

Volkswagen Corrado 1990 - 1994

Fuel Systems Supercharger Exhaust Engine Electrical Ignition System (Page GR-28)

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

California m.y. 1989-1990

Digifant Ignition system

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Hall sender unit

- [checking](#)
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Ignition distributor

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Ignition timing

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Knock sensor

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Safety measures

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

Digifant Ignition system

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Hall sender

- [checking](#)

Ignition coil

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Ignition distributor

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Ignition timing

- [advance, checking](#)
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Safety precautions

- [chart](#)

Engine Code AAA

Hall sender

- [checking](#)

Ignition coil

- [checking](#)

Ignition distributor

- [disassembling/assembling](#)

Ignition and spark plugs

- [technical data](#)

Motronic System

- [component layout](#)

Safety precautions

- [chart](#)

Notes

Refer to the Supplement at the back of the manual for additional information pertaining to this Repair Group.

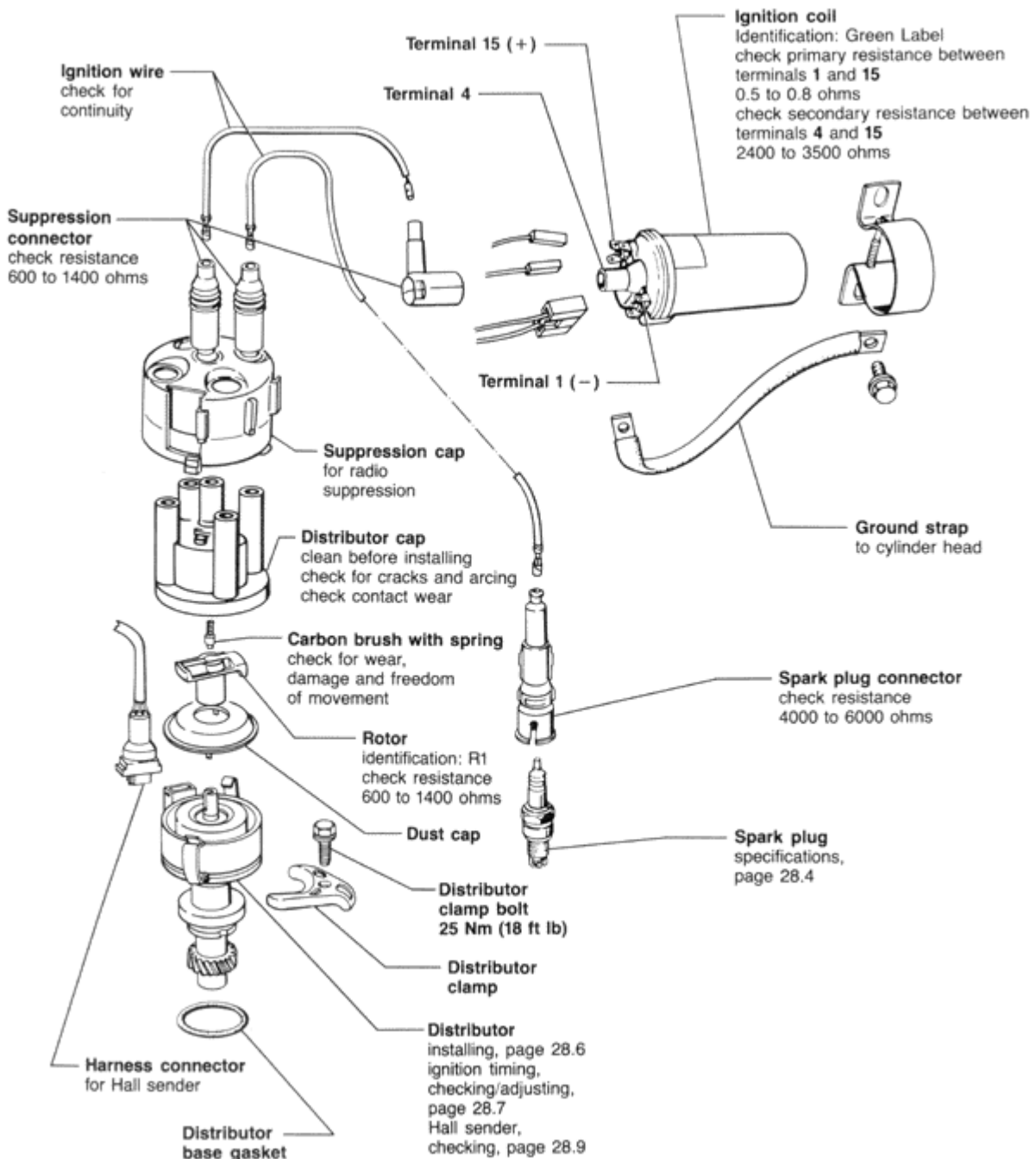
Volkswagen Corrado 1990 - 1994

Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-2)

Engine Code **PC** applying to:

- 49 States and Canada, model years **1989 to present** .
- California vehicles model years **1989 and 1990** .



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Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-3)

Digital control unit

for fuel injection and ignition systems, idle stabilizer valve, boost pressure control and oxygen sensor control system
located in right side of plenum
fresh air intake must first be removed before removing control unit/mounting plate
ignition map, checking, page 28.8
ignition trigger function, checking, page 28.9
electrical checks, see Group 24

Vacuum hose

only use genuine hose "black with yellow stripes"
critical length 1 meter,
do not lengthen or shorten

Control unit harness connector

- switch ignition **OFF** before connecting or disconnecting
- checking, see Repair Group 01 (Fuel Injection and Ignition)
- to disconnect, disengage spring clip on control unit
- electrical checking, see Repair Group 24

Nut

torque: 10 Nm (7 ft lb)

Knock sensor

mounted on cylinder block
checking, page 28.11

Coolant temperature sender

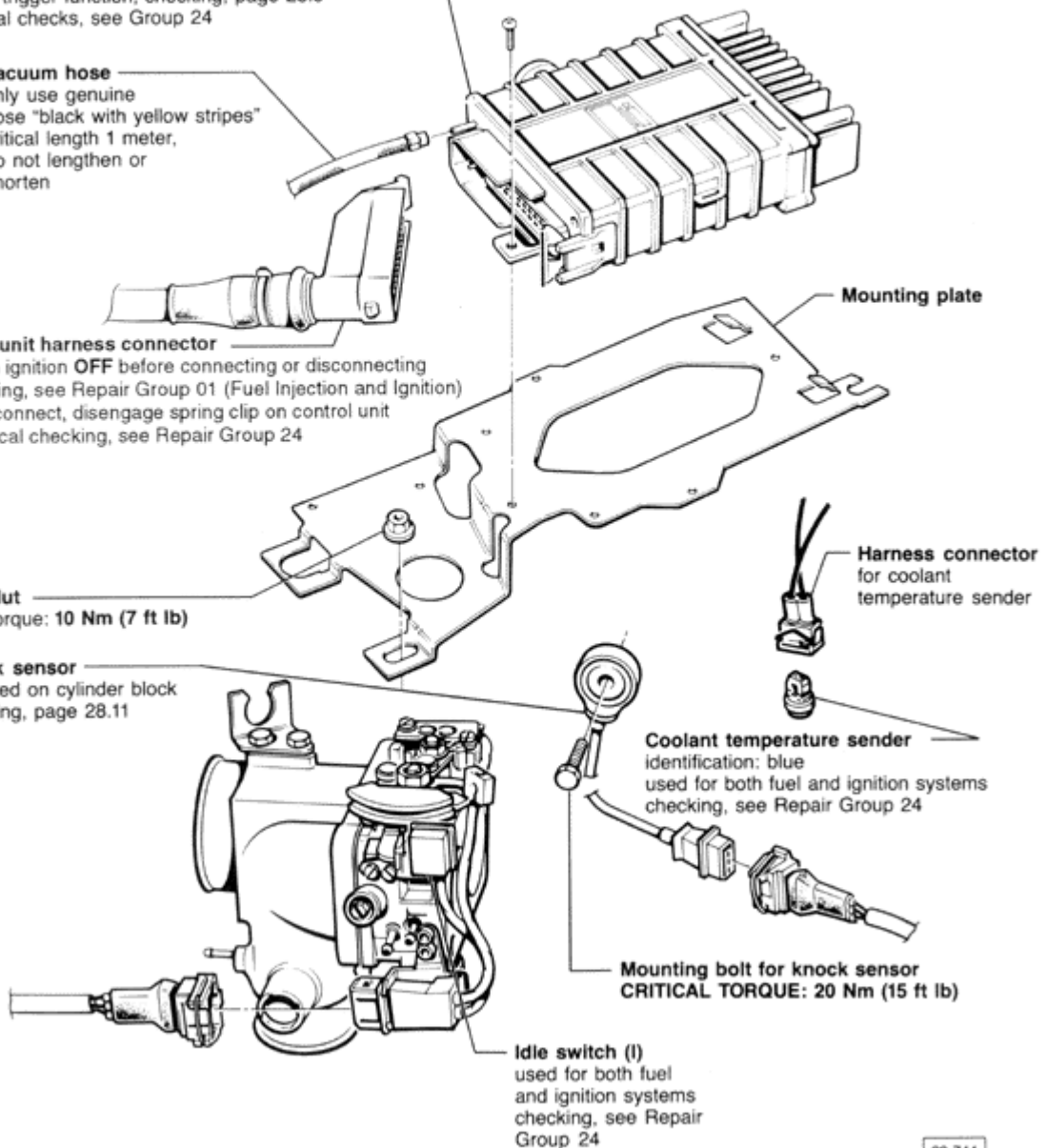
identification: blue
used for both fuel and ignition systems
checking, see Repair Group 24

Mounting bolt for knock sensor

CRITICAL TORQUE: 20 Nm (15 ft lb)

Idle switch (I)

used for both fuel and ignition systems
checking, see Repair Group 24



28-744

Notes

Ensure that no coolant hoses or lines touch the knock sensor. This could dampen the sensor and diminish the signal.

Safety measures

CAUTION!

Observe the following precautions to prevent personal injury as well as possible damage to the ignition system components.

Switch OFF the ignition before connecting or disconnecting components or test equipment

Do NOT crank engine before high tension wire of ignition distributor (terminal 4) is connected to ground

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

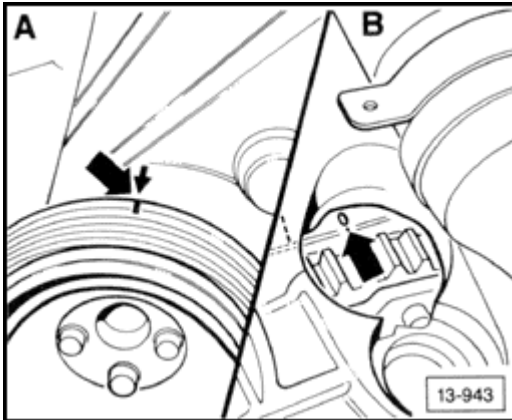
Before towing, vehicles with a defective ignition system (or where this is suspected) must have terminal 1 (green) of the ignition coil disconnected

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

Ignition distributor, installing
Engine installed



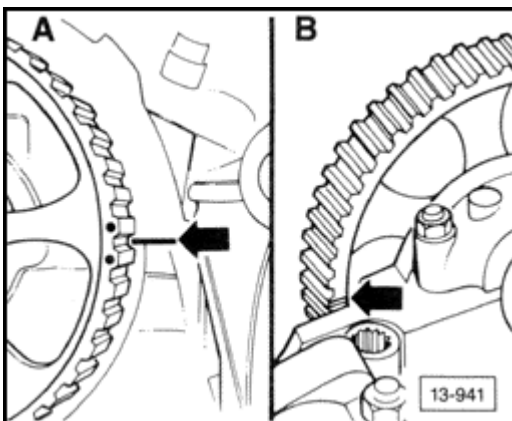
A

- rotate flywheel to **TDC** for number **1** cylinder (view **B**)

Engine NOT installed

- rotate engine until pulley mark aligns with arrow on toothed belt guard (view **A**)

Cylinder head cover INSTALLED

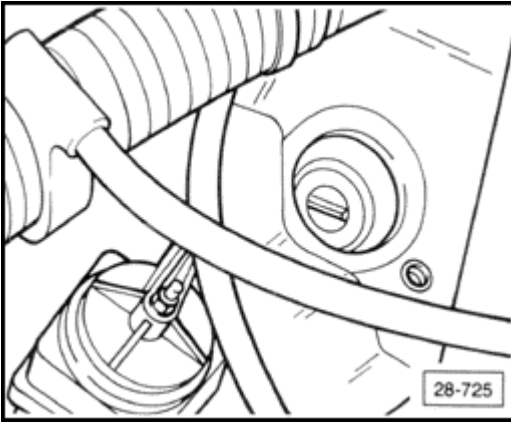


A

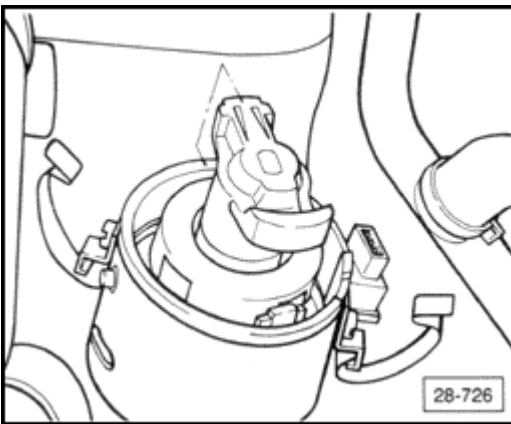
- marking on cylinder head cover (**arrow**) must fall between dots on camshaft sprocket (view **A**)

Cylinder head cover NOT INSTALLED

- marking on camshaft sprocket must align (**arrow**) with edge of cylinder head (view **B**)



- align oil pump drive pinion lug parallel to crankshaft



- position rotor arm to point at number 1 cylinder mark on distributor housing
- install distributor
- before fitting; clean distributor and check for cracks and signs of arcing, replace if necessary
- adjust ignition timing (see [page 28-7](#))

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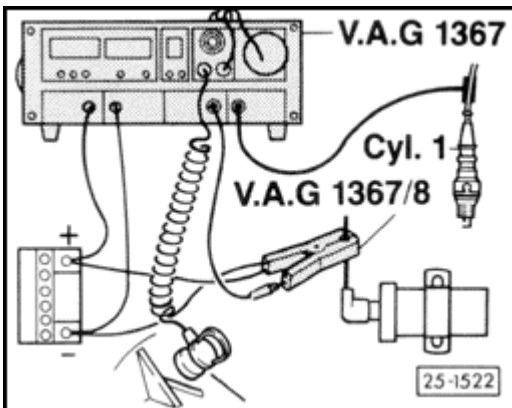
Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-7)

Ignition timing, checking and adjusting

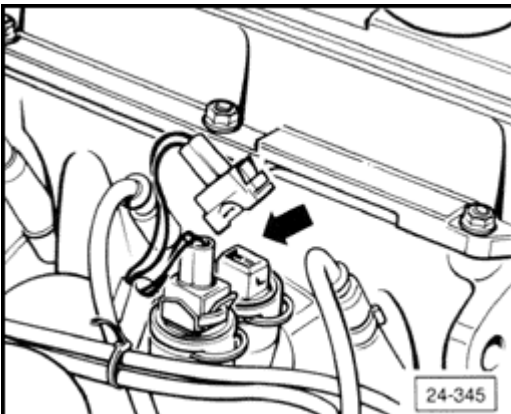
Requirement

- engine oil temperature 80° C (176° F) minimum
- switch ignition **OFF**



▲

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



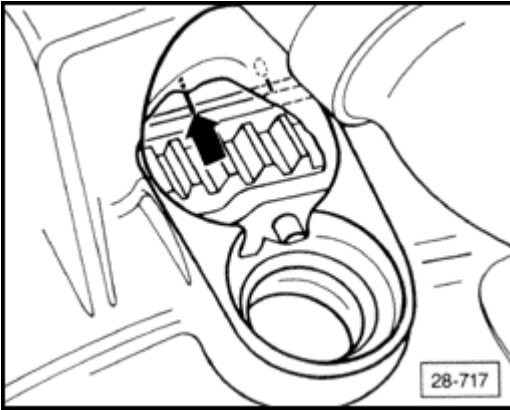
▲

- disconnect (blue) coolant temperature sensor (**arrow**)
- check ignition timing at 2000 to 2500 RPM

Ignition timing is displayed directly on **VAG 1367**

- checking 4° to 8° BTDC

With stroboscope



A

- aim strobe directly at flywheel opening
 - checking 4° to 8° BTDC

Regardless of checking method, if adjustment is necessary, proceed as follows

- destroy tamper proof cap covering head of distributor base clamp bolt
- loosen distributor base clamp
- rotate distributor as necessary to obtain specification
 - adjust $6^{\circ} \pm 1^{\circ}$ BTDC
- re-connect coolant temperature sensor (blue)
- raise engine speed three times then let engine idle
- check idle speed
 - 800 ± 30 RPM, adjust if necessary (see Group 24, [section 24-90](#))

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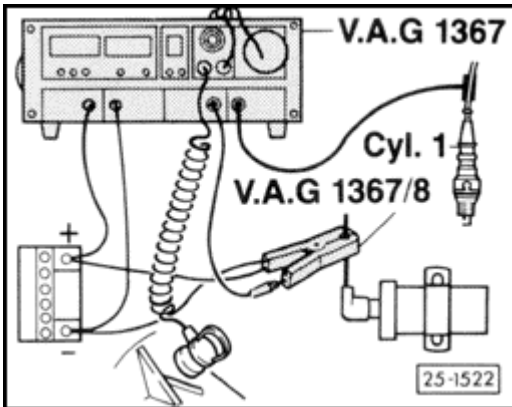
Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-8)

Ignition timing map, checking

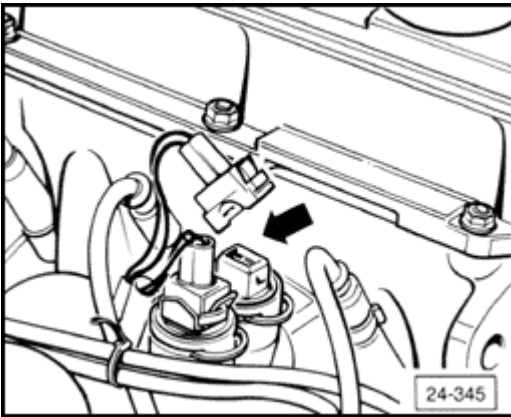
Requirements

- engine oil temperature 80° C (176° F) minimum
- coolant temperature sender **OK**
- switch ignition **OFF**



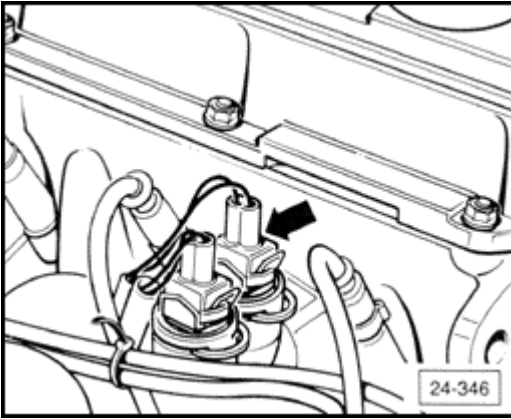
A

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



A

- disconnect (blue) coolant temperature sensor (**arrow**) and record ignition timing at 2500 RPM



A

- re-connect coolant temperature sender harness connector (**arrow**) and check ignition timing at 2500 RPM
 - ignition timing value must advance by 20° to 30° in addition to the previously recorded value

If same value is obtained (with re-connected sensor) as previously recorded value

- locate and eliminate open circuit in coolant temperature sensor wiring

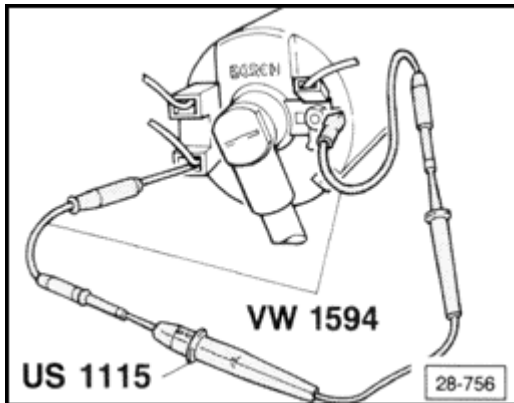
If open circuit is **NOT** found

- replace Digifant control unit

Ignition trigger function, checking

Requirements

- Ignition coil **OK**
- Hall sensor **OK**
- Electrical check of Digifant system **OK**



A

- connect **US 1115** LED tester to ignition coil terminals **1** and **15** using **VW 1594** adaptor kit
- operate starter
 - LED must flicker

If **NO**

- replace Digifant control unit

Hall sender unit, checking

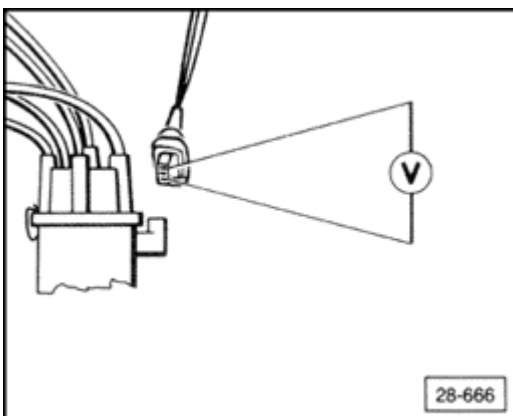
Requirement

- Electrical check of Digifant system **OK**

Voltage supply, checking

remove harness connector from Hall sender (on distributor)

- switch multimeter **US 1119** to 20 volt range



A

- connect multimeter to outer terminals of harness connector
- switch **ON** ignition
 - 10 volts minimum

If less than 10 volts

- replace Digifant control unit

If zero volts

- locate and eliminate open circuit in wiring using wiring diagram

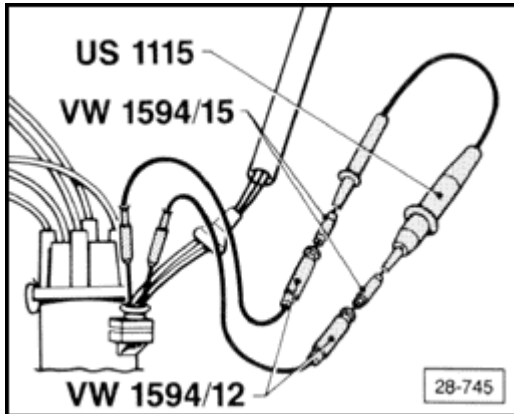
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Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-10)

Hall sender function, checking

- disconnect harness connector from fuel injector wiring guide
- loosen rubber boot on Hall sender connector (on ignition distributor)



A

- slide boot up wiring to expose harness connector terminals (while leaving connector connected)
- connect **US 1115** LED tester to center and outside wires of connector (using **VW 1594** adaptor kit)
- operate starter while watching LED tester
 - LED must flicker

If **NO**

- replace Hall sender (in distributor)

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Fuel Systems Supercharger Exhaust Engine Electrical Ignition System (Page 28-11)

Knock sensor, checking

Vehicles **WITHOUT** On-Board diagnostic capability **CANNOT** have the knock sensor functionally checked.

The complaint "**high speed not attainable**" can be caused by an intermittent or nonfunctioning knock sensor.

Possible causes:

- disconnected wiring
- corroded terminals (poor or no contact)
- knock sensor shield damaged
- mounting bolt incorrectly torqued; must be 20 Nm (15 ft lb)
- abnormal noises caused by:
 - torn or loose brackets
 - loose wiring
 - loosened components
 - broken, loose or missing bolts
 - mechanical damage

If **NO** fault found

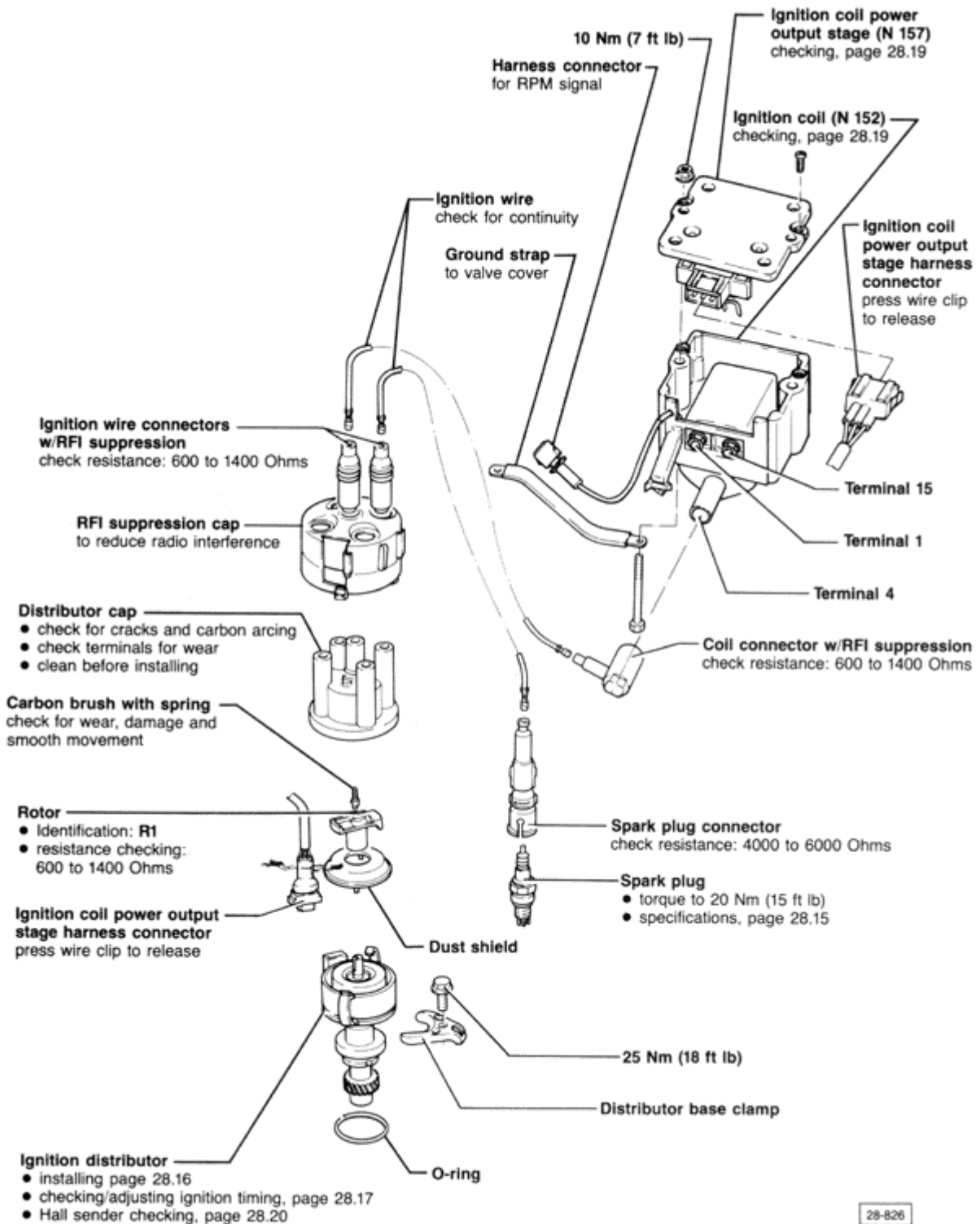
- replace knock sensor

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Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-12)

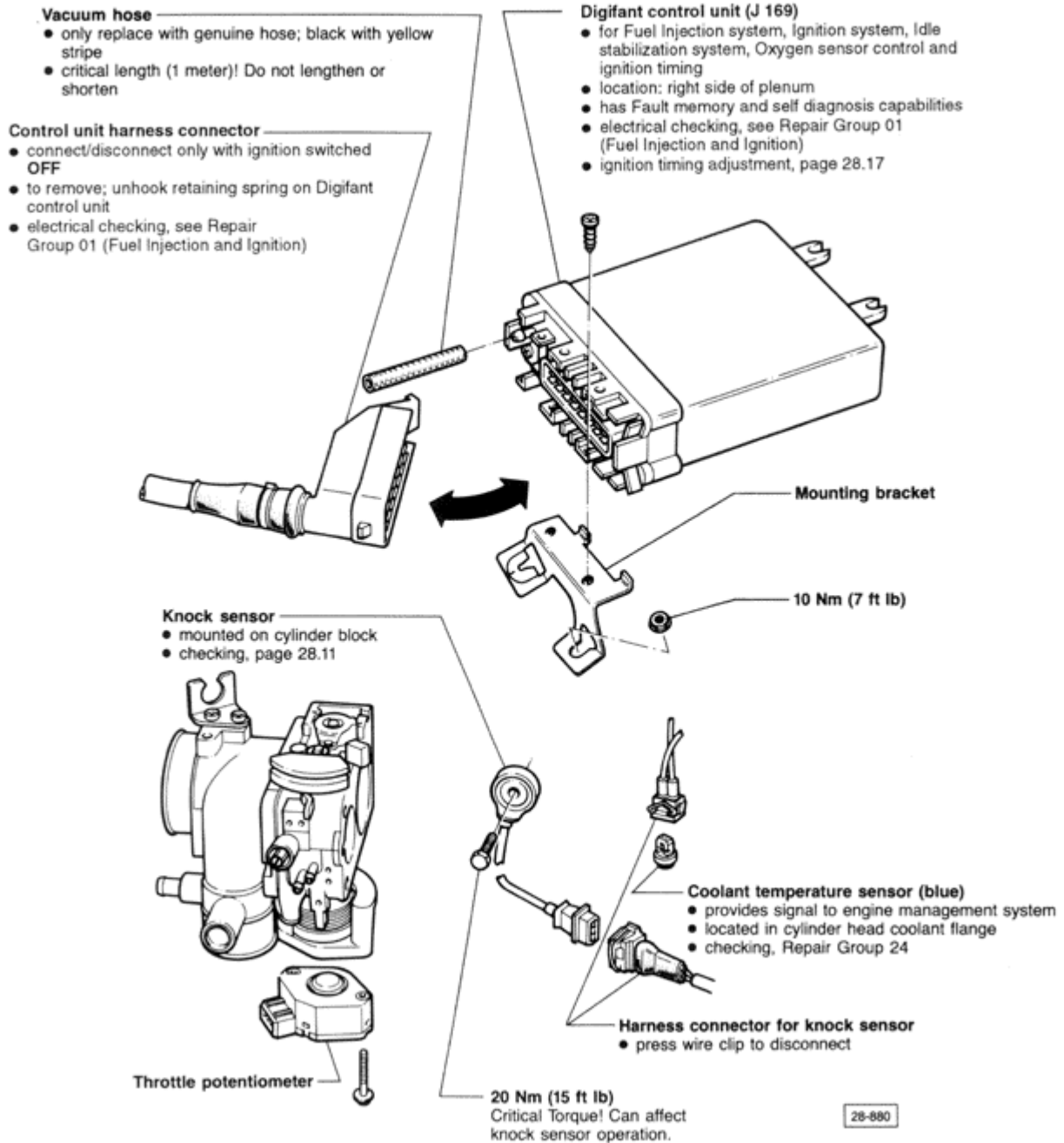
- electrical check of Digifant System, see [Repair Group 01 \(Fuel Injection and Ignition\)](#)
- fuel injection checking, see [Repair Group 24](#)
- ignition Technical data, see [page 28-15](#)
- observe Safety precautions, see [page 28-14](#)



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Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-13)



Safety precautions

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*
- *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*

Notes

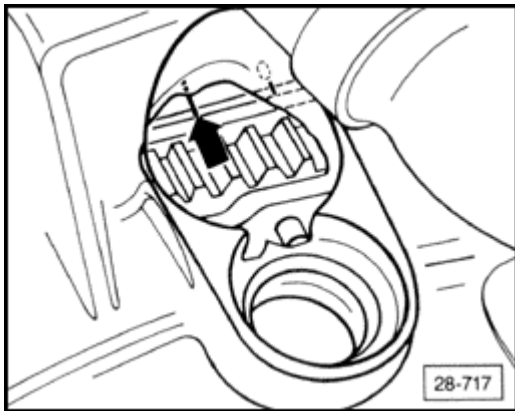
A variety of electrical connectors are used on this vehicle, ALWAYS use the VW 1594 adaptor kit to connect test instruments to these connectors.

CAUTION!

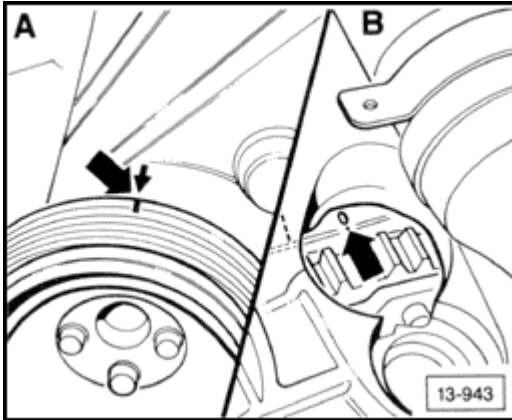
Before disconnecting a customers battery; ALWAYS ask for the radio code (if equipped with an anti-theft radio).

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Fuel Systems Supercharger Exhaust Engine Electrical
Ignition System (Page 28-15)

Ignition system, Technical Data

Engine Code	PG
RPM cutoff limit	6200 RPM
Ignition timing point , with engine oil temperature at 80 ° C minimum and with (blue) coolant temperature sensor disconnected :	
<ul style="list-style-type: none"> ● checking value ● adjusting value ● engine speed 	4 to 8 ° before TDC 6 ± 1 ° before TDC 2000 to 2500 RPM
Ignition advance , with engine oil temperature at 80 ° C minimum and with (blue) coolant temperature sensor connected :	
<ul style="list-style-type: none"> ● engine speed ● calculating advance 	4500 RPM 30 ± 3 ° advance + ignition timing point
Timing mark	
Firing order	1-3-4-2
Spark plugs <ul style="list-style-type: none"> ● torque ● gap 	Bosch W6 DPO or W6 DPI 25 Nm (18 ft lb) 0.6 to 0.7 mm (0.024 to 0.028 in.)
Ignition coil identification	Green label

Ignition distributor, installing

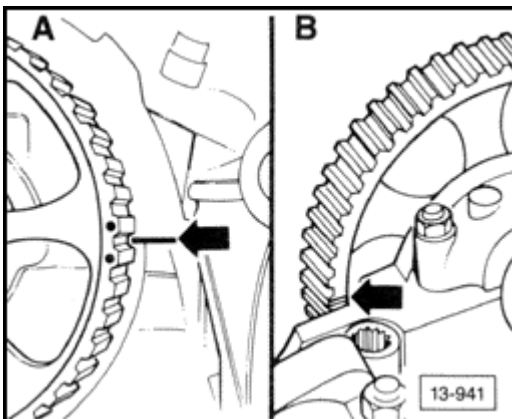


A With engine installed

- rotate flywheel to TDC for cylinder 1

B With engine removed

- align arrow on drive belt guard with mark on pulley

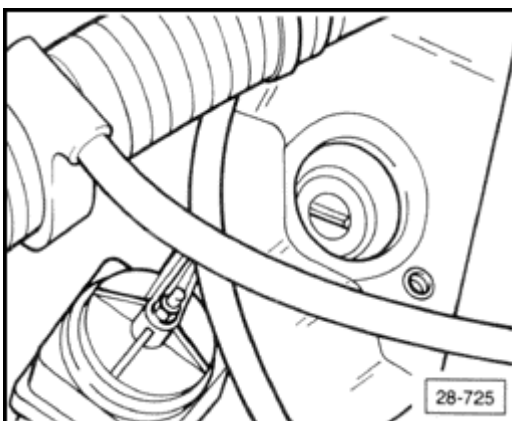


A With valve cover installed

- align dots on camshaft sprocket with marking on valve cover

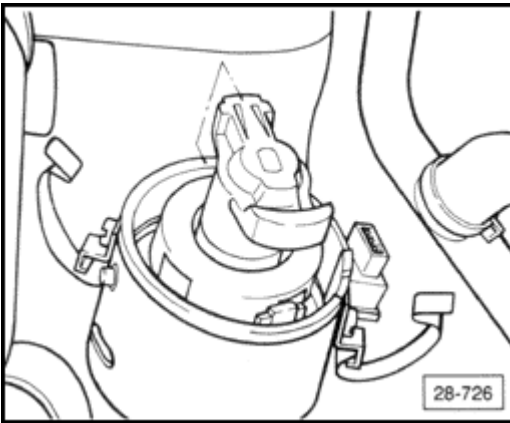
B With valve cover removed

- align marking on camshaft sprocket with edge of cylinder head



▪

align oil pump shaft parallel with crankshaft



- position distributor rotor to point at number 1 cylinder on distributor housing
- inspect distributor cap before installing
 - check for cracks and carbon arcing
 - check terminals for wear
 - clean before installing
- adjust ignition timing, [page 28-17](#)

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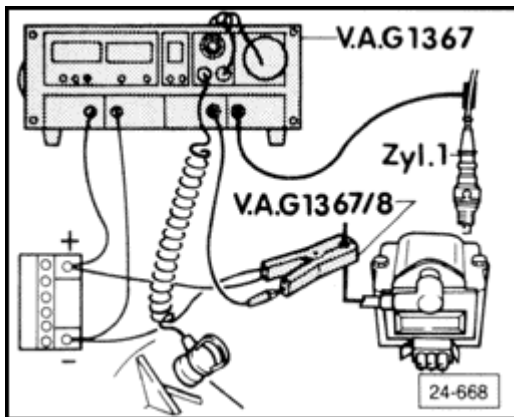
Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-17)

Ignition timing, checking/adjusting

Requirement

- engine oil temperature 80° C (176° F) minimum
- switch **OFF** ignition



- connect **VAG 1367** engine tester using **VAG 1367/8** inductive pickup
 - to display engine RPM and ignition timing point

CAUTION!

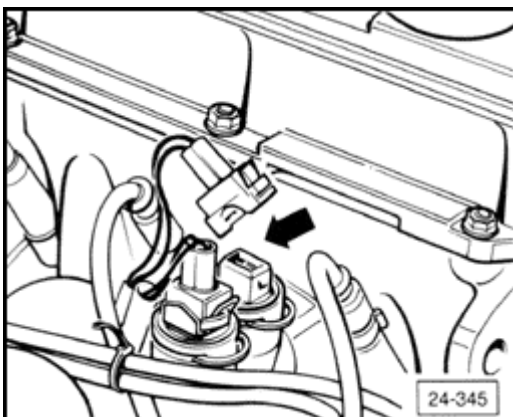
Be certain that TDC sensor is properly seated in recess on flywheel housing.

- start engine and let idle

With VAG 1367 engine tester

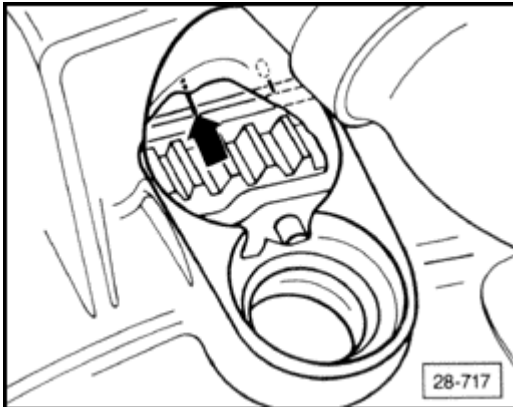
- disconnect blue coolant temperature sender
- raise engine speed to a level between 2000 and 2500 RPM and check ignition timing point (displayed directly on **VAG 1367** engine tester)
 - must be 4 to 8° Before **TDC**

With strobe light



- disconnect blue coolant temperature sender
- raise engine speed to a level between 2000 and 2500 RPM and check ignition timing point

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Fuel Systems Supercharger Exhaust Engine Electrical
Ignition System (Page 28-17a)



- point strobe at flywheel timing mark
 - must be 4 to 8° Before **TDC**

If **NO** (either method), adjust as follows

- adjust ignition timing by loosening and turning distributor until specification is obtained
 - adjusting value: 6° ± 1° Before **TDC**
- activate fault memory and then erase, see [Repair Group 01 \(Fuel injection and Ignition\)](#) for additional information

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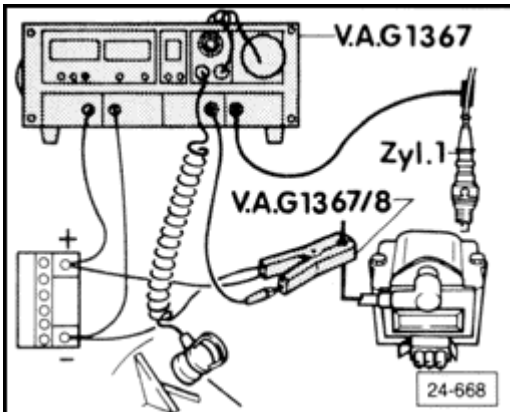
Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-18)

Ignition timing advance, checking

Requirements

- engine oil temperature 80° C (176° F) minimum
- read Fault memory and check for any stored faults, correct if necessary and then erase Fault memory

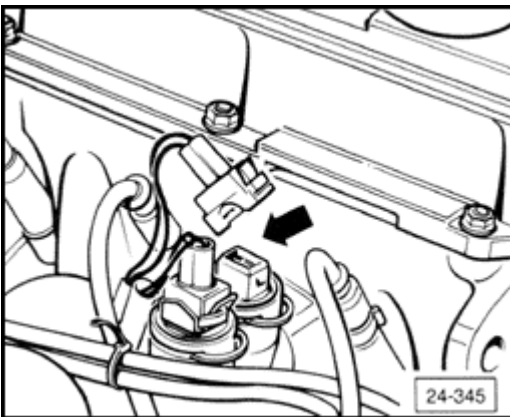


- connect **VAG 1367** engine tester using inductive pickup **VAG 1367/8**
 - for engine RPM and ignition timing point display

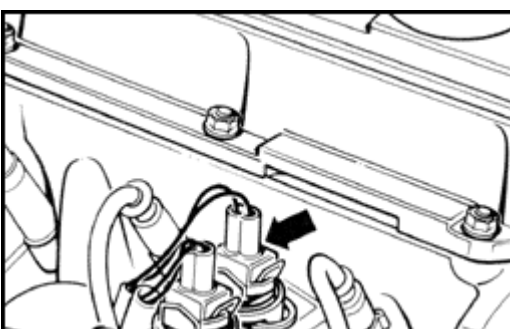
CAUTION!

Be certain that TDC sensor is properly seated in recess on flywheel housing.

- start engine and let idle



- disconnect blue coolant temperature sender
- raise engine speed to 2300 RPM and record ignition timing point display value



- reconnect blue coolant temperature sender (**arrow**)
- raise engine speed to 4500 RPM and observe ignition timing point display value
 - displayed value must advance at least 30° above the previously recorded value

If **NO**

- replace Digifant control unit (**J 169**)
 - even if no fault is displayed while reading fault memory

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Fuel Systems Supercharger Exhaust Engine Electrical
Ignition System (Page 28-19)

Ignition coil (N 152), checking

- perform following checks using **Fluke 83** multimeter (**US 1119**)
 - specified values are valid when measured at a temperature between 0 and 40° C (32 and 104° F)

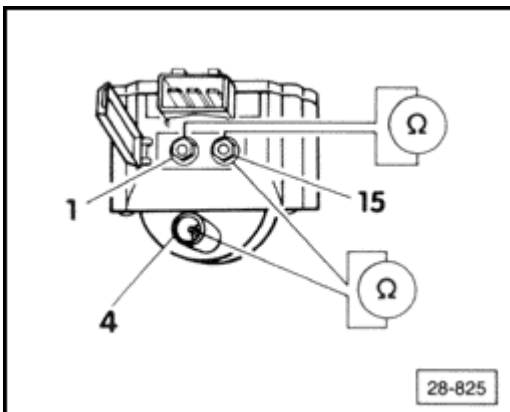
If measured values deviate from specified values

- check for open or short circuits using proper wiring diagram before replacing components
- use the **VW 1594** adaptor kit to make connections between the multimeter and the harness connectors

CAUTION!

Switch the multimeter to the appropriate measuring range before making test connections.

- disconnect coil wire and power output stage harness connector from coil



- check primary resistance between terminals **1** and **15**
 - must be 0.5 to 0.7 Ohms
- check secondary resistance between terminals **4** and **15**
 - must be 3000 to 4000 Ohms

If specified values not obtained

- remove ignition coil and disconnect power output stage of ignition coil
- repeat check

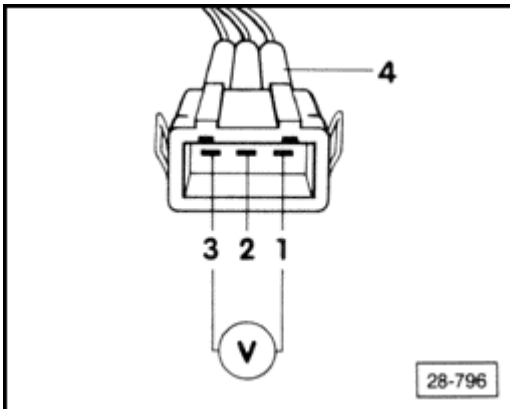
If specifications still not obtained

- replace ignition coil (**N 152**)

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Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-19a)

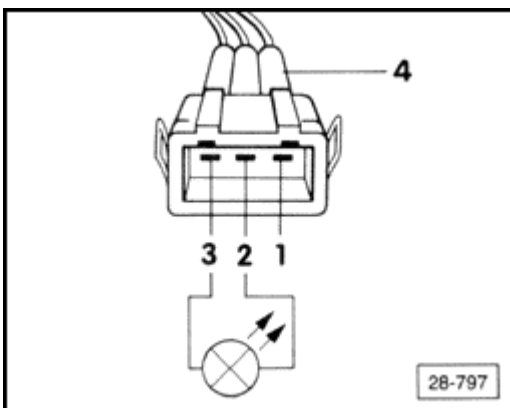


Power output stage, checking

- switch multimeter to 20 Volt range
- connect multimeter between terminals **1** and **3** of disconnected power output stage harness connector **4**
- switch **ON** ignition
 - must be approx. battery voltage

If **NO**

- check for open or short circuit in harness wiring using wiring diagram, repair or replace as necessary
- switch **OFF** ignition
- disconnect multimeter
- disconnect fuel injector main harness connector or remove fuse **18**



- connect **US 1115** LED tester between terminals **2** and **3** of disconnected fuel injector harness connector **4** using jumper leads from **VW 1594** adaptor kit
- operate starter to check signal from the Hall sender and the ignition switching function of the control unit
 - **LED** tester must flicker

If **NO**

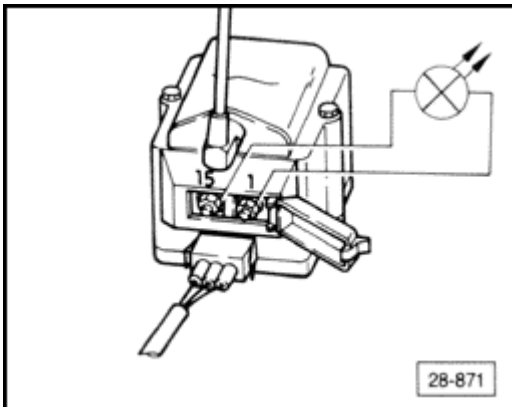
- check Hall sender (**G 40**), [page 28-20](#)

If Hall sender **OK**

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

- reconnect fuel injector main harness connector or reinstall fuse **18**
- reconnect ignition coil wire and power output stage harness connector
- switch **OFF** ignition

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Ignition System (Page 28-19b)



- connect multimeter between terminals **1** and **15** of ignition coil

CAUTION!

Do not handle or cause the test connections to become disconnected during the following step.

- switch **ON** ignition
 - must be 2 Volts minimum and then drop to 0 Volts after 1 to 2 seconds
- operate starter
 - LED tester must flicker

If **NO**

- replace ignition coil with power output stage (**N 157**)
- switch **OFF** ignition

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Fuel Systems Supercharger Exhaust Engine Electrical

Ignition System (Page 28-20)

Hall sender (G 40), checking

Requirement

- Electrical Test A **OK** from [Repair Group 01 \(Fuel Injection and Ignition\)](#)

Notes

*The Hall sender can also be checked using the **VAG 1598** Test box. See [Repair Group 01 \(Fuel Injection and Ignition\)](#).*

- perform following checks using **Fluke 83** multimeter (**US 1119**)
 - specified values are valid when measured at a temperature between 0 and 40° C (32 and 104° F)

If measured values deviate from specified values

- check for open or short circuits using proper wiring diagram before replacing components
- use the **VW 1594** adaptor kit to make connections between the multimeter and the harness connectors

CAUTION!

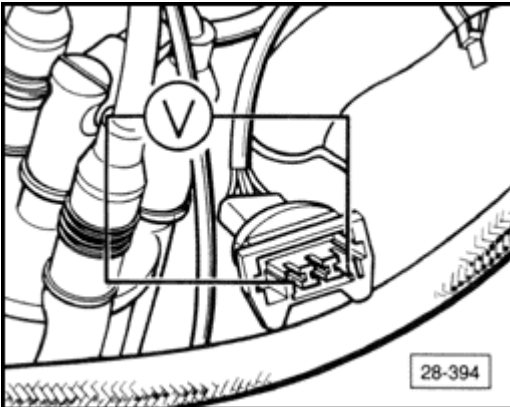
Switch the multimeter to the appropriate measuring range before making test connections.

Voltage supply, checking

Requirement

- electrical check of Digifant system **OK** , see [Repair Group 01 \(Fuel injection and Ignition\)](#)
- switch **OFF** ignition
- disconnect harness connector from (**N 41**) Hall control unit
- switch multimeter to 20 Volt range

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Fuel Systems Supercharger Exhaust Engine Electrical
Ignition System (Page 28-20a)



- connect multimeter between outer terminals of harness connector using **VW 1594** adaptor kit
- switch **ON** ignition
 - must be 10 Volts minimum

If **NO**

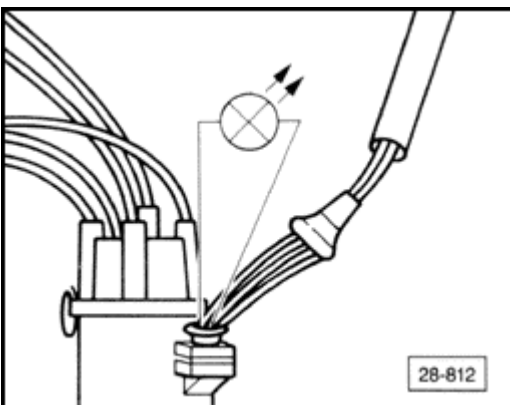
- check for open or short circuit in harness wiring using wiring diagram, repair or replace as necessary

If wiring **OK**

- replace Digifant control unit (**J 169**)
- switch **OFF** ignition
- reconnect harness connector to Hall control unit

Functional check

- disconnect main harness connector for fuel injectors
- disconnect Hall sender harness connector at distributor
- push up rubber boot (covering connector) to expose terminals and reconnect to distributor

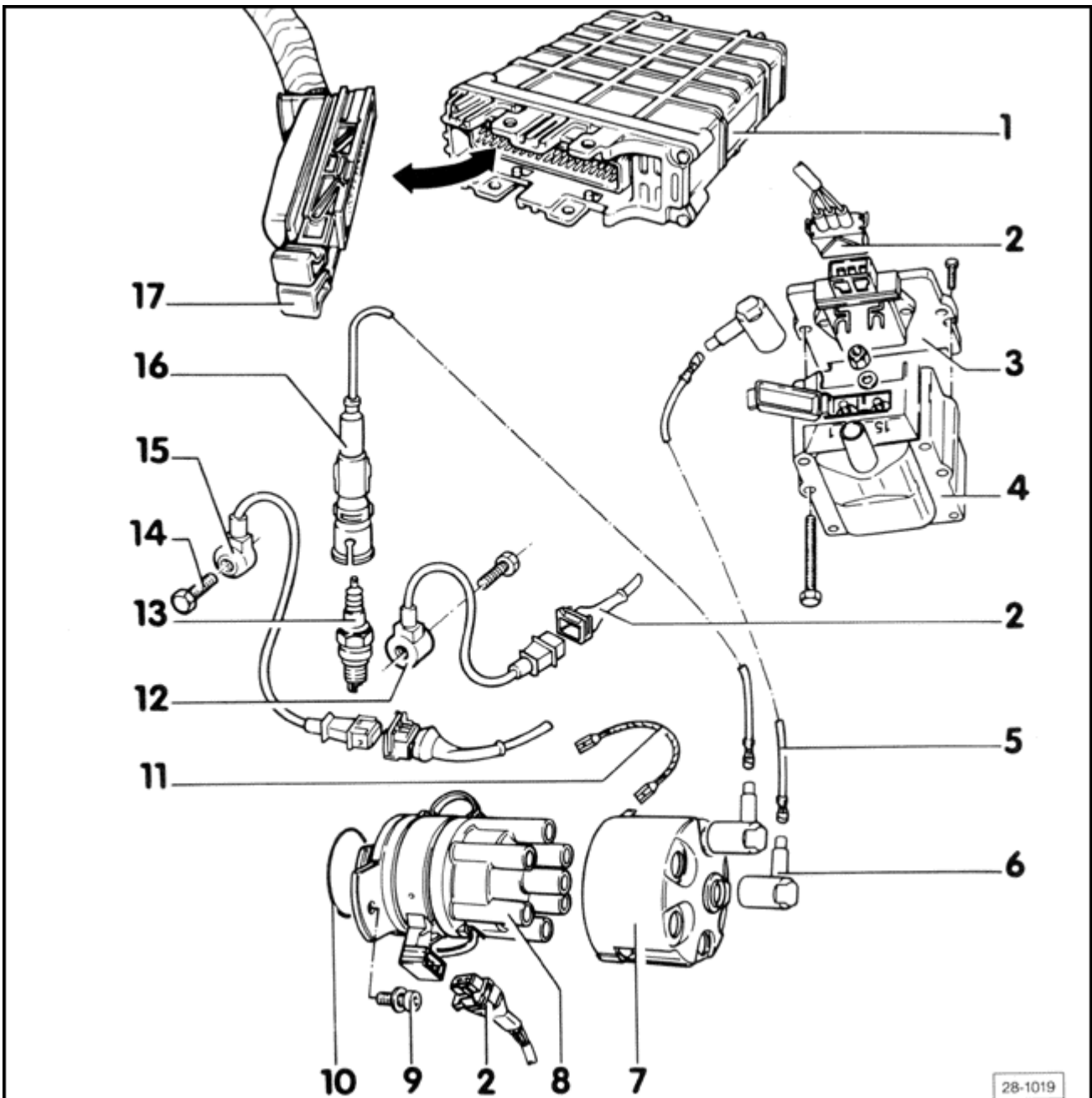


- connect **US 1115** LED tester to center terminal and then either of the outer terminals using **VW 1594** adaptor kit
- operate starter
 - LED tester must flicker

If **NO**

- replace distributor

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Fuel Systems Supercharger Exhaust Engine Electrical
Ignition System (Page 28-21)



- Ignition system repairing, see [page 28-22](#)
- Safety precautions, see [page 28-24](#)
- Spark plugs and technical data, see [page 28-23](#)

Notes

Components marked with an asterisk (*) are checked via the **VAG 1551** scan tool. See [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information.

- 1 - Engine control module (J 220)***
- 2 - Harness connector for ignition coil**
- 3 - Ignition coil power output stage (N 157)**
- 4 - Ignition coil (N 152)**

- 5 - Ignition wire**
- 6 - RFI suppression connector**
- 7 - RFI suppression cap**
- 8 - Distributor cap**
- 9 - 10 Nm (7 ft lb)**
- 10 - O-ring**
replace if damaged
- 11 - Ground connector**
- 12 - Knock Sensor II (G 66)***

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13 - Spark plug

- 25 Nm (18 ft lb)
- use 3122 B adaptor to remove and install

14 - 20 Nm (15 ft lb)

15 - Knock Sensor I (G 61)*

16 - Spark plug connector

use 3277 adaptor to remove and insert

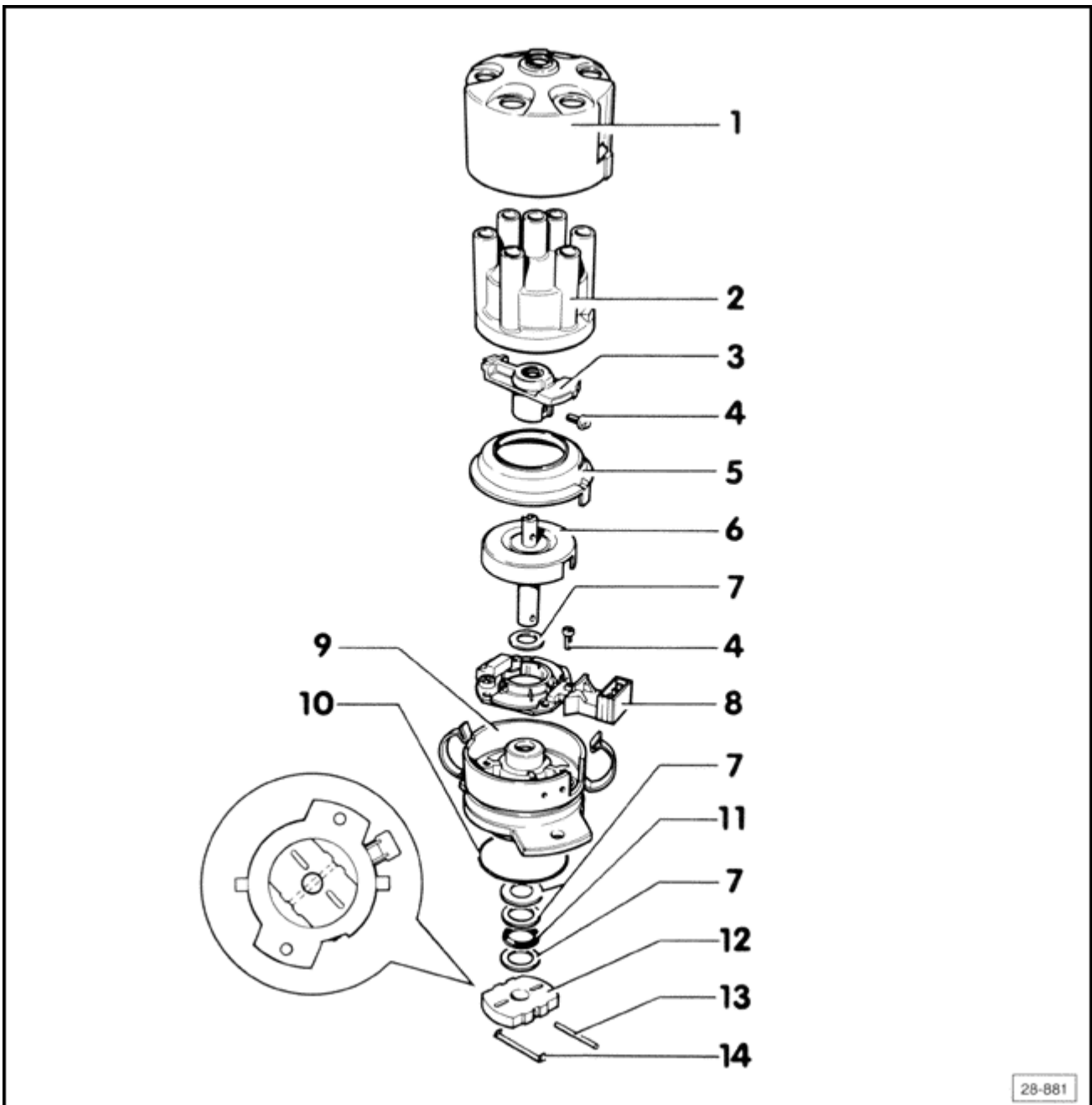
17 - Harness connector for engine control module

CAUTION!

Do NOT disconnect until ignition has been switched off for at least 20 seconds.

Notes

Refer to the Supplement at the back of the manual for additional information pertaining to this Repair Group.



- 1 - RFI suppression Cap
- 2 - Distributor cap
- 3 - Distributor rotor
 - 1000 Ohms resistance
 - always replace

Notes

The rotor is glued to the shaft. If the rotor has to be replaced, remove it by destroying it with a pair of pliers.

Carefully remove any adhesive residue from the shaft and glue on the new rotor using adhesive **AMV 185 100 01** or equivalent.

CAUTION!

Do NOT hit the rotor, there is danger of damaging the rotor shaft or bearing.

4 - 5 Nm (44 in. lb)

5 - Dust shield

6 - Distributor shaft

- before removing coupling **12**, mark coupling per position to shaft **6**
- after removing shaft, pull out pin **13**

7 - Shims

8 - Hall sensor

checking see [page 28-26](#)

9 - Distributor housing

10 - O-ring

replace if damaged

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11 - Plastic shim

12 - Coupling

before removing coupling, mark coupling per position to shaft **6**

13 - Pin

always replace

14 - Clip

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Ignition and spark plugs, technical data

Ignition Timing	Check using VAG 1551 Scan Tool for idle checking see Repair Group 24
Engine control module Part Number	021 906 258 P for manual transmission 021 906 258 S for automatic transmission
Firing order	1-5-3-6-2-4
Spark Plugs To remove or insert the spark plug connectors, use adaptor 3277 .	
Bosch part Number Electrode Gap Tightening Torque	C 9 MCC 0.7 to 0.8 mm 25 Nm (18 ft lb)

Safety precautions

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 engine control module could be damaged*
- *do not touch or remove ignition wires with engine running or while cranking*
- *if the engine must be cranked but not started (for compression testing etc.) disconnect harness connector from ignition coil power output stage and remove fuse 18*
- *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 (mark R1) with a different type*

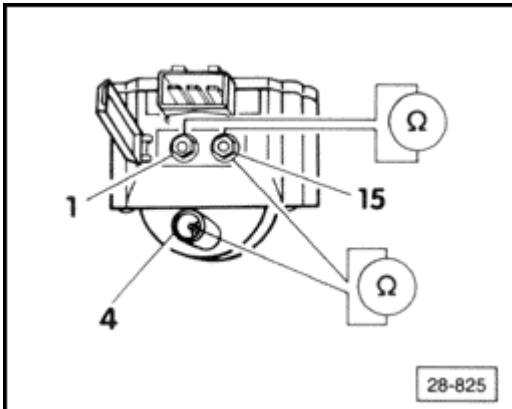
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Ignition System (Page 28-25)

Ignition coil, checking

- switch **OFF** ignition
- disconnect harness connector and ignition wire from ignition coil (**N 152**)
- switch **Fluke 83** multimeter to resistance range



- connect multimeter between terminals **1** and **15**
 - primary resistance must be 0.5 to 0.7 Ohms
- connect multimeter between terminals **4** and **15**
 - secondary resistance must be 3000 to 4000 Ohms

If specified values not obtained

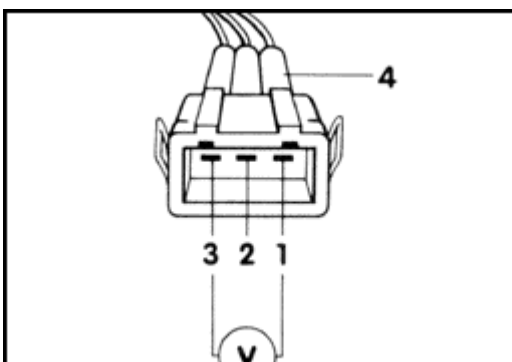
- disconnect ground strap from battery
- remove ignition coil and unscrew power output stage (**N 157**)
- repeat check

Ignition coil power output stage

Voltage supply, checking

Requirements

- no DTC's stored in DTC memory
- electrical check of Motronic system **OK** , see [Repair Group 01 \(Fuel Injection and Ignition\)](#) for additional information
- ignition coil **OK**
- disconnect harness connector from ignition coil power output stage
- switch **Fluke 83** multimeter to 20 Volt range



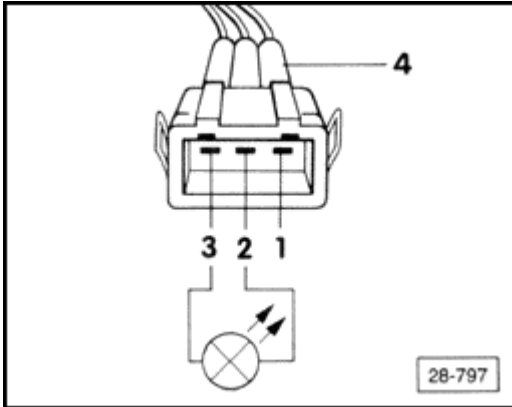
- connect multimeter to terminals **1** and **3** of harness connector using adaptor leads from **VW 1594** adaptor kit
- switch **ON** ignition
 - must be approx. battery voltage
- switch **OFF** ignition

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Ignition System (Page 28-25a)

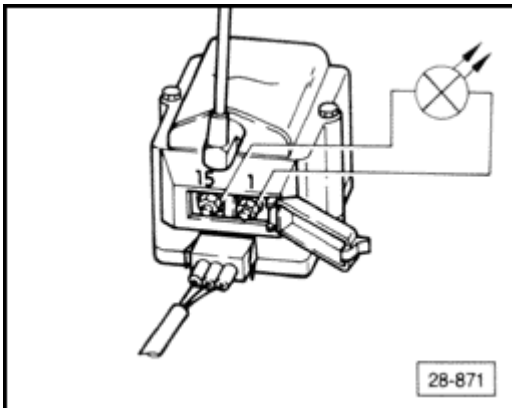
Power output stage triggering, checking



- connect **US 1115** LED tester to terminals **2** and **3** of harness connector using test adaptor **VW 1594/15** from **VW 1594** adaptor kit
- operate starter to check ignition signal from engine control module
 - LED tester must flicker

If **NO**

- replace engine control module (**J 220**)
- re-connect harness connector **4** and coil wire to ignition coil



- connect LED tester between terminals **1** and **15** on ignition coil using jumper leads from **VW 1594** adaptor kit

CAUTION!

During the following check, DO NOT touch any of the exposed terminals or connectors from the ignition coil or adaptor wires.

- switch **ON** ignition
 - LED tester must light up for 1 to 2 seconds
- operate starter
 - LED tester must flicker

If **NO**

- replace ignition coil power output stage

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Ignition System (Page 28-26)

Hall sensor, checking

Notes

The Hall sensor can also be checked using the **VAG 1598 Test Box** and **VAG 1598/18** adaptor. See [Repair Group 01 \(Fuel Injection and Ignition\)](#)

If **VAG 1598** Test Box is not available, check Hall sensor as follows:

Voltage supply, checking

- disconnect Hall sensor harness connector at ignition distributor
- switch **Fluke 83** multimeter to 20 Volt range
- connect multimeter between outer terminals of harness connector using jumper wires from **VW 1594** adaptor kit
- switch **ON** ignition
 - must be 4.5 Volts minimum

If no voltage indicated

- switch **OFF** ignition
- check wiring using wiring diagram

If wiring **OK**

- replace engine control module (**J 220**)

Function, checking

- remove fuse **18**
- slip rubber boot for Hall sensor harness connector away from the connector (leaving harness connector connected, but with terminals exposed to allow access for test connections)
- connect **US 1115** LED tester between center terminal of connector and brown/ white wire using jumper leads from **VW 1594** adaptor kit
- operate starter
 - LED tester must flicker

If **NO**

- replace Hall sensor