

## Removing and installing unit injector

Special tools, workshop equipment, test and measuring appliances and auxiliary items required

Vernier calipers capable of reading of at least 350-mm, preferably 400-mm

VW 387 Universal dial gauge bracket

3410 Insert (M10 multi-hex)

T10054 Insert (M8 multi-hex)

T10055 Puller

V.A.G 1331 Torque wrench (5...50 Nm)

G 000 100 Grease

Dial gauge

### **Note:**

*The unit injector adjusting screw -1- and the ball head pin -2- have been revised with the introduction of extended service intervals. With older engines with no extended service intervals, a mixed installation is permitted.*

### **Removing**

- 1) Remove upper toothed belt guard and cylinder head cover.
- 2) Turn crankshaft until the cam tabs point upwards for the unit injector which is to be removed.
- 3) Loosen lock nut of adjustment screw -1- and screw the screw out until the relevant rocker arm lies against the plunger spring of the unit injector.
- 4) Remove rocker arm securing bolts -2- (from outwards to inwards) with insert 3410 and take rocker arm shaft off.
- 5) Remove tensioning block securing bolts -3- with insert T10054 and remove the block.
- 6) Lever connector off unit injector with a screwdriver. Support the opposite side of the connector with light finger pressure to prevent canting.
- 7) Seat the puller into the slot on the side of the unit injector instead of the tensioning block.
- 8) Pull unit injector out of cylinder head seat with gentle taps.

### **Installing**

#### **Notes:**

- 1) *If a new unit injector is installed, the appropriate adjustment screw in the rocker arm must also be renewed.*
- 2) Each time work is performed which requires the unit injector to be adjusted, the adjustment screw in the rocker arm and also the unit injector ball pin must be cleaned and checked for signs of wear. If wear is evident, the ball pin and the adjustment screw must be replaced.
- 3) Grease the contact surface between ball pin and adjustment screw with G 000 100 grease.
- 4) New unit injectors are delivered with the O ring and heat insulating gasket. The heat shield seal and O rings must be renewed if an old unit injector is reinstalled.
- 5) Check that the three O rings, heat shield seal and the securing clip are seating correctly before installing unit injector.

#### **Note:**

**The seals must not be twisted.**

- 1) Oil the seals and fit the unit injector into the cylinder head with **great care**.
- 2) Push the unit injector evenly into the cylinder head onto its stop.
- 3) Fit the tensioning block into the slot on the side of the unit injector.

**Note:**

**If the unit injector is not at right angles to the tensioning block the securing bolt may loosen and this can damage the unit injector or the cylinder head.**

Therefore align the unit injector as follows.

- 1) Screw the new securing bolt into the tensioning block until the unit injector can still be turned easily.
- 2) Now align the unit injector at right angles with the camshaft bearing caps.
- 3) Check dimension "a" from outer edge of cylinder head to rounded edge of unit injector with a vernier gauge (measuring range min. 400 mm).

**Note:**

*Gradual introduction of unit injector with new solenoid valve nut. A mixed installation whilst observing dimension "a" is permitted.*

Unit injector with old solenoid valve nut

Cylinder	Dimension "a"
1	332.2 ±0.8 mm
2	244.2 ±0.8 mm
3	152.8 ±0.8 mm
4	64.8 ±0.8 mm

Unit injector with new solenoid valve nut

Cylinder	Dimension "a"
1	333.0 ±0.8 mm
2	245.0 ±0.8 mm
3	153.6 ±0.8 mm
4	65.6 ±0.8 mm

**Continuation for all unit injectors;**

Align the unit injector if necessary and tighten the securing bolt as follows:

- 1) Tighten securing bolt to 12 Nm and turn, 270° (3/4 turn) further (the turning further can be done in several stages).
- 2) Fit the rocker arm shaft and tighten the new securing bolts as follows:

Tighten the inner bolts -2- at first and then the outer bolts -1- hand tight. Then using same sequence, tighten to 20 Nm and 90° (1/4 turn) further.

- 3) Fit the dial gauge onto the adjustment screw of the unit injector as shown.
- 4) Turn the crankshaft in engine direction of rotation until the roller of the rocker arm is positioned on the peak of the drive cam tab, roller side -arrow A- positioned at highest point and Dial gauge -arrow B- positioned at lowest point
- 5) Remove dial gauge.

- 6) Turn adjustment screw inwards into rocker arm until a firm resistance is felt (unit injector positioned at stop).
- 7) Turn adjustment screw 225° back off stop.
- 8) Hold adjustment screw in this position and tighten the lock nut to 30 Nm.

Connect unit injector connector and install cylinder head cover and toothed belt guard.