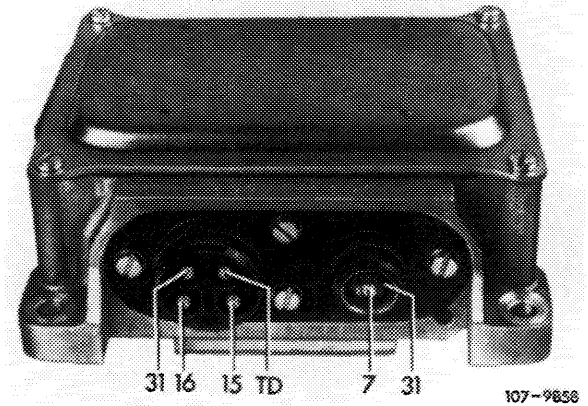


## A. Transistorized ignition system TSZ 4

### Note

This ignition system is widely free of maintenance requirements and guarantees adequate ignition voltage even at max. engine speeds as well as a more accurate adherence to firing point.

**Identification:** Yellow dot on housing top of switching unit up to production date 930, as well as Bosch No. 0 227 100 001.

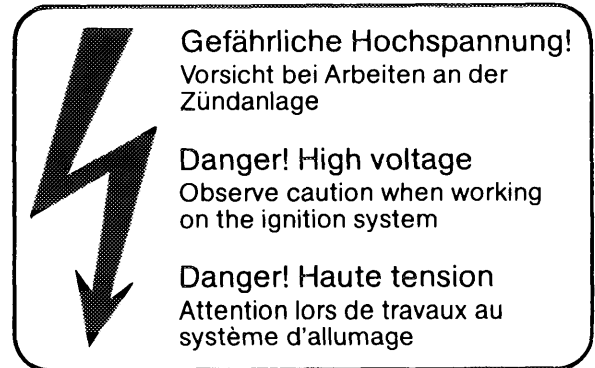


### Components of ignition system:

#### Ignition coil

Design and outer dimensions are similar to a normal high-performance ignition coil, but the winding is different. Its ratio is 1:185 as compared with 1:100 on conventional ignition coils.

**Identification:** Blue paintwork and a sticker Transistor, Bosch No. 0 221 122 01.

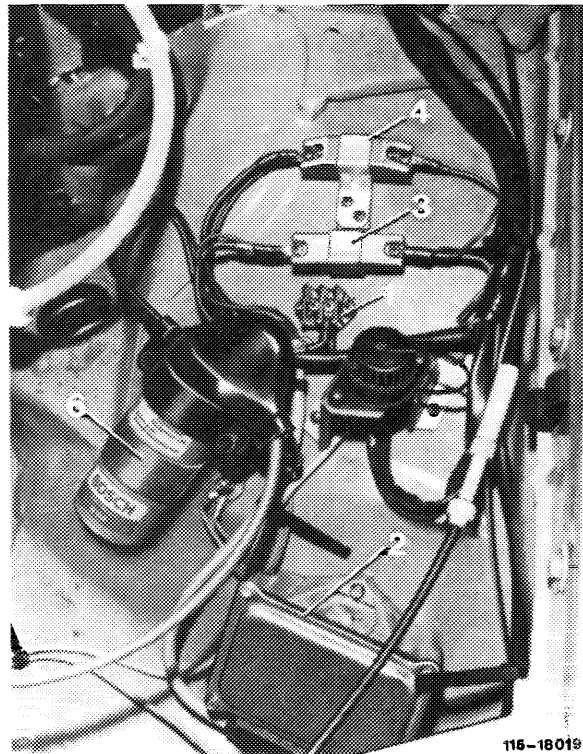


#### Series resistors

Series resistors 0.4  $\Omega$  and 0.6  $\Omega$  are assembled like the ignition coil resistors used before: A ceramic body encloses the resistance winding, with extending connections.

A sheet metal clamp is placed around ceramic body for fastening. The color of this clamp provides information about the resistance value, which is additionally punched in as a number.

Color	Code number	Resistance
blue, anodized	0.4	0.4 $\Omega$
metallic, anodized	0.6	0.6 $\Omega$



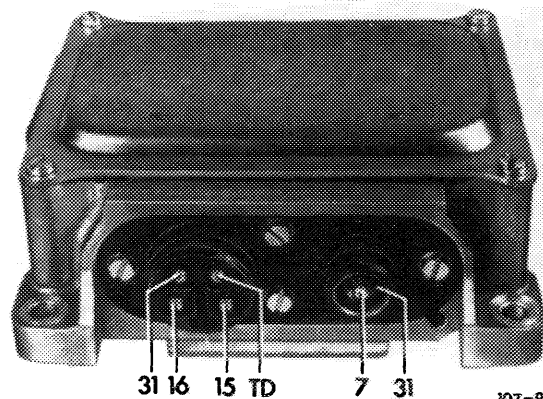
- 1 Cable connector
- 2 Switching unit TSZ 4
- 3 Series resistor 0.6  $\Omega$
- 4 Series resistor 0.4  $\Omega$
- 6 Ignition coil

115-18019

### Switching unit

The switching unit comprises several transistors, resistors and other electronic components in a metal housing. This housing protects these components against mechanical damage and splash water and serves simultaneously to dissipate electric heat losses. Contacting on switching unit is by means of a 4-point round plug connection and coaxial plug for activation.

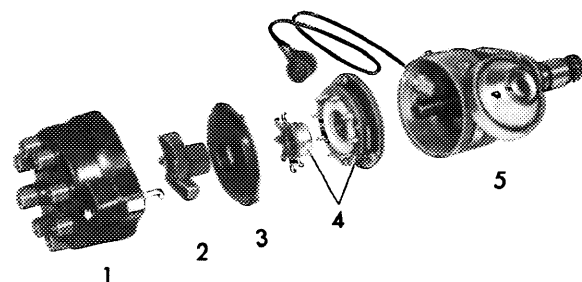
In the event of repairs, exchange complete switching unit only.



107-9658

### Ignition distributor

Instead of a breaker contact the ignition transmitter is provided with a transmitter section which operates according to the induction principle. Ignition timing (firing point) is adjusted by centrifugal force and vacuum similar to ignition distributors installed up to now.



- 1 Ignition distributor cap
- 2 Ignition distributor rotor
- 3 Shield cap
- 4 Transmitter section
- 5 Ignition distributor housing

115-10505

## Operation of transmitter section

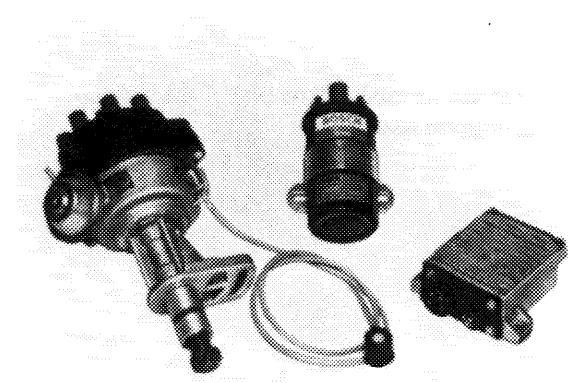
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A rotor with its number of teeth corresponding with **number of cylinders** on engine, generates during its rotation a change of magnetic flux per tooth in a magnetic field established by a permanent magnet. As a result, a control voltage (0.3 V – 100 V) with a steep change from a positive to a negative half wave is established in the induction coil located in magnetic field, with its magnitude depending on engine speed. This steep change of polarity of control voltage is used, following zero passage, for impulse forming, impulse amplification and interruption of primary current in switching unit.

If the primary current is interrupted, the ignition voltage is induced in secondary winding of ignition coil. The dwell angle control in switching unit adapts the current flow time of the primary current to the engine speed, that is, at increasing speed the dwell angle will also increase so that adequate ignition voltage is assured also in upper speed range.

### B. Transistorized ignition system without series resistors TSZ 8 z

Starting September 1981 the 8-cylinder engines of the standard version and starting model year 1982 of the national versions are provided with an ignition system without series resistors. This breakerless transistorized ignition system TSZ 8 z without rest potential differs from the ignition system of the 4- and 6-cylinder engines by a higher ignition capacity (identified by a green information label on ignition coil and on switching unit).



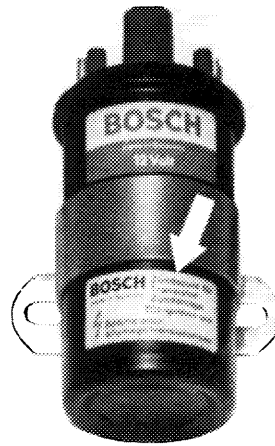
115-21387

## Components of ignition system:

### Ignition coil

The ignition coil is adapted to TSZ switching unit and designed for a higher ignition capacity.

**Identification:** Green information label, Bosch No. 0 221 118 329, DB part No. 000 158 45 03.

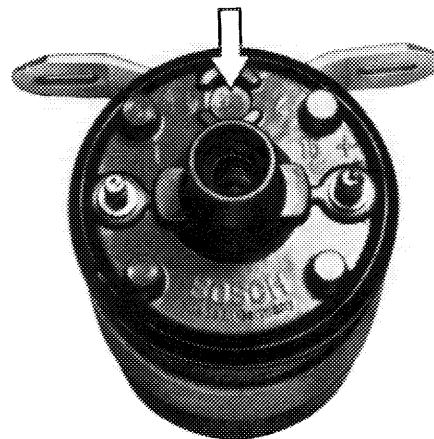


115 - 21515

Different characteristics with regard to former ignition coils:

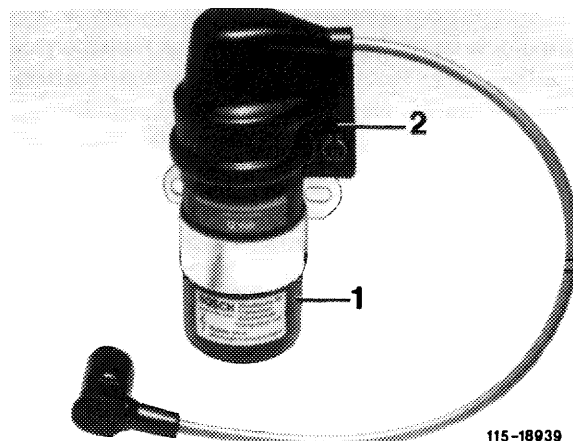
1. Safety plug in cap of ignition coil.
2. A higher dome.
3. Cable connection on terminal 1 with thread M 5.
4. Cable connection on terminal 15 with thread M 6.

The cover of the ignition coil has a 5.5 mm opening (arrow) which is closed with a plug. This plug is released if a defective final stage in switching unit results in overpressure under influence of the considerable heat developed. To prevent uncontrolled emergence of the plug or the sealing compound out of ignition coil, the ignition coil is provided with a cap.



115 - 21386

Never replace ignition coil by one of the ignition coils used up to now.



115 - 18939

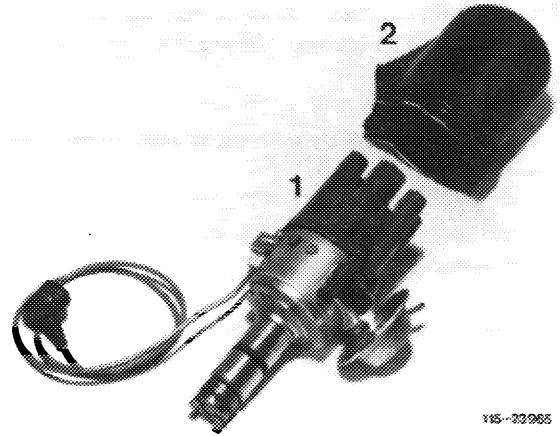
### Ignition distributor

This ignition distributor with inductance transmitter corresponds in principle to the version already known.

The green control line from distributor to switching unit is a single-core line. The shielding is used as a second line.

The distributor rotor has a suppressor resistor of  $1\text{ k}\Omega$  (code number R 1, on distributor rotor).

A suppressor resistance of  $1\text{ k}\Omega$  per cylinder is integrated in ignition distributor cap.



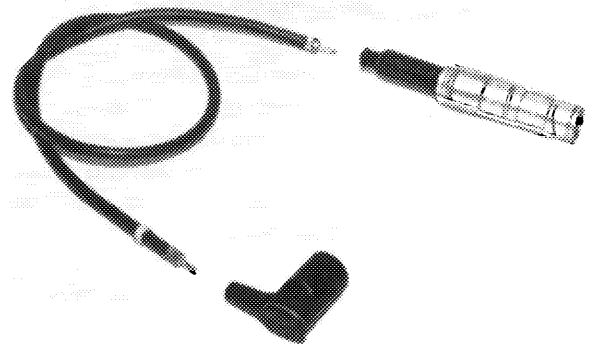
115-23965

### Ignition harness

The partially shielded spark plug connectors and offset distributor plugs are designed for the higher ignition voltage.

A suppressor resistor of  $1\text{ k}\Omega$  is installed in spark plug connectors.

They can be screwed off (threads M 3).

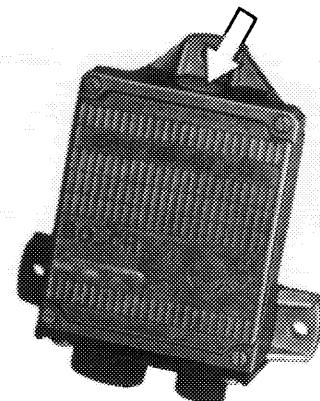


115-18940/1

### Switching unit

Connections are similar to the version already known.

**Identification:** Green sticker (arrow), Bosch No. 0 227 100 042, DB part No. 002 545 26 32.



115-21389

This switching unit has been given new, special electronic components (control IC) with the following functions:

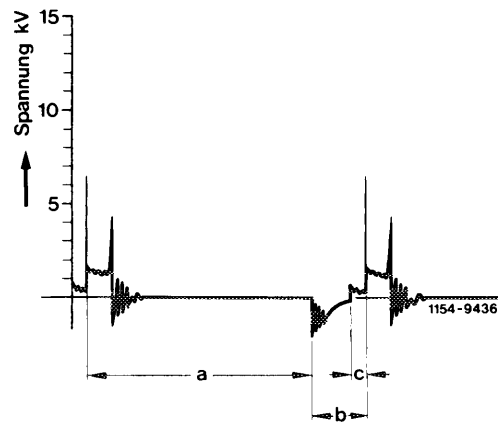
1. Limitation of primary current; as a result, elimination of series resistors.
2. Dwell angle control at varying battery voltage and engine speed by max. primary current.
3. Cutout of rest potential; no primary current will flow with ignition switched on and engine stopped.

### Operation of switching unit

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The max. primary current of the ignition coil is no longer determined by series resistors, but by a current limitation in switching unit. This current limitation is made after the max. possible primary current has been attained.

- a Opening angle
- b Dwell angle
- c Current limitation



The current limitation is shown on oscilloscope at idle speed. The current limitation is no longer seen as from an engine speed of approx. 2000/min.

The optional output of the ignition system is attained by dwell angle control in switching unit. The dwell angle is regulated in possible range in such a manner that approximately the same primary current is always obtained in any operating condition, that is at different battery voltages and engine speeds.

As a result of the elimination of the series resistors the primary current will be switched off via the switching unit, with the engine stopped and the ignition switched on (rest potential cutout). The primary current is switched on only after a given impulse sequence from transmitter in ignition distributor.

The revolution counter in instrument cluster is connected to terminal TD, as before.