shut-off**

- [checking](#)

**Digifant system**

- [underhood component layout](#)

**Fuel injectors**

- [checking](#)

**Fuel pressure regulator and residual pressure**

- [checking](#)

**Full throttle enrichment**

- [checking](#)

**Idle and full throttle switches**

- [checking/adjusting](#)

**Idle speed and CO content**

- [checking/adjusting](#)

**Idle stabilization**

- [checking](#)

**Intake air**

- [component layout](#)

**Oxygen sensor**

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## Throttle switches

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## Engine Code - PG California starting m.y. 1991

### Acceleration/full throttle enrichment and deceleration fuel cut-off

- [checking](#)

### Basic throttle adjustment

- [checking](#)

### Bypass valve adjustment

- [checking](#)

### CO potentiometer

- [checking](#)

### Coolant temperature sensor

- [checking](#)

### Digifant System

- [underhood component layout](#)

### Fuel injectors

- [checking](#)

### Fuel pressure regulator and residual pressure

- [checking](#)

### Idle speed and CO content

- [checking/adjusting](#)

### Intake air temperature sensor

- [checking](#)

### Oxygen sensor and oxygen sensor control

- [checking](#)

### Throttle body

- [component layout](#)

### Throttle potentiometer

- [checking](#)

## **Vacuum connections**

- [checking](#)

## **Vacuum sensor**

- [checking](#)

## **Engine Code AAA**

### **Acceleration, full throttle enrichment and fuel deceleration shut-off**

- [checking](#)

## **Dashpot**

- [checking and adjusting](#)

## **Engine Coolant Temperature (ECT) sensor**

- [checking](#)

## **Fuel injectors**

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## **Fuel injection system**

- [component layout](#)
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## **Fuel pressure regulator and residual pressure**

- [checking](#)

## **Idle speed**

- [checking](#)

## **Idle air control valve (N71)**

- [checking](#)

## **Intake Air Temperature (IAT) sensor**

- [checking](#)

## **Motronic system**

- [component layout](#)
- [Engine Control Module, component layout](#)
- [Intake air system, component layout](#)
- [throttle assembly component layout](#)

## **Safety precautions**

- [chart](#)

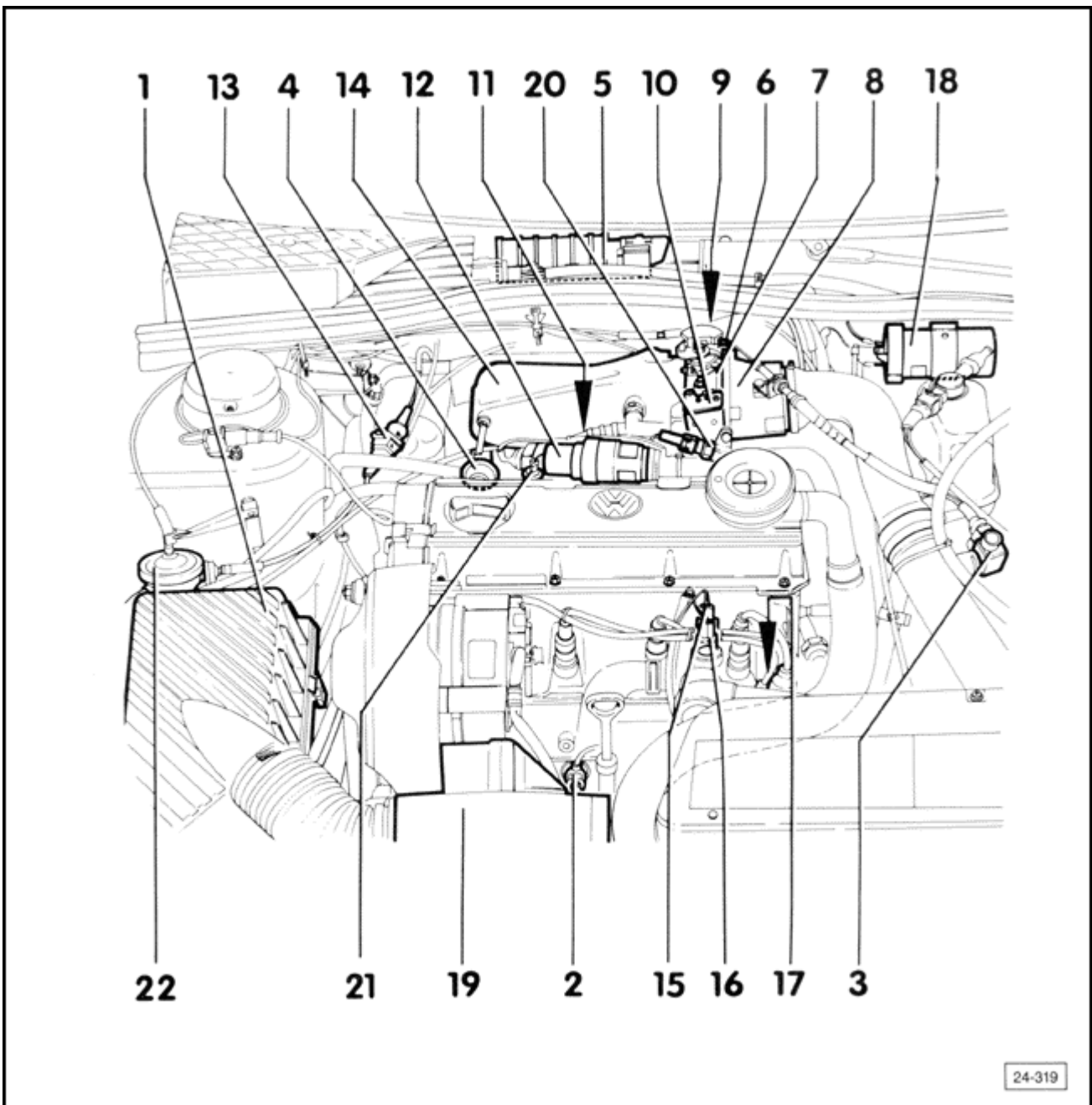
## **Throttle position (TP) potentiometer**

- [checking](#)

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-10-1)



1 - Air filter

2 - Knock sensor (G 61)

3 - CO potentiometer (G 74)

with CO adjustment screw and intake air temperature sensor (G 42)

4 - Fuel pressure regulator

5 - Digifant control unit (J 169)

6 - Idle speed adjustment screw

7 - Throttle valve housing

8 - Boost control valve housing

9 - Idle switch (F 60)

10 - Full throttle switch (F 81)

- 11 - Fuel rail assembly including fuel injectors**
- 12 - Idle stabilizer valve and boost pressure regulator (N 71)**
- 13 - Oxygen sensor heater/probe harness connector**
- 14 - Intake manifold**
- 15 - Coolant temperature sensor (blue)**  
supplies signal to control unit
- 16 - Coolant temperature sensor (black)**  
supplies signal to temperature gauge

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-10-2)**

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**17 - Ignition distributor with Hall sender (G 40)**

**18 - Ignition coil (N 152)**

**19 - G-charger**

boost pressure checking, see [Repair Group 21](#)

**20 - Pressure switch (F 130)**

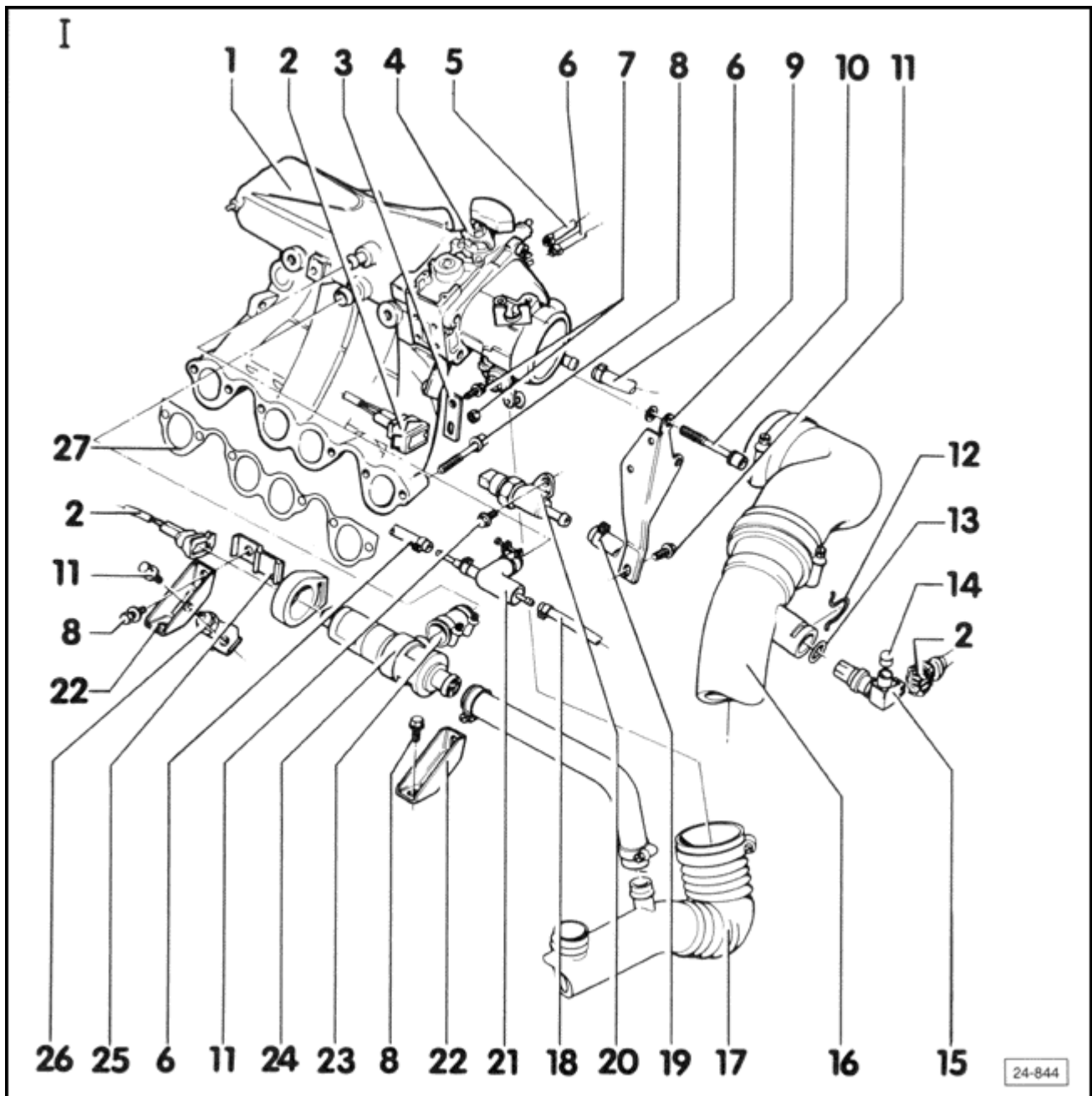
- for fuel pump after-run
- checking, [Repair Group 20](#)

**21 - Thermostwitch (F 87)**

for radiator cooling fan after-run

**22 - Carbon canister control valve**

checking, [Repair Group 20](#)



**1 - Intake manifold**

**2 - Harness connector**  
for pressure switch

**3 - Support bracket**  
between intake and exhaust manifolds

**4 - Throttle valve housing**  
basic throttle adjustment, [section 24-180](#)

**5 - Vacuum hose**

- to Digifant control unit
- critical length of 1 meter; do not lengthen or shorten

**6 - Vacuum hose**

- to carbon canister control valve
- vacuum hose layout and connections, [section 24-190](#)

**7 - 15 Nm (11 ft lb)**

**8 - 25 Nm (18 ft lb)**

**9 - Intake manifold support**

between bypass valve housing and cylinder head

**10 - Socket head bolt**

**20 Nm (15 ft lb)**

**11 - 10 Nm (7 ft lb)**

**12 - Locking clip**

**13 - O-ring**

**14 - Tamper proof plug**

- for CO adjustment screw
- remove to adjust CO
- idle speed adjustment, [section 24-90](#)

**15 - Potentiometer**

- for 49 States and Canada starting m.y. 1990
- for California m.y. 1990 only
  - measure potentiometer resistance between terminals **1** and **3**
    - must be between 0 and 2000 Ohms

**Notes**

*Resistance changes during idle speed adjustment.*

**16 - Connecting hose**

for intercooler

**17 - Bypass tube**

between bypass housing and G-charger

**18 - Hose**

to multi-function indicator and A/C

**19 - Hose**

to fuel rail

**20 - Pressure switch**

- for fuel pump after-run
- checking, see [Repair Group 20](#)

**21 - Connector tee**

**22 - Mounting brackets**

- for idle stabilizer valve
- mounting must be free of stress

**23 - Hose**

**24 - Idle stabilizer valve**

idle speed stabilization checking, [section 24-100](#)

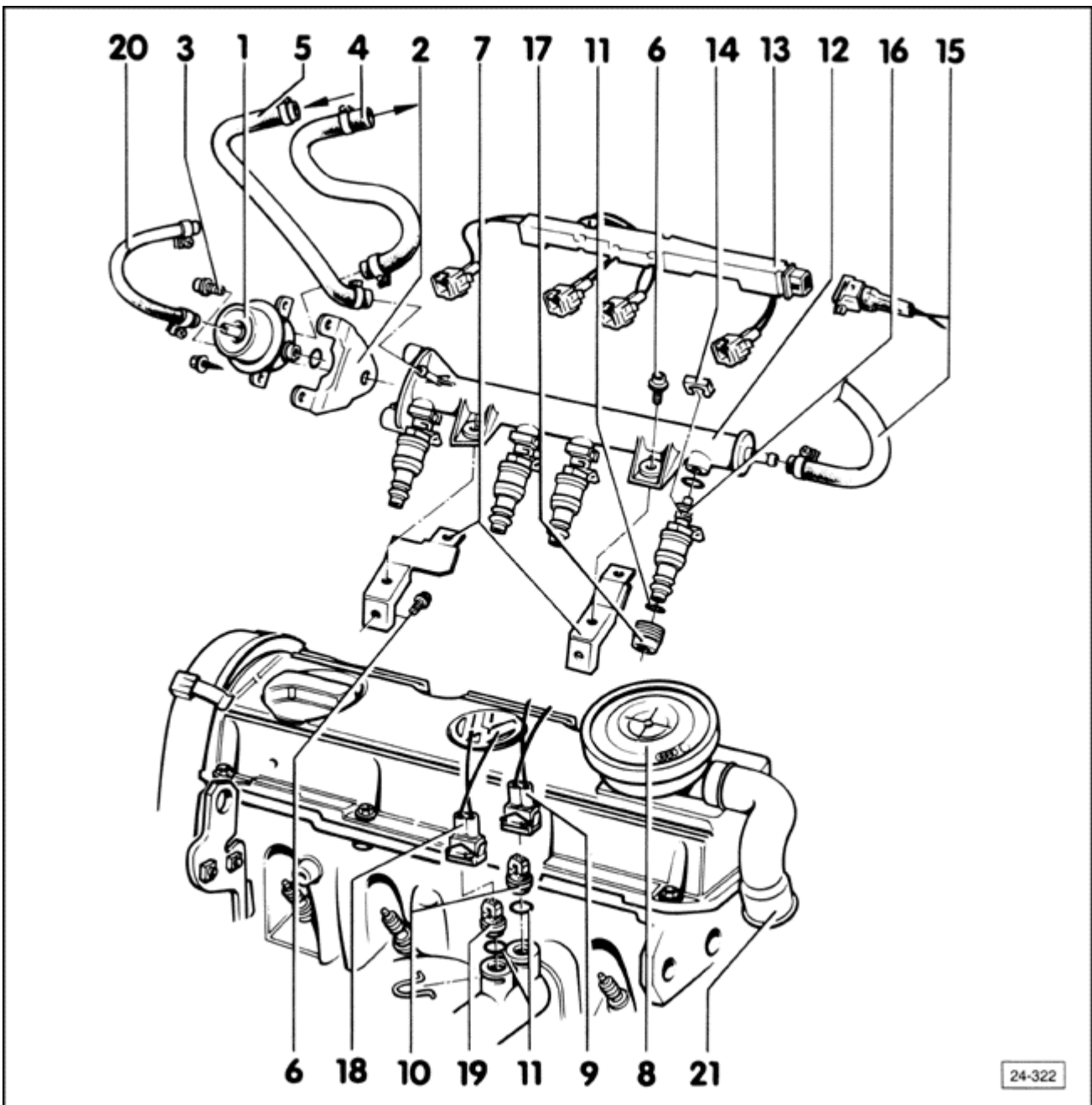
**25 - Support tab**

**26 - Thermo-switch**

for fan after-run

**27 - Gasket**

between intake manifold and cylinder head



**WARNING!**

**Fire Hazard. Do NOT smoke or have anything in area that can ignite fuel!**

- 1 - Fuel pressure regulator  
checking, [section 24-160](#)
- 2 - Mounting bracket  
for fuel pressure regulator
- 3 - Socket head bolt  
15 Nm (11 ft lb)
- 4 - Fuel return line  
blue
- 5 - Fuel supply line

black

**6 - Socket head bolt**  
**10 Nm (7 ft lb)**

**7 - Mounting bracket**  
for fuel rail

**8 - Emission control valve**

**9 - Harness connector**  
for blue coolant temperature sensor

**10 - Coolant temperature sensor**

- blue
- provides signal to Digifant control unit

**11 - O-ring**

always replace

**12 - Fuel rail**

**13 - Wiring guide**

**14 - Retaining clip**

ensure that injector is properly seated (top and bottom) before installing clip

**15 - Hose**

- for fuel pump run-on pressure switch
- connecting pressure gauge **VAG 1318**, [section 24-160](#)

**16 - Fuel injector**

checking, [section 24-170](#)

**17 - Fuel injector insert**

- use **D6** to install
- **20 Nm (15 ft lb)**

**18 - Harness connector**

- black
- for temperature gauge

**19 - Harness connector**

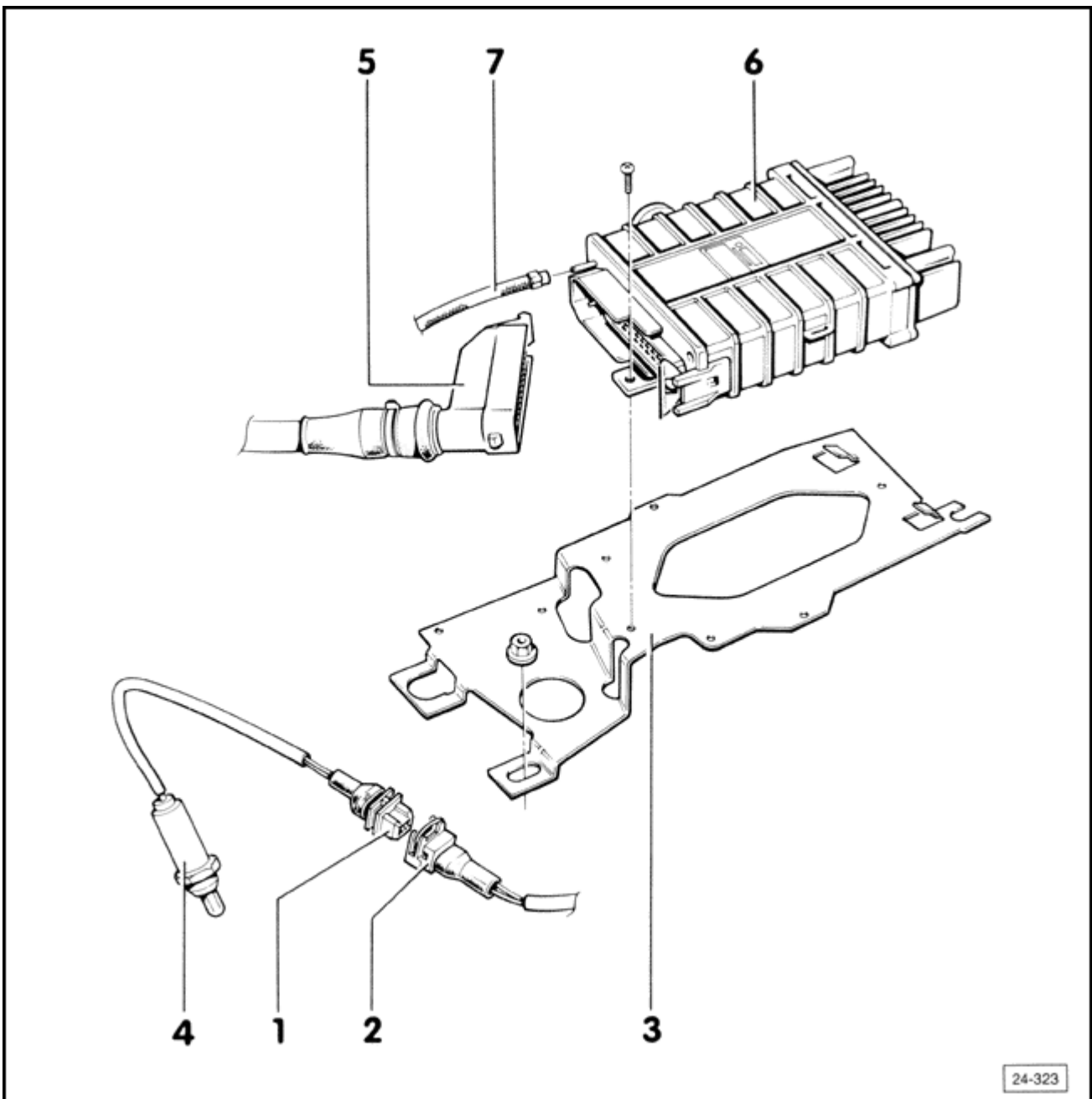
for black coolant temperature sensor

**20 - Hose**

to intake manifold

**21 - Hose**

to bypass tube



**1 - Connector**

- for Oxygen sensor probe (signal) and Oxygen sensor heater
  - check heater resistance across white wires
    - must be 3 to 4 Ohms

**2 - Harness connector**

- for Oxygen sensor/Oxygen sensor heater
  - check supply voltage at white wires, with engine running
    - must be approx. battery voltage

**3 - Mounting plate**

**4 - Oxygen sensor**

- 20 Nm (15 ft lb)

- checking, [section 24-110](#)
- install using **G5** anti-sieze compound but do not allow compound to enter probe slots

## **5 - Harness connector**

### ***CAUTION!***

***Ignition must be switched off before connecting or disconnecting!***

- for Digifant control unit (**J 169**)
- checking, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- to disconnect: disengage spring clip on control unit

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical Fuel Injection, AFC System (Page 24-40-2)

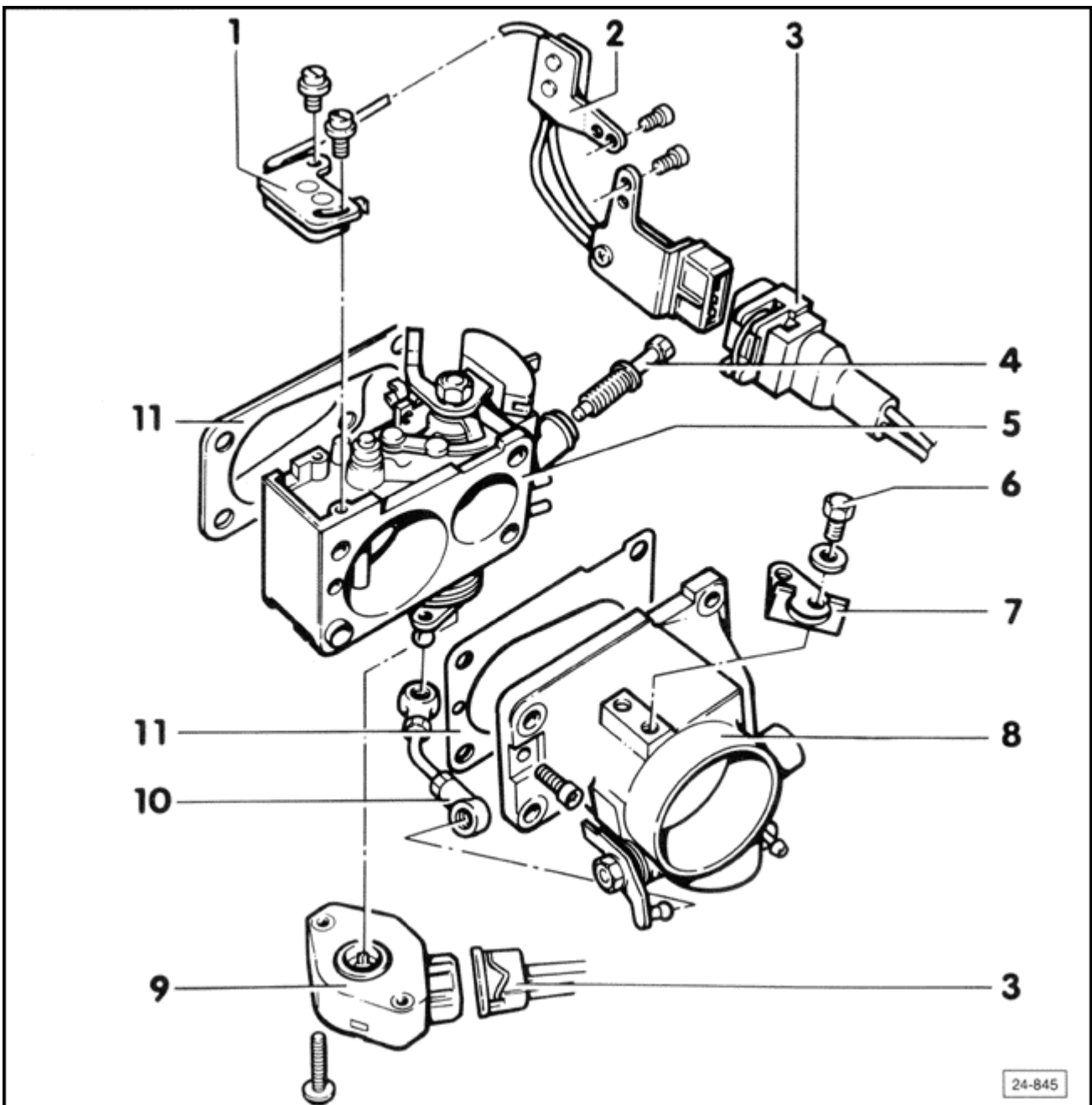
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#### 6 - Digifant control unit (J 169)

- controls: Fuel injection, Ignition, Boost pressure, Oxygen sensor and idle stabilization
- location: in right side of plenum
- remove fresh air intake before removing control unit

#### 7 - Vacuum line

- critical length 1 meter, do **NOT** lengthen or shorten
- only use correct replacement part, black with yellow stripe



**1 - Full throttle switch (F 81)**

- for 49 states and Canada starting m.y. 1990
- for California m.y. 1990 only
- checking/adjusting, see [section 24-140](#)

**2 - Idle switch (F 60)**

- for 49 states and Canada starting m.y. 1990
- for California m.y. 1990 only
- checking/adjusting, see [section 24-140](#)

**3 - Harness connector**

**4 - Idle speed adjustment screw**

- idle speed checking/adjusting, [section 24-90](#)

- check O-ring for damage, replace if necessary

#### **5 - Throttle body**

basic throttle adjustment, [section 24-180](#)

#### **6 - 10 Nm (7 ft lb)**

#### **7 - Throttle stop**

accelerator cable adjustment, [Repair Group 20](#)

#### **8 - Bypass valve body**

adjustment, checking [section 24-150](#)

#### **9 - Throttle potentiometer (G 69)**

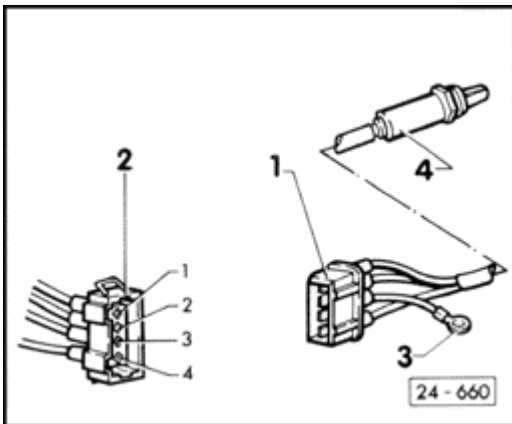
- for automatic transmission only
- for 49 states and Canada starting m.y. 1991

#### **10 - Connecting rod**

#### **11 - Gasket**

always replace

## Oxygen sensor, general information



- Oxygen sensor with 4-pin harness connector
- Connector (1) for Oxygen sensor and ground wire 3 are attached to right engine mount

### Terminal description of harness connector 2

- 1 (+) plus wire to OXS heater
- 2 (-) ground wire to OXS heater
- 3 shield for OXS signal wire
- 4 OXS signal wire

### Notes

*Terminal 3 of connector 2 does not apply to California vehicles, starting m.y. 1991.*

### **CAUTION!**

***Do not re-use any sprays or compounds containing silicone on engines equipped with Oxygen sensors.***

***Do Not use these compounds on or near intake air system or near the Oxygen sensor. Silicone drawn into the intake air system is not burned during combustion and will lead to contamination and malfunctioning of the Oxygen sensor.***

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-70-1)**

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**Technical data**

<b>Engine code</b>	<b>PG</b>
<b>Engine RPM limit</b>	6350 ± 150 RPM
<b>Idle speed</b>	800 ± 50 RPM
<b>CO content</b>	0.7 ± 0.4 volume %

## Safety precautions

### Rules of Cleanliness

#### **CAUTION!**

*When working on the fuel supply/injection system, carefully observe the following rules:*

- 1 - Thoroughly clean connection and surrounding areas before loosening connection.*
- 2 - After removing components, place in clean area and cover with foil or paper. Avoid using rags!*
- 3 - Components which have been opened or disassembled must be carefully covered or sealed if repair cannot be carried out immediately.*
- 4 - Install clean parts only.*
  - remove replacement parts from package just before installing*
  - do not use spare parts that were stored loose or unpackaged (e.g. in tool boxes, etc.)*
- 5 - When fuel system is open:*
  - avoid using compressed air whenever possible*
  - avoid moving the vehicle whenever possible*

## Safety measures

### **CAUTION!**

*Observe the following precautions to prevent personal injury as well as possible damage to sensitive electrical components.*

- *switch OFF the ignition before connecting or disconnecting components or test equipment*
- *connect and disconnect battery ONLY with ignition switched OFF otherwise the control unit could be damaged*
- *if the engine must be cranked but not started (for compression testing etc.) disconnect power output stage of ignition coil and*
- *do not use battery booster longer than one minute nor should 16.5 Volts be exceeded*
- *do not wash engine unless ignition is switched OFF*
- *disconnect BOTH battery terminals whenever arc or spot welding*
- *do not connect a condenser of any kind to terminal 1 of the ignition coil*
- *when installing noise suppressors, ONLY use 1000 Ohms for high tension wires and 5000 Ohms for spark plug connectors*
- *do not replace distributor rotor (marked R1) with a different type*
- *if the vehicle is heated up (e.g. in a painting booth) do not start the engine until it has had sufficient time to return to room temperature*

## Notes

A variety of electrical connectors are used on this vehicle, **ALWAYS** use the **VW 1594** adaptor kit to connect test instruments to these connectors.

### **CAUTION!**

*Before disconnecting a customer's battery; ALWAYS ask for the radio code (if equipped with an anti-theft radio).*

## Idle speed and CO content, checking/adjusting

### **CAUTION!**

*Ignition timing, CO content and idle speed RPM's are inter-related and must be checked/adjusted together.*

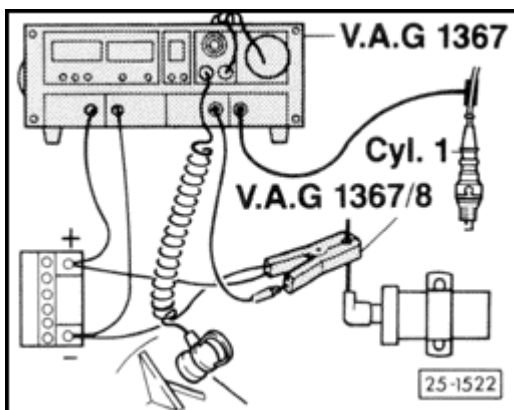
### **Notes**

*The Oxygen sensor remains connected during checking/adjusting.*

### Requirements

- engine oil temperature 80° C (176° F) minimum
- all electrical consumers switched **OFF** (do not take measurements while radiator cooling fan is running)
- A/C switched **OFF**
- ignition timing **OK**
- idle stabilizer valve **OK** , (when ignition is switched on the valve must buzz and hum)
- exhaust system must be leak tight

### Checking/adjusting



- switch **OFF** ignition
- connect **VAG 1367** engine tester using inductive pickup **VAG 1367/8** on ignition coil high tension lead
- connect **SUN 105** CO tester (or EPA approved equivalent) to CO tap tube using hose adaptor **VAG 1363/3**

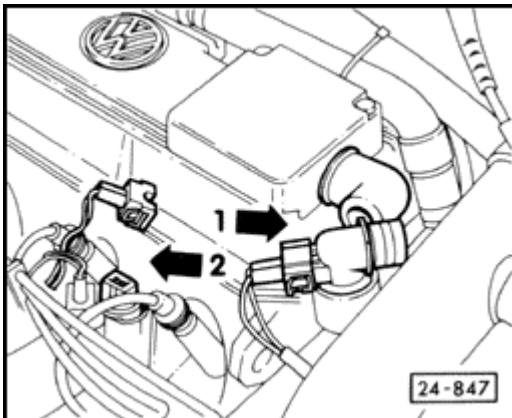
### **CAUTION!**

*Hose must fit securely on CO tap tube to avoid measuring inaccuracies due to dilution or leakage.*

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical Fuel Injection, AFC System (Page 24-90-2)

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- disconnect crankcase ventilation hose from emission control valve (**arrow 1**) and route such that only fresh air is drawn in
- start engine and let idle
  - will run from 1 to 4 minutes at increased engine RPM

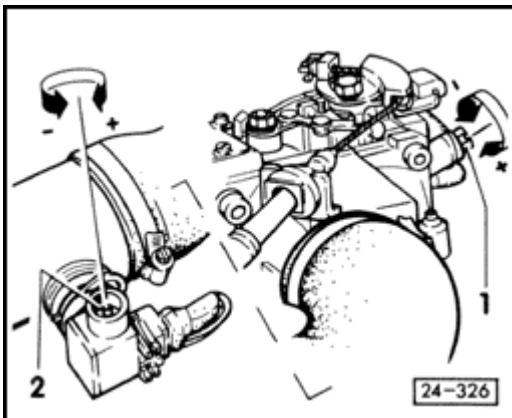
When idle speed is reduced approx. 100 RPM

- disconnect blue coolant temperature sensor harness connector

#### **CAUTION!**

**Do not start engine with coolant temperature sensor disconnected. The control unit will go into open loop making accurate adjustment impossible.**

- raise engine speed in excess of 3000 RPM 3 times then let idle



- check idle speed and CO content
  - idle speed must be  $800 \pm 50$  RPM
  - CO content must be  $0.7 \pm 0.4$  volume %

If **NO**

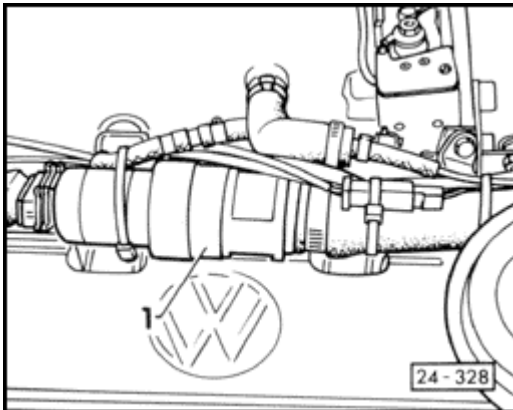
- adjust by alternately turning adjustment screws (**arrows**) until both specifications are obtained
- reconnect blue coolant temperature sensor
- raise engine speed 3 times then let idle
- check CO content
  - must be  $0.7 \pm 0.4$  volume %

If **NO**

- check OXS control, see [section 24-110](#)
- after repairs or replacements have been performed, install new plug over CO adjustment screw

## Idle stabilization, checking

### Function, checking



- switch **ON** ignition
  - idle stabilizer valve **1** must vibrate and hum

#### If **NO**

- switch **Fluke 83** multimeter (**US 1119** or equivalent) to resistance range
- disconnect harness connector from idle stabilizer valve
- connect multimeter across stabilizer valve terminals
  - must be between 2 and 10 Ohms

#### If **NO**

- replace idle stabilizer valve

#### If **YES**

- reconnect stabilizer valve harness connector
- check stabilizer valve wiring for open circuit using wiring diagram, also see. [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A**, step **11**

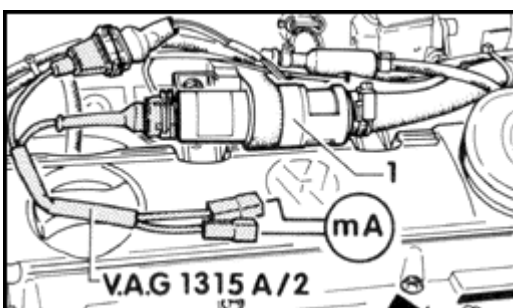
#### If wiring **OK**

- replace Digifant control unit (**J 169**)

## Control, checking

### Requirements

- engine oil temperature 80° C (176° F) minimum
- coolant temperature sensor (blue) **OK**
- idle speed **OK**
- intake air system **OK** (leak tight)



- switch multimeter to mA range
- connect test adaptor **VAG 1315A/2** between idle stabilizer valve and its harness connector
- connect multimeter to terminals of **VAG 1315A/2** adaptor using jumpers from **VW 1594** adaptor kit
- start engine and let idle
  - will run from 1 to 4 minutes at increased engine **RPM**

When idle speed is reduced approx. 100 RPM

- raise engine speed in excess of 3000 RPM 3 times then let idle
  - control current must be  $460 \pm 60$  mA and **fluctuating**

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-100-2)**

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- disconnect blue coolant temperature sensor harness connector (**arrow**)
  - control current must be  $460 \pm 60$  and **constant**

If test conditions are maintained but specifications are not obtained

- replace Digifant control unit (**J 169**)

**Notes**

*Idle speed stabilization control current is dependent upon engine load during idle. Due to the following loads the control current can vary between 400 and 1200 mA:*

- engine cold
- A/C switched **ON**
- electrical consumers switched **ON**
- power steering at full lock

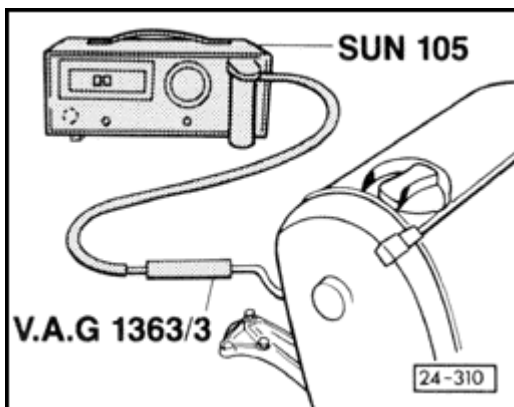
## Oxygen sensor control, checking

### **CAUTION!**

**Do Not re-use any sprays or compounds containing silicone on engines equipped with Oxygen sensors. Do Not use these compounds on or near intake air system or near the Oxygen sensor. Silicone drawn into the intake air system is not burned during combustion and will lead to contamination and malfunctioning of the Oxygen sensor.**

### Requirements

- engine oil temperature 80° C (176° F) minimum
- idle speed **OK**
- exhaust system between catalyst and cylinder head must be leak tight
- coolant temperature sensor (blue) connected
- voltage supply to OXS heater **OK**

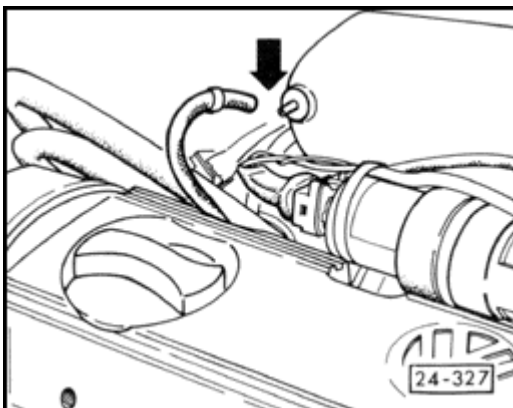


- connect **SUN 105** CO tester (or EPA approved equivalent) to CO tap tube using hose adaptor **VAG 1363/3**

### **CAUTION!**

**Hose must fit securely on CO tap tube to avoid measuring inaccuracies due to dilution or leakage.**

- start engine and let idle for at least 2 minutes
- record CO content



- disconnect pressure regulator vacuum hose from intake manifold (**arrow**) and plug off
  - CO content must increase briefly then return to recorded value

If CO content does not drop back

- disconnect OXS heater harness connector (**arrow**)
- connect jumper wire from **VW 1594** adaptor kit to OXS harness connector signal wire (**arrow**)
- alternately touch the free end of the adaptor wire to ground and battery positive
  - CO content must alternately increase and decrease

If **YES**

- replace Oxygen sensor

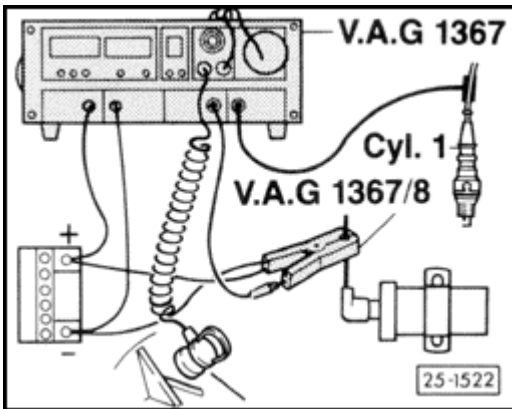
If **NO**

- check wiring between Oxygen sensor and Digifant control unit using wiring diagram, repair or replace as necessary

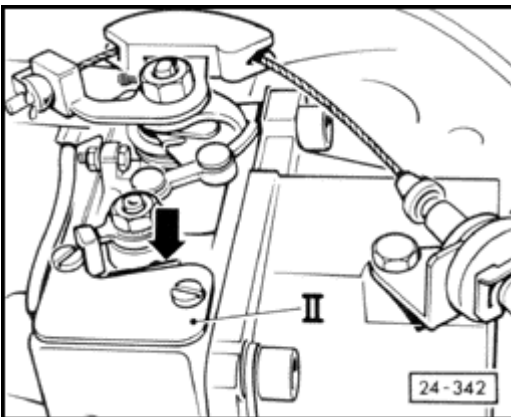
If wiring **OK**

- replace Digifant control unit (**J 169**)

## Full throttle enrichment, checking



- switch **OFF** ignition
- connect **VAG 1367** engine tester using **VAG 1367/8** inductive pickup
- start engine and let idle



- operate full throttle switch by hand (**arrow**)
  - engine speed must increase and decrease (hunts as deceleration fuel shut off kicks in)

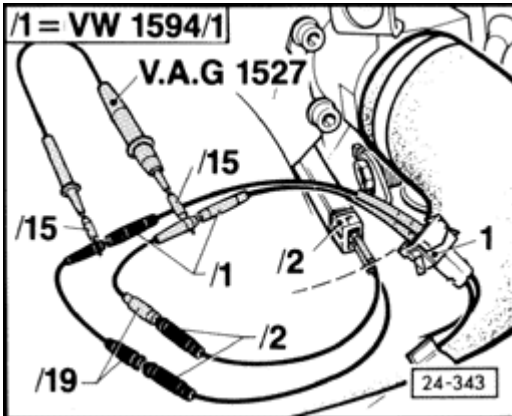
If **NO**

- check idle and full throttle switch adjustment, checking [section 24-140](#)

## **Deceleration fuel shut-off, checking**

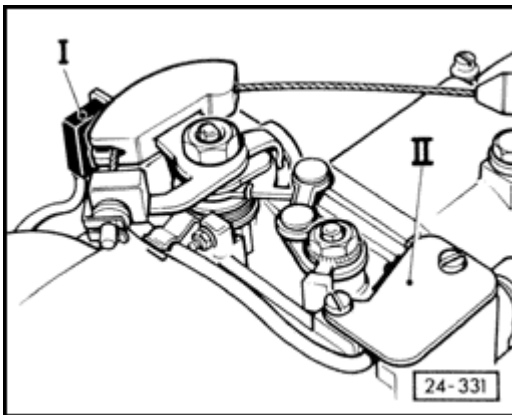
### Requirements

- engine oil temperature 80° C (176° F) minimum
- idle switch **OK**



- disconnect main injector harness connector **1** from fuel rail wiring guide connector **2**
- bridge connectors **1** and **2** using adaptor wires **VW 1594/1, 2, 15** and **19**
- connect **US 1115** LED tester to adaptors as shown
- start engine and let idle
  - LED tester must light up
- raise engine speed to approx. 3000 RPM and then release throttle abruptly
  - LED must go out briefly (indicating deceleration fuel shut-off has been activated)

## Idle and full throttle switches, checking and adjusting



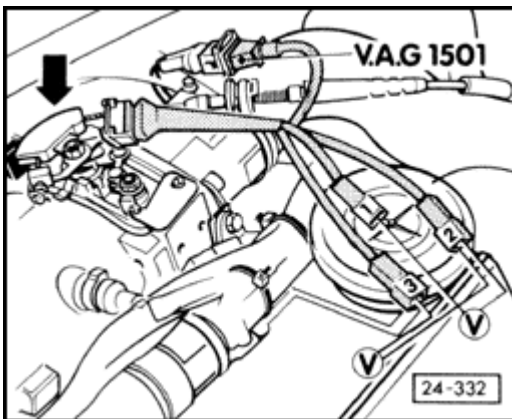
The idle switch I signals the Digifant control unit that the throttle is fully closed for the following functions:

- fuel cut-off during deceleration
- idle speed stabilization
- ignition timing control during idle (DIS function) and deceleration

The full throttle switch II signals the Digifant control unit that the throttle is fully opened for the following function:

- injection quantity during full throttle enrichment

## Voltage supply, checking



- disconnect throttle switch harness connector (**arrow**)
- connect test adaptor **VAG 1501** to harness connector
  - throttle switch connector remains open
- switch **Fluke 83** multimeter to 20 Volt range
- connect multimeter to terminals **1** and **2** of **VAG 1501** test adaptor using jumpers from **VW 1594** adaptor kit
- switch **ON** ignition
  - must be approx. 5 Volts
- switch **OFF** ignition
- connect multimeter to terminals **2** and **3** of **VAG 1501** test adaptor using jumpers from **VW 1594** adaptor kit

- switch **ON** ignition
  - must be approx. 5 Volts

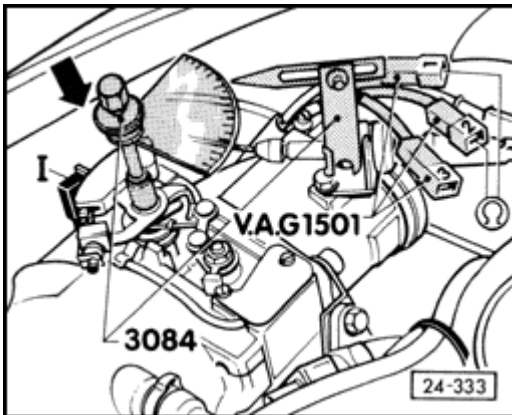
If voltage values are **not** obtained

- switch **OFF** ignition
- remove test adaptors and re-connect harness connector to throttle switch
- determine break in wiring between throttle switch connector and ECU, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) , **Test A** , steps **11** and **12** , repair or replace as necessary

If wiring **OK**

- replace Digifant control unit (**J 169**)

### Idle switch (F 60), checking and adjusting



- disconnect throttle switch harness connector (**arrow**)
- connect test adaptor **VAG 1501** between throttle switch harness connector and throttle switch
- switch **Fluke 83** multimeter to resistance range
- connect multimeter to terminals **1** and **2** of **VAG 1501** test adaptor using jumpers from **VW 1594** adaptor kit
- check idle switch **I** for continuity
  - throttle closed = 0 Ohms (continuity)
  - throttle open = Infinite resistance (open)
- attach protractor **3084** to throttle shaft using magnetic adaptor **3084/1**
- fasten protractor pointer to throttle cable sleeve using circlip
- note protractor position via pointer
- open throttle valve approx.  $10^\circ$  then slowly and carefully close throttle until idle switch is activated (continuity)
  - must be  $1.0 \pm 0.5^\circ$  before idle speed stop

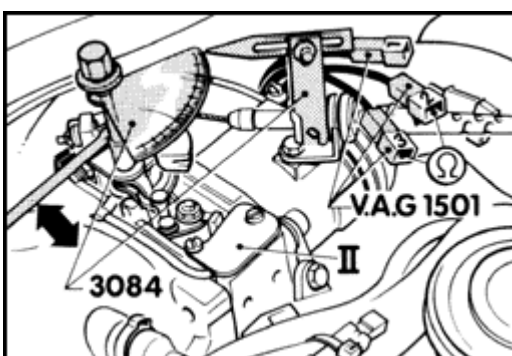
#### If **NO**

- adjust switch-on point by loosening throttle switch **I** and moving switch until throttle switch bracket is just resting against the throttle lever
- tighten switch and re-check

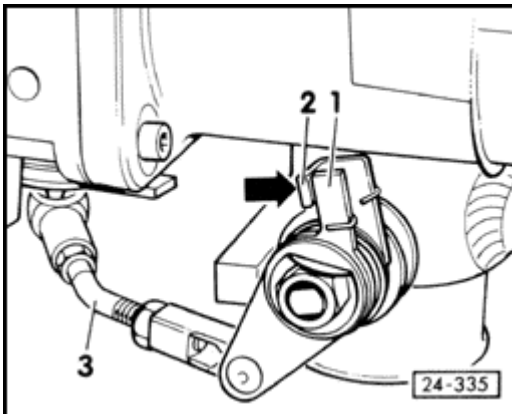
### Full throttle switch (F 81), checking/adjusting

#### Requirement

- bypass valve adjustment **OK** checking, [section 24-150](#)



- disconnect throttle switch harness connector (**arrow**)
- connect test adaptor **VAG 1501** between throttle switch harness connector and throttle switch
- switch **Fluke 83** multimeter to resistance range
- connect multimeter to terminals **2** and **3** of **VAG 1501** test adaptor using jumpers from **VW 1594** adaptor kit
- check full throttle switch **II** for continuity
  - throttle open = 0 Ohms (continuity)
  - throttle closed = Infinite resistance (open)



- attach protractor **3084** to throttle shaft using magnetic adaptor **3084/1**
- fasten protractor pointer to throttle cable sleeve using circlip
- using screwdriver, push throttle lever in direction of full throttle until lever **1** just starts to lift off by-pass valve lever **2 (arrow)**
- with throttle in this position, set protractor disc to  $0^\circ$
- close throttle approx.  $10^\circ$  then slowly open again until full throttle switch **II** just begins to activate (continuity)
  - must occur at  $4 \pm 1^\circ$

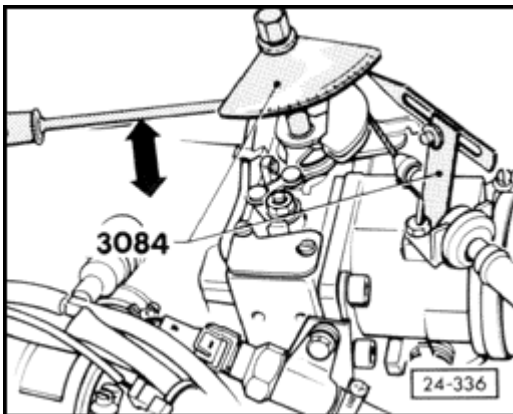
**If NO**

- adjust switch-on point by loosening full throttle switch **II** and moving switch until specification is obtained
- tighten switch and re-check
- adjust throttle cable such that with accelerator pedal fully depressed, full throttle is just attained (1 mm maximum play at throttle lever)

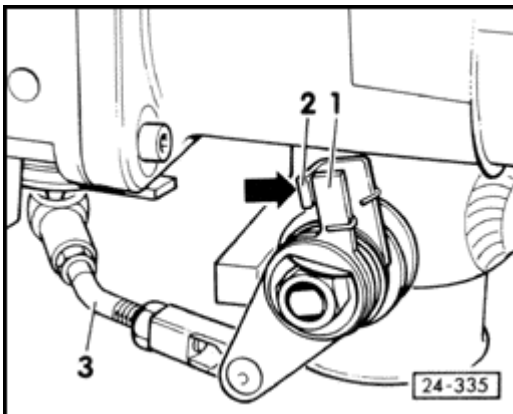
## By-pass valve adjustment, checking

### Notes

The by-pass valve controls the boost pressure. It is adjusted at the factory and must **not** be changed. Use the following check to determine if the by-pass valve adjustment has been inadvertently altered.



- attach protractor **3084** to throttle shaft using magnetic adaptor **3084/1**
- fasten protractor pointer to throttle cable sleeve using circlip
- using screwdriver, push throttle lever to full throttle stop
- with throttle in this position, set protractor to 10°



- slowly close throttle until lever **1** just makes contact with lever **2 (arrow)**
- read value on protractor
  - must be  $5 \pm 3^\circ$  before full throttle stop

If **NO**

- adjust by-pass valve on connecting rod **3**

### Notes

For full throttle switch checking/adjusting see [section 24-140](#).

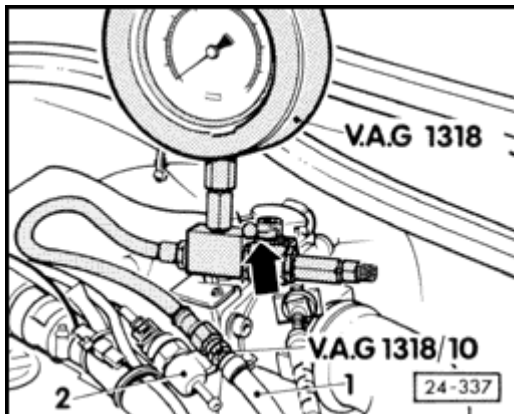
## Fuel pressure regulator and residual pressure, checking

### **WARNING!**

**Fire Hazard. Do not smoke or have anything in area that can ignite fuel!**

The fuel pressure regulator regulates the fuel pressure in proportion to intake manifold vacuum.

- wrap a lint free cloth around pressurized fuel hose to prevent fuel overspray
  - located between fuel rail and fuel pump after-run pressure switch

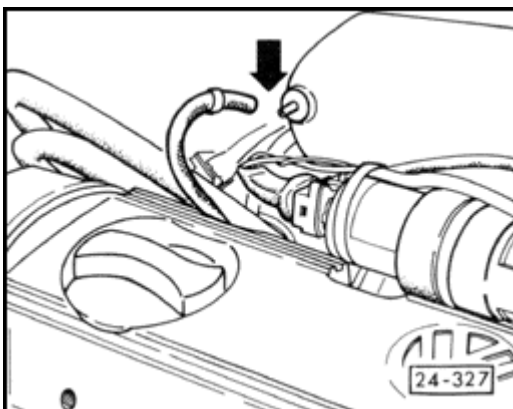


- disconnect hose **1** from pressure switch **2** and catch any fuel that runs out
- connect pressure tester **VAG 1318** to disconnected hose **1** using adaptor **VAG 1318/10**

### **Notes**

*The valve on the pressure gauge must be in the closed position, that is; the lever must be at a right angle to the direction of flow.*

- start engine and let run at idle
- observe fuel pressure
  - must be approx. 2.5 bar



- disconnect fuel pressure regulator vacuum hose from intake manifold (**arrow**)
  - fuel pressure must increase to approx. 3.0 bar
- switch **OFF** ignition
- check for leaks and residual pressure by watching pressure drop on gauge
  - after 10 minutes there must be 2 bar minimum pressure

If the residual pressure drops below 2 bar

- start engine until fuel pressure has built up
- switch **OFF** ignition, at the same time securely clamp fuel return hose (blue) and observe pressure drop on gauge
  - if pressure does **not** drop; pressure regulator is defective

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**Fuel Injection, AFC System (Page 24-160-2)**

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If pressure still drops; check the following

- hose connections are leaking
- fuel rail O-rings are leaking
- fuel injectors are leaking
- fuel pump check valve is leaking
- pressure gauge shut-off valve is leaking
- repair or replace as necessary
- drain fuel from **VAG 1318** before removing the pressure gauge

## Fuel injectors, checking

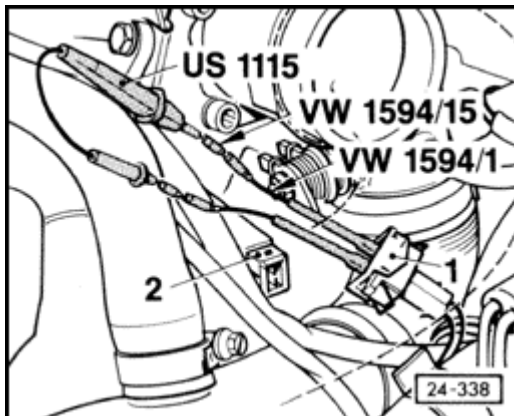
### **WARNING!**

**Fire Hazard. Do not smoke or have anything in area that can ignite fuel**

## Voltage supply and resistance, checking

### Requirement

- Hall sender **OK**, checking, see Repair Group 28



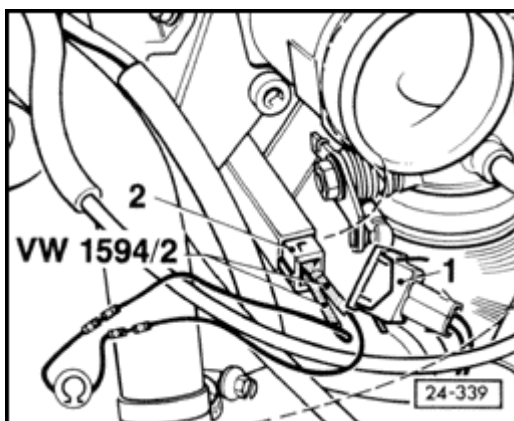
- disconnect harness connector **1** from connector **2**
- check fuel injector supply voltage at harness connector **1** using **US 1115** LED tester and jumper wires from **VW 1594** adaptor kit
- operate starter
  - LED tester must flicker

If LED does not flicker and does not light up

- re-connect harness connector **1** with connector **2**
- locate break in wiring for injectors (**N 30**, **N 31**, **N 32**, **N 33**) and eliminate see [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A**, step 4

If wiring **OK**

- replace Digifant control unit (**J 169**)



- switch **Fluke 83** multimeter to resistance range
- check fuel injector resistance at connector **2** using multimeter and jumper wires from **VW 1594** adaptor kit

If 3.7 to 5.0 Ohms

- all 4 injectors **OK**

If 5.0 to 6.7 Ohms

- 3 injectors **OK**

If 7.5 to 10.0 Ohms

- 2 injectors **OK**

If 15.0 to 20.0 Ohms

- 1 injector **OK**

If resistance is greater than 5 Ohms

- remove wiring from fuel rail brackets and carry out individual injector resistance checks at connectors and injectors

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical Fuel Injection, AFC System (Page 24-170-2)

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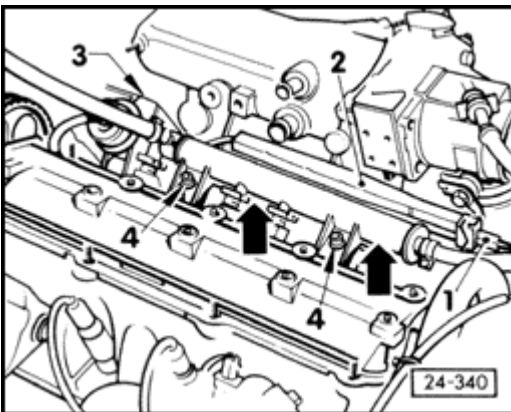
- must be 15 to 20 Ohms maximum per injector
- must be 0.5 Ohms maximum (continuity) across each injector harness connector
- repair or replace wiring or injectors as necessary

#### Injectors, removing

##### **WARNING!**

**Fire Hazard. Do not smoke or have anything in area that can ignite fuel!**

- remove idle stabilizer valve and place to one side
- remove valve cover and intake manifold support

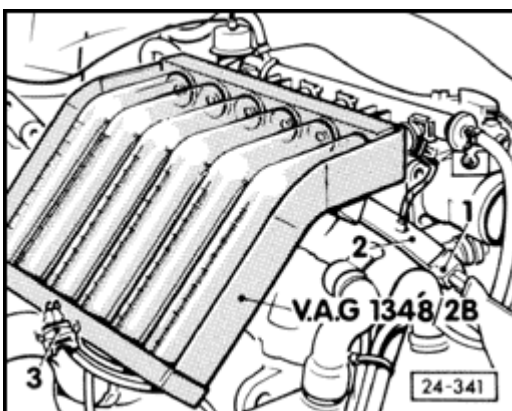


- disconnect harness connector **1** from injector wiring guide **2**
- carefully pry wiring guide **2** from fuel rail brackets (**arrows**)
- remove fuel rail mounting bolts **3** and **4**
- pull injectors complete with fuel rail and wire guide out of cylinder head

#### Spray pattern and sealing, checking

##### **WARNING!**

**Fire Hazard. Do not smoke or have anything in area that can ignite fuel!**



- remove fuel rail assembly (injectors/wire guide/fuel rail)
- insert injector assembly into openings of fuel analyzer **VAG 1348/2B**
- disconnect blue coolant temperature sender harness connector **3**
- re-connect harness connector **1** to connector **2**
- briefly operate starter and observe spray pattern
-

must be uniform among all injectors in the set

- disconnect harness connector **1**
- switch **ON** ignition for approx. 5 seconds and check injectors for leaks
  - not more than 2 drops per minute of leakage may occur

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If **YES**

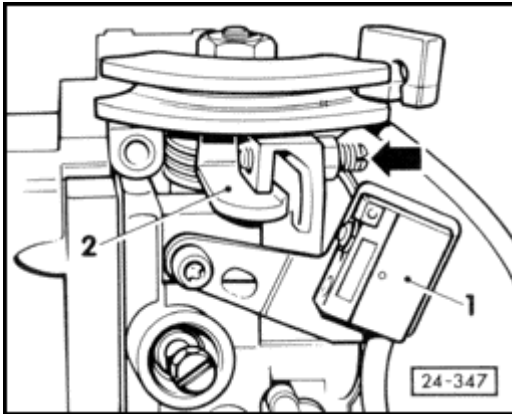
- replace faulty injector(s)

**Notes**

*When reinstalling fuel injectors, make sure O-rings are not damaged.*

### **Basic throttle adjustment, checking/adjusting**

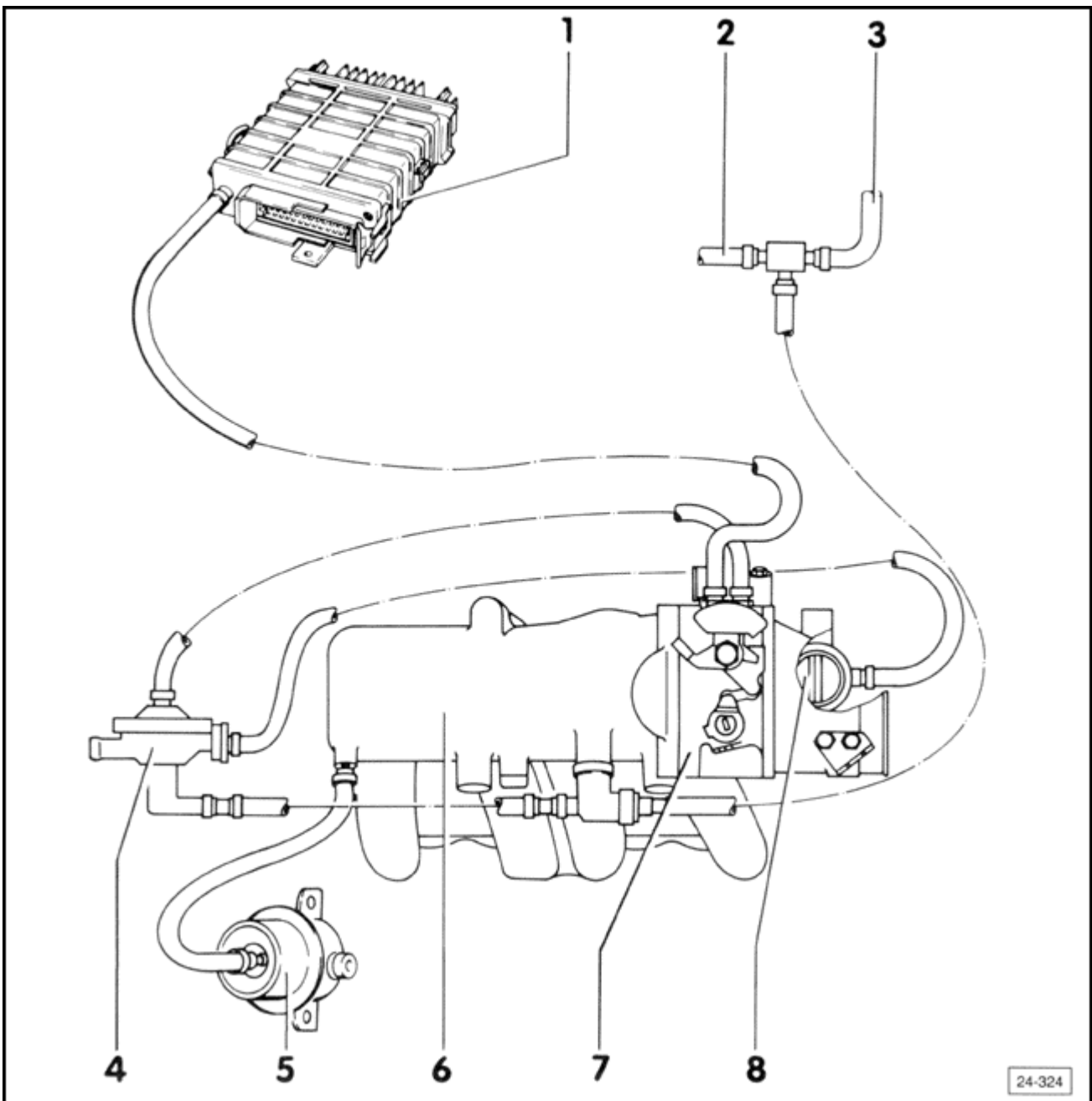
The stop screw is set at the factory and should NOT be changed. If the screw position should accidentally change, adjust as follows.



- unscrew throttle stop screw (**arrow**) until there is a gap between throttle lever **2** and throttle stop screw
- turn screw in until lever **2** just makes contact

To determine stop point of adjustment screw

- place a thin piece of cellophane between throttle lever **2** and throttle stop screw (**arrow**)
- pull up on the cellophane while turning in the adjustment screw, until cellophane begins to bind
- turn screw clockwise an additional 1/2 turn
- check idle switch and adjust if necessary, see [section 24-140](#)
- check idle speed and CO content and adjust if necessary, see [section 24-90](#)



**1 - Digifant control unit (J 169)**

- vacuum hose length between ECU and throttle body critical; 1 meter, do not lengthen or shorten
- only use correct replacement part; black with yellow stripe

**2 - to A/C**

**3 - to multi function indicator**

**4 - Carbon canister control valve**

**5 - Fuel pressure regulator**

**6 - Intake manifold**

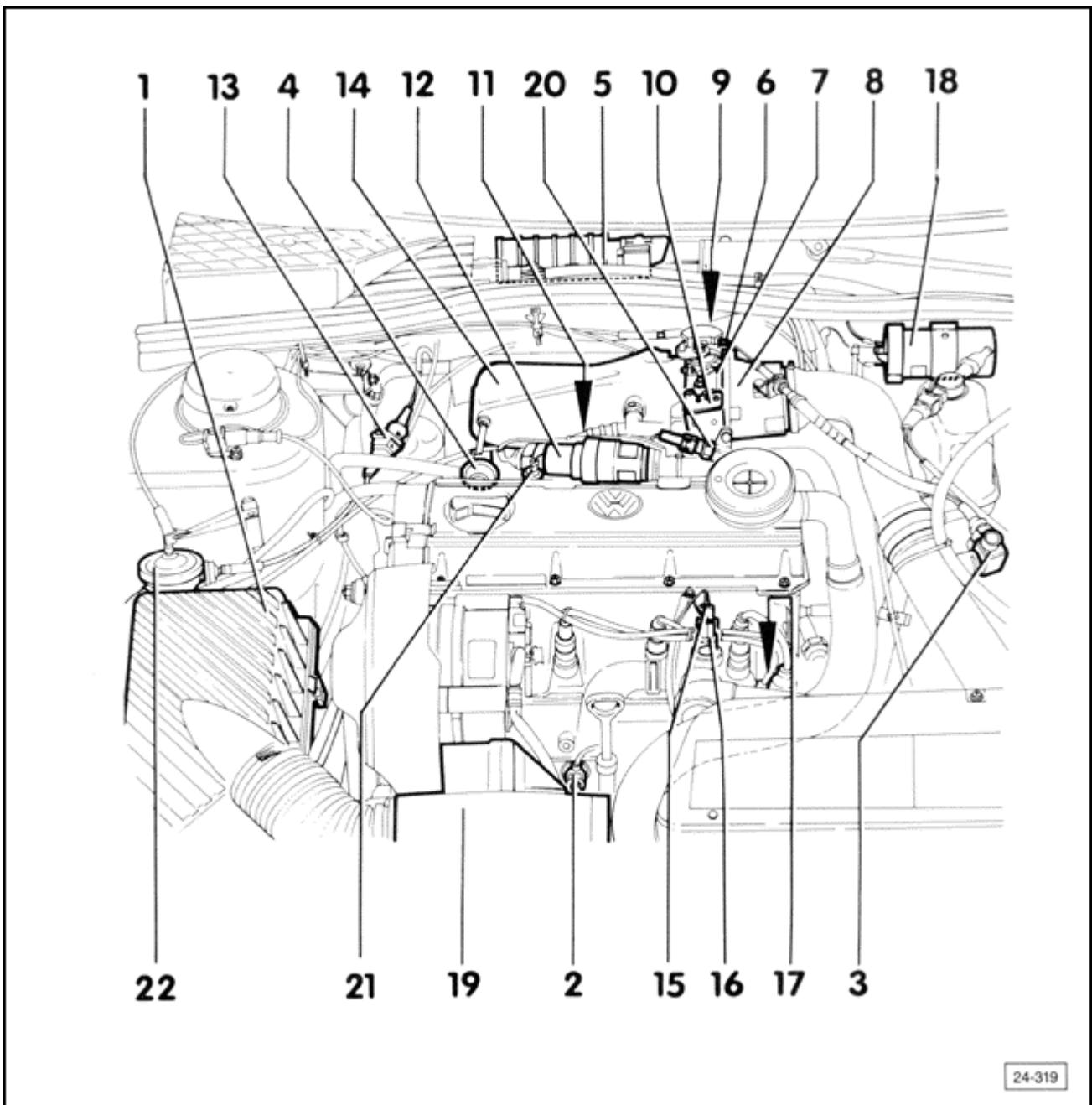
**7 - Throttle valve housing**

**8 - By-pass valve**

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

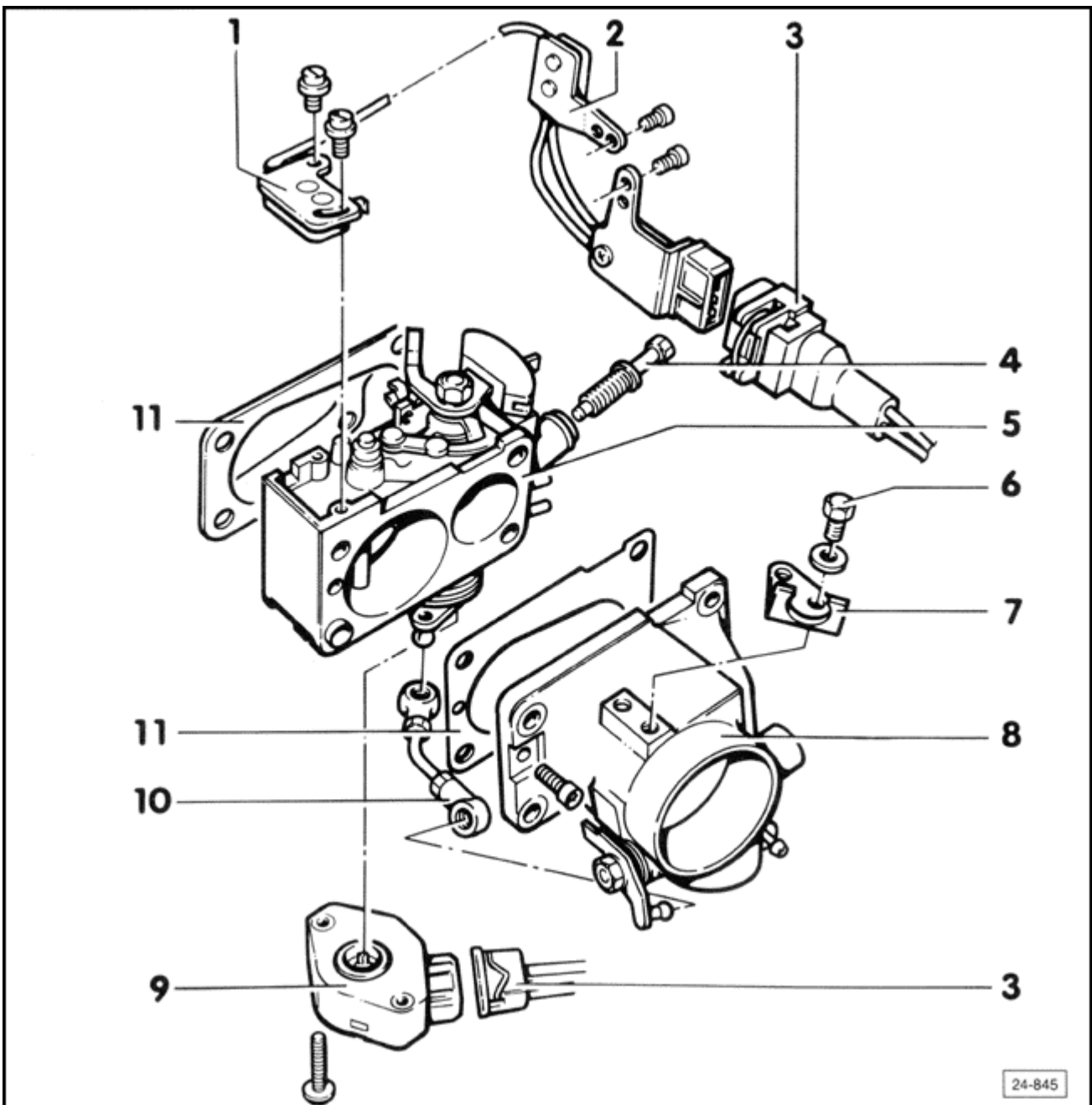
### Fuel Injection, AFC System (Page 24-200-1)



- 1 - Air filter
- 2 - Knock sensor (G 61)
- 3 - CO potentiometer (G 74)  
with CO adjustment screw and intake air temperature sensor (G 42)
- 4 - Fuel pressure regulator
- 5 - Digifant control unit (J 169)
- 6 - Idle speed adjustment screw
- 7 - Throttle valve housing
- 8 - Boost control valve housing
- 9 - Throttle potentiometer (G 69)  
eliminates former idle and full throttle switches (10)

- 11 - Fuel rail assembly including fuel injectors**
- 12 - Idle stabilizer valve and boost pressure regulator (N 71)**
- 13 - Oxygen sensor heater/probe harness connector**
- 14 - Intake manifold**
- 15 - Coolant temperature sensor (blue)**  
supplies signal to control unit
- 16 - Coolant temperature sensor (black)**  
supplies signal to temperature gauge
- 17 - Ignition distributor with Hall sender (G 40)**

- 18 - Ignition coil (N 152)**
- 19 - G-charger**  
boost pressure checking, see [Repair Group 21](#)
- 20 - Pressure switch (F 130) for fuel pump**  
after-run checking, [Repair Group 20](#)
- 21 - Thermostat (F 87) for radiator**  
cooling fan after-run
- 22 - Carbon canister control valve**  
checking, [Repair Group 20](#)



**1 - Idle speed adjustment screw**

- idle speed adjusting, [section 24-220](#)
- inspect O-ring for damage, replace if necessary

**2 - Throttle body**

- basic adjustment, [section 24-320](#)

**3 - 10 Nm (7 ft lb)**

**4 - Throttle stop**

- accelerator cable adjustment, [Repair Group 20](#)

**5 - Bypass valve body**

- adjustment, checking [section 24-310](#)

**6 - Harness connector for throttle potentiometer**

**7 - Throttle potentiometer (G 69)**

- for California, starting m.y. 1991
- checking, [section 24-290](#)

**8 - Connecting rod**

**9 - Gasket**

always replace

## Idle speed and CO content, checking/adjusting

### **CAUTION!**

*Ignition timing, CO content and idle speed RPM's are inter-related and must be checked/adjusted together.*

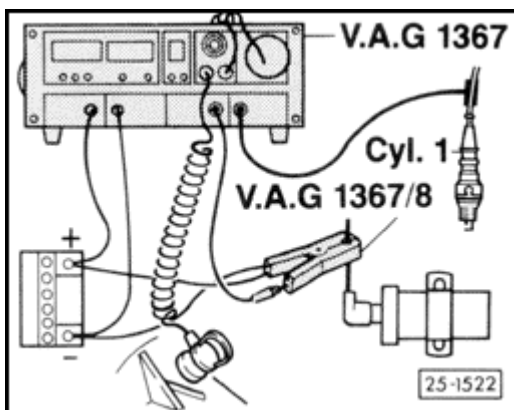
### **Notes**

*The Oxygen sensor remains connected during checking/adjusting.*

### Requirements

- engine oil temperature 80° C (176° F) minimum
- all electrical consumers switched **OFF** (do not take measurements while radiator cooling fan is running)
- A/C switched **OFF**
- ignition timing **OK**
- idle stabilizer valve **OK** , (when ignition is switched on the valve must buzz and hum)
- exhaust system must be leak tight

### Checking/adjusting



- switch **OFF** ignition
- connect **VAG 1367** engine tester using inductive pickup **VAG 1367/8** on ignition coil high tension lead
- connect **SUN 105** CO tester (or EPA approved equivalent) to CO tap tube using hose adaptor **VAG 1363/3**

### **CAUTION!**

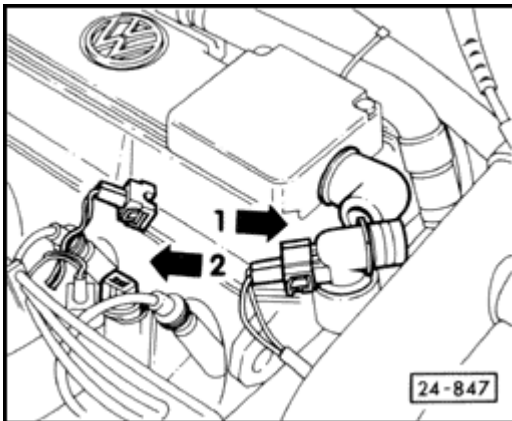
*Hose must fit securely on CO tap tube to avoid measuring inaccuracies due to dilution or leakage.*

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-220-2)

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- disconnect crankcase ventilation hose from emission control valve (**arrow 1**) and route such that only fresh air is drawn in
- start engine and let idle
  - will run from 1 to 4 minutes at increased engine RPM

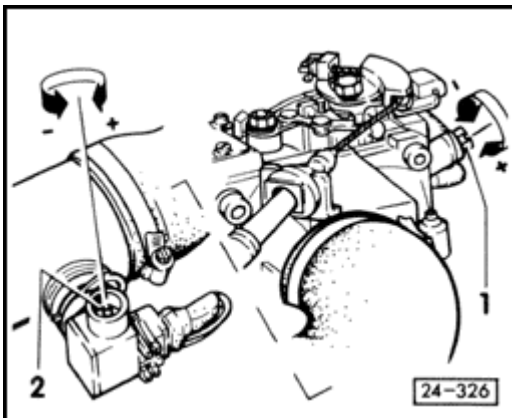
When idle speed is reduced approx. 100 RPM

- disconnect blue coolant temperature sensor harness connector

### **CAUTION!**

**Do not start engine with coolant temperature sensor disconnected. The control unit will go into open loop making accurate adjustment impossible.**

- raise engine speed in excess of 3000 RPM 3 times then let idle



- check idle speed and CO content
  - idle speed must be  $800 \pm 50$  RPM
  - CO content must be  $0.7 \pm 0.4$  volume %

If **NO**

- adjust by alternately turning adjustment screws (**arrows**) until both specifications are obtained
- reconnect blue coolant temperature sensor
- raise engine speed 3 times then let idle
- check CO content
  - must be  $0.7 \pm 0.4$  volume %

If **NO**

- check OXS control, see [section 24-110](#)
- after repairs or replacements have been performed, install new plug over CO adjustment screw

**Notes**

*After adjusting the idle speed, reconnect the crankcase ventilation hose. If the CO content then changes, this is not due to improper adjustment, but rather to oil dilution caused by short distance driving and insufficient warmup. With longer distance driving, the amount of fuel in the oil will be reduced and the CO will normalize again. A short term solution would be an oil change.*

## Oxygen Sensor and Oxygen Sensor Control, Checking

### **CAUTION!**

**Do Not re-use any sprays or compounds containing silicone on engines equipped with Oxygen sensors. Do Not use these compounds on or near intake air system or near the Oxygen sensor. Silicone drawn into the intake air system is not burned during combustion and will lead to contamination and malfunctioning of the Oxygen sensor.**

#### Requirements

- no leaks in exhaust system between catalytic converter and cylinder head
- voltage supply for Oxygen sensor heater **OK**
- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- start engine and let idle
- select Function "**Read measuring value block**", see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press **0** key twice to select display group number **00**
  - display will appear as shown

Read measuring value block Q  
 Display Group number input 00

- press **Q** key to enter input
  - following display appears

Measuring value block reading  
 1 2 3 4 5 6 7 8 9 10

- continue with checking **only** after:
  - the displayed value in channel **3** is less than **11** (which corresponds to a coolant temperature of at least 80° C or 176° F)
- let engine idle for 2 more minutes
  - read display value in channel **5** (Oxygen sensor signal)

Display value	Possible cause of fault	Fault correction
Varies more than <b>14</b>	No fault, Oxygen sensor control <b>OK</b>	Checking complete
<b>0 - 5</b>	Short circuit to positive (+) in wiring between Oxygen sensor and control unit	Perform Test <b>A</b>
<b>164 - 168</b>	Open circuit in wiring between Oxygen sensor and control unit	Perform Test <b>B</b>

**230** minimum

Short circuit to ground (-) in wiring between Oxygen sensor and control unit

Perform Test **C**

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-230-2)

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#### Test A

- disconnect Oxygen sensor/heater harness connector (on valve cover)
  - displayed value must be **164 - 168**

#### If YES

- Oxygen sensor control **OK**
- switch **OFF** ignition
- replace Oxygen sensor (**G 39**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
  - displayed value must be **0 to 5**

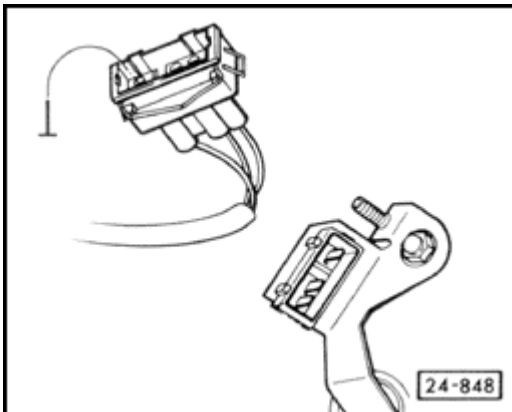
#### If NO

- Oxygen sensor control **not OK**
- switch **OFF** ignition
- check wiring for short circuit to control unit positive (+), repair or replace as necessary, also see [Repair Group 01 \(Fuel Injection and Ignition\)](#); Digifant system electrical testing, **Test A** , step **16**

#### If wiring OK

- replace Digifant control unit (**J 169**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

#### Test B



- disconnect Oxygen sensor/heater harness connector (on valve cover)
- touch violet wire (from Digifant control unit) to ground (-) using jumper from **VW 1594** adaptor kit
  - displayed value must be **230** minimum

#### If YES

- Oxygen sensor control **OK**
- switch **OFF** ignition
- replace Oxygen sensor (**G 39**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

- displayed value must be **164 - 168**
- Oxygen sensor control **NOT OK**
- switch **OFF** ignition
- check wiring for open circuit to control unit using wiring diagram, repair or replace as necessary, also see [Repair Group 01 \(Fuel Injection and Ignition\)](#) , **Test A** , step **16**

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical

#### Fuel Injection, AFC System (Page 24-230-3)

---

If wiring **OK**

- replace Digifant control unit (**J 169**)
- activate Fault memory then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

**Test C**

- disconnect Oxygen sensor/heater harness connector (on valve cover)
  - displayed value must be **164 - 168**

If **YES**

- Oxygen sensor control **OK**
- switch **OFF** ignition
- replace Oxygen sensor (**G 39**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
  - displayed value must be **230** minimum

If **NO**

- Oxygen sensor control **NOT OK**
- switch **OFF** ignition
- check wiring for short circuit between control unit and ground, repair or replace as necessary, also see [Repair Group 01 \(Fuel Injection and Ignition\)](#) , **Test A**, step **16**

If wiring **OK**

- replace Digifant control unit (**J 169**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

## **Acceleration/Full Throttle Enrichment and Deceleration Fuel Cutoff, Checking**

### **Notes**

Use the following procedure to check the deceleration fuel cutoff. If this check **and** the check for the air flow sensor potentiometer are **OK**, acceleration and full throttle enrichment are also **OK**.

- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- start engine and let idle
- select Function **08 "read measuring block value"**, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or:

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press **0** and **1** key to select display group number **00**
  - display will appear as shown

Read measuring value block Q  
Display group number input 01

- press **Q** key to enter input
  - display will appear as shown

Read measuring value block 1  
1 2 3 4

Continue with checking **only** if:

- the coolant temperature displayed in channel **3** is 80° C (176° F) minimum
- while observing channel **1** displayed value, raise engine speed in excess of 3000 RPM three times
- let engine idle for 2 minutes
- observe displayed value in channel **4**
- raise engine speed to a minimum of 3000 RPM by stepping on accelerator pedal then releasing
  - the value displayed in channel **4** must increase in value; drop to 0 ms; then return to the previously observed value

If **YES**

- acceleration/full throttle enrichment and deceleration fuel shutoff **OK**

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**Fuel Injection, AFC System (Page 24-240-2)**

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If displayed value does not increase and does not return to 0 ms

- check throttle potentiometer, see [section 24-290](#)

## Coolant temperature sensor, checking

### Requirement

- engine cold
- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- start engine and let idle
- select Function "**Read measuring value block**", see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press keys **0** and **1** to select "**Display group number 01**"
  - display will appear as shown

Read measuring value block Q  
 Display Group number input 01

- press **Q** key to acknowledge input
  - channels will be displayed as shown

Read measuring value block 1  
 1 2 3 4

- observe display value in channel **3**

Display value	Possible cause of fault	Fault correction
Must increase uniformly without interruption*	Coolant temperature sensor ( <b>G 62</b> ) and control <b>OK</b>	Checking complete
<b>-40 ° C</b>	Break in wiring, sensor wiring, or wiring to control unit	Perform Test <b>A</b>
<b>80 ° C minimum</b> **	Short circuit to negative (-) between coolant temperature sensor, wiring or control unit	Perform Test <b>B</b>

\* If engine malfunctions occur during certain temperature ranges **and** the displayed value in channel **3** does **NOT** increase uniformly and without interruption, the problem is a faulty coolant temperature sensor.

If **YES**

- replace coolant temperature sensor (G-62)

\*\* If the displayed value, 80 ° C (176 ° F) minimum does not correspond to the actual coolant temperature, e.g. actual coolant temperature under 60 ° C

- perform test **A**

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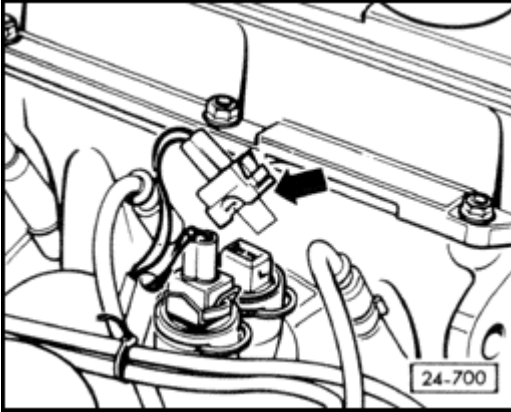
### Fuel Systems Supercharger Exhaust Engine Electrical

#### Fuel Injection, AFC System (Page 24-250-2)

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- perform test A

#### Test A

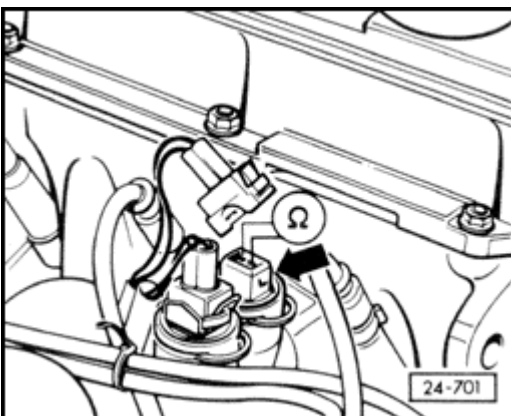


- disconnect coolant temperature sensor harness connector (blue) and bridge the connector terminals using jumpers from **VW 1594** adaptor kit
  - displayed value must be 80° C (176° F) minimum

#### If YES

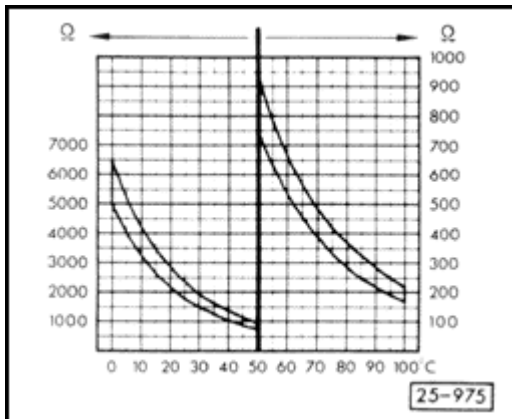
- coolant temperature sensor control **OK**
- switch **OFF** ignition
- replace coolant temperature sensor (**G 62**)
- activate Fault memory and erase - [Repair Group 01 \(Fuel Injection and Ignition\)](#), Self Diagnosis

#### Test B



- switch **OFF** ignition
- disconnect (blue) coolant temperature sensor harness connector
- switch **Fluke 83 (US 1119)** multimeter to resistance range
- connect multimeter between terminals of temperature sensor using jumpers from

## VW 1594 adaptor kit



Specified Value: per chart

If **OK**

- re-connect coolant temperature sensor (**G 62**) harness connector
- check wiring for short circuit to control unit negative (-), repair or replace as necessary, also see [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A**, step **9**

If wiring **OK**

- replace Digifant control unit (**J 169**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- return control unit to basic setting, see [Repair Group 01 \(Automatic Transmission\)](#)

If measured value is out of range

- replace coolant temperature sensor (**G 62**)

### Intake Air Temperature Sensor, checking

- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- switch **ON** ignition
- select Function **08 "Read measuring value block"**, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press **0** keys twice to select "**Display group number 02**"
  - display will appear as shown

Read measuring value block Q  
 Display Group number input 00

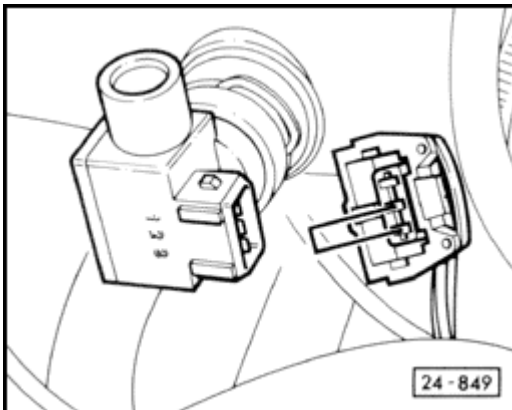
- press **Q** key to enter input
  - display will appear as shown

Read measuring value block 2  
 1 2 3 4 5 6 7 8 9 10

- read displayed value in channel **1**

Display value	Possible cause of fault	Fault correction
<b>10 to 190</b>	Coolant temperature sensor ( <b>G 62</b> ) and control <b>OK</b>	Checking complete
at least <b>250</b>	Open circuit in wiring between sensor and control unit	Perform Test <b>A</b>
<b>0</b>	Short circuit to positive (+) in wiring between sensor and control unit	Perform Test <b>B</b>

## Test A



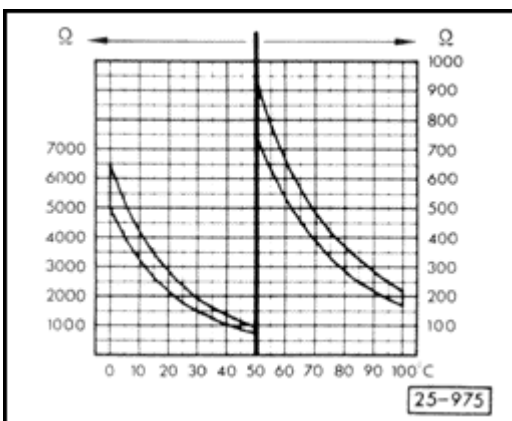
- disconnect CO potentiometer harness connector (with sensor for intake air temperature and bridge terminals **2** and **3** of the connector using jumpers from **VW 1594** adaptor kit
  - displayed value must be **0**

### If YES

- Intake air temperature sensor control **OK**
- switch **OFF** ignition
- replace CO potentiometer (**G 74**) and intake air temperature sensor (**G 42**)
- activate Fault memory and erase, [Repair Group 01 \(Fuel Injection and Ignition\)](#)

## Test B

- switch **OFF** ignition
- disconnect CO potentiometer harness connector



- measure sensor resistance across terminals **2** and **3** using **US 1119** multimeter and jumper wires from **VW 1594** adaptor kit
  - measured value must fall within appropriate area of chart

### If specified value obtained

- reconnect CO potentiometer harness connector
- check wiring for short circuit to control unit negative (-) using wiring diagram, repair or replace as necessary, see [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A**, step **10**

If wiring **OK**

- replace Digifant control unit
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

If the specified value **not** obtained

- replace CO potentiometer (**G 74**)
  - comes complete with with intake air temperature sensor (**G 72**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- check idle speed and CO content, adjust if necessary

## CO potentiometer, checking

### Requirement

- idle speed **OK**
- coolant temperature 80° C (176° F) minimum
- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- start engine
- select Function **08 "Read measuring value block"**, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press **0** keys twice to select "**display group number 00**"
  - display will appear as shown

Read measuring value block Q  
 Display group number input 00

- press **Q** key to enter input
  - channels will be displayed as shown

Read measuring value block 1  
 1 2 3 4 5 6 7 8 9 10

- observe displayed value in channel **2**

Display value	Possible cause of fault	Fault correction
<b>40 - 140</b> *	CO potentiometer ( <b>G 74</b> ) and triggering <b>OK</b>	Checking complete
<b>0...2</b>	Short negative (-): wire, CO Potentiometer, control unit	Perform Test <b>A</b>
at least <b>250</b>	Open circuit in wiring between potentiometer and control unit	Perform Test <b>B</b>

\* The displayed value depends on the CO content adjustment during idle adjustment.

### Test A

- disconnect CO potentiometer harness connector
  - display value: **250** minimum

If **YES**

- triggering of CO potentiometer (**G 74**) **OK**

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-270-2)

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- switch **OFF** ignition
- replace CO potentiometer assembly (**G 74**)
  - includes intake air temperature sensor (**G 42**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- check idle and CO values, adjust if necessary
  - displayed value must be **0** to **2**

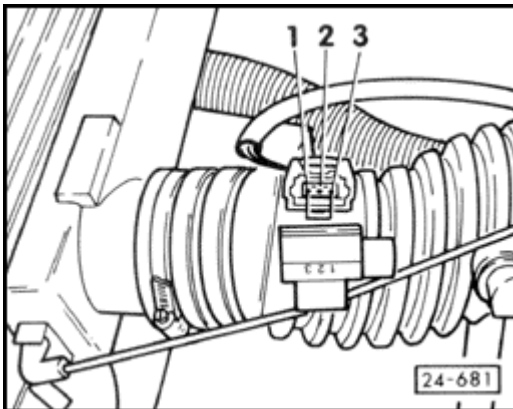
#### If **NO**

- CO potentiometer triggering (**G 74**) **NOT OK**
- switch **OFF** ignition
- reconnect CO potentiometer (**G 74**) harness connector
- eliminate short in wiring between control unit and ground using wiring diagram, see [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A**, step 11

#### If wiring **OK**

- replace control unit (**J 169**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

#### Test B



- disconnect CO potentiometer harness connector (with intake air temperature sensor) and bridge terminals **1** and **3** of connector using jumper wires from **VW 1594** adaptor kit
  - displayed value must be **0** to **2**

#### If **YES**

- control unit triggering **OK**
- switch **OFF** ignition
- replace CO potentiometer (**G 74**) assembly
  - includes intake air temperature sensor (**G 42**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- check idle speed and CO content, adjust if necessary
  - displayed value must be **250** minimum

If **NO**

- control unit triggering **not OK**
- switch **OFF** ignition
- reconnect CO potentiometer (**G 74**) harness connector
- determine open circuit and eliminate using wiring diagram, see [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A**, step **11**

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**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-270-3)**

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If wiring **OK**

- replace Digifant control unit (**J 169**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

## Vacuum sensor, checking

### Notes

The vacuum sensor (**G 71**) is installed inside the Digifant Control Unit (**J 169**).

- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- start engine and let idle
- select Function **08 "Read measuring value block"** , see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press **0** and **1** keys to select "**display group number 01**"
  - display will appear as shown

Read measuring value block Q Display group number input 01
---

- press **Q** key to enter input
  - channels will be displayed as shown

Read measuring value block 1 1 2 3 4
---

- continue with the test only if the coolant temperature in channel **3** is 80° C minimum
- read display value in channel **2**
  - displayed value must be 20 to 40% **fluctuating**

If **YES**

- vacuum line and vacuum sensor (**G 71**) inside Digifant control unit (**J 169**) **OK**

If displayed value 45% (minimum) and **constant**

- vacuum line and sensor (**G 71**) inside Digifant control unit (**J 169**) **NOT OK**
- check vacuum line between throttle body and control unit, replace if necessary

If vacuum line **OK**

- replace Digifant control unit
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

## **Throttle Potentiometer, Checking**

### **Notes**

*The throttle potentiometer provides information to the Digifant control unit (J 169) for the following functions:*

*with throttle closed:*

- *injector shut off during fuel deceleration cutoff*
- *idle stabilization*
- *ignition adjustment during idle using digital idle stabilization function*

*with throttle partially opened:*

- *determines injection quantity for acceleration enrichment*

*with throttle fully opened:*

- *determines injection quantity during full throttle enrichment*

### **Checking**

- connect **VAG 1551** Diagnostic tester, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- switch **ON** ignition
- select Function **08 "Read measuring value block"** , see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information

or

- while observing **VAG 1551** display, select the following functions in sequence
  - 1- Rapid data transfer
  - 01**- Engine electronics
  - 08**- Read measuring value block
- press **0** and **5** keys to select "**Display group number 05**"
  - display will appear as shown

Read measuring value block Q Display group number input 05
---

- press **Q** key to enter input
  - channels **will** be displayed as shown

Read measuring value block 5 1 2 3 4
---

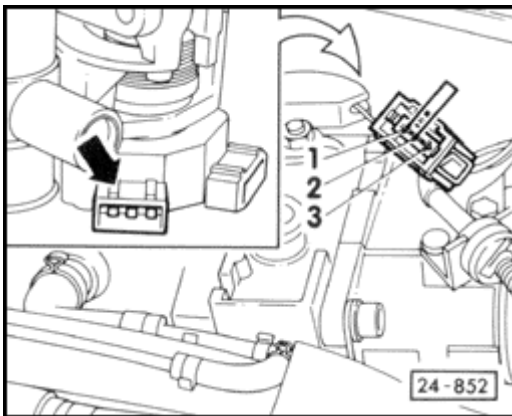
- read displayed value in channel **2**

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**Fuel Injection, AFC System (Page 24-290-2)**

Display value	Possible cause of fault	Fault correction
Idle stop 5 - 50 <sup>°</sup>	Throttle potentiometer ( <b>G 69</b> ) and control <b>OK</b>	Checking complete
full throttle stop* min.90 <sup>°</sup>	-	-
0.0 <sup>°</sup>	Open circuit in wiring between throttle potentiometer and control unit	Perform Test <b>A</b>
min. 90 <sup>°</sup> at idle stop	Short circuit to positive (+) in wiring between throttle potentiometer and control unit	Perform Test <b>A</b>

- open throttle slowly and uniformly
  - displayed value in channel **2** must uniformly increase without interruption

**Test A**



- disconnect 3-pin throttle potentiometer (**G 69**) harness connector (**arrow A**)
  - displayed value must be 0.0 ><sup>°</sup>
- bridge terminals **1** and **2** of the harness connector (**arrow 2**) using jumpers from **VW 1594** adaptor kit
  - displayed value must be 90 ><sup>°</sup> minimum

If **YES**

- throttle potentiometer control **OK**
- switch **OFF** ignition
- replace throttle potentiometer (**G 69**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

Vehicles with automatic transmission only:

- after removal/installation or replacement of throttle potentiometer reset control unit to reference setting, see [Repair Group 01 \(Automatic Transmission\)](#)

If **NO**

- throttle potentiometer control **NOT OK**
- switch **OFF** ignition
- check wiring for open circuit or short to control unit positive (+), repair or replace as

necessary, also see [Repair Group 01 \(Fuel Injection and Ignition\)](#), **Test A** . step **13**  
and/or **Test B** steps **1** and **2**

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If wiring **OK**

- replace Digifant control unit (**J 169**)
- activate Fault memory and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

## Fuel Injectors, Checking

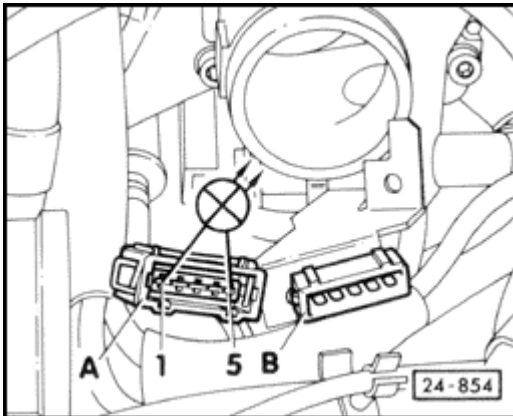
### **WARNING!**

**Fire Hazard. Do not smoke or have anything in area that can ignite fuel!**

### Voltage Supply and Resistance, checking

#### Requirement

- Hall sender **OK**



- check voltage supply to all injectors using **US 1115** LED tester and jumper wires from the **VW 1594** adaptor kit in the following sequence of terminals in connector **A**
  - 1** and **5**
  - 2** and **5**
  - 3** and **5**
  - 4** and **5**
- operate starter
  - LED must flicker

If LED tester lights up continuously

- replace ground wire between battery, transmission and Digifant control unit
- fasten ground wire to transmission using new mounting bolt

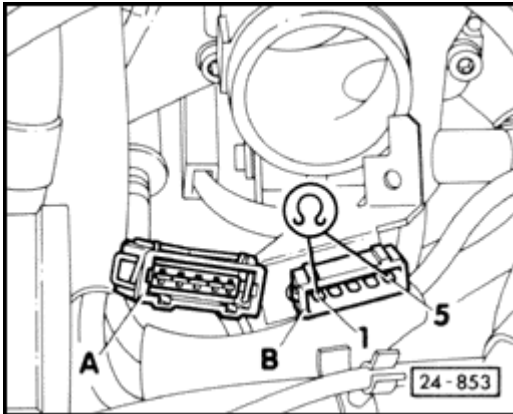
If LED tester does not flicker or light up

- reconnect harness connectors **A** and **B**
- check wiring for open circuit to control unit, repair or replace as necessary, also see [Repair Group 01 \(Fuel Injection and Ignition\)](#): Digifant system electrical testing **Test A** - step **6**

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical Fuel Injection, AFC System (Page 24-300-2)

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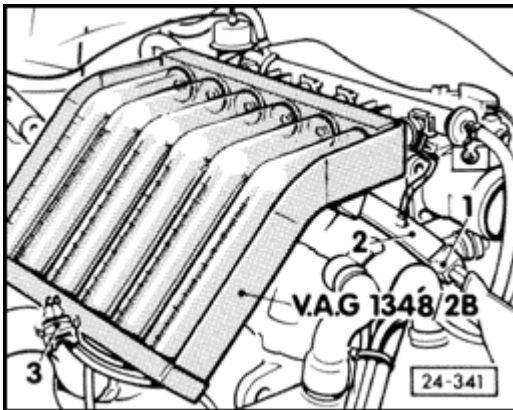


- check resistance for all injectors using **Fluke 83** multimeter
- connect multimeter between the following terminals in connector **B** (in the sequence given):
  - 1 and 5
  - 2 and 5
  - 3 and 5
  - 4 and 5
- must be 15 - 20 Ohms (for each reading)

#### Fuel injector spray pattern and sealing, checking

#### **WARNING!**

**Fire Hazard. Do not smoke or have anything in area that can ignite fuel!**



- remove fuel rail assembly (injectors/wire guide/fuel rail)
- insert injector assembly into openings of fuel analyzer **VAG 1348/2B**
- disconnect blue coolant temperature sender harness connector **3**
- re-connect harness connector **1** to connector **2**
- briefly operate starter and observe spray pattern
  - must be uniform among all injectors in the set
- disconnect harness connector **1**
- switch on ignition for approx. 5 seconds and check injectors for leaks
  - not more than 2 drops per minute of leakage may occur

#### If **YES**

- replace faulty injector(s)

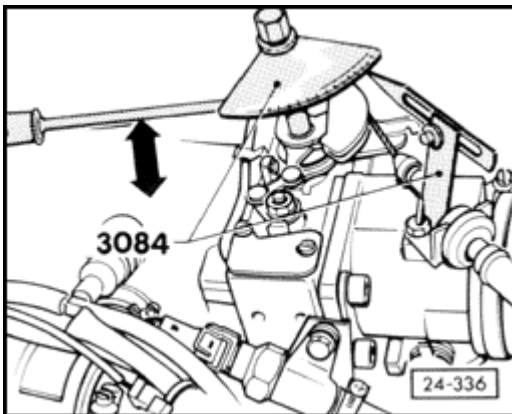
**Notes**

*When reinstalling fuel injectors, make sure O-rings are not damaged.*

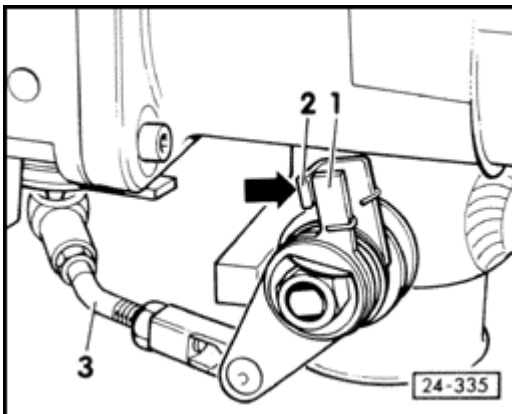
## By-pass valve adjustment, checking

### Notes

The by-pass valve controls the boost pressure. It is adjusted at the factory and must **not** be changed. Use the following check to determine if the by-pass valve adjustment has been inadvertently altered.



- attach protractor **3084** to throttle shaft using magnetic adaptor **3084/1**
- fasten protractor pointer to throttle cable sleeve using circlip
- using screwdriver, push throttle lever to full throttle stop
- with throttle in this position, set protractor to 10°



- slowly close throttle until lever **1** just makes contact with lever **2 (arrow)**
- read value on protractor
  - must be  $5 \pm 3^\circ$  before full throttle stop

If **NO**

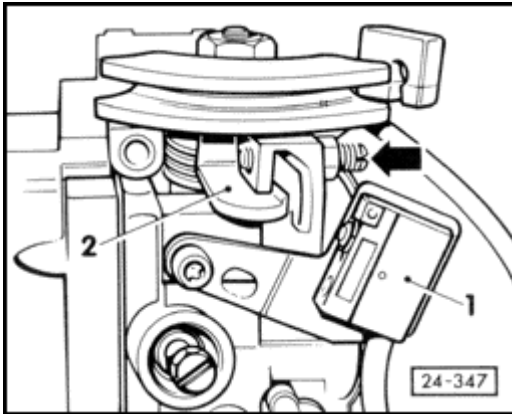
- adjust by-pass valve on connecting rod **3**

### Notes

For full throttle switch checking/adjusting see [section 24-140](#).

### **Basic throttle adjustment, checking/adjusting**

The stop screw is set at the factory and should not be changed. If the screw position should accidentally change, adjust as follows.



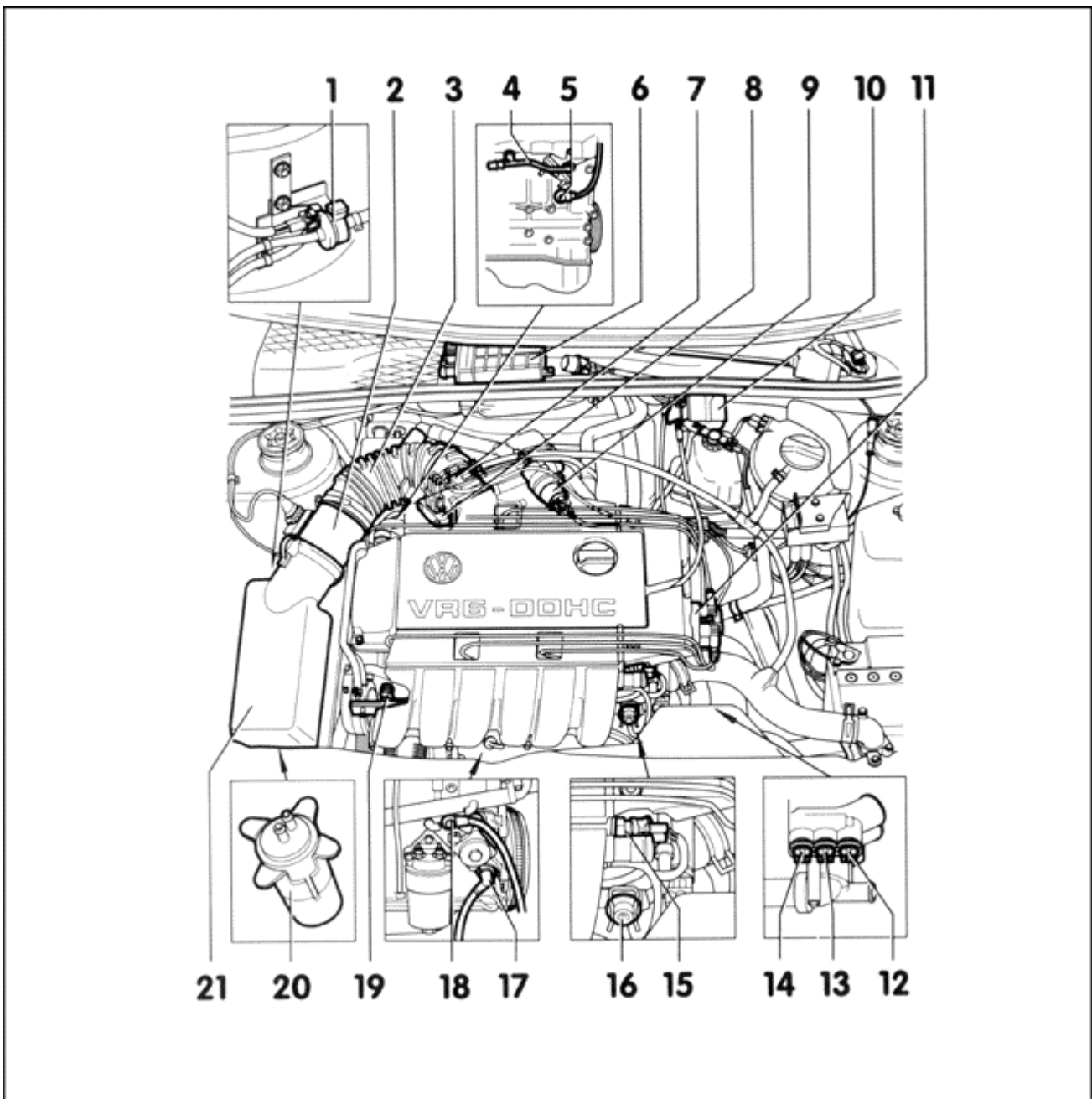
- unscrew throttle stop screw (**arrow**) until there is a gap between throttle lever **2** and throttle stop screw
- turn screw in until lever **2** just makes contact

To determine stop point of adjustment screw

- place a thin piece of cellophane between throttle lever **2** and throttle stop screw (**arrow**)
- pull up on the cellophane while turning in the adjustment screw, until cellophane begins to bind
- turn screw clockwise an additional 1/2 turn
- check idle switch and adjust if necessary, see [section 24-140](#)
- check idle speed and CO content and adjust if necessary, see [section 24-90](#)

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical Fuel Injection, AFC System (Page 24-330-1)



**1 - EVAP solenoid valve I (N 80)**

**2 - Mass air flow (MAF) sensor (G 70)**

before removing ignition must have been switched off for a minimum of 20 seconds

**3 - Intake air boot**

with connection for idle air control and heater element

**4 - CO tap tube**

**5 - Knock sensor I (G 61)**

**6 - Motronic engine control module (ECM) (J 220)**

**7 - Throttle body**

heated via coolant

**8 - Throttle position (TP) sensor (G 69)**

**9 - Idle speed control (ISC) valve (N 71)**

**10 - Ignition coil (N 152)**

**11 - Ignition distributor**  
with Hall sensor

**12 - Temperature sensor**

- brown
- for A/C

**13 - Engine coolant temperature (ECT) sensor (G 62)**

- blue
- 2 pole

**14 - Engine coolant temperature (ECT) sensor**

- supplies signal to instrument panel temperature gauge
- yellow
- 4 pole

**15 - Intake air temperature (IAT) sensor (G 72)**

**10 Nm (7 ft lb)**

**16 - Fuel pressure regulator**

**17 - Engine speed (RPM) sensor (G 28)**

**18 - Knock sensor II (G 66)**

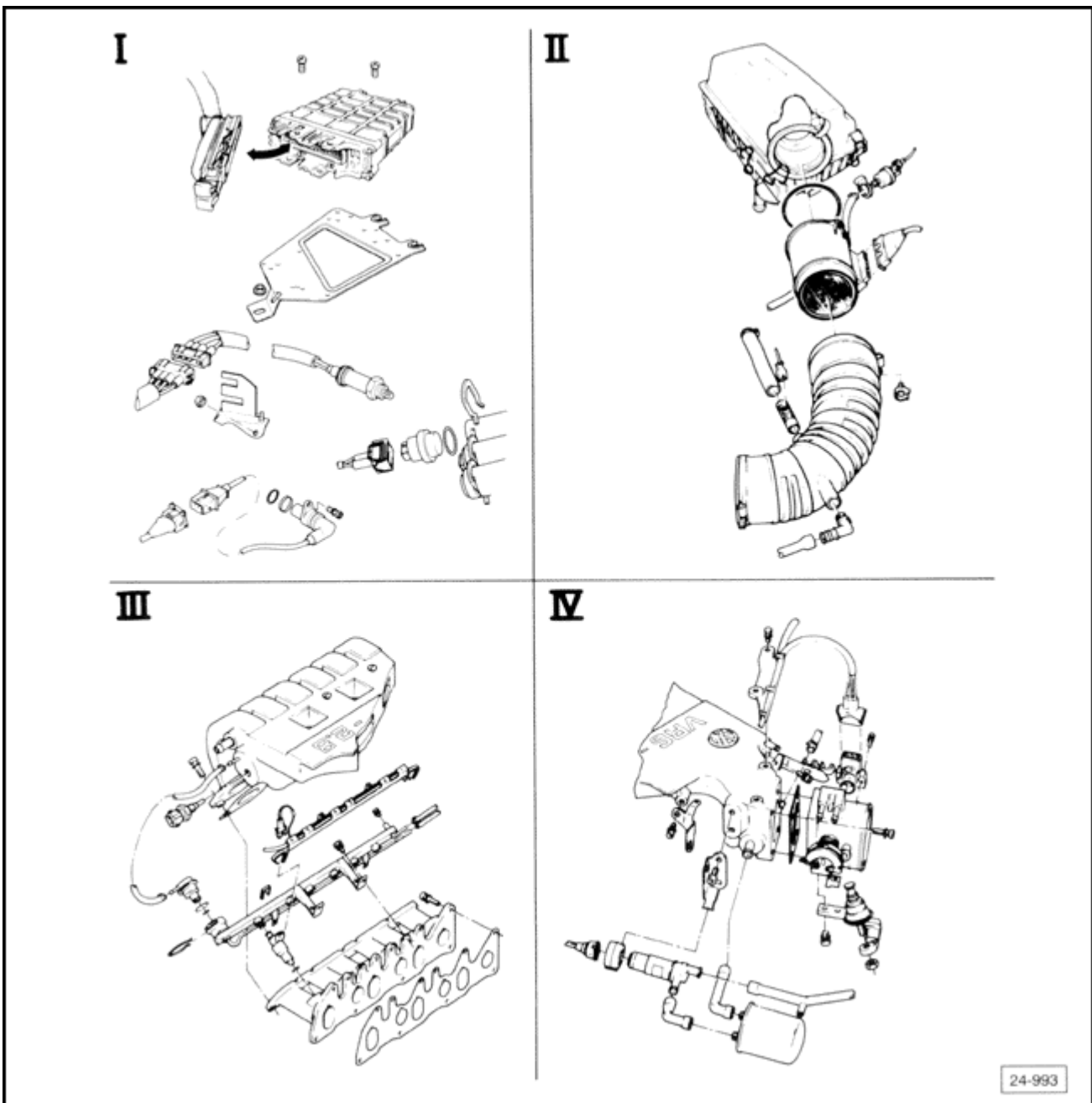
**20 Nm (15 ft lb)**

**19 - Fuel injectors (N 30, N 31, N 32, N 33, N 83, N 84)**

**20 - Carbon canister**

- mounted below air cleaner
- for additional information see [Repair Group 20](#)

**21 - Air cleaner**



**WARNING!**

**Fire Hazard. Do NOT smoke or have anything in area that can ignite fuel!**

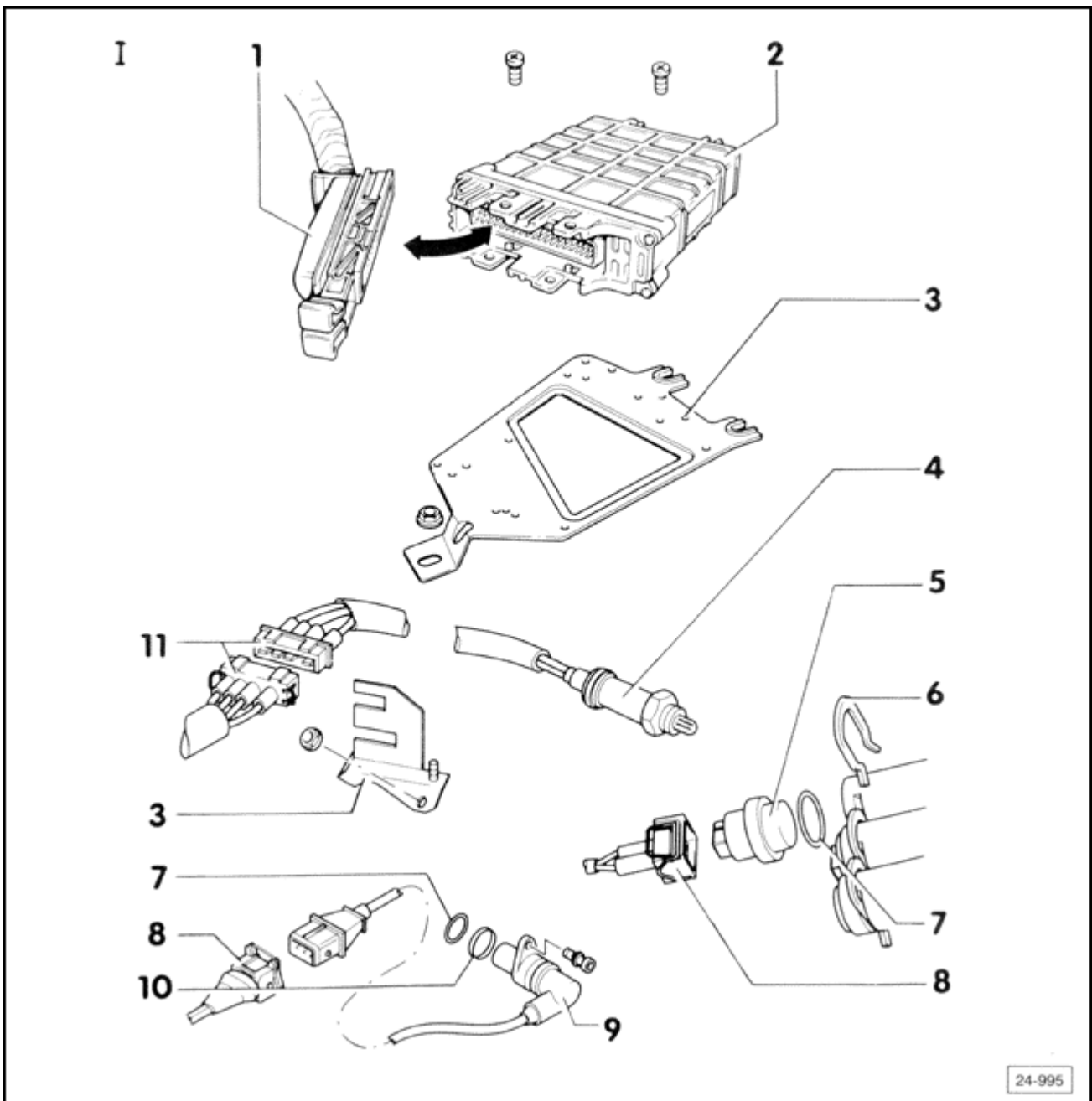
- the engine control module for the fuel injection and ignition system is equipped with **DTC MEMORY** (Fault memory)
- activate **DTC MEMORY** (Fault memory) before repairing, adjusting or troubleshooting the system
- always check all vacuum connections for tightness and condition
- components identified with an \* are checked via **On Board Diagnosis**, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- components identified with \*\* are checked using **Output Diagnostic Test Mode (DTM)**, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- always replace the affected seals and sealing rings during assembly work

- always replace clamps with screw type when replacing hoses
- for repairing ignition portion of this system, see Repair Group 28
- 10.5 Volts minimum is required for proper function of electrical components

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-340-2)**

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- I Motronic ECM, component layout, [section 24-350](#)
- II Intake air system, component layout, [section 24-360](#)
- III Fuel injection system, [section 24-370](#)
- IV Throttle assembly, component layout, [section 24-380](#)
  - Safety precautions see [section 24-390](#)
  - Rules of Cleanliness see [section 24-390](#)
  - Idle speed, checking see [section 24-400](#)



**1 - Motronic ECM harness connector**

- before removing; ignition must have been switched off for a minimum of 20 seconds
- 68-pin
- Motronic System Electrical Testing, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

**2 - Motronic engine control module (ECM) (J 220)\***

- installation location: drivers side of plenum panel in engine compartment
- with **DTC MEMORY** (Fault memory), see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- idle speed and ignition timing point checking/adjusting see [section 24-400](#)

**3 - ECM mounting plate**

**4 - Heated Oxygen sensor (HO2S) (G 39)\***

- **50 Nm**
- installation location: front exhaust pipe
- coat threads with **G5** but do not allow **G5** to contact slotted area of sensor tip.

To check heater voltage supply:

- switch **Fluke 83** multimeter to 20 Volt range
- connect multimeter between terminals **1** (red/white) and **2** (brown)
- start engine and let idle
- must be approx. battery voltage

#### **5 - Engine coolant temperature (ECT) sensor (G 62)\***

- blue
- 2-pin
- checking see [section 24-440](#)

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**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-350-2)**

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**6 - Retaining clip**

check for secure fit

**7 - O-ring**

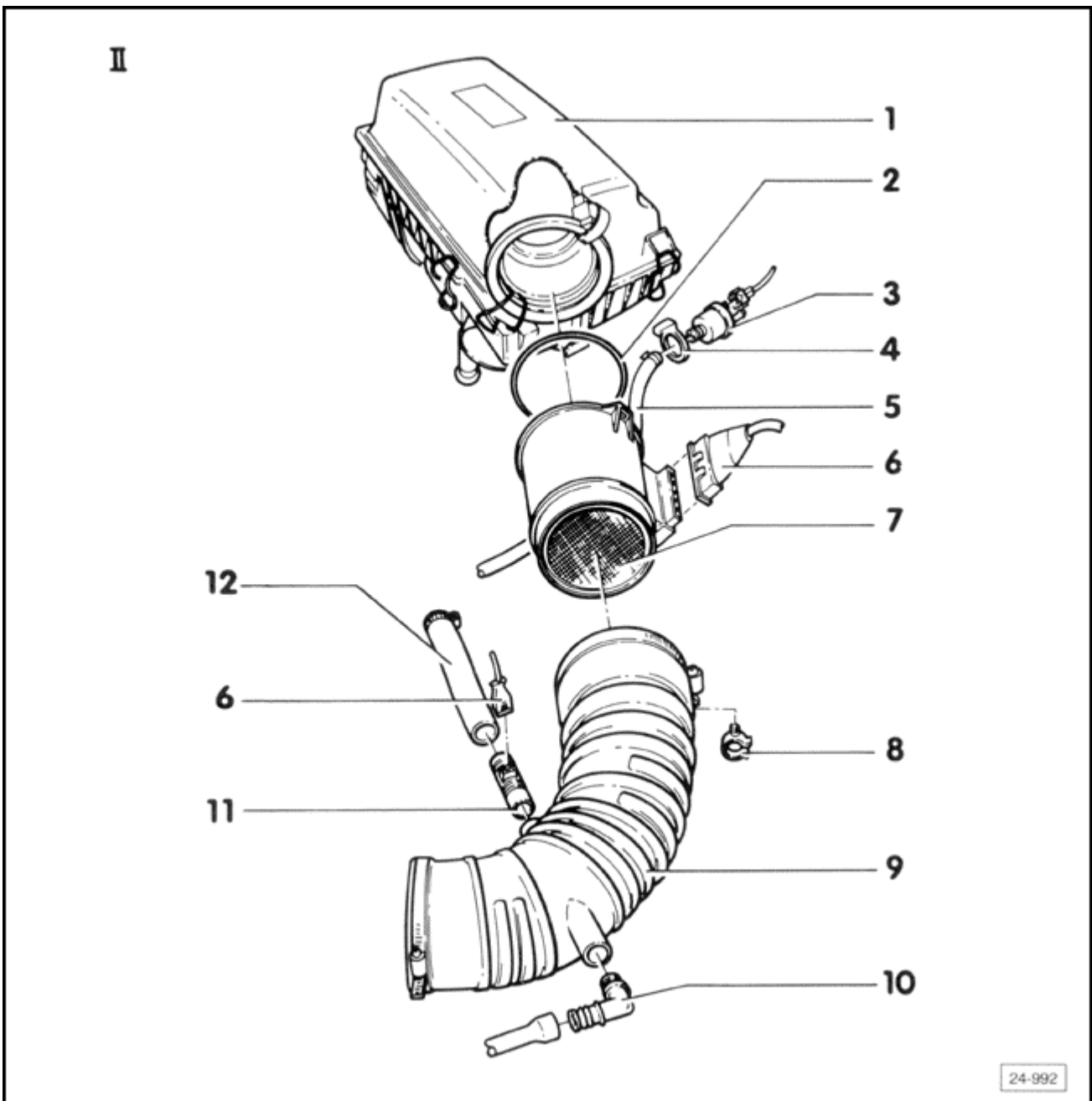
**8 - Harness connector for blue ECT sensor**

**9 - Engine speed (RPM) sensor (G 28)\***

**10 - Spacer**

**11 - Harness connector for HO2S sensor**

- 4-pin
- for **HO2S** and **HO2S** heater
- fastened to rear engine mount facing front of vehicle



- 1 - Air cleaner housing
- 2 - O-ring
- 3 - EVAP frequency valve (N 80)\*
- 4 - Retaining ring  
for (N 80) solenoid valve
- 5 - Hose  
to throttle body
- 6 - Harness connector  
to (N 79) heated tube
- 7 - Hot wire Mass Air Flow (MAF) sensor (G 70)\*
- 8 - Mounting clip

**9 - Intake air boot**

**10 - Angle connector**

for hose to idle air control (**IAC**) valve

**11 - Heated tube (N 79)**

- for crankcase housing ventilation
- check for continuity

**12 - Connecting hose**



**8 - 25 Nm (18 ft lb) 9 - Intake manifold**  
lower section

**10 - Manifold gasket**

- always replace
- note installed position

**11 - O-ring**

carefully replace if damaged

**12 - Fuel injectors (N 30, N 31, N 32, N 33, N 83, N 84)**

removing and installing, see [section 24-470](#)

**13 - Retaining clip**

check for secure fit

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-370-2)**

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**14 - Fuel pressure regulator**

checking, see [section 24-460](#)

**15 - Harness connector (6 total)**

for fuel injectors

**16 - Intake air temperature (IAT) sensor (G 72)**

**10 Nm (7 ft lb)**

**17 - Vacuum line**

- replace if damaged
- check for secure fit



- checking, see [section 24-450](#)

**7 - O-ring**

**8 - Throttle body**

- heated with coolant
- if setscrew for basic adjustment of throttle has been moved, replace throttle body

**9 - 25 Nm (18 ft lb)**

**10 - Gasket**

always replace

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-380-2)**

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- 11 - Dashpot**  
checking and adjusting, see [section 24-420](#)
- 12 - Mounting bracket for dashpot**
- 13 - 20 Nm (15 ft lb)**
- 14 - Air hose**  
to intake air boot
- 15 - Noise damper**  
for **IAC** (idle air control) valve
- 16 - Vacuum hose**  
from noise damper to intake manifold upper part
- 17 - Connector hose**  
from **IAC** (idle air control) valve to noise damper
- 18 - Idle air control (IAC) valve (N 71)\*\***  
checking, see [section 24-410](#)
- 19 - Mounting ring**

## **Safety precautions**

Observe the following precautions to prevent personal injury as well as possible damage to sensitive electrical components.

- switch **OFF** the ignition before connecting or disconnecting components or test equipment
- connect and disconnect battery only with ignition switched **OFF**, otherwise the **ECM** (Engine Control Module) could be damaged
- if the engine must be cranked but not started (for compression testing etc.) disconnect the power output stage of the ignition coil and remove fuse **18**
- do not touch or disconnect the ignition wires with the engine running or while cranking

## **Rules of Cleanliness**

### **CAUTION!**

*When working on the fuel supply/injection system, carefully observe the following rules:*

- 1 Thoroughly clean connection and surrounding areas before loosening - connection.*
- 2 After removing components, place in clean area and cover with foil or paper. - Avoid using rags!*
- 3 Components which have been opened or disassembled must be carefully - covered or sealed if repair cannot be carried out immediately.*
- 4 Install clean parts only.*
  - *remove replacement parts from package just before installing*
  - *do NOT use spare parts that were stored loose or unpackaged (e.g. in tool boxes, etc.)*
- 5 When fuel system is open:*
  - *avoid using compressed air whenever possible*
  - *avoid moving the vehicle whenever possible*

**Volkswagen Corrado 1990 - 1994**  
**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-390-2)**

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**Notes**

*A variety of electrical connectors are used on this vehicle, **ALWAYS** use the **VW 1594** adaptor kit to connect test instruments to these connectors.*

**CAUTION!**

***Before disconnecting a customers battery; ALWAYS ask for the radio code (if equipped with an anti-theft radio).***

## Idle speed, checking

### Notes

Idle speed, ignition timing and CO-content are **NOT** adjustable.

### Requirements

- engine coolant temperature 80° C (176° F) minimum
- all electrical consumers switched **OFF**
- A/C switched **OFF**
- exhaust system must be leak-tight
- start engine and let idle
- activate **DTC MEMORY** (Fault memory) and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- connect **EPA 105** CO tester to CO tap tube using **VAG 1363/3** adaptor  
After connecting the **VAG 1551** Scan Tool, the display will alternate between the two following operating modes:

1 - Rapid Data Transfer
2 - Blink Code Output

- press 1 button to select operating mode "**Rapid Data Transfer**"
  - display will appear as shown

Rapid data transfer	HELP
Insert address word XX	

- press **0** and **1** buttons to select address word "**Engine Electronics**"
  - display will appear as shown

Rapid data transfer	Q
01 - Engine electronics	

- press **Q** button to enter input
- press **➡** button
  - display will appear as shown

Rapid data transfer	HELP
Select function XX	

- press buttons **0** and **4** to select function **04** "**basic setting**"
  - display will appear as shown

Rapid data transfer	Q
04 - Start basic setting	

- press **Q** button to enter input

- display will appear as shown

Start basic setting	HELP
Insert display group number XX	

- press **0** and **1** buttons to select display group **01**
  - display will appear as shown

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-400-2)

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Perform basic adjustment	Q
Input display group number 01	

- press **Q** button to enter input
  - display fields **1** through **4** will appear as shown

System in basic adjustment 1	➡		
1	2	3	4

### Notes

*When this mode is selected; the EVAP solenoid valve I (N 80) is closed.*

- observe display field 2
  - when the temperature exceeds 80° C (176° F) continue to next step
- raise engine speed briefly then let engine idle for 2 minutes
- read display value for engine RPM and ignition timing point as follows
  - display field **1** = engine RPM  
must be 650 to 750 RPM's
  - display field **4** = ignition timing point  
must be 6° BTDC and fluctuating
- observe CO content on tester
  - checking value must be 0.3 to 1.5 Vol.%
- press ➡ button
- press **0** and **6** buttons to select function **06 "Ending output"**
  - display will appear as shown

Rapid data transfer	HELP
Select function xx	

- press **Q** button to enter input

Rapid data transfer	Q
06 - Ending output	

If specified RPM value not obtained

- check gas pedal for ease of movement, correct as necessary
- check dashpot, see [section 24-420](#) for checking/adjusting
- check **TP** (Throttle Position Sensor), see [section 24-450](#) for checking/adjusting
- check **IAC** valve (Idle Air Control), see [section 24-410](#) for checking
- check **EGR** valve, see [Repair Group 26](#)

If all specified values are obtained

- check intake system for air and vacuum leaks

## **Idle air control (IAC) valve (N 71), checking**

### Requirement

- **VAG 1551** Scan Tool connected

### Function, checking

- see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for Output Diagnostic Test Mode (DTM) checking

### Triggering, checking

- switch **OFF** ignition
- disconnect harness connector from **IAC** valve
- connect **US 1115** LED tester to terminals **1** and **2** of harness connector
- switch **ON** ignition and perform Output DTM again until **IAC** valve (**N 71**) is triggered
  - LED tester must flash

### If **NO**

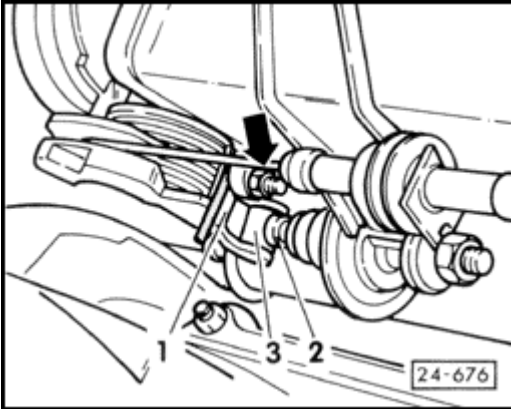
- perform Motronic system electrical checks, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

### Resistance, checking

- remove ignition wire guide from cylinders **1**, **3** and **5**
- disconnect harness connector from **IAC** valve (**N 71**)
- switch **Fluke 83** multimeter to resistance range
- connect multimeter between terminals **1** and **2** of **IAC** valve connector using jumper wires from **VW 1594** adaptor kit
  - must be between 10 and 20 Ohms

## Dashpot, checking and adjusting

### Checking



- open and close throttle until dashpot cam **2** contacts roller **3**
- in this position measure gap between limiter screw (**arrow**) and throttle lever **1** using feeler gauge or drill bit
  - must be 2.5 to 3.5 mm

### Adjusting

- place 3.0 mm drill between limiter screw (**arrow**) and throttle lever **1**
- adjust dashpot such that cam **2** just touches roller **3**
- tighten dashpot with jam nut to prevent turning

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-430-1)

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#### Acceleration, full throttle enrichment and fuel deceleration shut off, checking

##### Requirement

- **VAG 1551** Scan Tool connected
- start engine and let idle
- press **1** button to select operating mode "**Rapid Data Transfer**"
  - display will appear as shown

Rapid data transfer	HELP
Insert address word XX	

- press **0** and **1** buttons to select address word "**Engine Electronics**"
  - display will appear as shown

Rapid data transfer	Q
01 - Engine electronics	

- press **Q** button to enter input
- press **➡** button
- press **0** and **8** buttons to select **08 "Read test value block"**
- press **Q** button to enter input
  - display will appear as shown

Read test value block	HELP
Insert display group number XX	

- press **0** and **4** buttons to select display group **04**
  - display will appear as shown

Read test value block	Q
Insert display group number 04	

- press **Q** button to enter input
  - display will appear as shown

Read test value block 4			
1	2	3	4

- continue with checking only if engine coolant temperature exceeds 80° C (176° F)
- let engine idle for approx. 2 minutes
- observe display value in field **4**
  - display value must be **00010** at idle
- raise engine speed to approx. 3000 RPM using accelerator pedal
  - display value must be **10100** (briefly)

- release accelerator pedal
  - display value must be **00011** (briefly) and then become **00010** at idle

**Notes**

*If anything else appears in display, see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information*

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-430-2)

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- press **➡** button
- press **0** and **6** buttons to select function **06 "Ending output"**
  - display will appear as shown

Rapid data transfer	HELP
Select function XX	

- press **Q** button to enter input

Rapid data transfer	Q
06 - Ending output	

If specified values not obtained

- check TP (Throttle Position Sensor) see [section 24-450](#)

## Engine coolant temperature (ECT) sensor, checking

### Requirements

- engine cold
- **VAG 1551** Scan Tool connected
- start engine and let idle
- press **1** button to select operating mode "**Rapid Data Transfer**"
  - display will appear as shown

Rapid data transfer	HELP
Insert address word xx	

- press **0** and **1** buttons to select address word "**Engine Electronics**"
  - display will appear as shown

Rapid data transfer	Q
01 - Engine electronics	

- press **Q** button to enter input
- press **➡** button
- press **0** and **8** button to select function **08 "Read test value block"**
- press **Q** button to enter input
  - display will appear as shown

Read test value block	HELP
Insert display group number XX	

- press **0** and **1** buttons to select display group **01**
  - display will appear as shown

Read test value block	Q
Insert display group number 01	

- press **Q** button to enter input
  - display will appear as shown

Read test value block 1	➡		
1	2	3	4

- observe display value in field **2**
  - engine temperature must be uniform and increase without interruption
- press **➡** button
- press **0** and **6** buttons to select function **06 "Ending output"**
  - display will appear as shown

Rapid data transfer	HELP
Select function XX	

- press **Q** button to enter input

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-440-2)

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Rapid data transfer  
06 - Ending output

Q

#### Notes

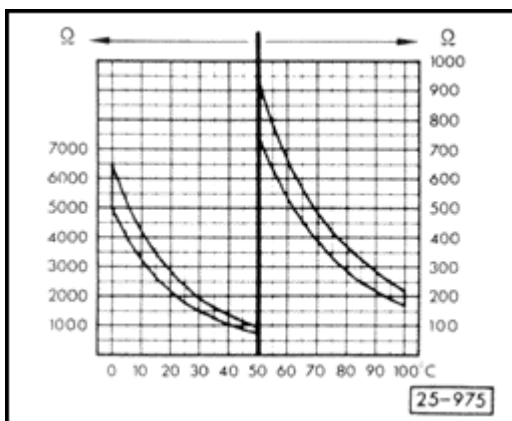
*If engine malfunctions occur during certain temperature ranges and the display value does not increase without interruption, temperature signal has been interrupted and the **ECT** sensor (**G 62**) must be replaced.*

If display values do not change

- perform electrical check, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)

#### Resistance, checking

- switch **OFF** ignition
- disconnect **ECT** harness connector from blue **ECT** sensor
- switch **Fluke 83** multimeter to resistance range
- connect multimeter to terminals of **ECT** sensor using jumper wires from **VW 1594** adaptor kit



## Throttle position (TP) sensor, checking

### Vehicles with automatic transmissions:

- the harness with the 4 pin connector leads to the transmission control module (**J 217**)
- if the throttle position (**TP**) sensor is replaced, the transmission control module (**J 217**) must "**learn**" the voltage value of the new potentiometer. See [Repair Group 01 \(Automatic Transmission\)](#) for On Board Diagnosis procedures to return the control module to its basic setting

### Requirement

- **VAG 1551** Scan Tool connected
- switch **ON** ignition
- press **1** button to select operating mode "**Rapid Data Transfer**"
  - display will appear as shown

Rapid data transfer	HELP
Insert address word XX	

- press **0** and **1** buttons to select address word "**Engine Electronics**"
  - display will appear as shown

Rapid data transfer	Q
01 - Engine electronics	

- press **Q** button to enter input
- press **➡** button
- press **0** and **8** buttons to select function **08 "Read test value block"**
- press **Q** button to enter input
  - display will appear as shown

Read test value block	HELP
Insert display group number XX	

- press **0** and **3** buttons to select display group **03**
  - display will appear as shown

Read test value block	Q
Insert display group number 03	

- press **Q** button to enter input
  - display will appear as shown

Read test value block 3			
1	2	3	4

- observe "throttle angle" in channel **3** of display
  - displayed value must be 9 to 19  $\angle^\circ$
- open throttle slowly
  - displayed value must be uniform and increase without interruption
  - with throttle completely open displayed value must be 94 to 101  $\angle^\circ$
- press  $\Rightarrow$  button

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-450-2)

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If **NO**

- press **0** and **6** buttons to select function **06 "Ending output"**
  - display will appear as shown

Rapid data transfer	HELP
Select function XX	

- press **Q** button to enter input

Rapid data transfer	Q
06 - Ending output	

- perform electrical checks, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- if necessary replace **TP** (throttle position) sensor (**G 69**)

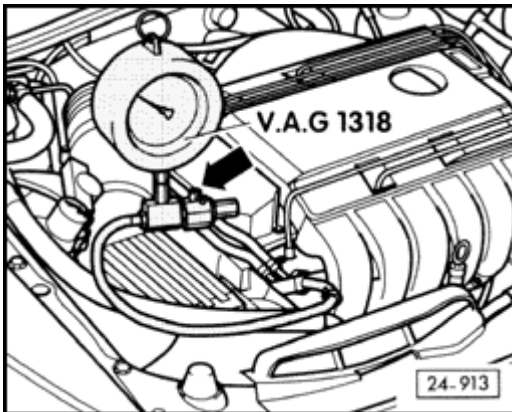
## Fuel pressure regulator and residual pressure, checking

### **WARNING!**

**Fire hazard. Do NOT smoke or have anything in area that can ignite fuel!**

### **CAUTION!**

**Fuel under pressure! Cover the fuel rail test measuring point with a rag to protect against fuel spray when removing the sealing screw.**

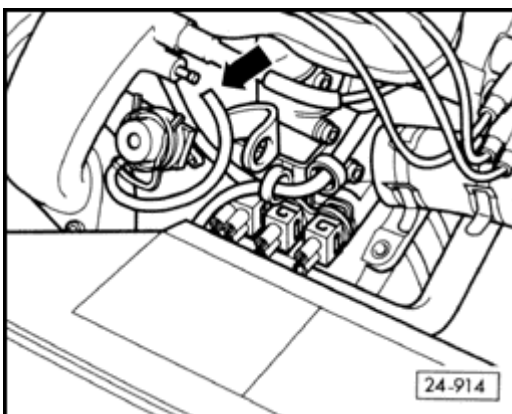


- connect **VAG 1318** pressure tester to fuel rail using adaptor **VAG 1318/10**

### **CAUTION!**

**Shut-off valve for VAG 1318 pressure tester must be closed. The lever (arrow) must be perpendicular to the direction of flow.**

- start engine and let idle
- observe fuel pressure on gauge
  - must be approx. 3.5 bar gauge pressure



- disconnect hose from fuel pressure regulator (**arrow**)
  - fuel pressure must increase to approx. 4.0 bar gauge pressure, after 10 minutes, gauge pressure must not be less than 2.5 bar

If after 10 minutes gauge pressure is less than 2.5 bar

- check for leaks in system
- start engine and after fuel pressure builds up, switch **OFF** ignition
- at same time, clamp blue return line tightly and observe pressure drop on pressure gauge

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**Fuel Systems Supercharger Exhaust Engine Electrical**  
**Fuel Injection, AFC System (Page 24-460-2)**

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If pressure does **NOT** drop

- fuel pressure regulator is defective

If pressure drops again

- check if:
  - line connections are tight
  - O-rings or seals on fuel distributor leak
  - fuel injectors leak
  - fuel pump check valve leaks
  - **VAG 1318** Pressure tester leaks (at shut-off valve)

**Notes**

*Drain any residual fuel from the pressure tester before disconnecting it from the fuel rail.*

## **Fuel injectors, checking**

### **WARNING!**

**Fire hazard. Do NOT smoke or have anything in area that can ignite fuel!**

### **Removing**

- remove ignition wire guides
- remove suction hose from hot wire Mass Air Flow (**MAF**) sensor
- disconnect hose to EVAP solenoid valve at throttle body
- disconnect harness connector from TP (throttle position) sensor
- disconnect IAC (idle AIR control) valve
- disconnect accelerator cable from throttle
- disconnect coolant hoses from throttle body and plug off
- disconnect connector hose from heated tube
- unclip fuel lines at cylinder head cover and remove from fuel rail
- disconnect vacuum hose from fuel pressure regulator
- remove intake manifold, upper section
- unclip lines to fuel injectors from wiring guide
- remove wiring guide
- remove fuel injectors and fuel rail as an assembly

### **Notes**

*If the injectors are too tight within the holes of the lower section of the intake manifold; carefully pry under the valve body using wrench **SW 16** .*

### **Installing**

- install in reverse order of removal

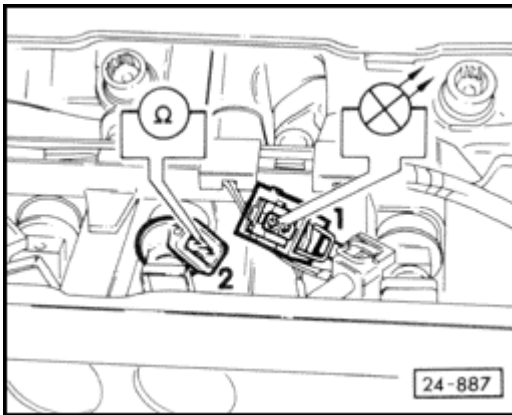
### **Notes**

*Use care when installing the fuel injectors to avoid damaging the O-rings. Lightly lubricate the O-rings with oil to ease assembly.*

## **Fuel injectors, checking**

- remove upper section of intake manifold (see previous section)

## Electrical, checking



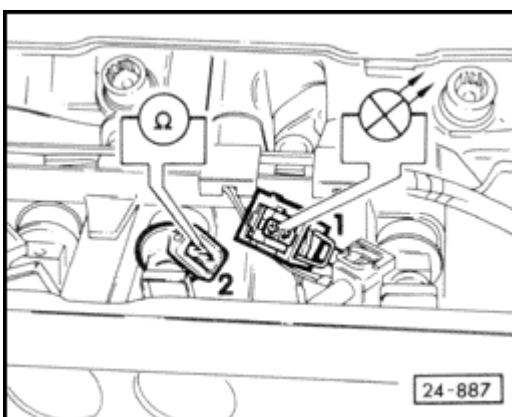
- disconnect harness connectors from all fuel injectors
- switch **Fluke 83** multimeter to resistance range
- connect multimeter to terminals of fuel injector connector **2** using jumper wires from **VW 1594** adaptor kit
  - must be 15 to 21.5 Ohms

If 0 Ohms (continuity)

- check for short circuit in wiring using wiring diagram, repair or replace as necessary

If wiring **OK**

- replace fuel injector(s)
- disconnect harness connector from ignition coil power output stage



- check voltage supply to each injector
- connect **US 1115** LED tester between terminals of harness connector **1** using jumper wires from **VW 1594** adaptor kit
- operate starter
  - LED tester must flicker

If **NO**

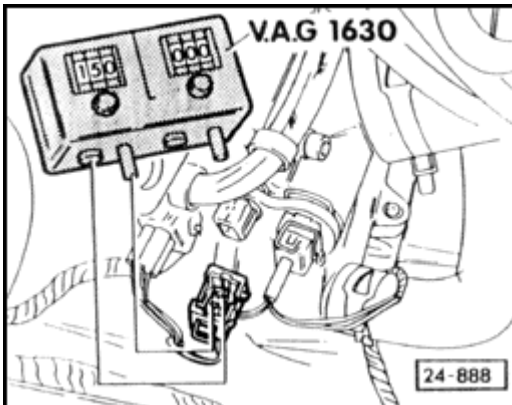
- re-connect the harness connector(s) to fuel injector(s)
- check for open circuit in wiring between fuel injectors (**N 30, N 31, N 32, N 33, N 83, N 84**) and engine control module using wiring diagram, repair or replace as necessary, see [Repair Group 01 \(Fuel injection and Ignition\)](#) Test steps **8** through **13**

## Checking spray pattern and for leaks

## Volkswagen Corrado 1990 - 1994

### Fuel Systems Supercharger Exhaust Engine Electrical Fuel Injection, AFC System (Page 24-470-3)

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- disconnect harness connector from blue engine coolant temperature (ECT) sensor (**G 62**)
- preset digital potentiometer **VAG 1630** to 15,000 Ohms
- connect the **ECT** harness connector to the **VAG 1630** potentiometer using jumper wires from the **VW 1594** adaptor kit

#### Notes

If the **VAG 1630** potentiometer is not available; use adaptor **VAG 1490** by connecting the 15,000 Ohm side directly to the **ECT** harness connector.

- fuel injectors remain electrically connected
- feed and return line remain connected to fuel rail

#### Notes

There is a tool (**VAG 1602**) that can be used to measure the fuel quantity output of the fuel injectors, simultaneously. If a **VAG 1602** is not available, an acceptable method would be to substitute 6 separate beakers to collect the fuel and a single graduated beaker to measure each of the accumulations individually.

- adjust location of measuring tubes in **VAG 1602** to align with fuel injectors on fuel rail
- insert injectors into each of the **VAG 1602** measuring tubes
- operate starter for several seconds and observe spray pattern
  - spray pattern must be the same for all injectors
- switch **ON** ignition for approx. 5 seconds and check for injector leakage
  - no more than 2 drops per injector is allowed
- empty **VAG 1602** (or equivalent) of any residual fuel

#### Notes

When installing the fuel injectors, be sure that the O-rings in the fuel rail are not damaged. Always replace damaged O-rings.

- activate **DTC MEMORY** (Fault memory) and then erase, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
  - any faults that are generated by checking the (**G 62**) ECT sensor will then be erased

## **Intake air temperature (IAT) sensor, checking**

### Requirement

- **VAG 1551** Scan Tool connected
- switch **OFF** ignition
- disconnect harness connector from **IAT** sensor
- remove **IAT** sensor from intake manifold
- reconnect sensor to harness connector
- plug hole in manifold where sensor was removed
- start engine and let idle
- press **1** button to select operating mode "**Rapid Data Transfer**"
  - display will appear as shown

Rapid data transfer	HELP
Insert address word xx	

- press **0** and **1** buttons to select address word "**Engine Electronics**"
  - display will appear as shown

Rapid data transfer	Q
01 - Engine electronics	

- press **Q** button to enter input
- press **➡** button
- press **0** and **8** buttons to select function **08 "Read test value block"**
- press **Q** button to enter input
  - display will appear as shown

Read test value block	HELP
Insert display group number XX	

- press **0** and **3** buttons to select display group **03**
  - display will appear as shown

Read test value block	Q
Insert display group number 03	

- press **Q** button to enter input
  - display will appear as shown

Read test value block 3			
1	2	3	4

- read value displayed in channel **4** "Intake manifold temperature" (approx. ambient

temperature)

- spray **IAT** sensor with a commercial cooling spray
  - displayed temperature must decrease
- press **➡** button
- press **0** and **6** buttons to select function **06 "Ending output"**
  - display will appear as shown

# Volkswagen Corrado 1990 - 1994

## Fuel Systems Supercharger Exhaust Engine Electrical

### Fuel Injection, AFC System (Page 24-480-2)

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Rapid data transfer	HELP
Select function xx	

- press **Q** button to enter input

Rapid data transfer	Q
06 - Ending output	

If displayed value does not decrease

- perform electrical checks, see [Repair Group 01 \(Fuel Injection and Ignition\)](#), Test step **22**
- if necessary, replace air intake temperature (**IAT**) sensor