Index

index continues on next row down

4-cylinder

5-cylinder

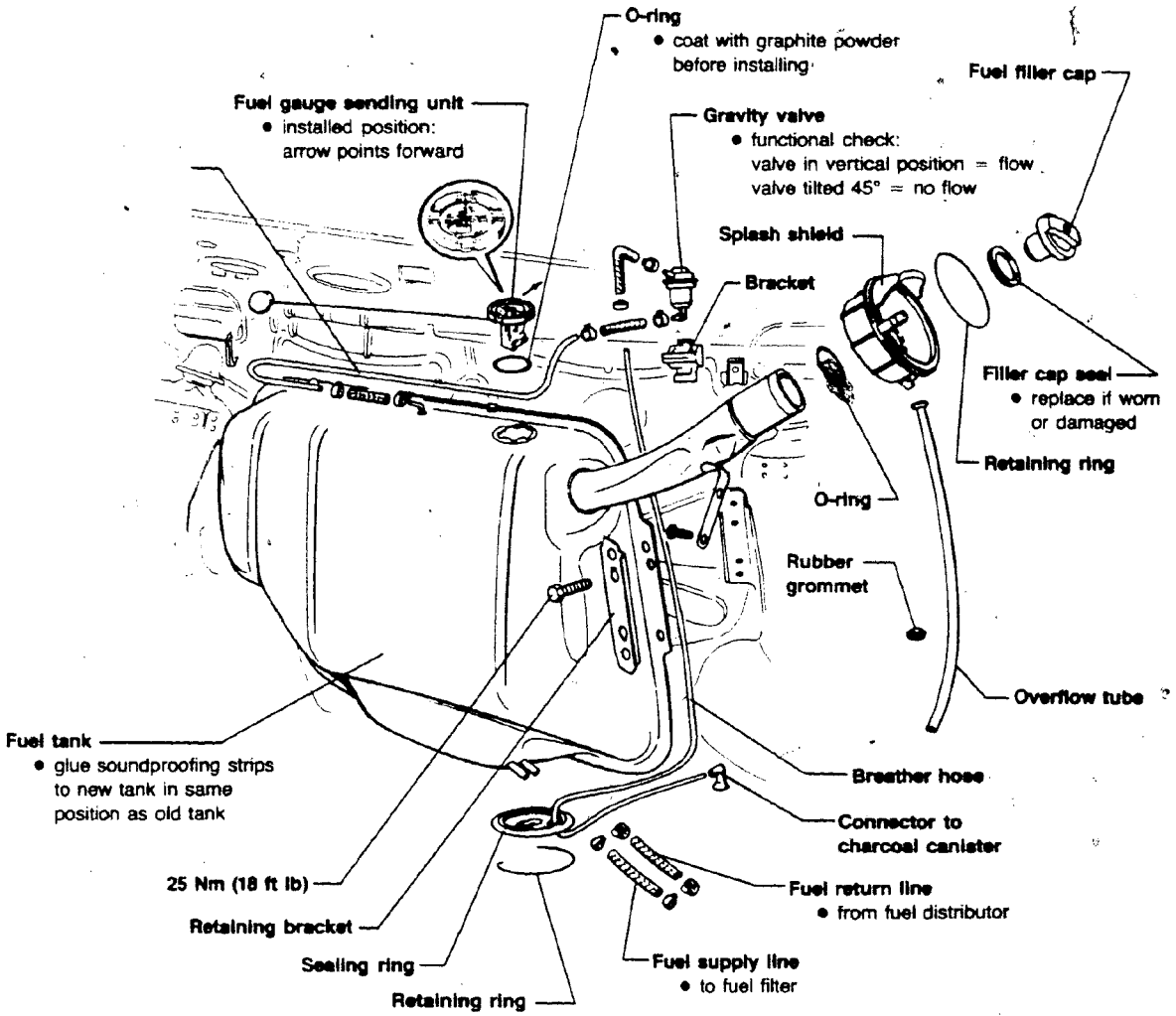
90 Quattro 20V

WARNING

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

Note

- always replace all seals and clamps
- always observe rules of cleanliness — page 20.7

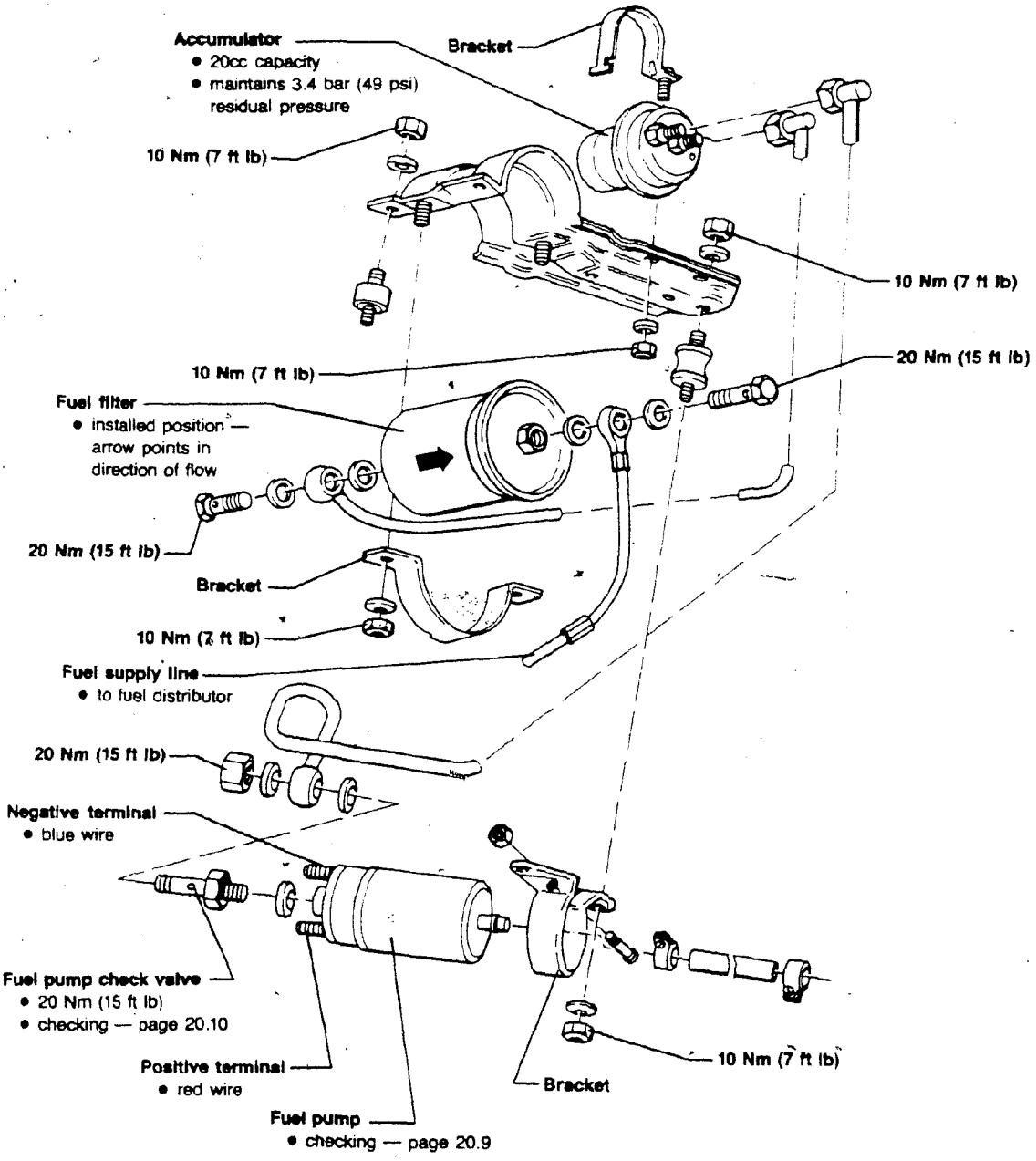


WARNING

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

Note

- always replace all seals and clamps
- always observe rules of cleanliness — page 20.7



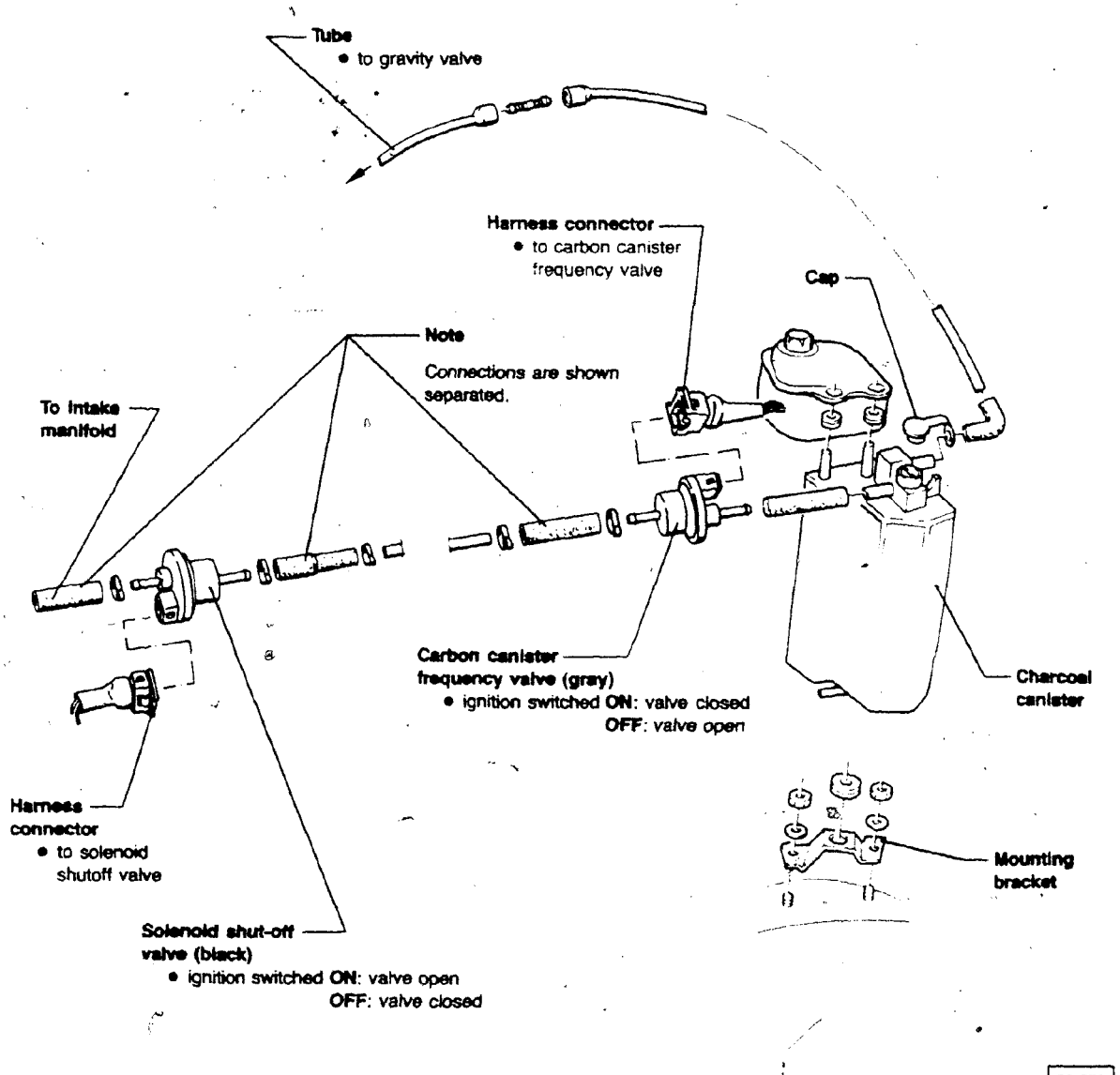
20-555

WARNING

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

Note

- always replace all seals and clamps
- always observe rules of cleanliness — page 20.7



Carbon canister

Frequency valve, checking

- remove hose to activated charcoal canister from valve
- start engine and let idle

If coolant temperature under 60°C (140°F):

- valve must not operate
  - there must be no, or very little vacuum to the connection

If coolant temperature over 60° (140°F):

- valve must cycle
  - valve operates for 120 seconds with very noticeable vacuum to connection

Then

- valve **STOPS** operating for 90 seconds with no or very little vacuum to the connection

Note

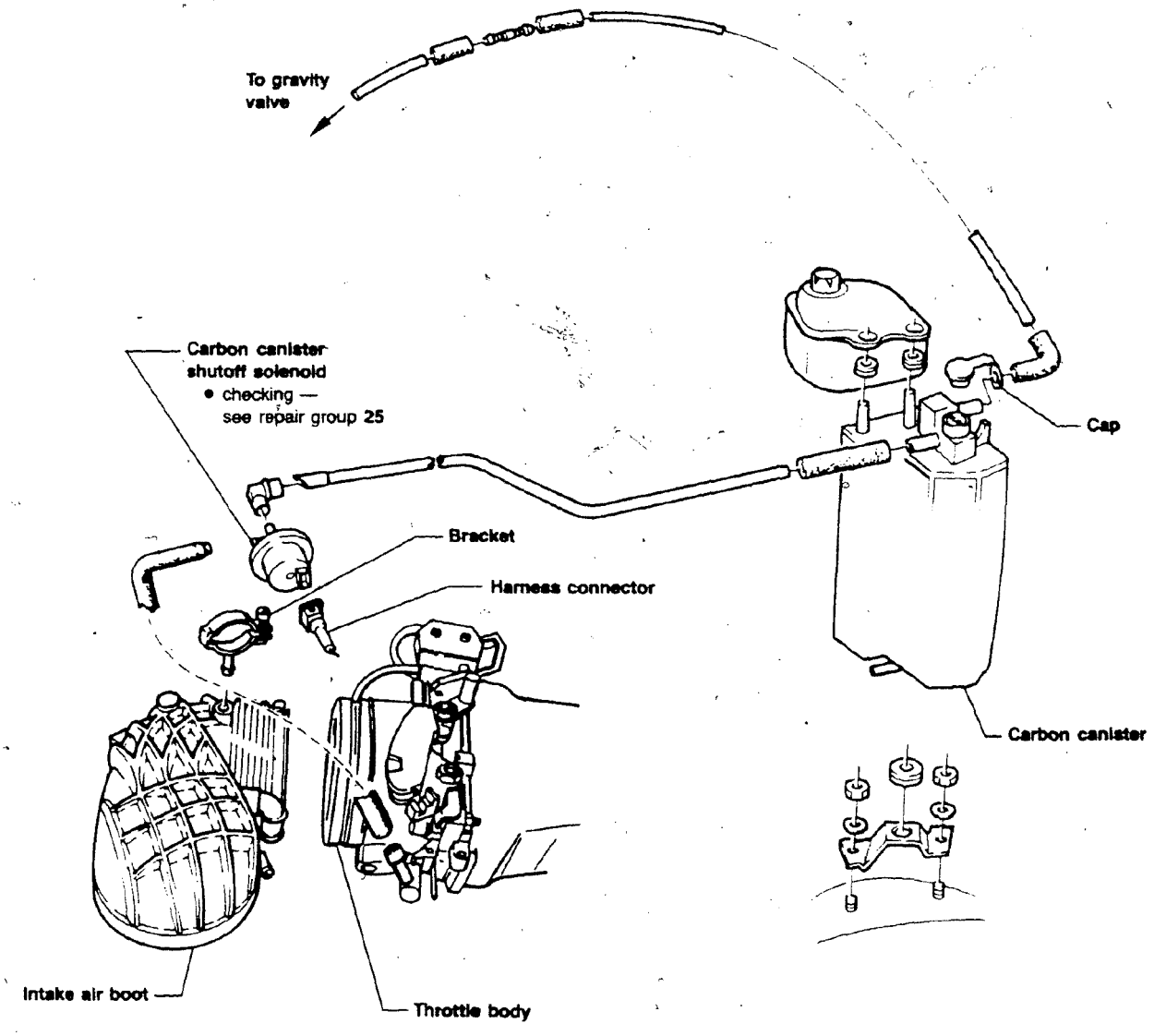
If the frequency valve is operating properly it will repeat this pattern of 120 seconds **ON** and 90 seconds **OFF** for as long as the engine is running.

WARNING

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

Note

- always replace all seals and clamps
- always observe rules of cleanliness — page 20-7



20-574

CAUTION

First:

- clean connecting points before loosening

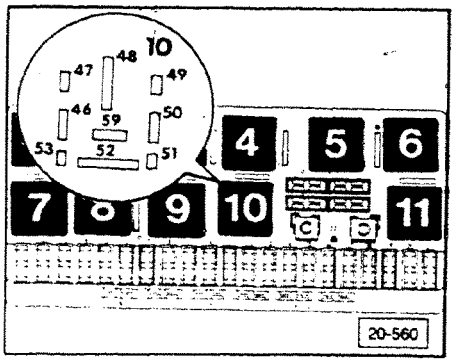
When fuel system is open

- do not use compressed air if you don't need it
- move vehicle only if you must
- if you cannot finish repairs, carefully cover parts with plastic or paper — not with rags

Use clean parts only

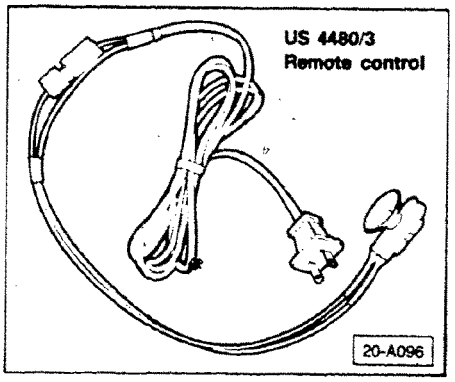
- do not unwrap new parts before needed
- only use new parts, not loose or unwrapped parts from tool box
- lay removed parts on clean surface. Cover with plastic or paper — not with rags

Rules of cleanliness

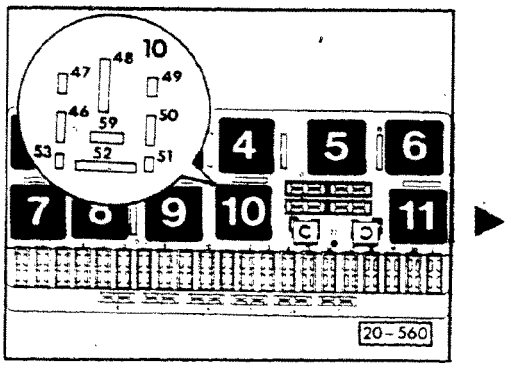


Connecting remote control US 4480/3

- remove fuel pump relay from position **10** on the fuse/relay panel



- switch **US 4480/3** remote control to **OFF** position
- plug **US 4480/3** remote control into socket **10** of fuse/relay panel



Fuel pump relay, checking

Symptom: pump is not switched ON (not audible) while starting

- remove cover from fuse relay box
- remove fuel pump relay from location number **10**
- connect **US 1115** LED tester between terminals **48** and ground, between terminals **46** and ground
- switch **ON** ignition
  - **US 1115** LED tester must light up
- switch ignition **OFF**

If **NO**
- locate and repair break in wiring using wiring diagram
- connect **US 1115** LED tester between terminals **46** and **47**
- switch ignition **ON**
  - LED must light up for about one second

If **NO**
- * perform vehicle self diagnosis

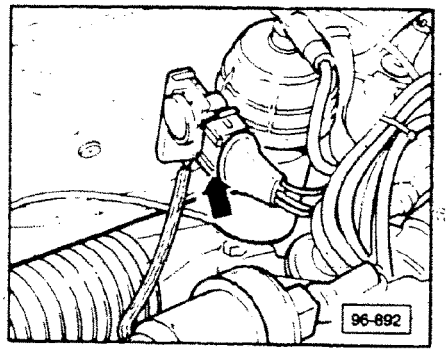
or
- locate open or disconnected wire to ignition control unit,** repair as necessary

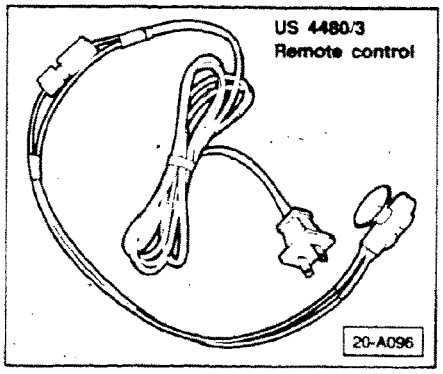
If **NO** break or disconnection
- replace control unit

If **NO** defect found
- replace fuel pump relay

* 4-cylinder **ONLY**

** If 4-cylinder; this refers to the Motronic control unit





Fuel pump, checking

Requirements

- Fuse number **13 OK**
- *Fuse number **24 OK**
  (in the additional fuse box)
- Harness connector for the power output stage of the ignition coil, disconnected (**arrow**)

■ operate starter briefly
- fuel pump must run audibly

If **NO**
■ connect remote control **US 4480/3** (page 20.7)
■ activate remote control switch

If fuel pump runs
■ check fuel pump relay page 20.8

If fuel pump does **NOT** run
■ check voltage supply at fuel pump electrical connections using **US 1115** LED tester

Checking supply voltage

■ disconnect terminal at fuel pump and connect **US 1115** LED tester
■ activate remote control switch
- **US 1115** LED tester must light up

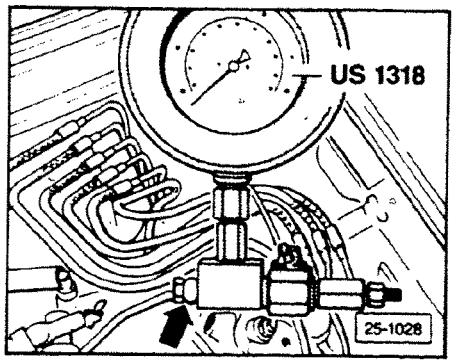
If **NO**
■ locate and repair break in wiring using wiring diagram

If voltage supply **OK**
■ replace fuel pump

* 5-cylinder **ONLY**

WARNING

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



Fuel pump check valve, checking

Note

Performing this check will simultaneously check connections from the fuel pump to the fuel distributor test connection point.

Requirement

- Fuse number **13 OK**

▶ ■ connect **US 1318** pressure tester to the fuel pre-feed line (**arrow**)

Note

Shut off valve on **US 1318** must be in closed position (lever perpendicular to direction of flow)

- remove fuel pump relay from fuse/relay box, location number **10**
- connect remote control **US 4480/3**
- activate remote control in intervals until a pressure of approximately 5 bar (73 psi) is built up

WARNING

Danger of fuel spray when opening shut off valve. Hold a cloth in front of the opening on the **US 1318**.

▶ **Note**

If gauge pressure indication exceeds 5 bar reduce the pressure by short, careful openings of the shut off valve.

- record or note gauge pressure

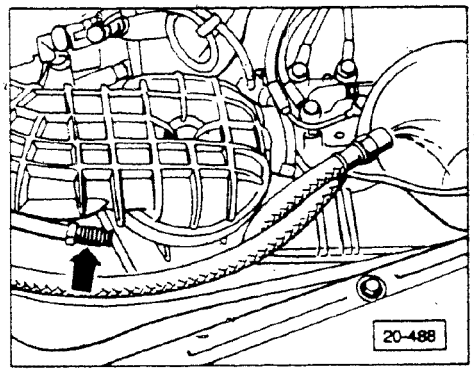
Note

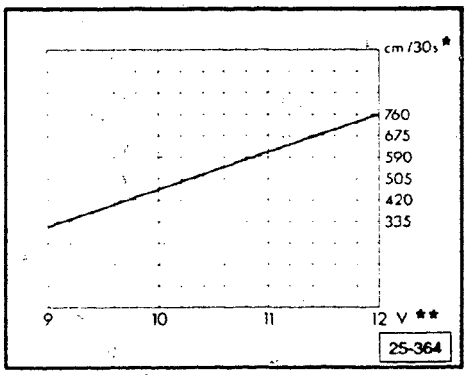
If after one minute the 5 bar (73 psi) pressure has not been achieved, either the fuel line connections are leaking or the fuel pump check valve is leaking, or both.

- observe pressure drop:
  - 4-cylinder specification: pressure must **NOT** drop below 2.6 bar (38 psi) after 10 minutes
  - 5-cylinder specification: pressure must **NOT** drop below 3.4 bar (49 psi) after 10 minutes

If pressure drops below specification

- check fuel line connections for leakage or replace fuel pump check valve





Note

The chart is expressed in units of cubic centimeters (cc's). It is also acceptable to substitute milliliters (ml) for cc's.

This will allow you to use containers calibrated in cc's or ml's with equal results.

- 1 milliliter = 1 cubic centimeter

Fuel pump delivery rate, checking

Requirements

- Free flow through fuel filter and associated fuel lines
- Voltage supply **OK** (checking page 20.9)
- Remote control **US 4480/3** connected (see page 20.6)

- remove fuel filler cap
- detach fuel return line at connection **(arrow)** and place into a measuring container (if necessary use an extension hose)

- activate remote control switch for 30 seconds
- using chart, compare amount of fuel delivered

If **NOT** within range specified on chart:
- check fuel filter for blockage, replace if necessary

If **OK**
- replace fuel pump
  - recheck delivery rate

If still **NOT OK** (low delivery)
- problem is not with fuel pump but probably a result of a restriction in the fuel circuit
- look for:
  - pinched lines or hoses
  - rust, scale, or foreign material lodged in the lines or connector orifices

- clean or repair as necessary until flow matches chart

* minimum delivered quantity in ccs per 30 seconds

** voltage at fuel pump with engine not running and pump on (using **US 4480/3**) with pump voltage approximately 2 volts less than battery voltage

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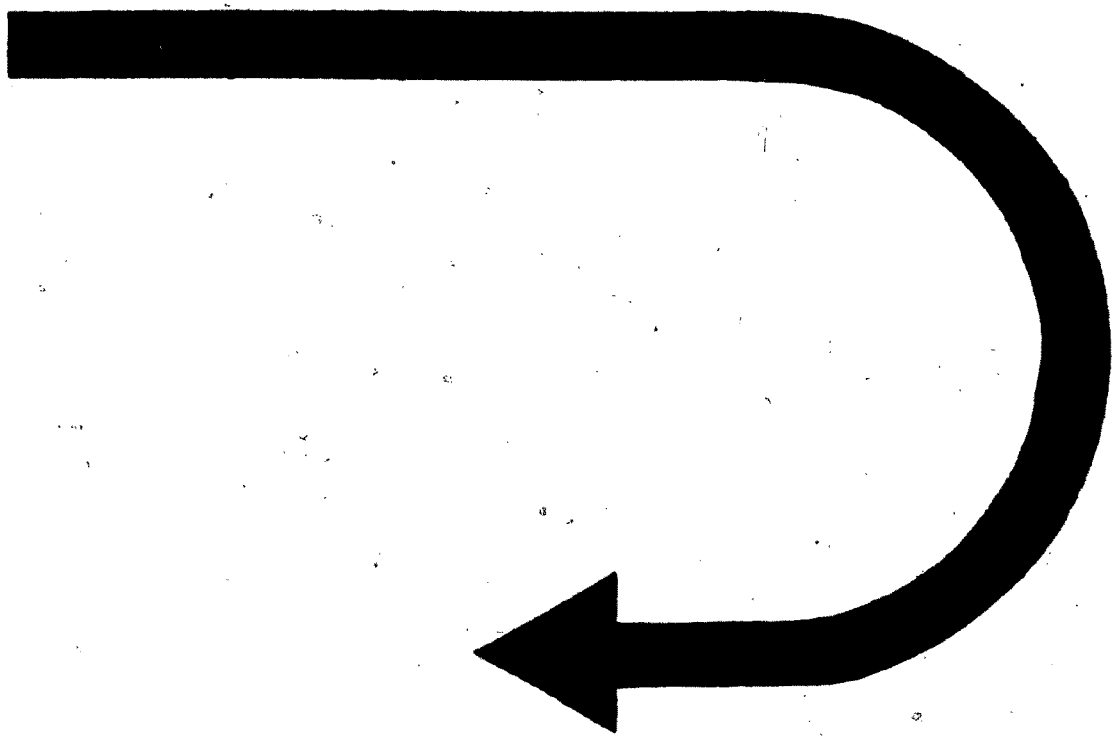
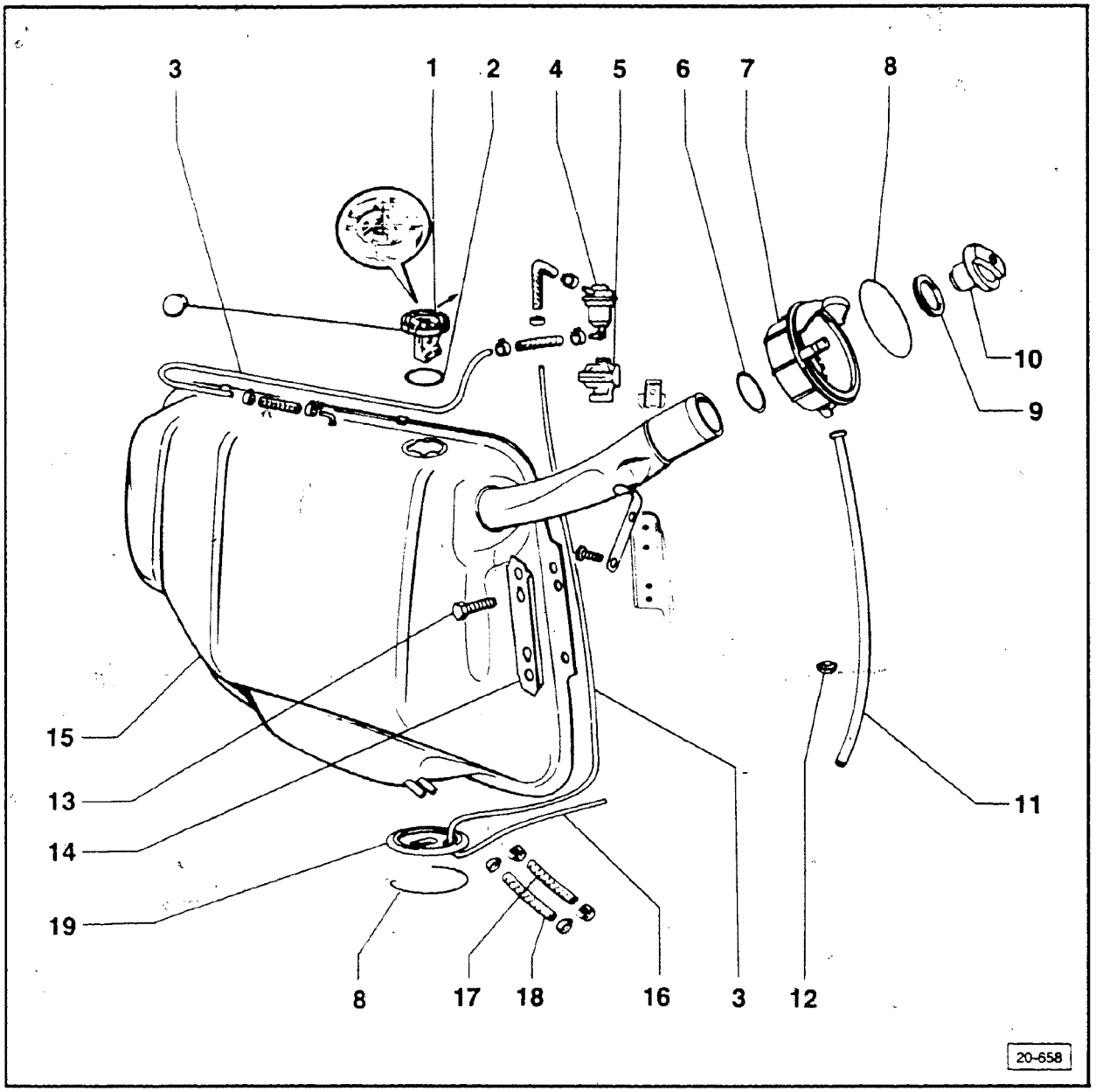
BEGINNING OF NEXT ROW





WARNING

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

Note

- Always replace seals when installing new parts
- hose connections are secured with either screw-type or lock-type clamps, always replace lock-type clamps
- Follow Rules of Cleanliness, page 20.16
- Connect remote control, page 20.17

1 — **Fuel gauge sending unit**
removing:
- disconnect battery ground strap
- remove cover and harness connector from sending unit
- release bayonet lock on sender by turning unit with tool **VAG 2012 A**

Installation position:

- arrow points in driving direction

2 — **O-ring**
coat with oil before installing

3 — **Vent line**

4 — **Gravity/Vent valve**
removing:
- pull valve up and out of bracket

checking flow:
- valve vertical — flow
- valve tipped 45° — **NO** flow

5 — **Bracket**

6 — **O-ring**

7 — **Splash shield**

8 — **Retaining ring**

9 — **Gasket**
replace

10 — **Fuel filler cap**

11 — **Overflow line**

12 — **Rubber grommet**

13 — **25 Nm (18 ft lb)**

14 — **Bracket**

15 — **Fuel tank**
removing, see page 20.23

16 — **Vent line**
to carbon canister

17 — **Return line**
from pressure regulator

18 — **Supply line**
to fuel rail

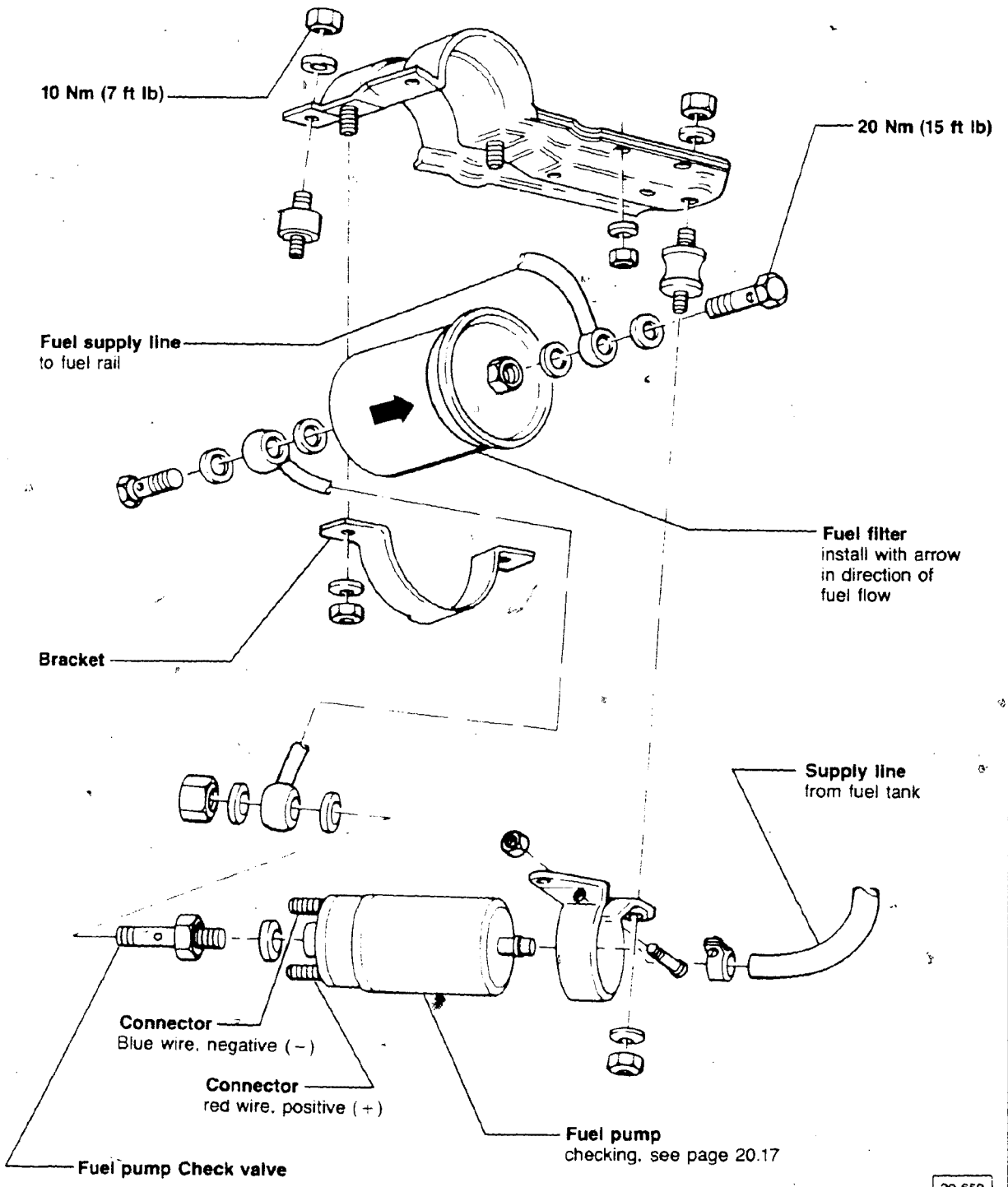
19 — **Dust seal**

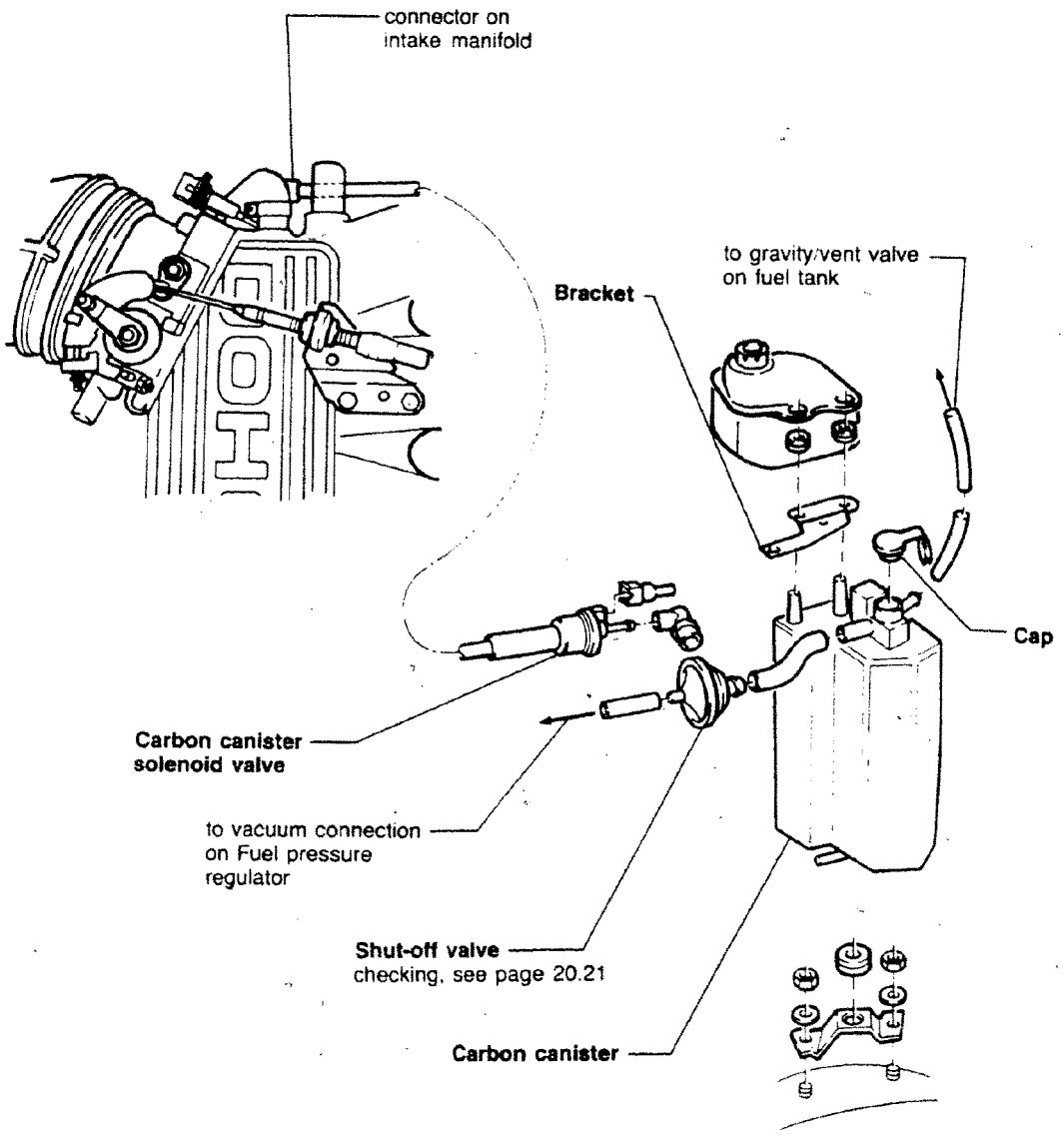
Note

Always replace seals when installing components.

WARNING

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




connector on
intake manifold
to gravity/vent valve
on fuel tank
Bracket
Cap
Carbon canister
solenoid valve
to vacuum connection
on Fuel pressure
regulator
Shut-off valve
checking, see page 20.21
Carbon canister
20-660

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 toolboxes, etc.)

5 — when fuel system is open:
- avoid using compressed air whenever possible
- avoid moving the vehicle whenever possible

Fuel pump, checking

Voltage supply, checking

Requirement
- fuse number 13 **OK**

- disconnect coil wire from ignition coil and connect to ground using jumper from **VAG 1594** adaptor set
- activate starter briefly
  - fuel pump must be audible (running) for a brief period

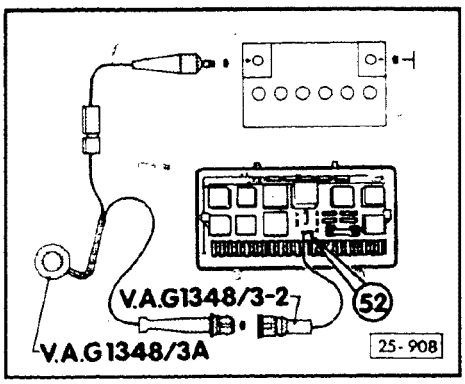
WARNING

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

Note

If ambient noise levels are high in the vicinity of the vehicle being tested, it may require a second person to verify that the fuel pump is running.

If fuel pump is **NOT** running
- remove fuel pump relay from fuse/relay panel location **10**



- connect remote control **VAG 1348/3A** to terminal **52** (of relay location **10**) and to battery positive using adaptor lead **VAG 1348/3-2**
- activate remote control

If fuel pump **RUNS**
- check fuel pump relay, see page 20.20

If fuel pump does **NOT** run
- disconnect fuel pump wires
- connect **US 1115** LED tester to fuel pump wires using adaptor set **VAG 1594**
- activate remote control
  - LED tester must light up

If **YES**
- replace fuel pump

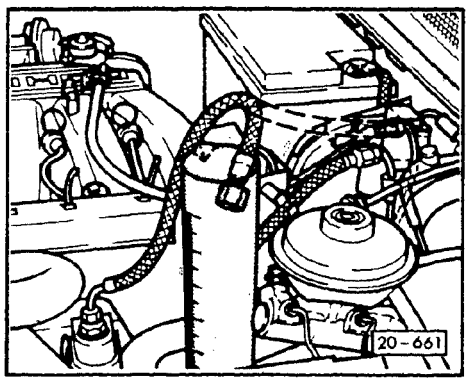
If **NO**
- check wiring for open circuit using wiring diagram, replace or repair wiring as necessary

Fuel pump delivery rate, checking

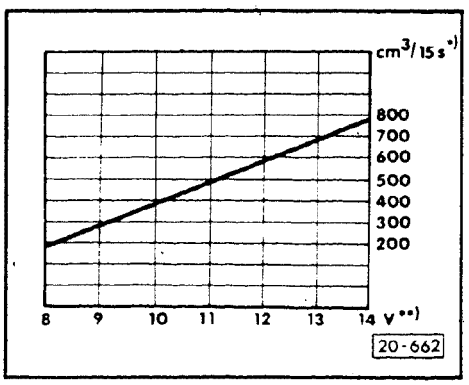
Requirements
- free flow through fuel filter and associated fuel lines
- voltage supply **OK**
- remote control **US 1348/3A** connected, see page 20.20

WARNING

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



- remove fuel filler cap
- separate fuel return line at connector on plenum
- place fuel line into measuring container (attach an extension hose or tubing if necessary)
- activate remote control for 15 seconds



- using chart compare amount of fuel delivered

If **NOT** within range specified on chart
- check fuel filter for restriction, replace if necessary

If **NO** restriction
- trial replace fuel pump then recheck delivery rate

CAUTION

If trial replacements do **NOT** result in acceptable measurements, re-install the original component.

If still **NOT OK** (low delivery)
- problem is not with fuel pump but probably a result of a restriction in the fuel circuit
- look for
  - pinched lines or hoses
  - rust, scale or foreign material lodged in lines or connector orifices

Note

The chart is expressed in units of cubic centimeters (cc's). It is also acceptable to substitute milliliters (ml) for cc's.

This will allow you to use containers calibrated in cc's or ml's with equal results.

- 1 milliliter = 1 cubic centimeter

- clean or repair as necessary until flow matches chart
  - *) minimum delivery rate in cc's per 15 seconds
  - **) voltage at fuel pump with engine **NOT** running and pump turned **ON** (using remote control)

Note

Fuel pump voltage should be approximately 2 volts less than battery voltage.

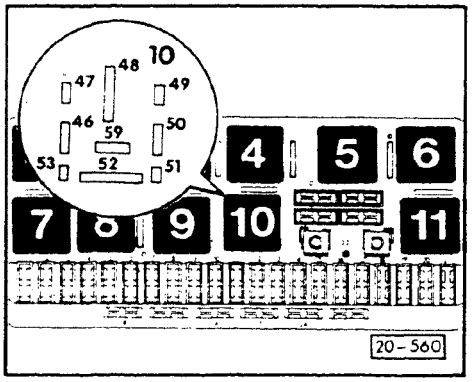
Fuel pump relay, checking

Requirement
- fuse number **13 OK**

- connect **US 1115** LED tester to fuse **13** and ground
- briefly energize starter
  - LED tester must light up and the fuel pump relay must pull up (listen for click or verify by touching)

If relay does **NOT** pull up
- check fuel pump relay control

If control is **OK**
- replace fuel pump relay

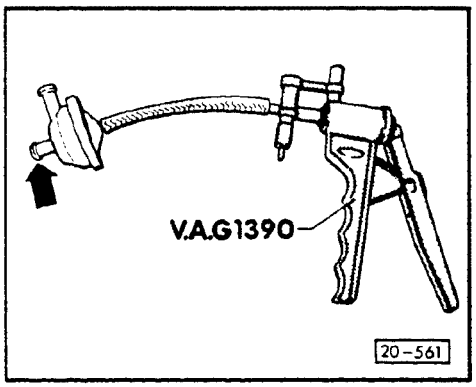


Fuel pump relay control, checking

- remove fuel pump relay from fuse relay panel, cavity **10**
- switch **ON** ignition
- switch **US 1119** multimeter to 20 volt range
- connect multimeter between terminal **46** and ground then terminal **48** and ground
  - each must be approximately 12 volts

If voltage value is **NOT** obtained
- eliminate open circuit in wiring using wiring diagram
- switch **OFF** ignition
- connect **US 1115** LED tester between terminals **46** and **47**
- switch **ON** ignition
  - LED tester must light up for approximately 1 second

If **NO**
- check wiring for open circuit using wiring diagram, repair as necessary



Carbon canister shut-off valve, checking

- install vacuum pump on small port
- blow into large port (**arrow**)
  - should be **NO** flow

If **FLOW**
- replace valve

If **NO** flow
- operate **US 1390** vacuum pump
  - valve must open (flow)

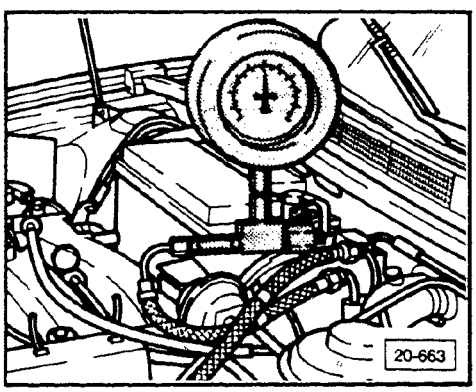
If **NO** flow
- replace valve

Fuel pump check valve, checking

Requirement
- fuse **13 OK**

WARNING

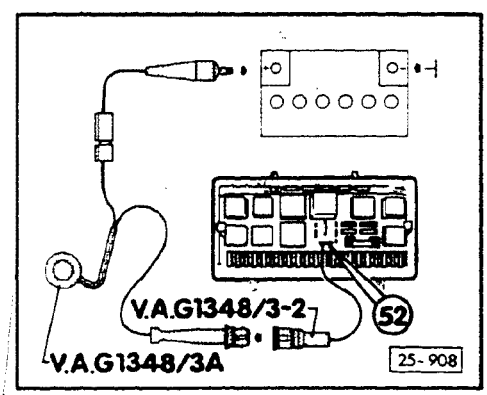
Fire hazard. Do not smoke or have anything in area that can ignite fuel.



Note

Performing this check will simultaneously check connections from the fuel pump to the test connection point on the **VAG 1318** tester.

- connect **VAG 1318** tester to fuel supply line
- **OPEN** shut-off valve on **VAG 1318** tester (lever parallel to direction of flow)
- remove fuel pump relay from location **10** of fuse/relay panel



- connect remote control **VAG 1348/3A** to terminal **52** (of relay location **10**) and to battery positive using **VAG 1348/32** adaptor
- briefly actuate remote control until fuel begins to flow
- close shut-off valve on **VAG 1318** tester (lever perpendicular to direction of flow)
- activate remote control in intervals until pressure of approximately 5 bar (73 psi) is established
- note or record gauge pressure at this time

more

Note

If gauge pressure indication exceeds 5 bar, reduce the pressure by briefly and carefully opening the **VAG 1318** shut-off valve.

WARNING

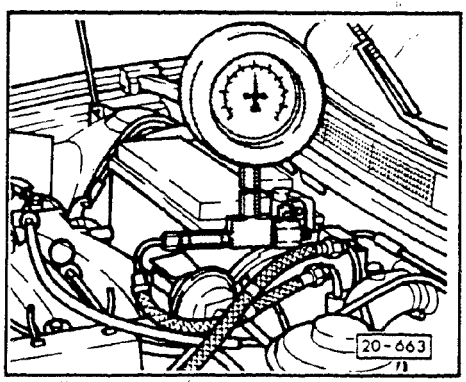
Danger of fuel spray when opening shut-off valve. Hold a cloth in front of the opening on the **VAG 1318** tester.

WARNING

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

If gauge does **NOT** reach 5 bar after approximately 10 seconds of remote control operation

- examine fuel lines for leakage, replace or repair as necessary, repeat check



After 10 minutes

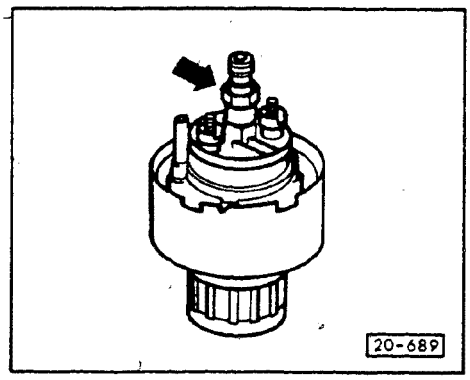
- observe pressure reading on **VAG 1318**
  - must **NOT** be less than 3.4 bar (49 psi)

If **YES**

- check fuel line connections for leakage, replace or repair as necessary

If **NO** leakage

- replace fuel pump check valve



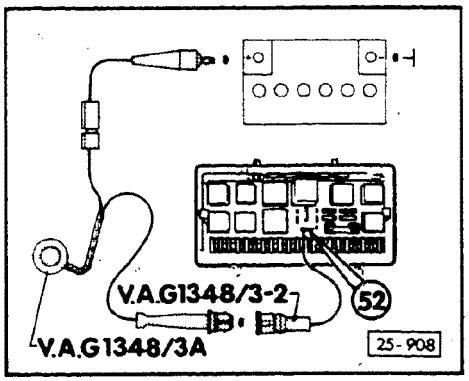
Fuel pump check valve, replacing

- remove check valve from fuel pump housing
- replace check valve and install new seal
  - tighten to 20 Nm (15 ft lb)

CAUTION

Do **NOT** clamp fuel pump in a vise.

Fuel tank, removing/installing



Emptying fuel tank

- disconnect fuel supply line in engine compartment
- extend length of supply line by attaching a section of extension hose
- insert extension hose into a suitable container to temporarily store fuel

WARNING

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

- remove fuel pump relay from location **10** of fuse/relay panel
- connect remote control **VAG 1348/3A** to terminal **52** (of relay location **10**) and to battery positive using adaptor lead **VAG 1348/3-2**

- operate remote control until fuel tank is empty

CAUTION

Do **NOT** overfill collecting container.

Removing

- disconnect battery ground strap
- empty fuel tank
- loosen rubber boot and overflow line from body

- remove trunk panel
- remove harness connector from sending unit
- remove vent line from fuel line

- remove supply and return lines
- loosen dust seal and vent line from body
- loosen fuel tank from body and lift out

- install sound deadening strips on new tank in same position as old tank

Note

Attach sound proofing strips and fuel line attachments on new fuel tank in same position as original tank.

Installing

- installation is reverse sequence of removal procedures

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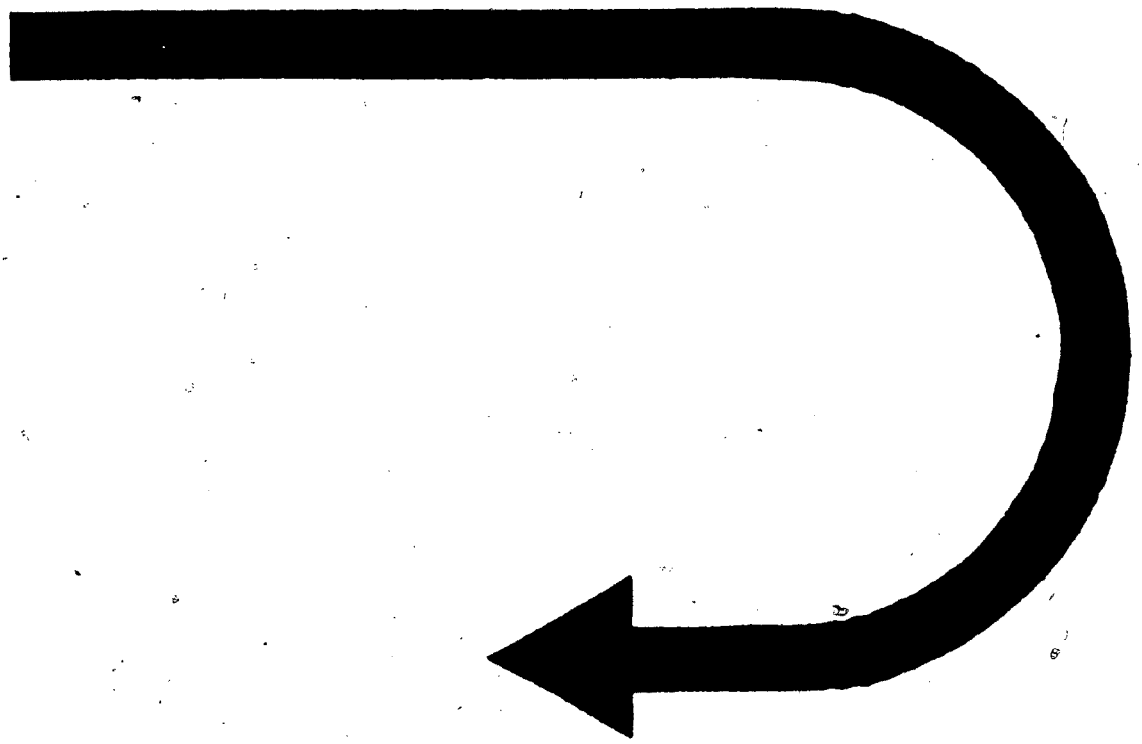
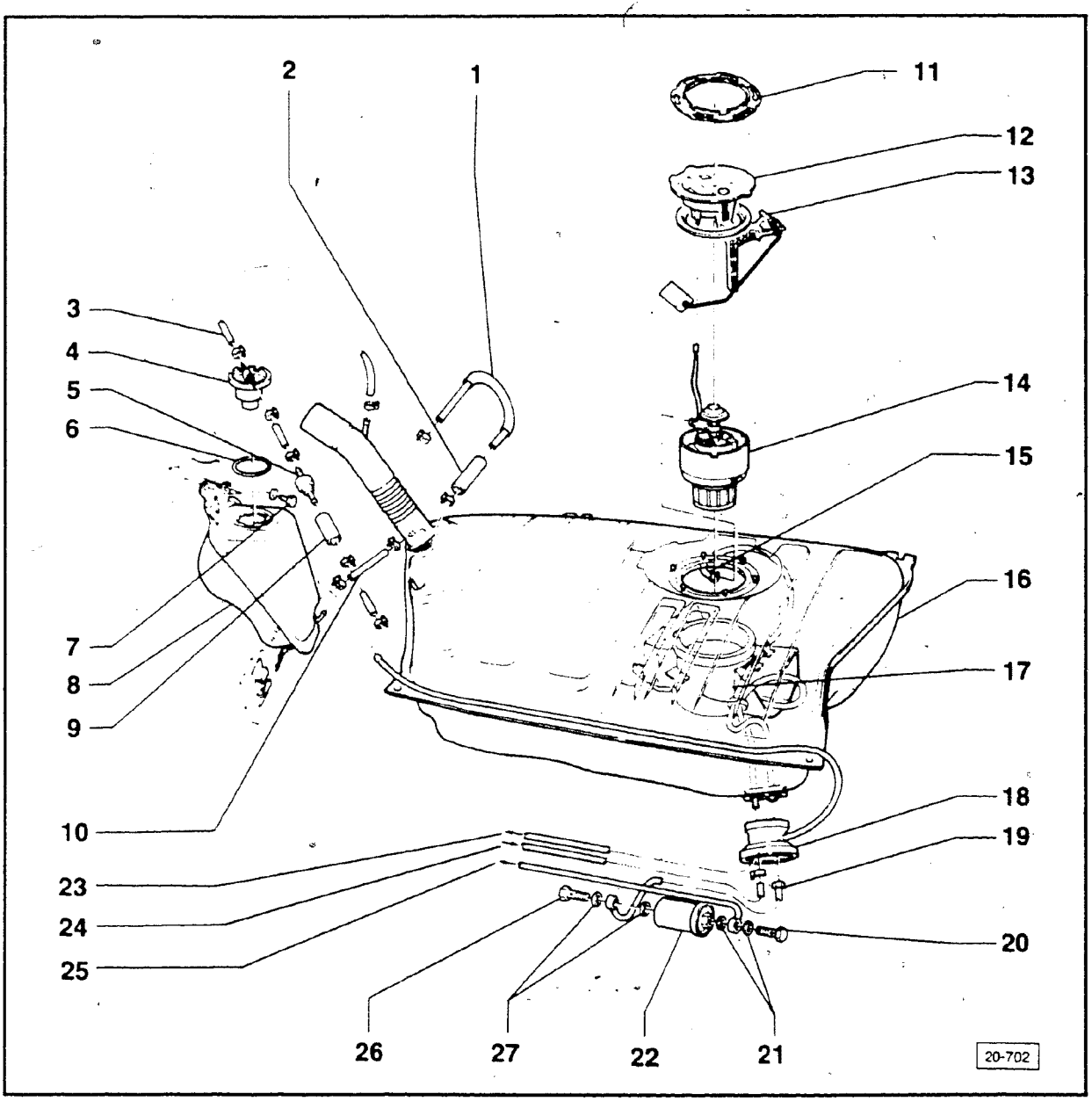
BEGINNING OF NEXT ROW





1 — **Vent line**

2 — **Foam tube**

3 — **Vent line**

4 — **Float valve**

5 — **Pressure regulating valve**

6 — **O-ring**
Replace
Coat with oil before installing

7 — **5 Nm (44 in lb)**

8 — **Expansion tank**

9 — **Foam tube**

10 — **Vent line**

11 — **Lock ring**

12 — **Fuel gauge sending unit**
Removing/installing see page 20.32

13 — **Gasket**
Replace

14 — **Fuel pump**
Removing/installing page 20.30
Checking page 20.28
Delivery rate, checking page 20.35
Disassembling/assembling page 20.27

15 — **Fuel supply line connection**
20 Nm (15 ft lb)

16 — **Fuel tank**
Removing/installing page 20.37

17 — **Baffle**

18 — **Grommet**

19 — **Fuel supply line connection**
20 Nm (15 ft lb)

20 — **Banjo bolt**
20 Nm (15 ft lb)

21 — **Seal**
Replace

22 — **Fuel filter**
Install with flow in direction of **arrow**

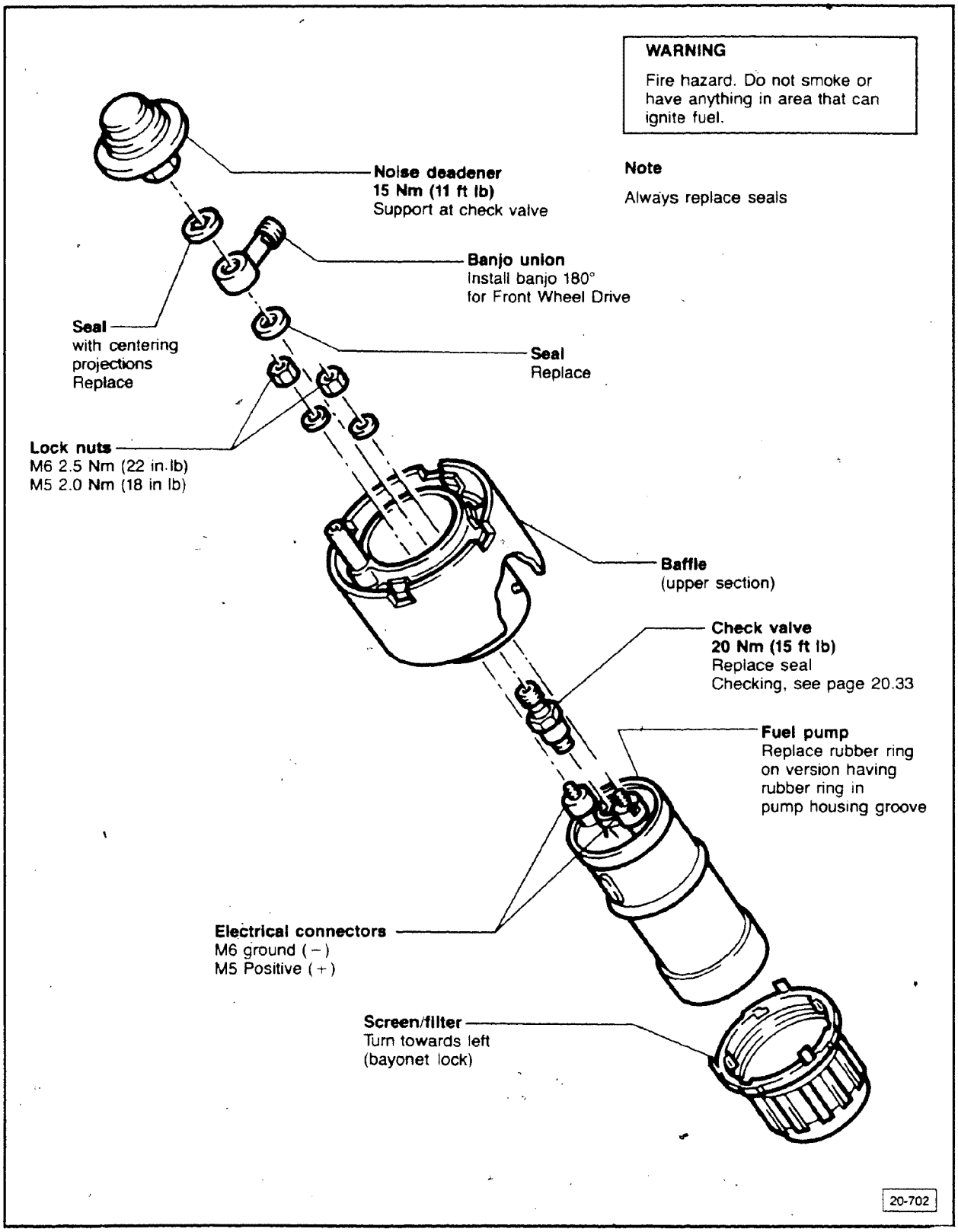
23 — **Vent line**
to charcoal canister on **7A** engine

24 — **Fuel return line**
from pressure regulator

25 — **Fuel supply line**
to fuel line at engine

26 — **Banjo bolt**
20 Nm (15 ft lb)

27 — **Seal**
Replace


WARNING
Fire hazard. Do not smoke or have anything in area that can ignite fuel.
Note
Always replace seals
Noise deadener
15 Nm (11 ft lb)
Support at check valve
Banjo union
Install banjo 180°
for Front Wheel Drive
Seal
with centering
projections
Replace
Seal
Replace
Lock nuts
M6 2.5 Nm (22 in lb)
M5 2.0 Nm (18 in lb)
Baffle
(upper section)
Check valve
20 Nm (15 ft lb)
Replace seal
Checking, see page 20.33
Fuel pump
Replace rubber ring
on version having
rubber ring in
pump housing groove
Electrical connectors
M6 ground (−)
M5 Positive (+)
Screen/filter
Turn towards left
(bayonet lock)
20-702

Fuel pump, checking

Voltage supply, checking

Requirement
- Fuse number **13 OK**

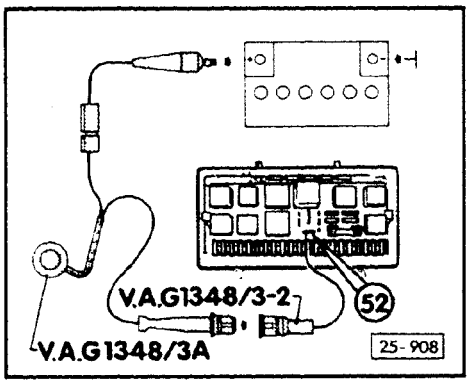
WARNING

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

- disconnect coil wire from ignition coil and connect to ground using jumper from **VAG 1594** adaptor set
- activate starter briefly
  - fuel pump must be audible (running) for a brief period

Note

If ambient noise levels are high in the vicinity of the vehicle being tested, it may require a second person to verify that the fuel pump is running.

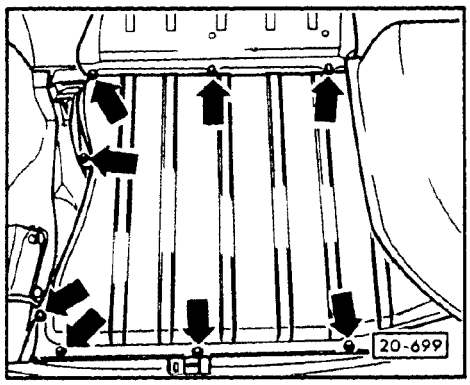


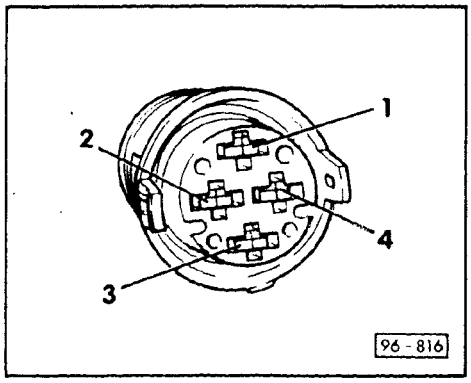
If fuel pump is **NOT** running
- remove fuel pump relay from fuse/relay panel location **10**
- connect remote control **VAG 1348/3A** to terminal **52** (of relay location **10**) and to battery positive using adaptor lead **VAG 1348/3-2**
- activate remote control

If fuel pump **RUNS**
- check fuel pump relay control, see page 20.31

If fuel pump does **NOT** run
- remove trunk floor panel
- remove fuel tank cover
- remove fuel gauge sender harness connector

more





▶

- connect LED tester **US 1115** to terminals **1** and **4** of harness connector using adaptor set **VAG 1594**
- operate remote control
  - LED tester must light up

WARNING

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

If **NO**
- check wiring for open circuit using wiring diagram

If **YES**
- remove fuel gauge sender unit
- empty fuel tank as much as necessary, see page 20.37
- switch multimeter **US 1119** to resistance range
- check continuity of wires between sensor housing and fuel pump

If continuity is **NOT** obtained
- check wiring for open circuit using wiring diagram, repair as necessary

If continuity **IS** obtained
- replace fuel pump

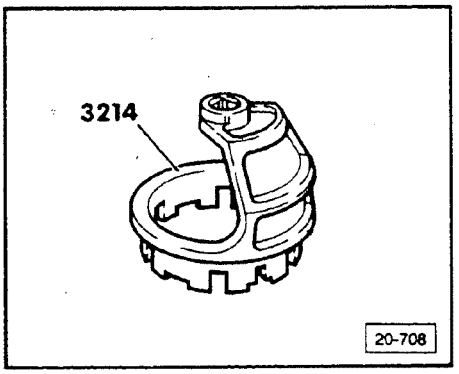
Fuel pump, removing/installing

Removing

- remove fuel gauge sending unit, page 20.32
- remove fuel supply line on fuel pump (support on banjo connection)

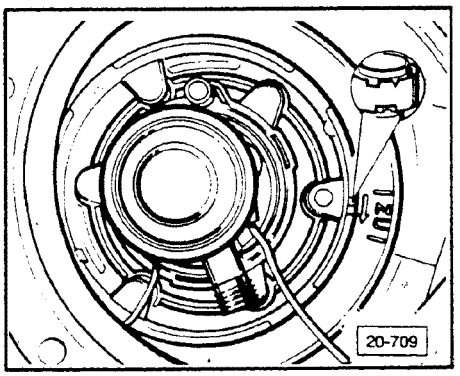
WARNING

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

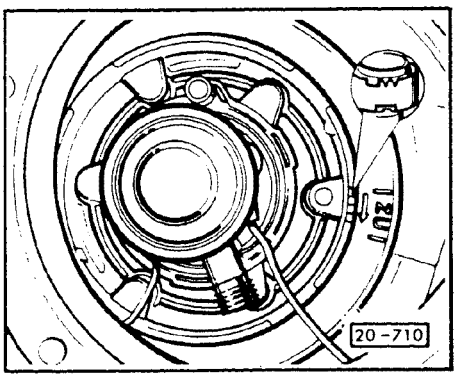


- turn outer circumference of pump housing approximately 15mm to the left using tool **VAG 3214**
- pull up pump to remove

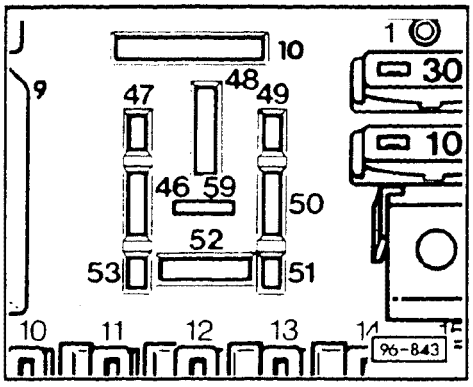
Fuel pump, installing



- vehicles with Front Wheel Drive install pump in baffle so that **single V** marking lines up with marking on baffle



- vehicles with All Wheel Drive install pump in baffle so that **double V** marking lines up with marking on baffle
- turn pump housing (outer circumference) approximately 15mm to right (lock) using **VAG 3214**



Fuel pump relay control, checking

- remove fuel pump relay from fuse relay panel, cavity **10**
- switch **ON** ignition

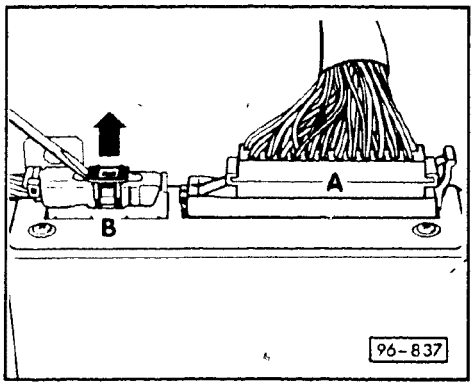
- switch **US 1119** multimeter to 20 volt range
- connect multimeter between terminal **46** and ground then terminal **48** and ground
  - each must be approximately 12 volts

If voltage value is **NOT** obtained
- eliminate open circuit in wiring using wiring diagram

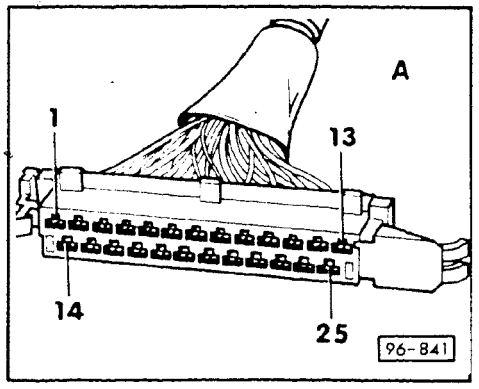
- switch **OFF** ignition
- connect **US 1115** LED tester between terminals **46** and **47**
- switch **ON** ignition
  - LED tester must light up for approximately 1 second

If **YES**
- replace fuel pump relay

If **NO**, check wiring as follows
- expose MPI control unit by removing foot well cover beneath glove box
- remove control unit harness connector **A**



- switch multimeter **US 1119** to resistance range



- check continuity between terminal **7** of control unit harness connector **A** and terminal **47** of relay cavity **10** on fuse relay panel
  - must be 0.0 to 0.8 ohms (continuity)

If continuity is **NOT** obtained from **BOTH** measurements
- eliminate open circuit in wiring using wiring diagram

If continuity **IS** obtained from **BOTH** measurements
- replace MPI control unit

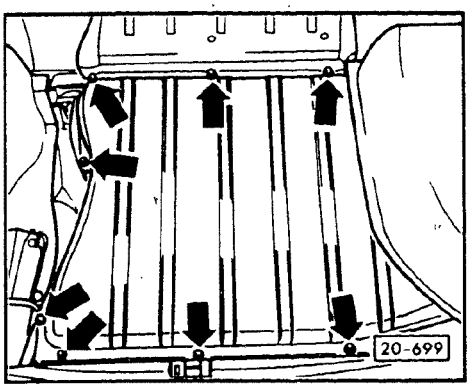
Fuel gauge sending unit, removing/ installing

Note

Fuel tank must be 3/4 full or less. Empty fuel tank as much as necessary, see page 20.37

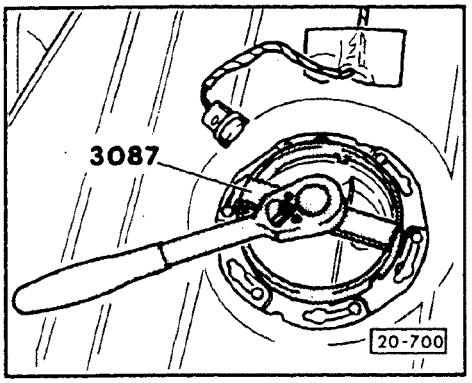
WARNING

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

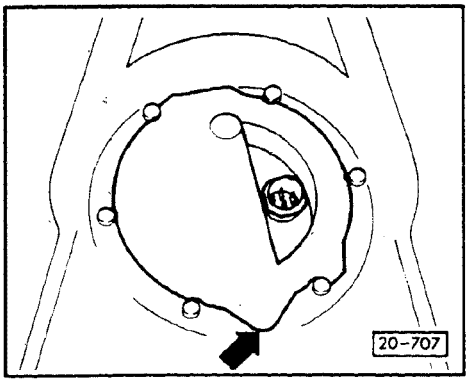


Removing

- remove trunk floor panel
- remove fuel tank cover
- disconnect battery ground strap



- remove harness connector from fuel gauge sending unit
- turn lock to left using tool **VAG 3087** and remove
- lift sending unit housing out of fuel tank and remove fuel pump harness connector
- remove fuel gauge sending unit



Installing

- install seal in opening
- connect fuel pump harness connector to fuel pump
- install fuel gauge sending unit with projection (**arrow**) pointing towards rear of tank
- carefully press down fuel gauge sending unit (against spring located in lower section of sender) until lock ring can be installed
- turn lock ring to right using tool **VAG 3087**

Fuel pump check valve, checking

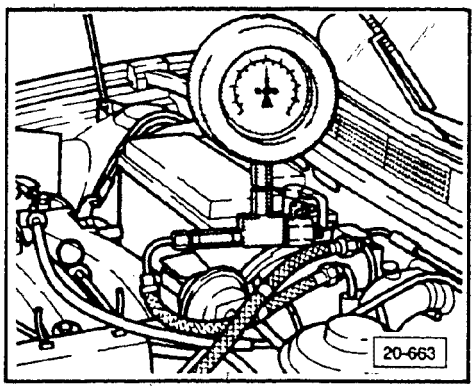
Requirement
- Fuel **13 OK**

Note

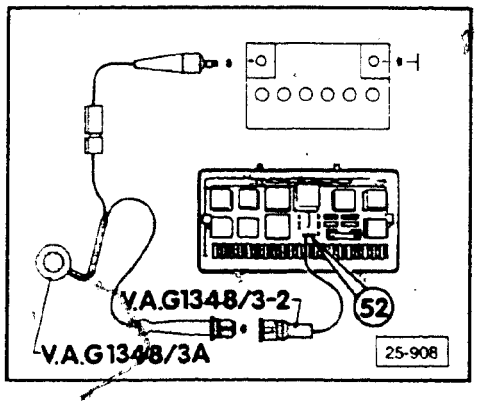
Performing this check will simultaneously check connections from the fuel pump to the test connection point on the **VAG 1318** tester.

WARNING

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



- connect **VAG 1318** tester to fuel supply line
- **OPEN** shut-off valve on **VAG 1318** tester (lever parallel to direction of flow)



- remove fuel pump relay from location **10** of fuse/relay panel
- connect remote control **VAG 1348/3A** to terminal **52** (of relay location **10**) and to battery positive using **VAG 1348/3-2** adaptor
- briefly actuate remote control until fuel begins to flow
- close shut-off valve on **VAG 1318** tester (lever perpendicular to direction of flow)
- activate remote control in intervals until pressure of approximately 5 bar (73 psi) is established
- note or record gauge pressure at this time

more

Note

If gauge pressure indication exceeds 5 bar, reduce the pressure by briefly and carefully opening the **VAG 1318** shut-off valve.

WARNING

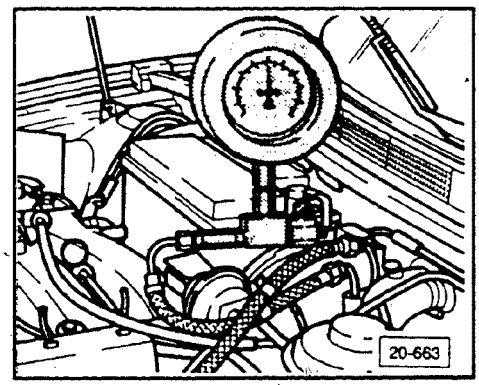
Danger of fuel spray when opening shut-off valve. Hold a cloth in front of the opening on the **VAG 1318** tester.

WARNING

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

If gauge does **NOT** reach 5 bar after approximately 10 seconds of remote control operation

- examine fuel lines for leakage, replace or repair as necessary, repeat check



After 10 minutes

- observe pressure reading on **VAG 1318**
  - must **NOT** be less than 3.4 bar (49 psi)

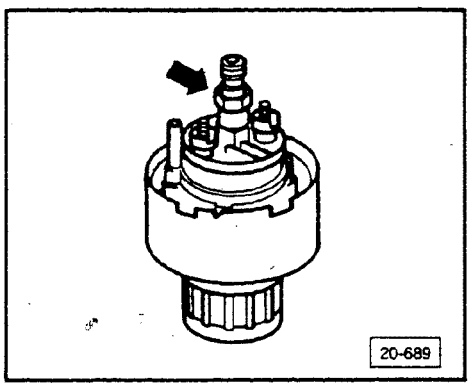
If **YES**

- check fuel line connections for leakage, replace or repair as necessary

If **NO** leakage

- replace fuel pump check valve

Fuel pump check valve, replacing



- remove check valve from fuel pump housing
- replace check valve and install new seal
  - tighten to 20 Nm (15 ft lb)

CAUTION

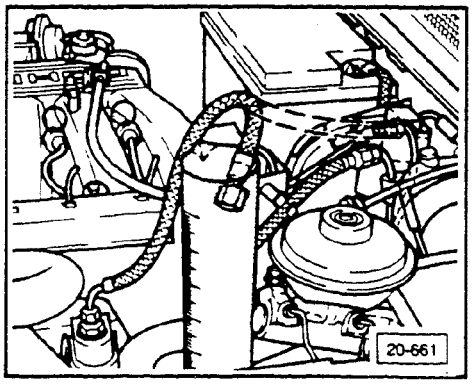
Do **NOT** clamp fuel pump in a vise.

Fuel pump delivery rate, checking

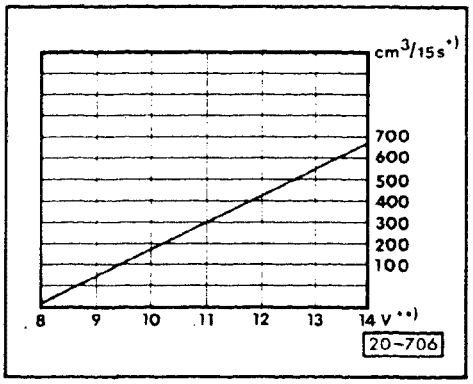
Requirements
- Free flow through fuel filter and associated fuel lines
- Voltage supply **OK**
- Remote control **US 1348/3A** connected, see page 20.28

WARNING

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



- remove fuel filler cap
- separate fuel return line at connector on plenum
- place fuel line into measuring container (attach an extension hose or tubing if necessary)
- activate remote control for 15 seconds



- using chart compare amount of fuel delivered

If **NOT** within range specified on chart
- check fuel filter for restriction, replace if necessary

If **NO** restriction
- trial replace fuel pump then recheck delivery rate

ÇAUTION

If trial replacements do **NOT** result in acceptable measurements, re-install the original component.

If still **NOT OK** (low delivery)
- problem is not with fuel pump but probably a result of a restriction in the fuel circuit
- look for
  - pinched lines or hoses
  - rust, scale or foreign material lodged in lines or connector orifices

Note

The chart is expressed in units of cubic centimeters (cc's). It is also acceptable to substitute milliliters (ml) for cc's.

This will allow you to use containers calibrated in cc's or ml's with equal results.

- 1 milliliter = 1 cubic centimeter

- clean or repair as necessary until flow matches chart

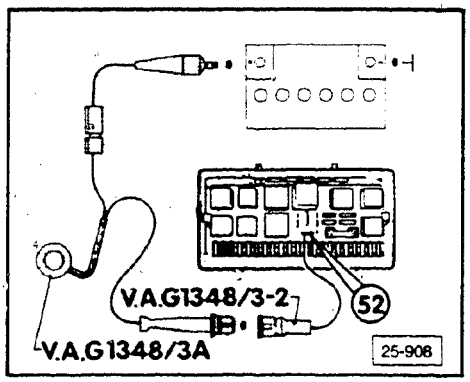
*) minimum delivery rate in cc's per 15 seconds

) voltage at fuel pump with engine **NOT running and pump turned **ON** (using remote control)

Note

Fuel pump voltage should be approximately 2 volts less than battery voltage.

Fuel tank, removing/installing



Emptying fuel tank

- disconnect fuel supply line in engine compartment
- extend length of supply line by attaching a section of extension hose
- insert extension hose into a suitable container to temporarily store fuel

WARNING

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

- remove fuel pump relay from location **10** of fuse/relay panel
- connect remote control **VAG 1348/3A** to terminal **52** (of relay location **10**) and to battery positive using adaptor lead **VAG 13483-2**
- operate remote control until fuel tank is empty

CAUTION

Do **NOT** overfill collecting container.

Removing

- disconnect battery ground strap
- loosen rubber grommet from floor panel
- remove wires from underside of fuel tank
- wipe up any residual fuel using rag
- remove filler cap
- loosen splash shield on filler neck from side panel
- remove trunk trim as necessary, see Group 70
- remove fuel tank cover
- vehicles with All Wheel Drive, remove expansion tank
- remove fuel tank mounting nuts (2 on front side of tank)
- remove fuel tank

Note

Attach sound proofing strips and line attachments on new fuel tank in same position as original tank.

Installing

- installation is reverse sequence of removal procedures