

A. Without tester

**Note for vehicles with diaphragm vacuum pump**

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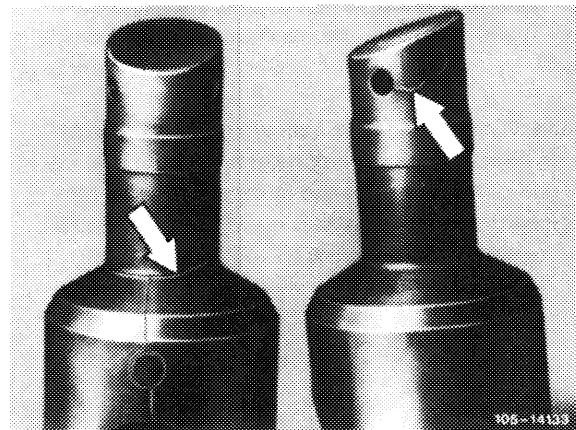
If engine oil shows up in vacuum lines or in brake unit, the diaphragm of the vacuum box or the diaphragm in vacuum pump may be defective.

If engine oil shows up, replace vacuum box as well as the vacuum lines containing oil, if required. Repair vacuum pump and replace brake unit, if these units are showing oil on connection for vacuum line.

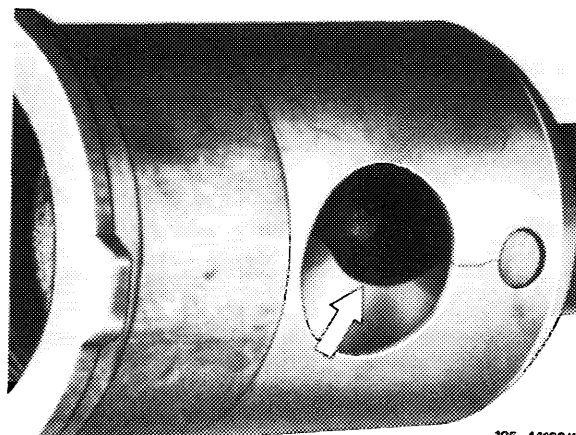
If a leaking diaphragm in vacuum pump or a leaking vacuum box on injection pump are responsible for oil entering combustion chambers via intake pipe, the resulting increased combustion temperature may lead to prechamber damage.

If the vacuum lines are showing an intensive black color along their entire length, the reason may be engine oil in combustion chamber. In such a case it will be of advantage to check all prechambers.

Replace prechambers with cracks in bottom (arrows) or burnt (scale-covered) ball pin surface (arrow), if not, damage to engine caused by chips or peelings from prechamber components may be expected.



**Note:** The piston-type vacuum pump is installed on standard version since June 1980 and on national version since model year 1981.



## Checkup

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- 1 Run engine.
- 2 Pull vacuum line (brown) from T-fitting (7) and check for presence of vacuum.

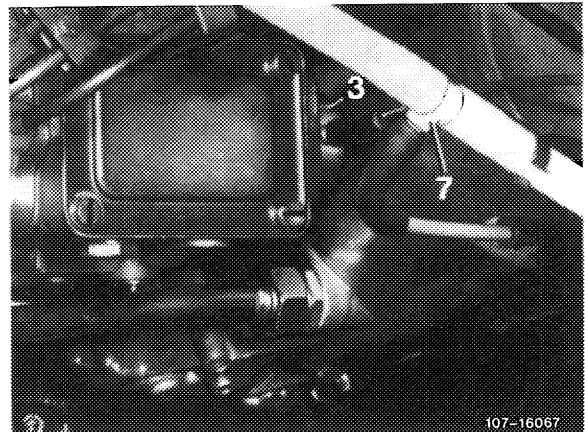
a) If there is no vacuum, unscrew vacuum line with T-fitting on vacuum pump and on brake unit.

Check throttle in T-fitting for unobstructed passage and blow out with compressed air, if required.

**Note:** On vehicles with diaphragm vacuum pump. If throttle is oiled up, the diaphragm in vacuum pump may be defective. This may be the case, if engine oil is seen on connection of vacuum line (pump end). Reconditioning of vacuum pump is described in repair instructions "Brakes model 115 and 123".

b) If vacuum is available at T-fitting, connect vacuum box (3) and T-fitting (7) to each other by means of a hose.

The vacuum coming from vacuum pump (8) is now acting directly against diaphragm in vacuum box (3) and will pull the control rod in injection pump into stop position. If the engine is not stopping immediately, replace vacuum box (07.1–220).

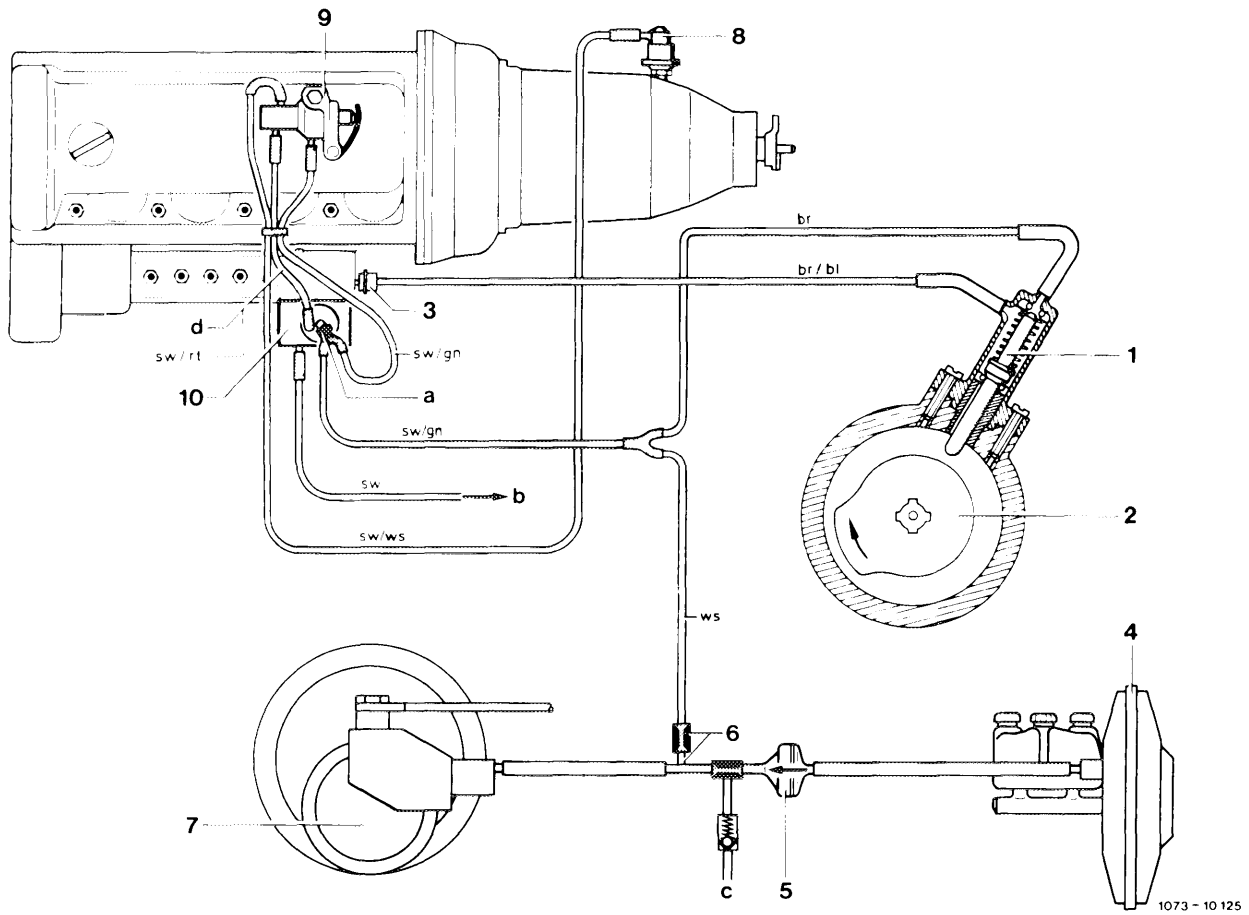


If the engine stops immediately, the vacuum box is in order. The complaint may then have been caused by a sticking valve (1) in steering lock. For replacing valve, refer to repair instructions "Steering model 115 and 123".

### Attention!

Do not mix up vacuum lines during assembly.

3 Run engine, check vacuum control unit and valve in steering lock for function and leaks.



- 1 Valve
- 2 Cam
- 3 Vacuum control unit injection pump
- 4 Brake unit
- 5 Check valve
- 6 T-piece with installed choke (orifice)
- 7 Vacuum pump
- 8 Vacuum control unit for transmission

- 9 Switchover valve
- 10 Vacuum control valve
- a Suction line
- b Vent line
- c Central lock
- d Control line

- br = brown
- br/bl = brown/blue
- sw/rt = black/red
- sw/gn = black/green
- sw = black
- sw/ws = black/white

## B. With tester

### Data

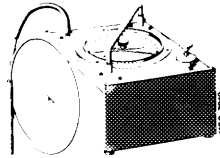
Permissible leakiness of system	6 mbar/min at 400 mbar vacuum
Permissible leakiness of individual components	5 mbar/min at 300 mbar vacuum
Plug-on length of connections	12 ± 2 mm

### Color code of vacuum lines for diesel key starting

Vacuum line	Color code
Suction line from distributor to valve for key starting (100)	brown
Control line from valve for key starting to shutoff box of injection pump (101)	brown/blue

### Special tool

Tester for vacuum

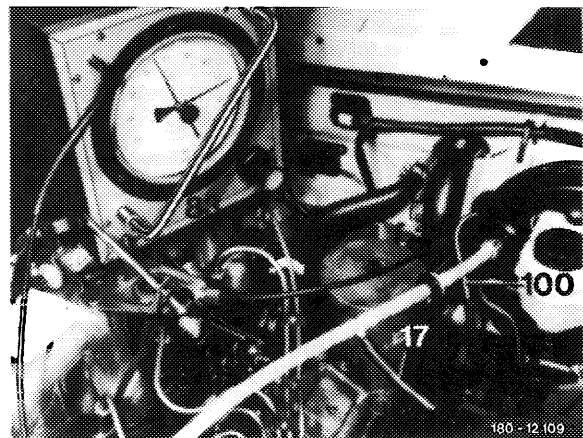


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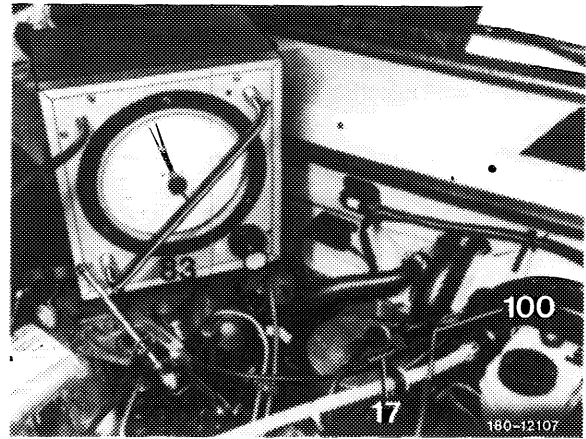
### Checkup

- 1 Set ignition key on steering lock to position "2".
- 2 Pull suction line (100) out of connection (17).

Layout without central interlock and air conditioner/automatic climate control



3 Connect tester (83) and evacuate.



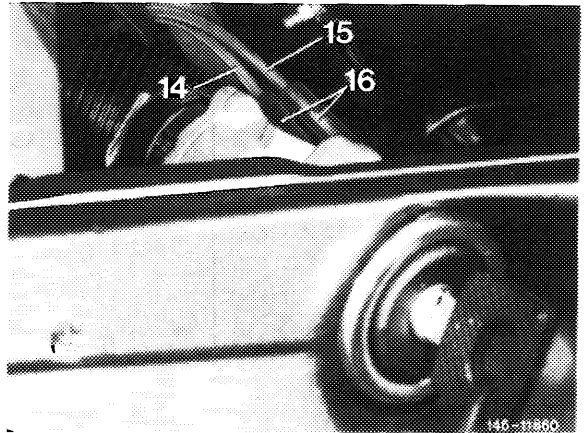
Layout with central interlock or air conditioner

4 If the pressure gauge shows a vacuum decrease the valve for key starting on steering lock is leaking.

5 Replace valve for key starting system on steering lock (46-640).

**Attention!**

Prior to replacing valve for key starting and vacuum box of injection pump, check hose lines and their connections.



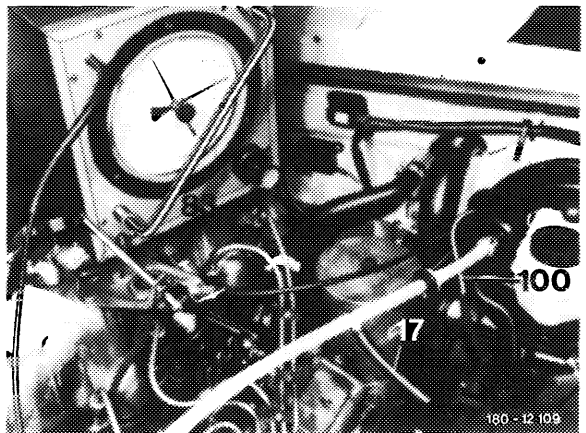
6 If readout on pressure gauge is not changing, the valve for key starting system is not leaking.

7 Turn ignition key on steering lock back to position "1" or "0".

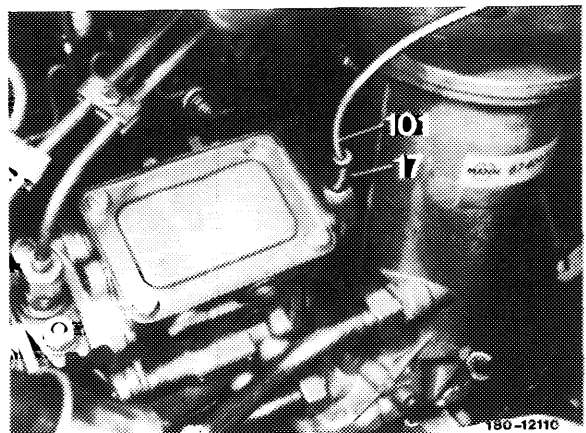
8 Evacuate system with tester (83).

9 If pressure gauge shows a vacuum decrease, the vacuum box or the valve may be leaking.

10 In such a case, disconnect tester (83) on suction line (100).



11 Pull control line (101) with connection (17) from vacuum box of injection pump.



12 Connect tester (83) to vacuum box (arrow) and evacuate.

13 If pressure gauge shows a vacuum decrease, the vacuum box of injection pump is leaking.

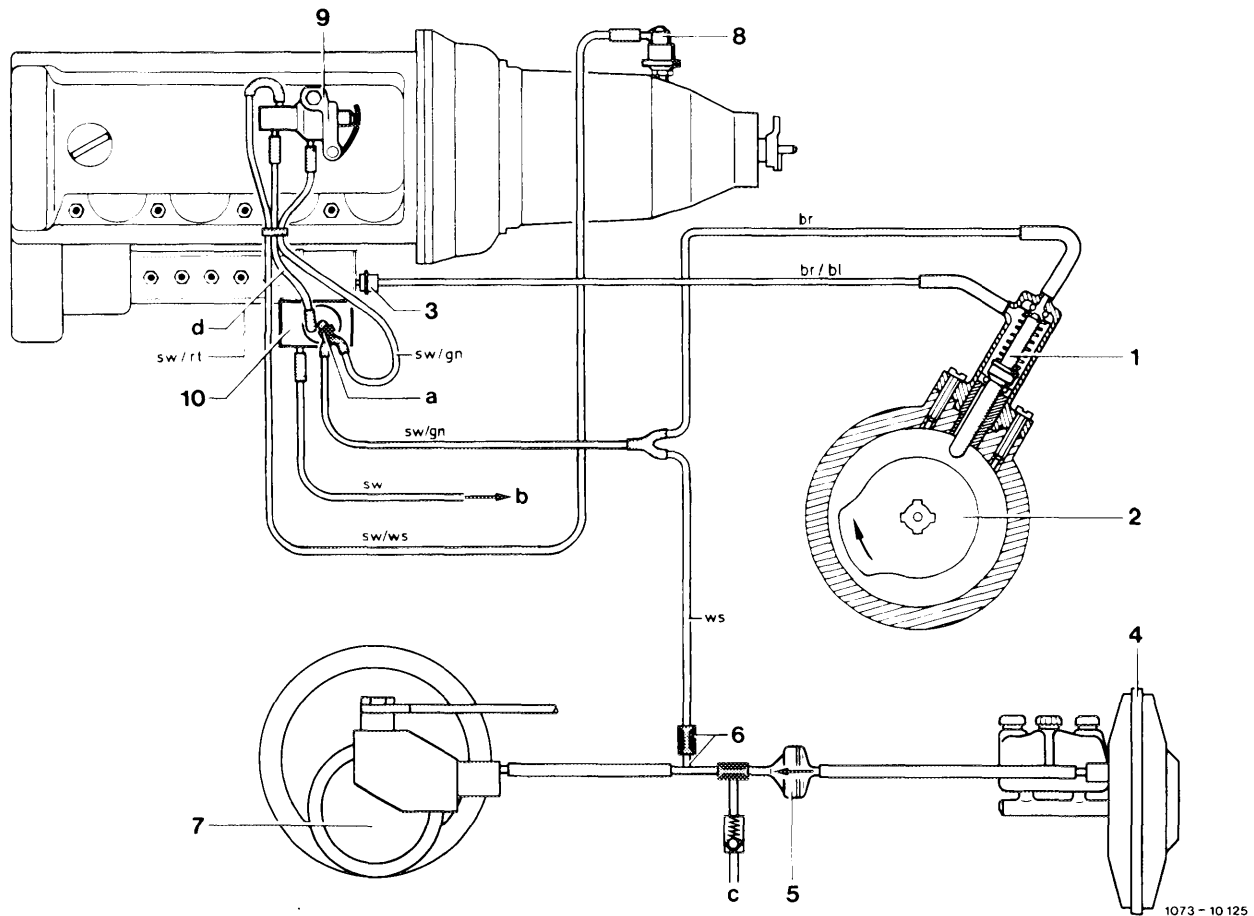
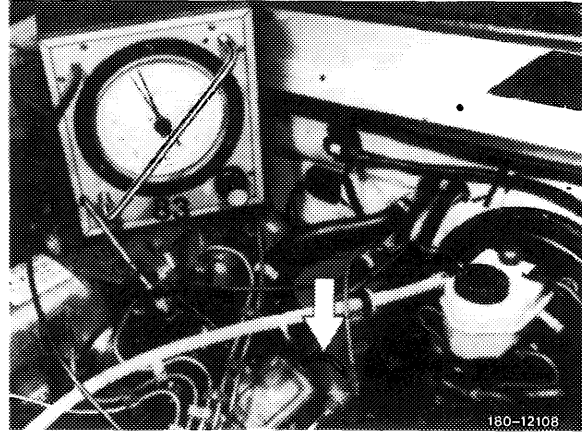
14 Replace vacuum box of injection pump (07.1-220).

15 If readout on pressure gauge is not changing, the vacuum box of the injection pump is leaktight and the leak is at valve for key starting system. Replace valve vor key starting system (46-640).

16 If the vacuum box and the valve on vehicles with central interlock or air conditioner are leaktight, the leak is in vacuum system, in central interlock, light range regulation or air conditioner.

18 In such a case, check central interlock (80-260).

19 Check vacuum elements, vacuum rotary switches and pull switches of air conditioner for leaks (83-545).



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- 2 Cam
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- 4 Brake unit
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