

Revision: Revised, checking of valve timing at 2 mm stroke.

General Note

Valve timing is checked at 2 mm valve stroke; not as before at 0.4 mm. For this purpose, valve clearance is neutralized.

Under shop conditions, it is generally enough to check begin of opening at intake valve of 1st cylinder.

Checking

1 Unscrew spark plugs or glow plugs.

2 Determine code No. of camshaft.

Code No. is punched-in at rear end of camshaft.

3 Crank engine with tool combination (Fig. 00-9/1) on crankshaft until tip of intake cam, intake valve of 1st cylinder, is vertically pointing upwards.

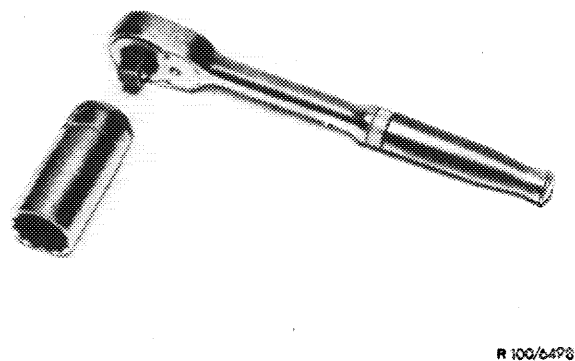


Fig. 00-9/1

Socket wrench insert 001 589 65 09 00

Caution! Do not crank engine at fastening bolt of camshaft gear.

Never rotate engine in reverse while measuring, since this will cause considerable measuring errors.

4 On gasoline engines, push rocker arm downwards with removal and installation tool part No. 116 589 00 61 00 and introduce valve gauge.

On diesel engines, push valve spring retainer down with screwdriver.

Valve gauge should be thick enough to neutralize valve clearance.

5 Screw dial gauge holder, part No. 121 589 00 21 00, to holding clip for cylinder head cover (Fig. 00-9/2).

6 Insert dial gauge and attach in such a manner that feeler pin rests on valve spring retainer under a preload of 3 mm (Fig. 00-9/2).

Set scale to zero.

Caution! Feeler pin of dial gauge should be seated accurately vertical on valve spring retainer.

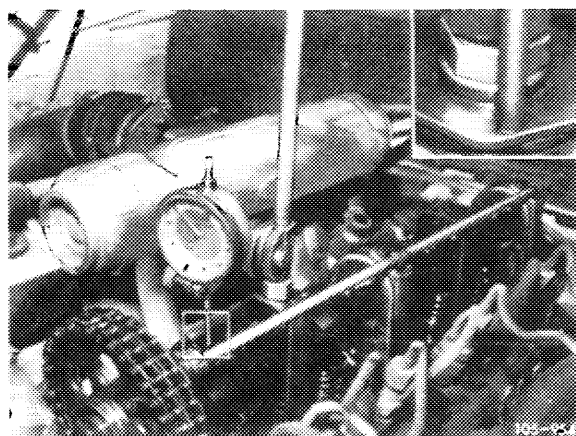


Fig. 00-9/2  
Dial gauge holder 121 589 00 21 00

7 Keep rotating engine in direction of rotation until small pointer of dial gauge is back at 1 mm.

8 In this position, read value on balancing disc, which should be similar to that on Table (page 00-0/12).

### Adjusting

Caution! If timing requires correction, install an offset woodruff key or new timing chain.

Woodruff keys are available in the following steps:

Offset mm	Part No.	For a correction of approx.
0.7	621 991 04 67	4° crankshaft
0.9	621 991 02 67	6 1/2° crankshaft
1.1	621 991 01 67	8° crankshaft
1.3	621 991 00 67	10° crankshaft

An offset by one tooth on camshaft gear results in approx. 18° on crankshaft.

An offset of woodruff key toward the right (in driving direction) will advance begin of intake, an offset to the left will retard begin of intake.

9 Loosen fastening screw of camshaft gear.

10 Mark camshaft gear and timing chain with paint in relation to each other and remove camshaft gear.

11 Insert required woodruff key and mount camshaft gear.

12 Repeat jobs 6-8.

13 Remove dial gauge holder and valve gauge.

14 Check valve clearance.

15 Install spark plugs or glow plugs.

16 Start engine and check for leaks.