

version: b26df73

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1 Function

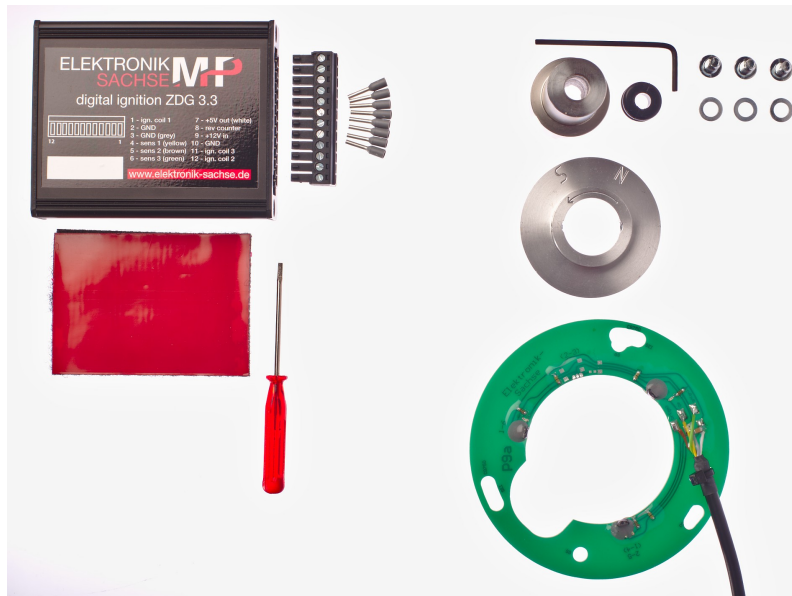
The digital ignition kit ZDG3 replaces original electronic ignition units as well as old points including the weights advancer or manual advance wires.

Function: Starting from TDC the momentary peripheral speed is determined and by this means, the time up to ignition is calculated per crank turn. Because the peripheral speed varies substantially during acceleration, this long measurement is selected in order to determine a relatively exact measurement.

The computation of ignition timing is divided into 4 ranges:

| Range | Function |
|----------------|--|
| 0–400 rpm | Starting range, ignition always at TDC |
| 400–1000 rpm | Idling range, 2° to 8° advanced ignition, depending on curve selection |
| 1000–6200 rpm | Partial load range, the spark advance adjustment occurs here |
| 6200–12000 rpm | Maximum load range, constant maximum advanced ignition, depending on curve selection |

2 Scope of Delivery



3 Mounting

- First remove pickup plate and advancer. From the original pickup harness the grommet will be continued to use. Therefore cut the cables directly at the grommet and use a 4 mm drill to remove the rest of ONE cable in the grommet. Through this hole insert the new pickup lead.
- Cut the green and black wire 5 cm from the plug. Cut the other (pickup) wires totally. Now pull the blue- and yellow cables out of the insulation and instead push the white pickup lead into the insulation sleeve. Reconnect the black and green wire with round connectors.
- The circuit board is mounted like the old pickup plate and the insulation sleeve is placed as before, but the white cable is routed directly to the mounting location of the ignition box. This is where the old TCI boxes are. Next, the driver sleeve and the magnetic disk is mounted, but do not tighten the set screws the disk. Recently tighten on the original central nut.

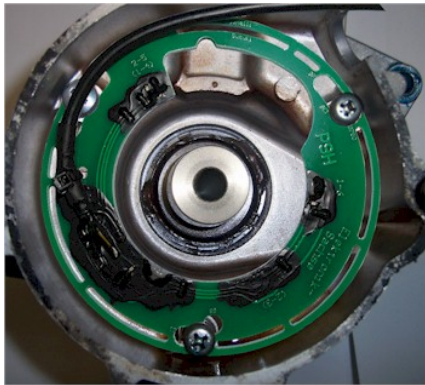
Except for coils from a 2-stroke engine and CDI types, nearly all types of new or used ignition coils can be used. The only technical requirement of the coil is a primary resistance of $2\ \Omega - 5\ \Omega$.



Driver sleeve



Mounted driver



3

4 Electrical Connections

The wire cross section of the ground cable should not be below 1.5 mm^2 and should be kept as short as possible. The wire cross-section of the other cables should not be below 0.5 mm^2 .

Attention: Please do not shorten the pickup lead and use insulated wire end ferrules on the other cables!

Igni-
tion
cir-
cuit

| Connector | Function |
|-----------|--|
| 1 | Ignition coil cylinder 2+5 – |
| 2 | Ground |
| 3 | Pickup lead, black/grey |
| 4 | Pickup lead, yellow |
| 5 | Pickup lead, brown |
| 6 | Pickup lead, green |
| 7 | Pickup lead, white |
| 8 | Output for electronic rev counter/tachometer |
| 9 | +12 supply voltage, switched |
| 10 | Ground (same as #2) |
| 11 | Ignition coil cylinder 3+4 – |
| 12 | Ignition coil cylinder 1+6 – |

5 Settings

- Bring the outer pistons 1+6 into TDC position
- Turn the 'S'-marked Magnet close to the sensor shown on the left picture. Take care that the magnets in the disk are approximately in the same height as the sensor.

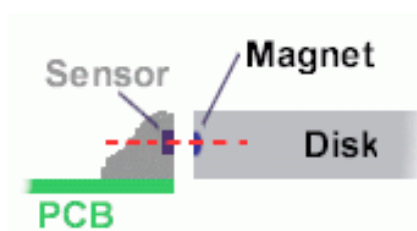


Figure 1

- turn on the ignition lock
- continue rotating the disk. The LED near the sensor should light up when the 'S'-marking passes the sensor (It is possible that the LED(s) already indicating at power on)
- Turn the disk slowly to the 'N'-marking until the Led is switching off. The disk is in the correct position and can be tightened by the set screws.
- Notice: you can't switch the LED on only by turning back to the 'N' marking. Therefore the disc must be turned back to the 'S' marked magnet.



1

The DIP switches are on the left side of the ignition box. DIP switch No. 1 controls the rev limiter. It has two settings: *up* and *down*:

| DIP switch 1 | Rev limiter setting |
|--------------|---------------------|
| up | 9400 rpm |
| down | 8800 rpm |

The rev limiter DIP switch No. 2 is next to DIP switch No. 1 and adjusts the frequency of the electronic tachometer that can be connected to #7. If no electronic tachometer is connected this switch can be ignored.

DIP switch No. 2 should be in the *up* position for crankshaft frequency selection and *down* position for camshaft frequency selection:

| DIP switch 2 | Frequency setting |
|--------------|-------------------|
| up | crankshaft |
| down | camshaft |

The ignition curves can be set using the rotary dial on the left side of the box, right of the DIP switches. Curve No. 0 is a test mode in which the box continually fires without the engine running. This tests the installation of the units and coils. But it doesn't test the pickup.

Rotary switch settings 1–9 are the different ignition curves.

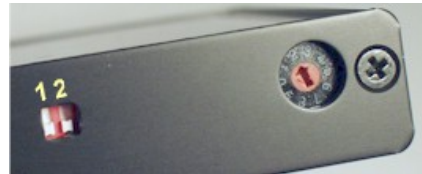


Figure 2 DIP switches and rotary switch.

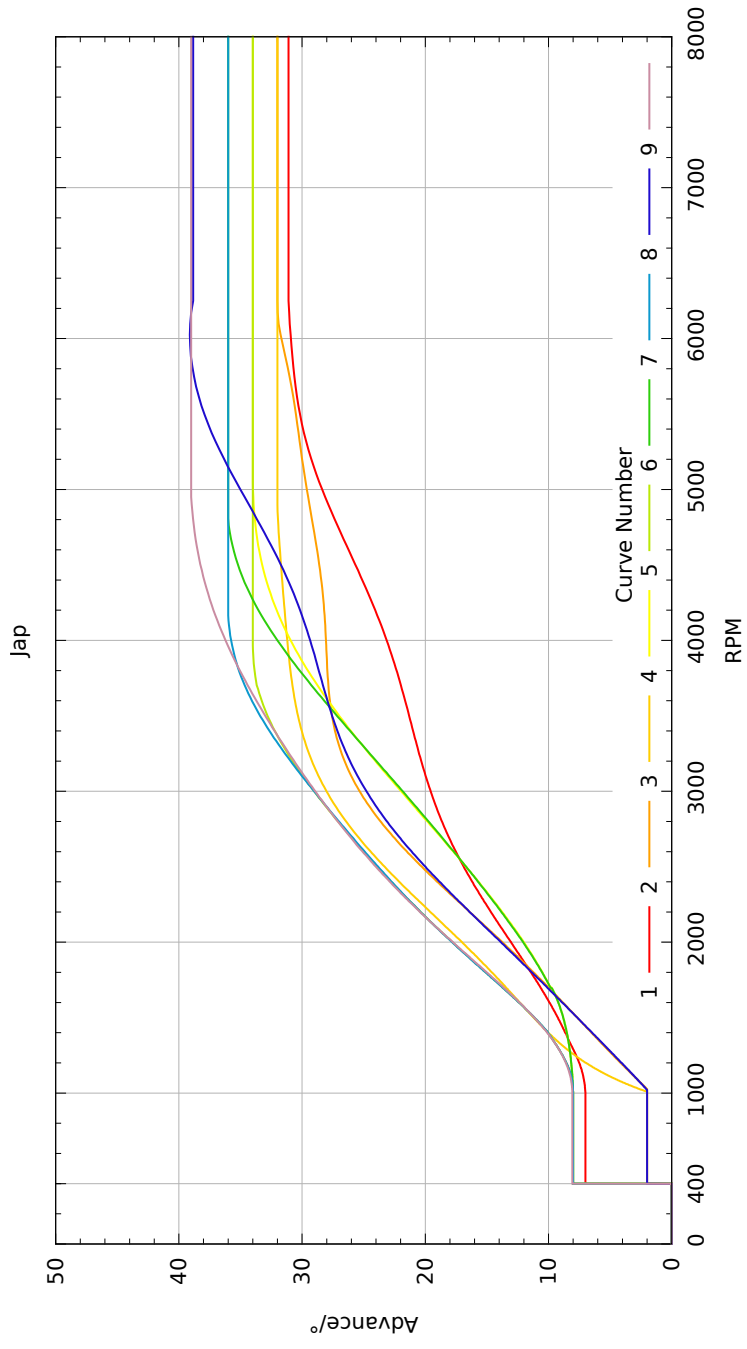


Figure 3 Selectable ignition curves.

6 General Notes / Troubleshooting

Only use interference-free caps for the spark plugs! Recommended are NGK caps with 5 k Ω internal resistance.

Doesn't start: If the engine should not start, or the engine kicks back, then the ignition coils are mixed up. If so, swap the ignition cables which lead to the spark plugs or reconnect the external ignition coils. As a general rule: each time when a piston reaches TDC also the corresponding plug must have a spark. To check the cable connecting and the supply voltage turn the rotary switch to '0'. Now the spark plugs must fire continually. If now the rotary switch is turned again on a level you can easily check the timing with a strobe only by activating the starter (without plugs in the cylinders). If the engine should not start with slowly turning starter, probably the battery voltage falls under the minimum supply voltage of the ignition (approx. 7 V).

Irregular engine cutouts: If sometimes the engine suspends while driving for 2-3 seconds and keeps running thereafter normally. That means that the ignition has been reset. The cause for it can be a defective cap or a loose ignition cable in the coil or cap. But in most cases a bad contact in the operating voltage supply (kill switch, starter lock, fuse holder, terminals etc.) causes this effect. For a test you can connect a cable directly from the ignition coils and the ignition box to the positive terminal of the battery. Also put a second cable from the negative terminal of the battery to the ignition box (secure ground connection). If the engine is running well now you can assume an error in the wiring harness. With contact breakers such a bad contact is not noticeable, because a short break for a few milliseconds of the supply voltage doesn't matter, electronics in contrast are more sensitively.

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