

E. Ignition Setting

Before setting the ignition to $8^\circ \pm 1^\circ$ TDC, the contact gap should always be checked (see Job No. 01 — 3, Section D).

Ignition adjustment can be carried out either

- a) with the timing light or
- b) with a suitable flash stroboscope.

a) Ignition adjustment, using timing light:

1. Adjust ignition control cable. To do this

- a) move the timing lever (5) at the distributor bearing **right over to the advance stop** and fix it in this position with a clamp (15) (see Fig. 01 — 3/24).
- b) Slacken the hexagon nut (8) and screw the adjustment screw (9) right home (Fig. 01 — 3/23).
- c) Move the rotary control of the control cable for the ignition adjustment to the left against the stop "früh" (advance) and turn it back from this position about 3 to 4 mm, measured around the circumference of the rotary control knob. This extra amount of travel is deliberately left at the control knob

because the Bowden cable may stretch after a period of use and it is therefore necessary to make allowance for this.

- d) Push the rubber damping (4) and the clamping chuck (2) onto the Bowden cable as far as the timing lever (5). Grip the Bowden cable in the clamping chuck by tightening up the hexagon nut (1) (Fig. 01 — 3/23).
- e) The cable must be drawn taut by backing out the adjustment screw (9) so that the **timing lever (5) of the distributor is definitely lying against the advance stop**.

Then lock the adjustment screw (9) by tightening up the hexagon nut (8) (see Fig. 01 — 3/23 and Fig. 01 — 3/24) and then remove the clamp (15).

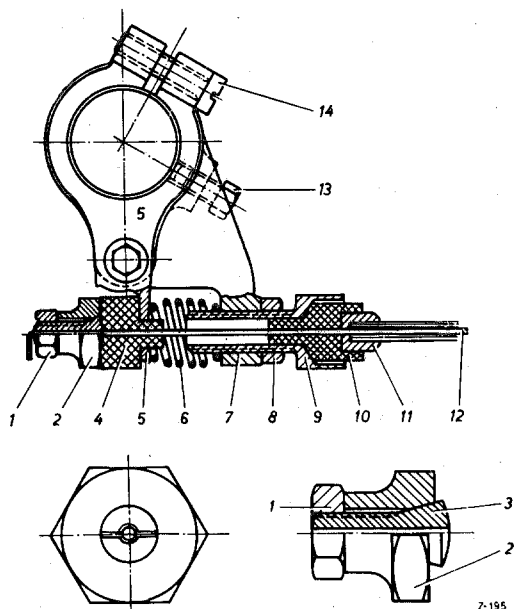


Fig. 01 — 3/23

- | | |
|-----------------------|---|
| 1 Hexagon nut | 9 Adjustment screw |
| 2 Clamping chuck | 10 Rubber sleeve |
| 3 Wedge piece | 11 Sleeve |
| 4 Rubber damping | 12 Coil spring |
| 5 Timing lever | 13 Hexagon screw for fixing distributor |
| 6 Compression spring | 14 Clamping screw |
| 7 Distributor bearing | |
| 8 Hexagon nut | |

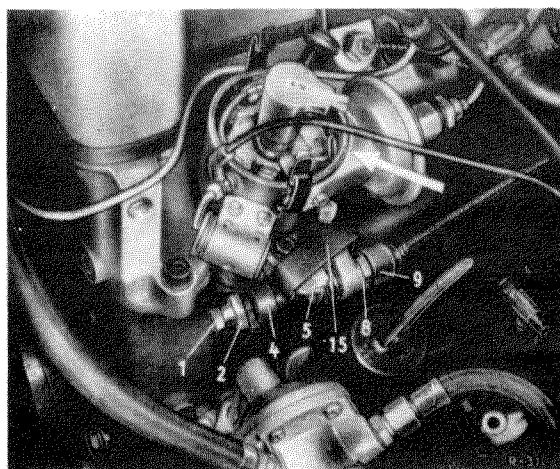


Fig. 01 — 3/24

- | | |
|------------------|--------------------|
| 1 Hexagon nut | 8 Hexagon nut |
| 2 Clamping chuck | 9 Adjustment screw |
| 4 Rubber damping | 15 Clamp |
| 5 Timing lever | |

2. Remove distributor cap.

3. Use Socket SW 22 (with ratchet) on shoulder nut on the front of the crankshaft to turn crankshaft **in the direction in which the en-**

- 1 Screw plug with pivot pin for chain guide
- 2 Screw plug for oil relief valve
- 3 Lock screw for chain drive
- 4 Cover plate

- 1 Distributor rotor arm
- 2 Timing lever

-

6. Switch on ignition.
7. Turn the distributor in a clockwise direction until the points of the contact breaker are closed. Then turn it slowly in the opposite direction until the timing light lights up. At this point the breaker arm lifts off the contact holder.
8. Tighten the clamping screw (14) at the timing lever of the distributor.
9. Check the ignition setting once again. The ignition is properly adjusted if, when the crankshaft is slowly turned **in the direction in which the engine turns**, the timing light lights up exactly at the instant at which the timing pointer points to $8^{\circ} \pm 1^{\circ}$ BTDC on the scale (see Fig. 01—3/25).

10. Put on the distributor cap.

b) Setting the ignition with the flash stroboscope.

Setting the ignition with the flash stroboscope is preferable to the timing light method because the ignition setting can be checked and adjusted at higher engine speed.

1. Check the adjustment of the ignition control cable (see Section A, Paragraph 1).

Note: When adjusting the ignition setting with the flash stroboscope, the ignition control knob must be turned to the left (advance) as far as it will go.

2. Flash Stroboscope 000 589 48 21 is connected as follows: Ground lead 3 (black) to ground.

Positive lead 2 (red) to a positive terminal, e. g. ignition coil, Terminal 15.

Insert extension cable (4) between ignition cable and spark plug of Cylinder No. 1. Then connect Cable 5 (blue) of the stroboscope to the extension cable (Fig. 01—3/28).

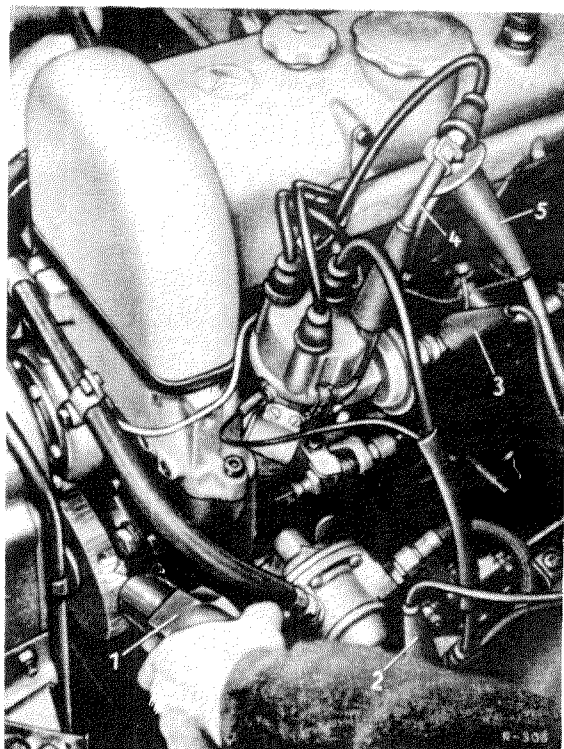


Fig. 01—3/28

- | | |
|------------------------|-------------------|
| 1 Flash stroboscope | 4 Extension cable |
| 2 Positive cable | 5 Main cable |
| 3 Ground cable (Black) | |

3. Check ignition setting.

Note: Hold the flash stroboscope so that the timing indicator and the scale are illuminated (see Fig. 01—3/28). It is easier to take readings if the punched figures and marks on the scale are rubbed over with white paint.

4. The measured ignition settings should be:

engine speed	vacuum union	ignition setting in degrees BTDC
starter speed	with	$8^{\circ} \pm 1^{\circ}$ (basic initial setting)
n = 800 r.p.m.	with	$15^{\circ} - 23^{\circ}$
n = 800 r.p.m.	without	$15^{\circ} - 23^{\circ}$
n = 1500 r.p.m.	without	$26^{\circ} - 32^{\circ}$
n = 3000 r.p.m.	without	$32^{\circ} - 39^{\circ}$
n = 4500 r.p.m.	without	$41^{\circ} - 47^{\circ}$
n = 4500 r.p.m.	with	$47^{\circ} - 57^{\circ}$

Note: The engine speeds given must be strictly adhered to. Revolution Counter 000 589 12 21 should be used.

When checking the initial setting at starter speed the plug connectors should be pulled off.

5. If it is necessary to correct the ignition setting, slacken the clamping screw (14) at the timing lever of the distributor bearing (see Fig. 01—3/23) and turn the distributor so that the specified ignition setting is obtained.

6. In order to check the timing curve of the distributor accurately the distributor must

be removed and the ignition curve reflecting the vacuum and governor control movement checked on a suitable test stand.

7. The distributor is in proper working order if the ignition setting alters steadily and without jerking in accordance with the thickness of the tolerance feeler band used and in relation to the appropriate engine speed or alternatively the vacuum obtained at this speed (Fig. 01—3/29) and (Fig. 01—3/30).

Automatic governor control movement for distributor VJU 4 BR 14

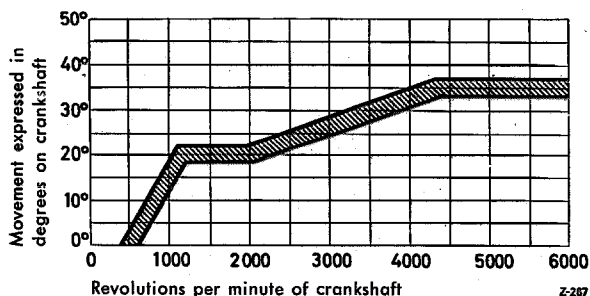


Fig. 01—3/29

Note: The governor control movement curve begins at 0° (see Fig. 01—3/29).

With the distributor installed in the vehicle, the degrees registered on the scale for the initial ignition setting (8°) must be added to the value read off the scale when making the test.

Furthermore the ignition setting can alter to some extent through the influence of the twin roller chain and the drive. Thus the values given in Fig. 6 cannot necessarily be compared with those shown on the movement curve.

c) New distributor bearing without ignition control cable

The ignition control cable (octane number compensator) has recently been superseded because the general improvement in the quality of fuels has rendered it no longer necessary to adapt the ignition setting to the anti-knock rating of every individual fuel.

If for any reason fuels of lower anti-knock rating than 86 octane F—1 have to be used, the ignition setting can be retarded in the direction "spät" (retard) at the distributor bearing.

Automatic vacuum control movement for distributor VJU 4 BR 14

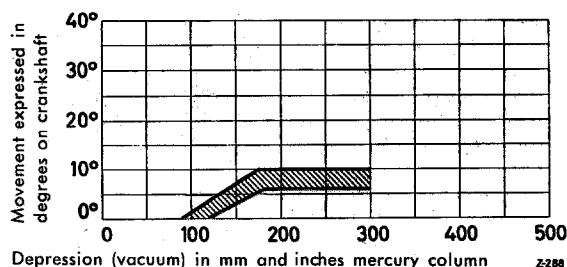


Fig. 01—3/30

Use of ignition control knob (octane number compensator)

The ignition timing and installation of the engine is carried out at the factory at the advance position and with a fuel specified by us and having a minimum anti-knock rating of 86 Octane according to the Research Method (F—1).

When the vehicle is in use, the control knob of the octane number compensator on the instrument panel must be turned to the left as far as it will go and must be left there!

The knob must only be turned to the right, i.e. in the direction "retard", if for any reason fuel of lower anti-knock rating than 86 F—1 is used or alternatively if in the course of time the engine should begin to "pink" owing to the presence of combustion deposits in the cylinders. The customer should be informed about the correct operation of the octane number compensator.

The following points should be taken into account when setting the ignition:

1. After slackening the milled nut (12), back out the adjustment screw (13) to the point where the timing lever (3) is definitely against the advance stop. Then lock with the milled nut (12) (Fig. 01—3/30a).
2. Adjust the ignition in the way shown in paragraphs (a) and (b) — i.e. to $8^{\circ} \pm 1$ BTDC.
3. If the vehicle is using fuels of the prescribed anti-knock rating (86 Octane according to Research Method F—1) no changes should be made.

If fuels of a lower anti-knock rating are used, the ignition setting should be retarded by screwing in adjustment screw (13) in the direction "spät" (retard) to the point where the engine operates without pinking.

Note:

- a) A notch has been made at the edge of the adjustment screw. One turn is equal to an alteration of ignition setting corresponding to approx. 1 degree of movement on the camshaft or two degrees on the crankshaft.
 - b) The adjustment screw (13) and the cable (10) together with the nipple are supplied by the Spares Department as an assembly.
- When fitting, care must be taken to ensure that the slot in the disk (8) which holds the cable and the nipple is at the bottom because otherwise the disk might easily slip off and get lost.

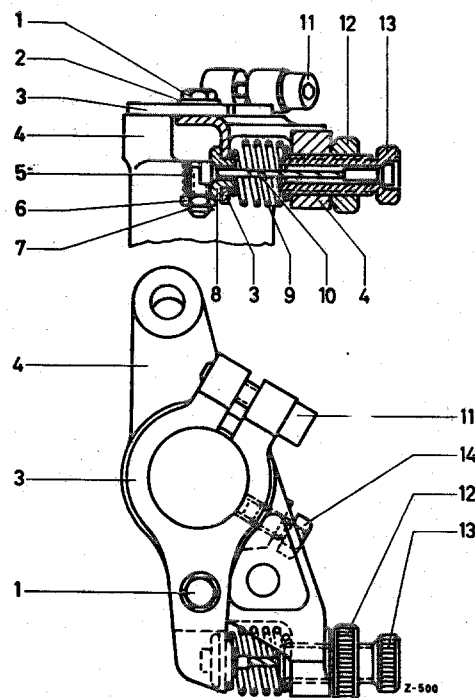


Fig. 01—3/30a

- | | |
|---|--|
| 1 Hexagon screw M 5×30 S
DIN 931-8 G | 10 Cable A 1.6×50 DIN 719 87
with two nipples B 1.8
DIN 719 88 |
| 2 Disk 5.3 DIN 125 St. | 11 Clamping screw |
| 3 Timing lever | 12 Milled nut 121 990 00 57 |
| 4 Distributor bearing | 13 Adjustment screw
121 150 00 84 |
| 5 Spring 136 993 08 01 | 14 Hexagon screw for fixing
distributor |
| 6 Hexagon nut M 5 DIN 934-5 S | |
| 7 Cotter pin 1×12 DIN 94 St. | |
| 8 Disk 121 158 00 76 | |
| 9 Compression spring
186 993 24 01 | |