

G-charger

- [boost pressure](#)
- [component layout](#)
- [damage, repairing](#)

Safety precautions

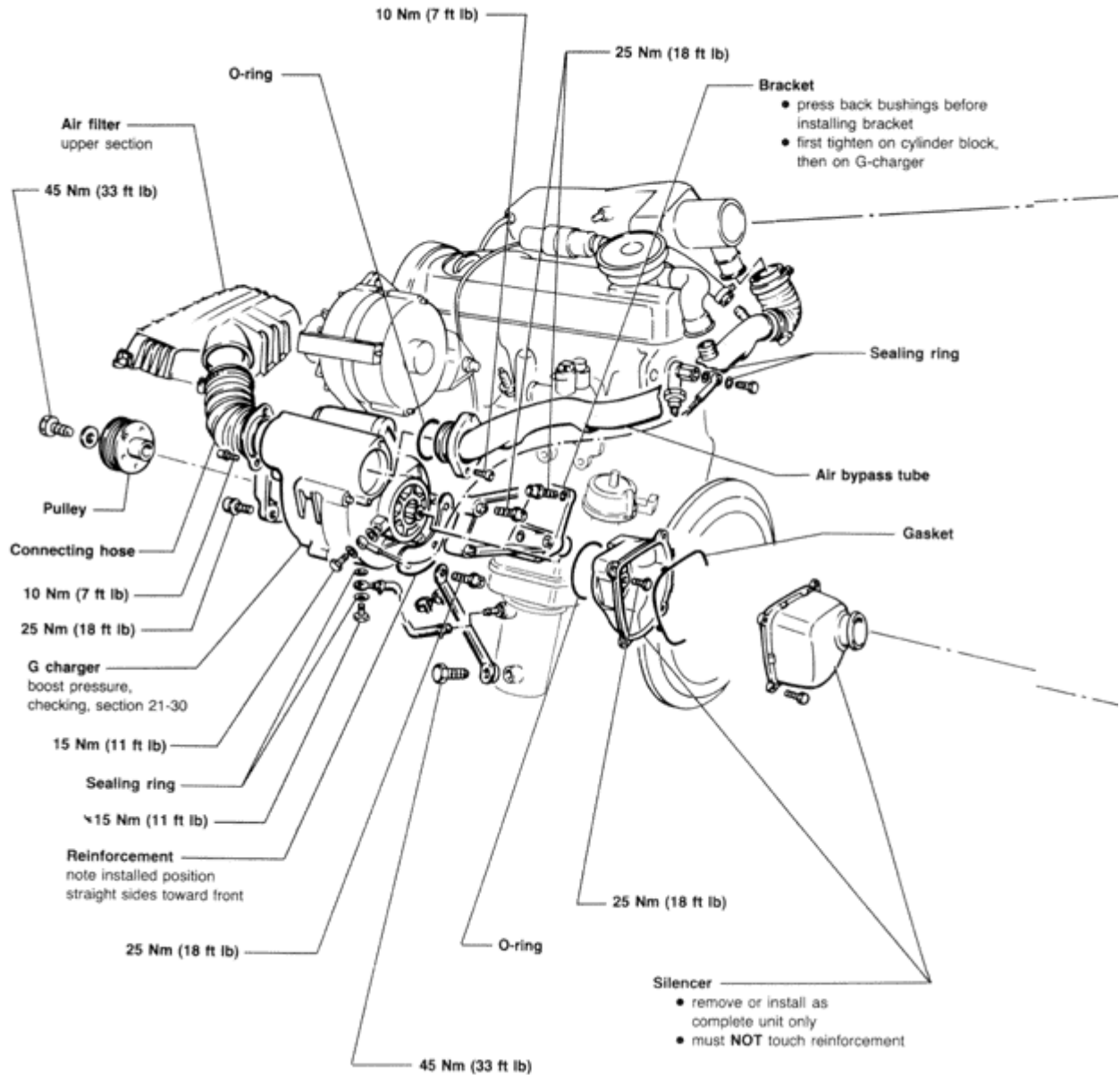
- [chart](#)

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Supercharger (Page 21-10-1)

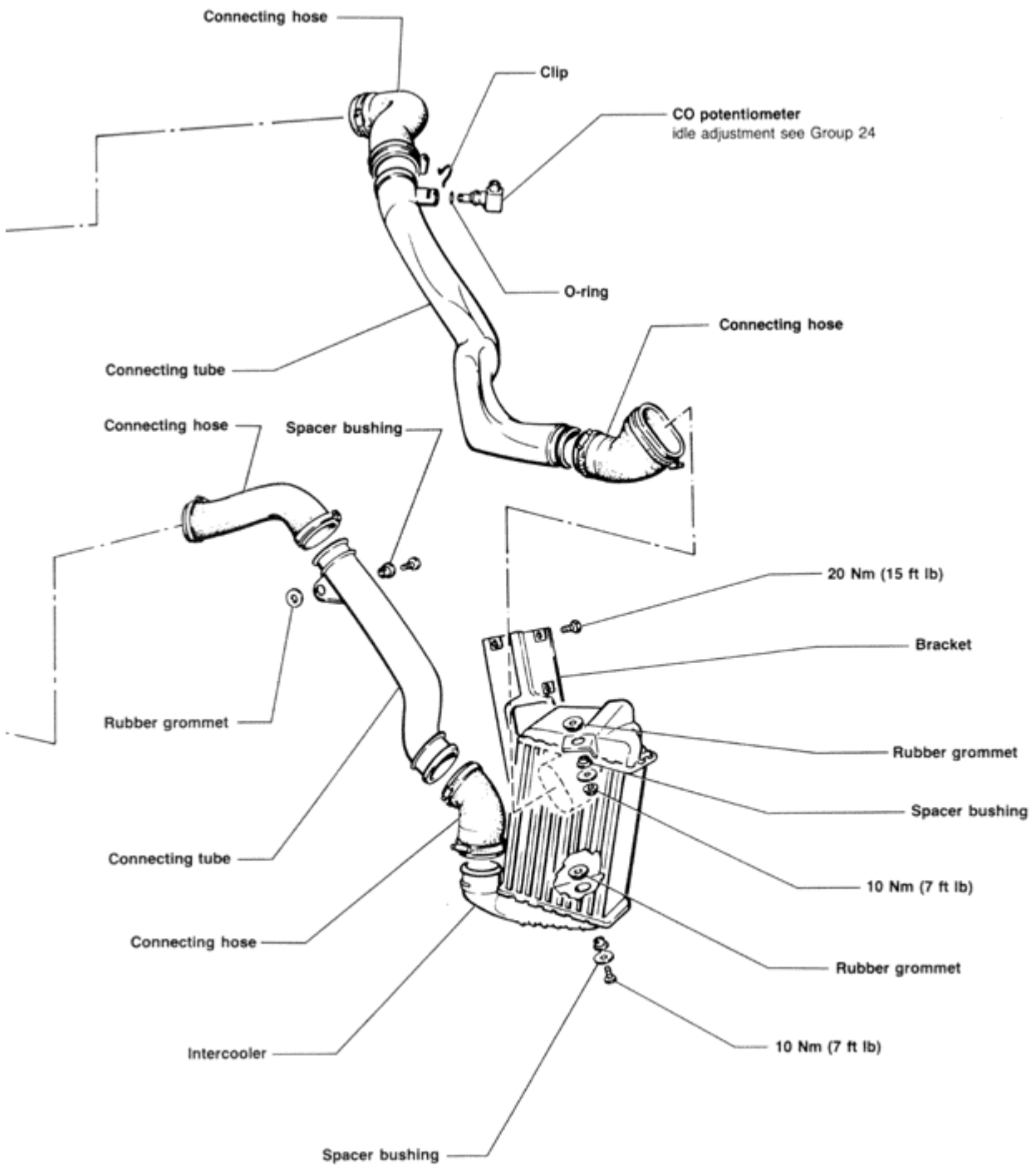
Before starting repairs, see Safety Precautions, [section 21-20](#).



Notes

- secure **ALL** hose connections with clamps
- replace **ALL** seals and sealing rings
- air system must be sealed

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Safety Precautions

Rules of Cleanliness

When working on fuel system, always follow precautions on cleanliness below:

- thoroughly clean all unions and area near connections **before** disconnecting
- place removed parts on a **clean** surface and cover over. Use paper or plastic sheet. Do **NOT** use fluffy cloths.
- components which have been opened or disassembled must be covered or sealed carefully if repair cannot be carried out immediately
- only install **clean** components
- only unpack replacement parts immediately before they are installed
- do **NOT** use parts that have been stored loose (for instance, in toolboxes)
- when fuel system is open, do **NOT** work with compressed air if this can be avoided or move car unless absolutely necessary

System Precautions

CAUTION!

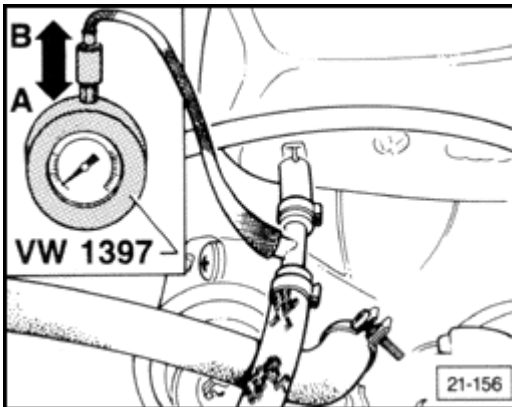
When working on vehicles with Digifant fuel/ ignition system, observe the following precautions to prevent personal injury and/or damage to the ignition system:

- *connect/disconnect ignition system wires (including high tension wires and test instrument wires) only when the ignition is switched OFF*
- *do NOT crank engine before high tension wire of ignition distributor (terminal 4) is connected to ground with jumper wire*
- *do NOT use battery booster longer than 1 minute or exceed 16.5 Volts with booster*
- *do NOT wash engine unless the ignition is switched OFF*
- *disconnect battery completely when arc or spot welding*
- *do NOT connect condenser to terminal 1*
- *do NOT substitute rotor of ignition distributor or radio noise suppressor with one of different type*
- *when installing suppressor, use only 1000 Ohms for high tension wires and 5000 Ohms for spark plug connectors*
- *do NOT allow terminal 1 of coil to contact ground. Possible destruction of the control unit could result*

Boost pressure, checking

Check these first

- idle setting **OK** (checking, see [repair Group 24](#))
- knock sensor **OK** (checking, see repair Group 28)
- engine oil temperature 80° C (176° F) minimum



- connect pressure gage **VW 1397** to pressure regulator using **T** adaptor
- open pressure gage check valve to position **A**
- start engine and run at idle
- remove harness connectors from CO potentiometer and temperature sensor (in front flange on cylinder head, color code blue)
- accelerate to full throttle
 - engine speed must increase periodically and then drop (surges)
- observe pressure gage
 - boost pressure must reach 0.6 bar (8.7 psi) at high engine speed

If **NO**

- check air system for leakage, check bypass setting, see [Repair Group 24](#) and/or replace G-charger

G-charger damage, repairing

CAUTION!

Strictly observe Rules of Cleanliness when working on or assembling components in the G-charger system.

If the G-charger is damaged by foreign material entering the inlet air system, perform the following steps **BEFORE** replacing the G-charger

- thoroughly clean air filter housing
- replace air filter element
- replace intercooler
- replace silencer
- clean G-charger connecting hoses, if cleaning not possible, replace
- replace seals and sealing rings
- replace air bypass tube
- check for filter screen in air bypass tube

If no filter screen

- repair is complete

If filter screen installed

- check air bypass tube for foreign material

If present

- thoroughly clean intake manifold (inside)
- remove cylinder head, see [Repair Group 15](#) for additional information on this topic
- carefully inspect cylinder head for obvious damage and stress induced damage resulting from foreign material, repair or replace as necessary
- inspect piston and cylinder walls for foreign material damage, repair or replace as necessary

Boost pressure system, leak checking

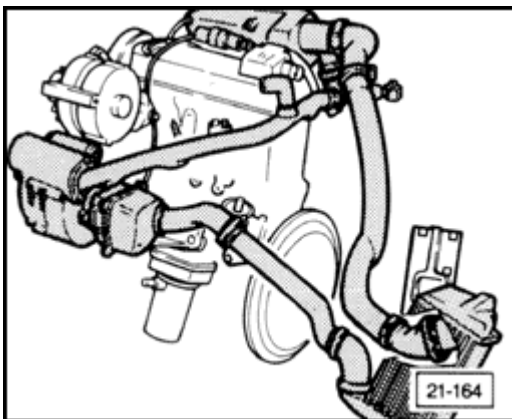
Notes

By using leak tester tool **VAG 1687**, **Test A** will completely check the inlet air system for leakage. The following tests are performed with the engine **not** running.

Test A

If there is still leakage after performing **Test A**

- perform **Test B**

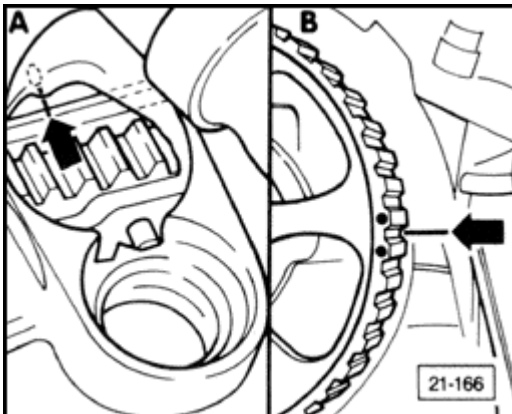


Test A leak-checks the following:

- G-charger including silencer
- connecting hoses between silencer and intercooler
- connecting hoses between intercooler (with CO potentiometer **G 74**) and by-pass
- by-pass tube between G-charger and by-pass
- connecting hose to carbon canister shut-off valve
- throttle
- intake manifold
- fuel injector sealing at seat

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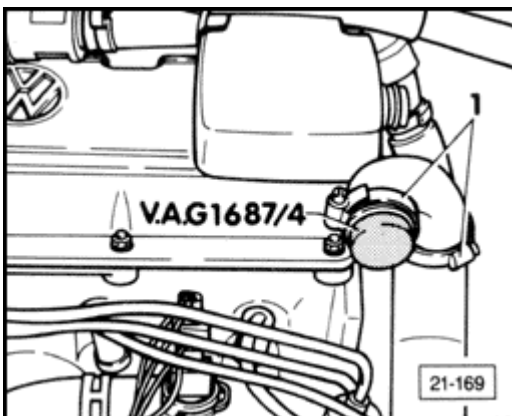


- remove camshaft drive belt cover from above engine

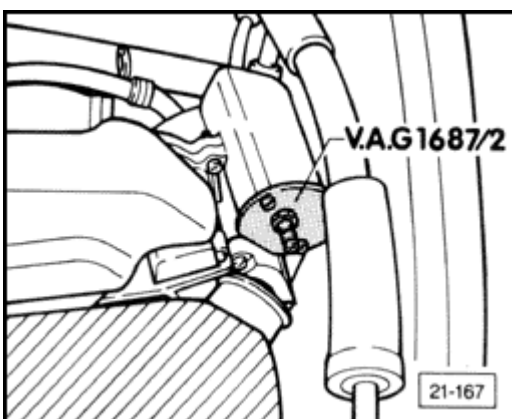
A: position crankshaft at TDC for cylinder 1 .

B: camshaft cover marking must be between dots on cam gear.

- note position of camshaft gear dots
- turn back camshaft gear approx. 3 teeth by turning crankshaft counterclockwise



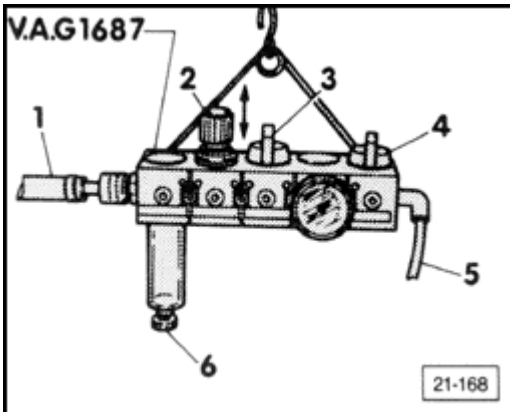
- remove crankcase ventilation hose from pressure regulator valve and seal off using adaptor **VAG 1687/4**
- tighten hose to adaptor using two hose clamps **1**



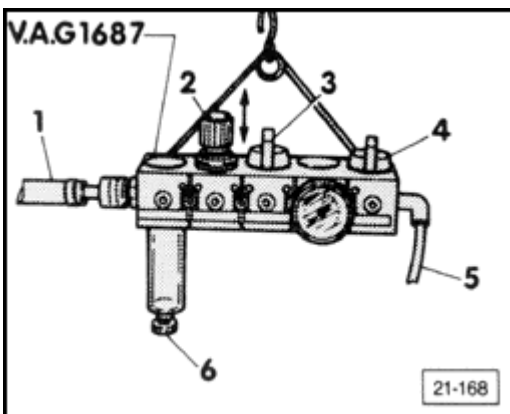
- remove intake air hose flange from G-charger
- install adaptor **VAG 1687/2**

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- close valves **2, 3, 4** on **VAG 1687** leak tester, drain viewing glass if necessary using drain screw **6**
- connect shop air **1** to **VAG 1687** leak tester
- connect pressure hose **5** to tester using adaptor **VAG 1687/2**
- open valve **3**
- adjust pressure on valve **2** to 0.9 bar
 - cap pushed upwards



- open valve **4** until the boost pressure circuit (air path) is pressurized
 - regulate using valve **2** until 0.9 bar pressure is obtained
- close valve **3** and observe pressure drop
 - pressure build-up must not exceed 0.9 bar
- observe pressure after 30 seconds
 - pressure must not be less than 0.3 bar

If **YES**

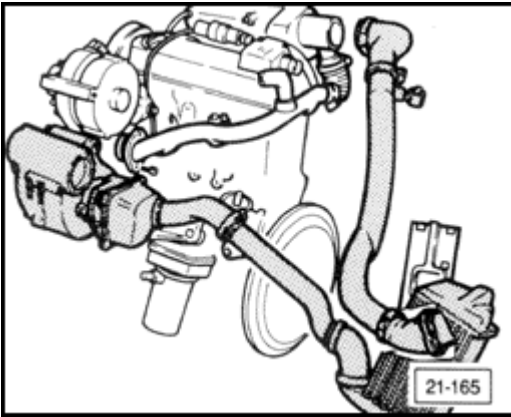
- determine source of leak by listening, feeling or by applying a commercial leak detector spray

Notes

A slight air leak near the top toothed gear of the G-charger does not affect boost pressure. This area is not connected to the boost system when the engine is running.

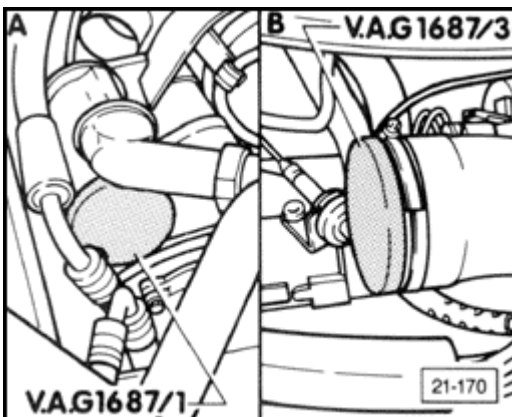
- release the applied pressure before removing the adaptor by removing the coupling from adaptor **VAG 1687/2**

Test B

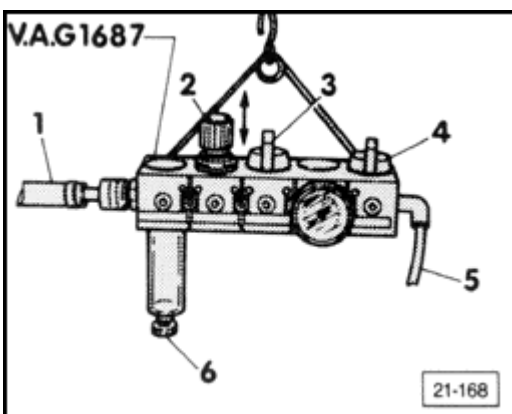


Test B leak-checks the following:

- G-charger with silencer
- connecting hoses between silencer and intercooler
- connecting hoses between intercooler (with CO potentiometer G 74) and throttle body



- **A** : disconnect by-pass tube at G-charger and install adaptor VAG 1687/1
- **B** : disconnect intercooler hose from throttle body
- plug off hose opening using adaptor **VAG 1687/3**
- tighten hose to adaptor using hose clamp

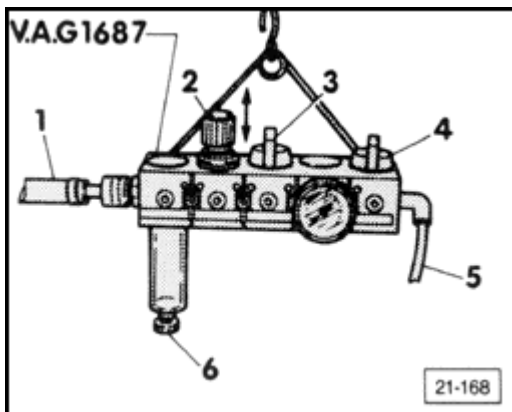


- close valves **2, 3** , and **4** on leak tester **VAG 1687**

- connect air pressure hose **5** to adaptor **VAG 1687/2**
- open valve **3**
- adjust pressure on valve **2** to 0.9 bar
 - with cap pushed upwards

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- open valve **4** until the boost pressure circuit (air path) is pressurized
 - regulate using valve **2** until 0.9 bar pressure is obtained
- close valve **3** and observe pressure drop
 - pressure build-up must not exceed 0.9 bar
- observe pressure after 40 seconds
 - pressure must not be less than 0.3 bar

If **YES**

- determine source of leak by listening, feeling or by applying a commercial leak detector spray
- release the applied pressure before removing the adaptor by removing the coupling from adaptor **VAG 1687/2**
- perform **Test A** to check for leakage