

# **CONTENTS**

## **EXHAUST TURBO-CHARGER Assy group 042**

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## 1 Exhaust turbo-charger

### 1.1 Removing and fitting exhaust turbo-charger components

**ATTENTION:** When removing and fitting the exhaust turbo-charger, care must be taken to ensure that highest standards of cleanliness are maintained. See rules regarding cleanliness. Always fit new gasket. The exhaust turbo-charger and the boost pressure valve form one unit. If the exhaust turbo-charger is defective, the whole unit must be replaced as it is not possible to effect a repair using workshop facilities.

### 1.2 Rules regarding cleanliness when working on exhaust turbo-charger

**ATTENTION:** When working on the exhaust turbo-charger the following 5 rules on cleanliness must be closely observed.

1. Clean joints and the surrounding areas carefully before removing.
2. Lay removed components on a clean base and cover them. Use film or paper. Do not use fuzzy cloth!
3. Carefully cover or close opened components if the repair is not to be carried out immediately.
4. Only fit parts which are clean.
  - Spare parts must not be removed from their packaging until they are about to be used.
  - Do not use any parts which have been stored without packaging (in tool boxes, for example).
5. Once the unit has been opened:
  - where possible, avoid working with compressed air
  - do not move the vehicle, if possible.

## 2 Change exhaust turbo-charger

### Tools:

Testing device for V-belts: 001 589 69 21 00

Includes: Removing front passenger seat and right-side engine cover with maintenance cover, see group 171

Change alternator, see group 190

Tension V-belt, see group 010

### Removing:

- 1 Remove front passenger seat and right-side engine cover with maintenance cover, see group 171
- 2 Remove alternator, see group 190
- 3 Screw off both retaining screws (1/1 and 1/2), loosen hose clip (1/4). Pull off hose (1/5) and remove intake manifold (1/3).

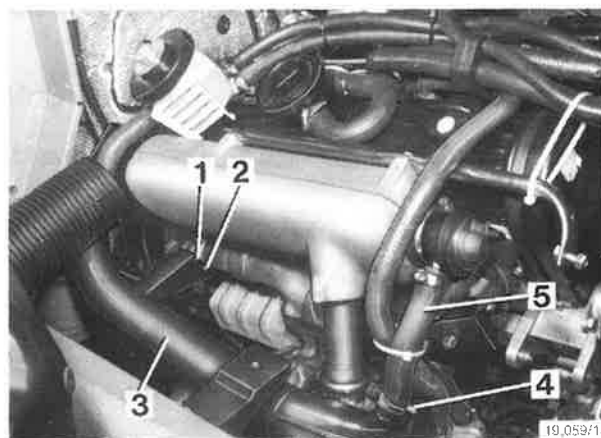


Fig. 1

- 4 Unscrew four retaining nuts (2).



Fig. 2

- 5 Unscrew nuts (3/1), remove screws (3/2) and detach seal ring (3/3) with exhaust tube (3/4). Remove gasket from exhaust turbo-charger.

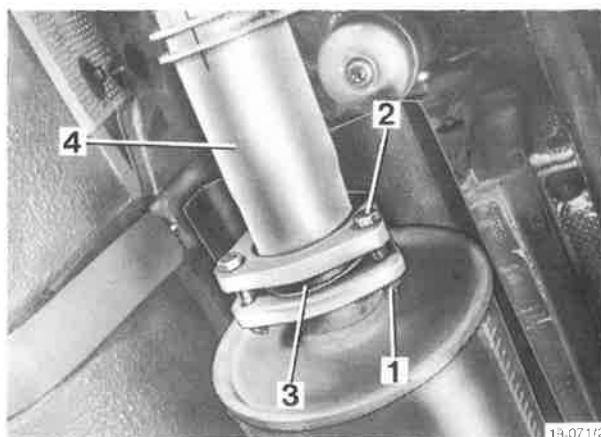


Fig. 3

- 6 Loosen screws (4/1) of return pipe (4/2).

**Note:** The return pipe must be closed to prevent dirt from getting in.

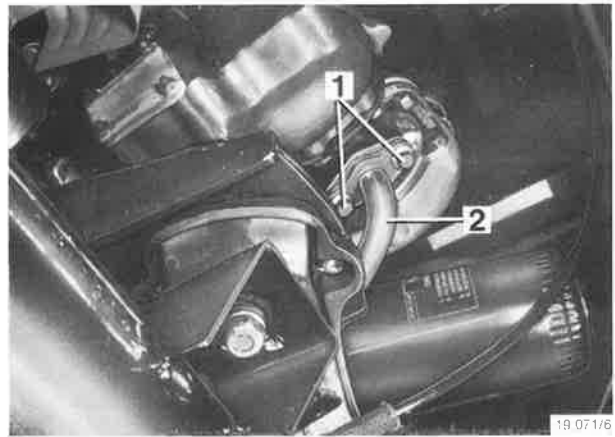


Fig. 4

- 7 Unscrew banjo bolt (5/1) from the pressure pipe (5/2). Remove banjo bolt (5/1) and seal rings (10/3).

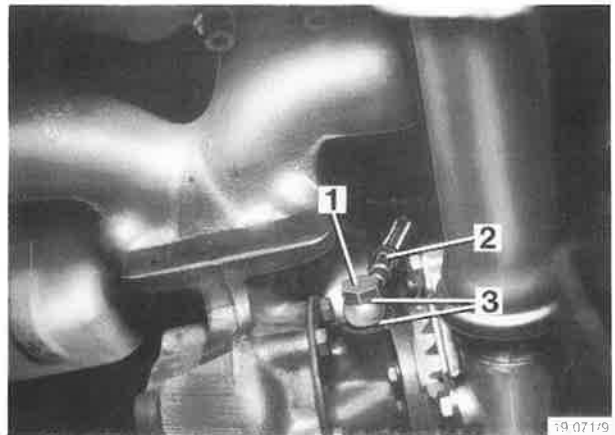


Fig. 5

- 8 Cut open cable binder (6).

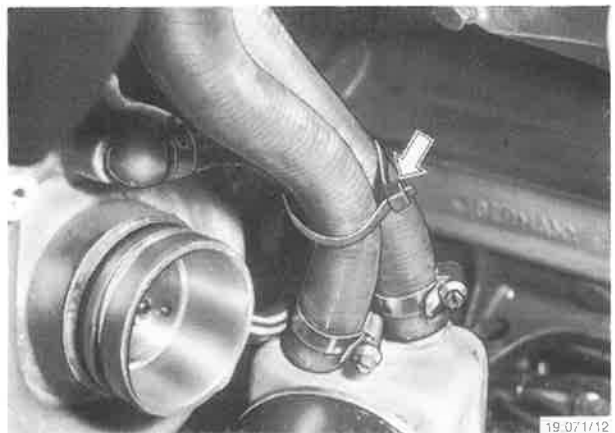


Fig. 6

- 9 Screw off the four retaining nuts of the turbo-charger (7), remove turbo-charger.

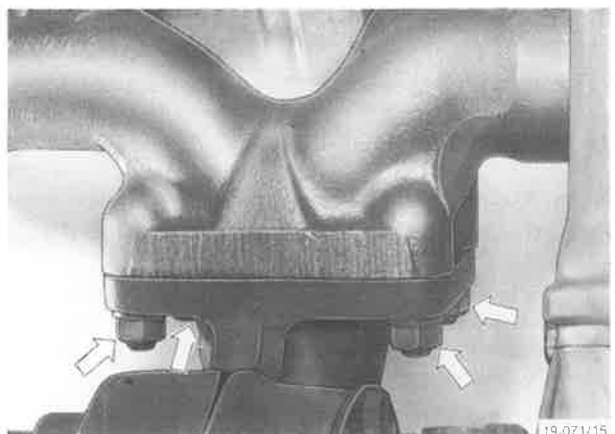


Fig. 7

- 10 Remove pressure pipe (8) with seal rings.

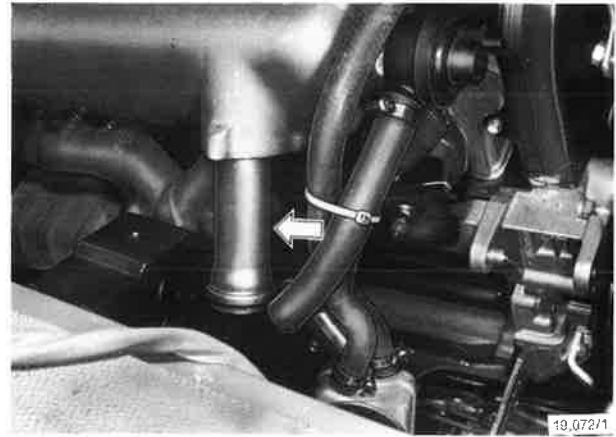


Fig. 8

Fitting:

- 11 Push O-ring (9/1) onto pressure pipe (9/2) and insert pressure pipe (9/2) into the inlet pipe.

**Note:** O-rings should be replaced and smeared with rubber lubricant.

- 12 Fasten turbo-charger on exhaust manifold with 4 retaining nuts (7).

- 13 Fill connecting piece on the turbo-charger with engine oil before screwing on the pressure pipe.

- 14 Fit banjo bolts (5/1), pressure pipe (5/2) and seal rings (5/3). Torque of the banjo bolts 25 Nm.

**Note:** Replace always seal rings.

- 15 Insert gasket (10) and tighten return pipe to 30 Nm.



Fig. 9



Fig. 10

- 16 Attach cable binder (11).
- 17 Further fitting is made in reverse sequence 5-3.
- 18 Fit alternator, see group 190

**Note:** Always replace gasket between turbo-charger and exhaust tube. Tension V-belt, see group 010

- 19 Start engine and run for one minute at idling speed. Do not rev up straight away so that the turbo-charger pressure lubrication has chance to work.

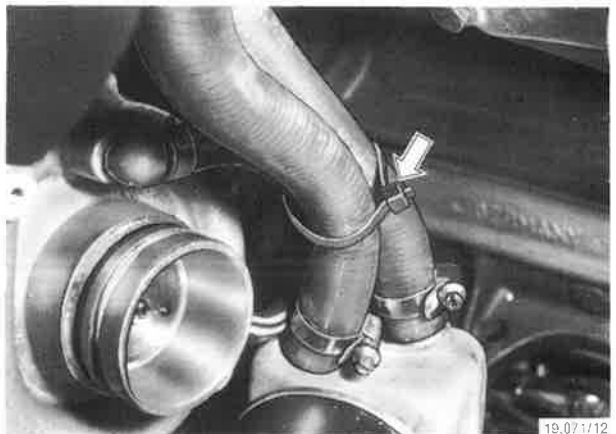


Fig. 11

### 3 Check boost pressure

Includes: Change pressure control valve, see group 041

Tools:

Boost pressure manometer 905.3.12.105.0

1 Remove cover (1).

2 Open catch (2/2) and remove engine cover (2/1).

3 Loosen hose clip (3/2) and pull off hose (3/1).

4 Push hose (4/1) onto the T-piece (4/2) of the boost pressure manometer. Push the boost pressure manometer hose (4/3) onto the connection (4/4) on the diaphragm housing of the injection pump. Care should be taken to ensure that the connections are leak-tight.

5 Run the engine to warm it up.

**Note:** Reaching the prescribed boost pressure implies perfect function of the turbo-charger and that:

- There are no leakages on the inlet or the exhaust side.
- The control line to the boost pressure control valve is not blocked, loose, leaking.
- There are no defects on the engine/injection system as to beginning of delivery, maximum speed, valve clearance, injection nozzles, compression pressure.

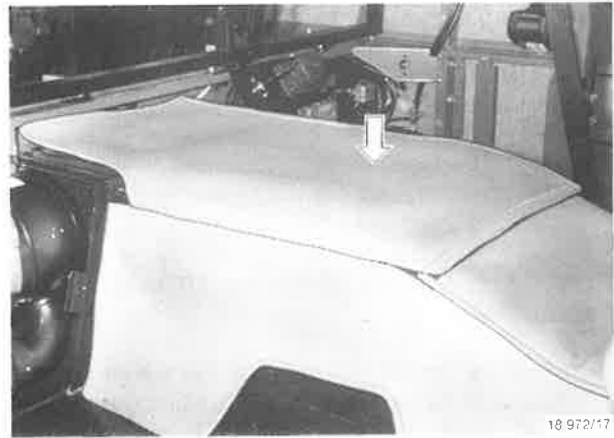


Fig. 1



Fig. 2

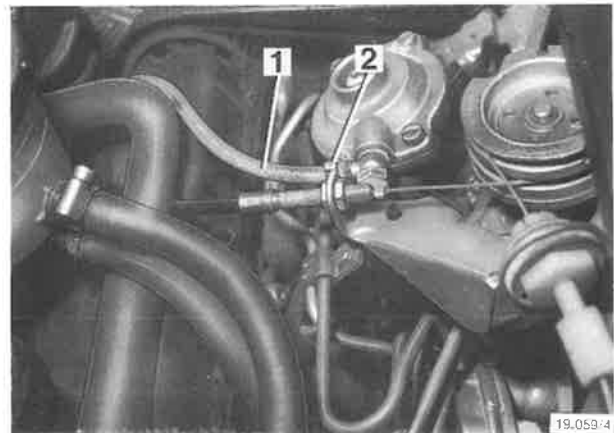


Fig. 3

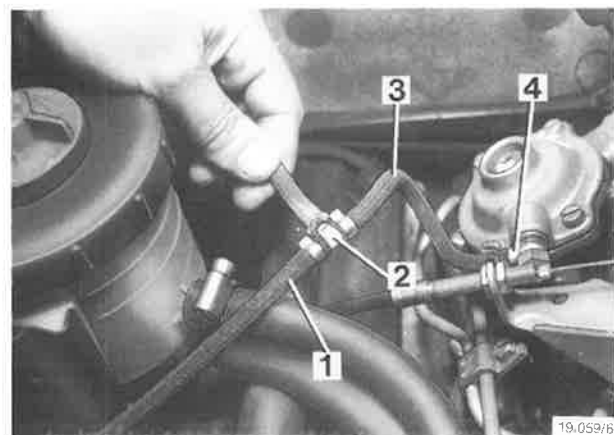


Fig. 4

- 6 Open the manometer check valve (turn it in the direction of arrow B) (5)
- 7 Switch selector lever to position "2" or gear lever into 2<sup>nd</sup> gear.
- 8 The boost pressure is measured under full load whilst in 2<sup>nd</sup> gear.

**Note:** Max. duration of testing 10 seconds per measurement.

- 9 Measure boost pressure at full throttle in 2<sup>nd</sup> gear and by simultaneously braking the vehicle to 40 km/h.

- 10 Read off boost pressure from the manometer. Target value: 0.64 - 0.72 bar pressure.

**Note:** To facilitate reading off boost pressure whilst driving, the value can be stored by tightening the check valve - arrow direction A - and then read off (5).

**WARNING:** To avoid incorrect measurement when checking boost pressure, the manometer check valve must be vertically upwards when reading off boost pressure (see Fig. 5).

### Boost pressure too high

If the boost pressure is too high and the control line to the boost pressure control valve is blocked, loose or leaking, replace control line.

If the boost pressure is too high, but the control line is o.k., then the boost pressure control valve is defective and therefore the turbo-charger must be replaced.

### Boost pressure too low

- 11 Remove front passenger seat and right-side engine cover with maintenance cover, see group 171
- 12 Loosen hose clip (6/1) pull off hose (6/2) and check (visual inspection).
- 13 Seal hose (6/2) with suitable blind plug (approx. 20 mm) and hose clip.

**Note:** Seal also opening (7) of inlet pipe.

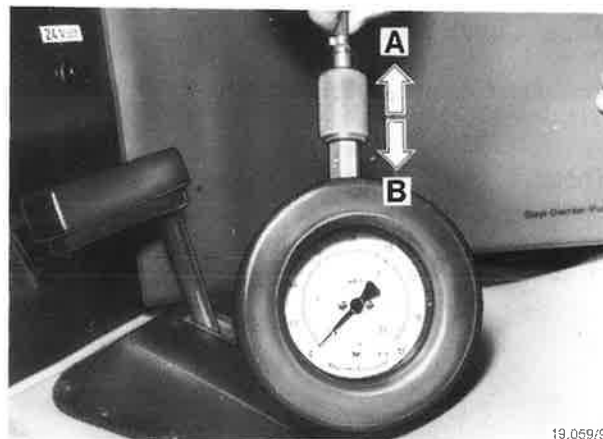


Fig. 5

19.059/9

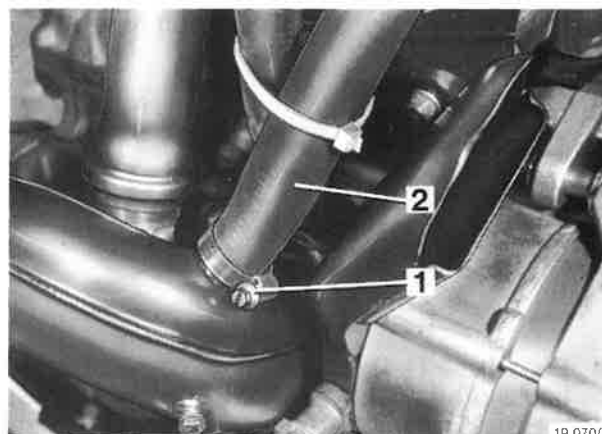


Fig. 6

19.070/9

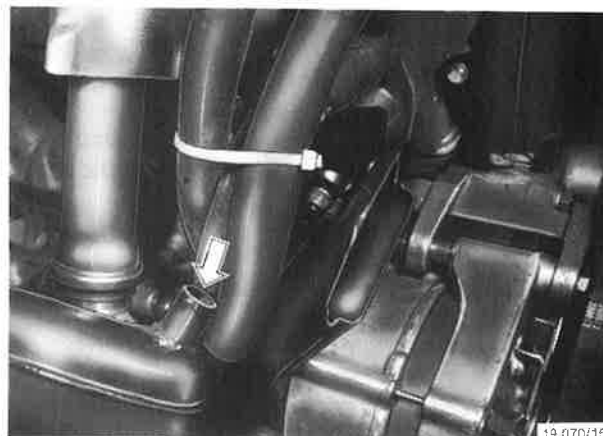


Fig. 7

19.070/15

14 Repeat boost pressure test, see items 5 - 10.

**Note:** If boost pressure is now o.k., renew boost pressure control valve (8), see group 041  
If boost pressure is still too low, replace turbo-charger, see section 2.

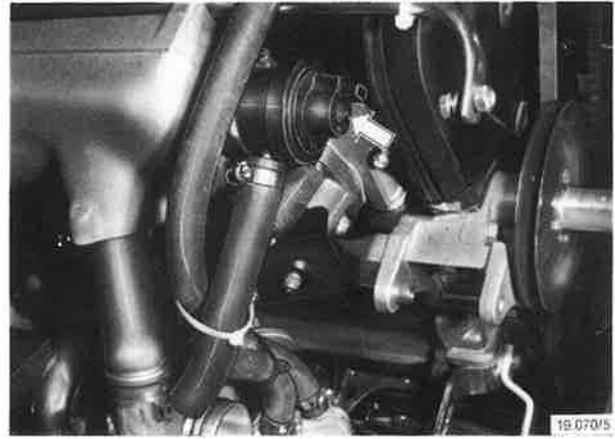


Fig. 8

15 Pull off hose (9/1) from the manometer T-piece (9/2). Pull off boost pressure manometer hose (9/3) from the connection piece of the diaphragm housing of the injection pump.

16 Further mounting is made in reverse order 3-1.

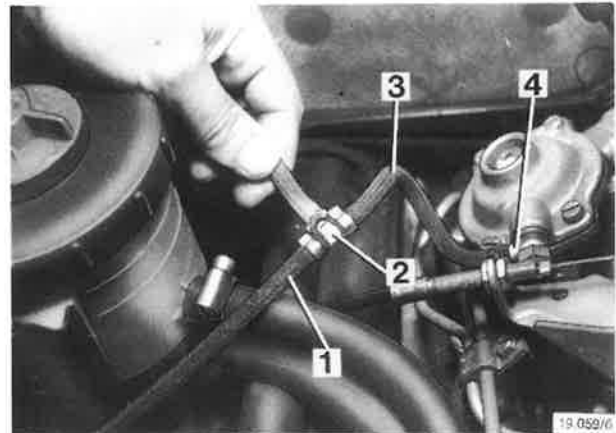


Fig. 9

### 4 Change oil pipe

Includes: Removing front passenger seat and right-side engine cover with maintenance cover, see group 171

Removing alternator, see group 190

Tension V-belt, see group 010

1 Remove front passenger seat and right-side engine cover with maintenance cover, see group 171

2 Remove alternator, see group 190

3 Unscrew union nut (1).



Fig. 1

- 4 Unscrew banjo bolt (2/1), remove seal rings (2/3).
- 5 Remove oil pipe (2/2).

Fitting:

- 6 Screw on oil pipe (2/2) to turbo-charger with banjo bolt (2/1). Fit new seal ring (2/3).
- 7 Screw on union nut (1).
- 8 Fitt alternator, see group 190

**NOTE:** Tension V-belt, see group 190

- 9 Check and if necessary top up level of engine oil.
- 10 Start engine and check for leakage.

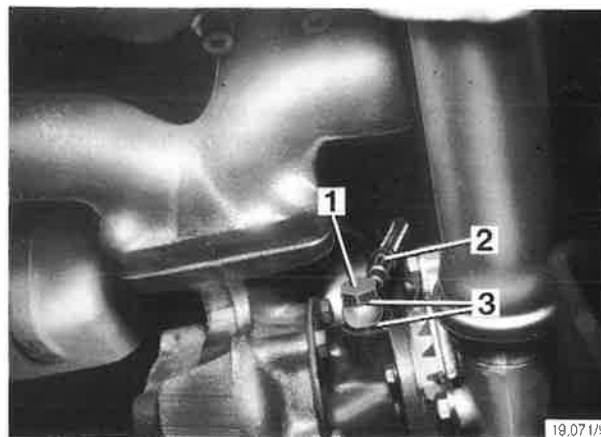


Fig. 2

### 5 Change oil return pipe

Removing:

- 1 Unscrew retaining screws (1/1).
- 2 Unscrew union nut (2).
- 3 Remove return pipe (1/2).

**NOTE:** Position suitable catch pan for spilling oil.

- 4 Clean contact surface on turbo-charger.

Fitting:

- 5 Screw on union nut (2).
- 6 Insert gasket between return pipe and turbo-charger (fit always new gasket).
- 7 Tighten retaining screws (1/1).
- 8 Check and if necessary top up engine oil.
- 9 Start engine and check for leakage.

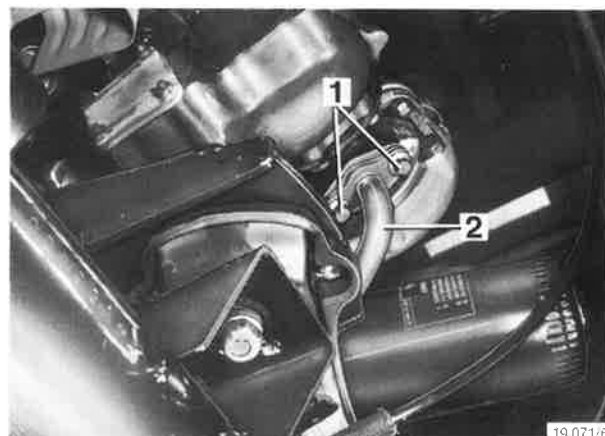


Fig. 1



Fig. 2

### 6 Check, change pressure control valve

#### Removing:

- 1 Screw off screw plug with seal ring (1), pull out pressure spring (2/3) with piston (2/4) of the oil pump.

**NOTE:** Opening pressure 5.3 - 6.3 bar.

- 2 Check pressure ring (2/3) and piston (2/4) for wear or jamming traces.

#### Fitting:

- 3 Insert pressure spring with piston, tighten screw plug (2/1) with new seal rings (2/2).
- 4 Start engine and check for leakage.

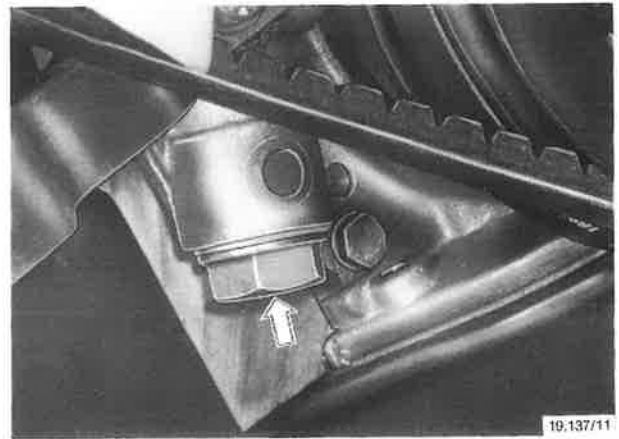
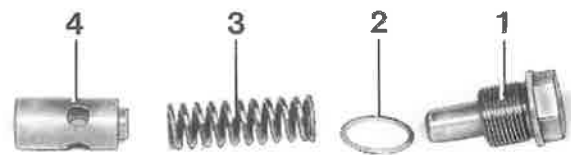


Fig. 1



19.093/4

Fig. 2

