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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.

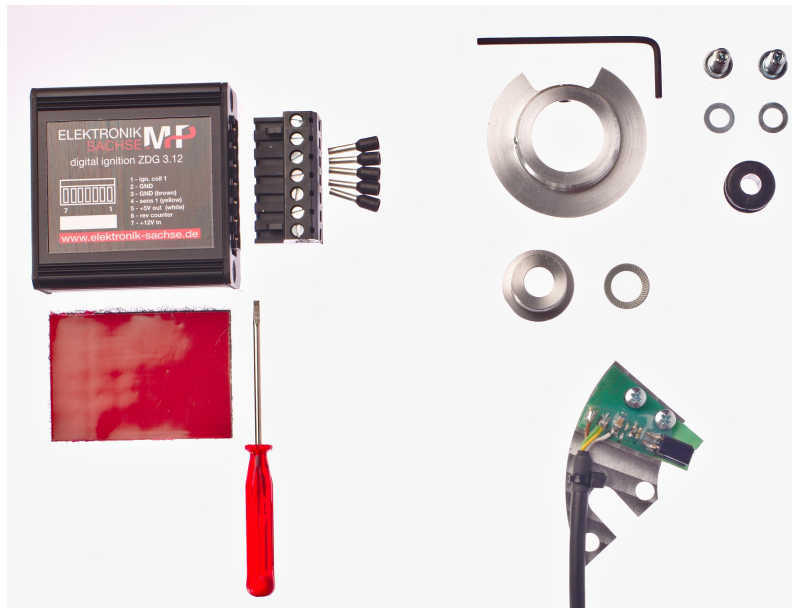
The computation of ignition timing is divided into 4 ranges:

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<b>Range</b>	<b>Function</b>
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

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## 2 Scope of Delivery



## 3 Mounting

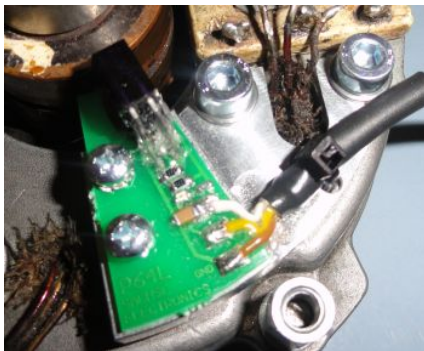
- Remove the center screw of the rotor. If necessary block the sprocket by placing a large screwdriver through the ignition inspection opening of the gearbox. Fasten the driver with the center screw (leave the washer). (1) (2)
- Next, fit the sensor plate on the fastening points of the stator plug. (3)
- Push the sector disk onto the driver sleeve. (4)
- Be sure that the disk does not touch the light barrier. (5)
- There had been a large variation in the cover series production, hence the wall thickness varies considerably. With a little grease on the ring of the sector disk you can test the distance to the cover. If the ring touches the cover inside there will be a (grease) marking. The cover fits most, but at some few you have to clear some material inside with a small hand drill (eg Dremel). (6)



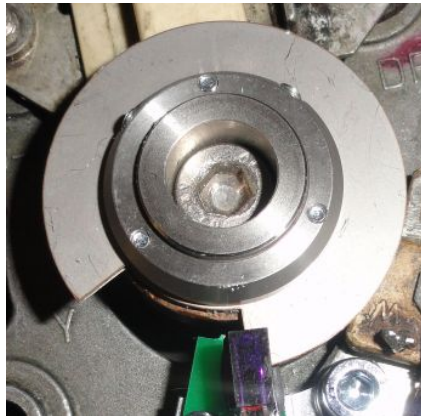
(1)



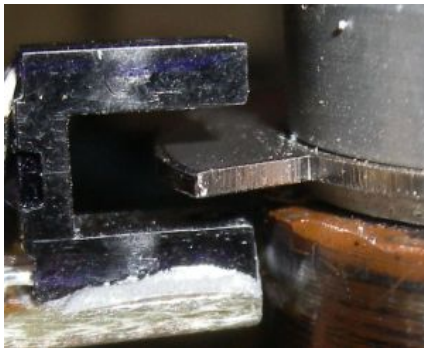
(2)



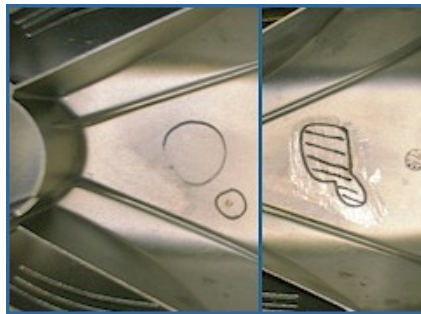
(3)



(4)



(5)



(6)

The assembly of the ignition box takes place by the provided velcro strip on a suitable surface, which should not be in the splash-water range. 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  $2\ \Omega - 5\ \Omega$ .

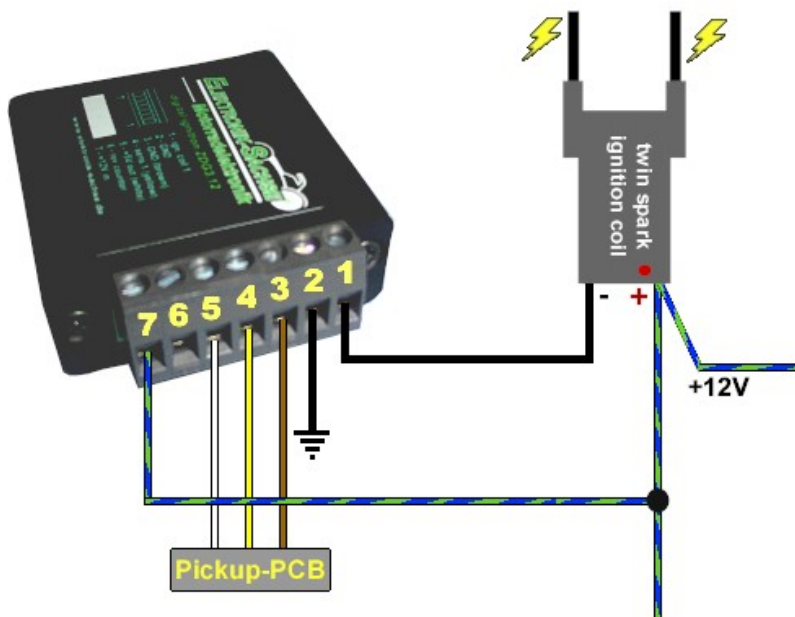
## 4 Electrical Connections

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

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

name: Z64-electrical-4  
file: Z64-electrical-4  
state: unknown

Ignition circuit diagram (two 6V coils)



name: electrical-pg-zdg3.12-dual.jpg  
file: electrical-pg-zdg3.12-dual.jpg  
state: unknown

Connector	Function
1	Ignition coil cylinder –
2	Ground
3	Pickup lead, brown
4	Pickup lead, yellow
5	Pickup lead, white
6	Output for electronic tachometer
7	+12 supply voltage, switched

## 5 Settings

- First, bring the pistons to TDC position (marking on the flywheel).
- Rotate the light disk precisely into position as shown on the picture. The position is correct when the LED toggles.
- Now tighten the two grub screws in the disk. Be sure that the disk is approx. In the middle of the barrier cutout. Replace the spark plug caps, the bike is ready to start!

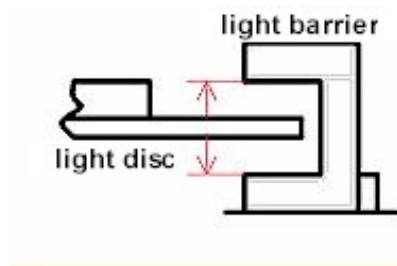
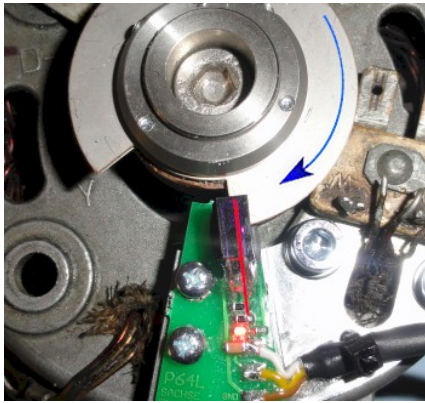


Figure 1

- Checking the timing with a timing lamp: Because of the different advance timing of the digital ignition the old markings on the flywheel are not longer valid. The only way to check the setting with a lamp is to unscrew the plugs, put them back into the caps and lay them on the cylinders (ground connection). Now connect the timing lamp and let the engine turn only by pressing the starter button. Now the TDC marking must be visible through the inspection hole. Depending

on the accuracy of the setting you will see only a difference of 1- max. 2 deg



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	8900 rpm
down	8100 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.

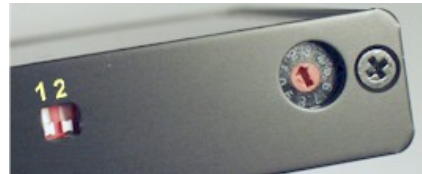


Figure 2 DIP switches and rotary switch.

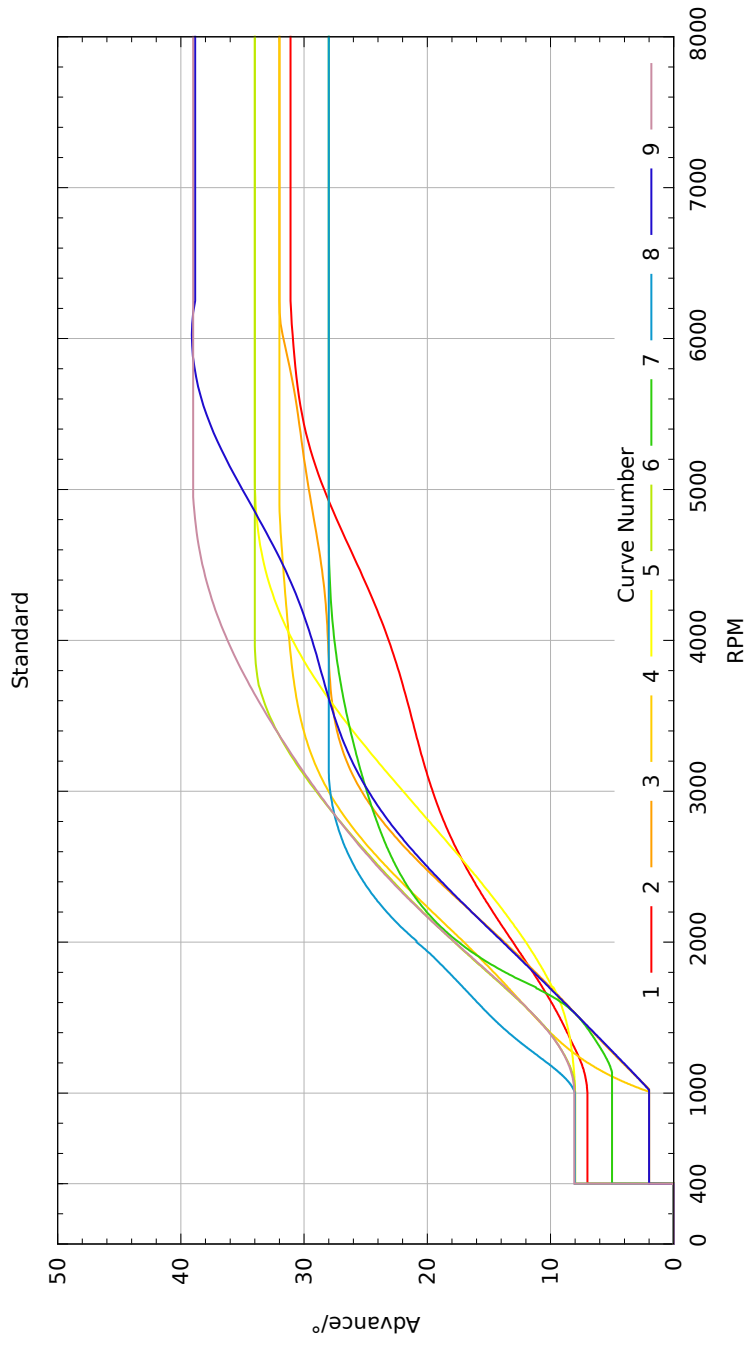


Figure 3 Selectable ignition curves.



## 6 General Notes / Troubleshooting

Only use interference-free caps for the spark plugs! Recommended are NGK caps with 5 k $\Omega$  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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