

Contents

1	Function	1
2	Mounting	2
3	Electrical Connections	3
4	Settings	4
5	General Notes / Troubleshooting	8

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: Per revolution of the crankshaft starting from TDC, the momentary peripheral speed is determined and by this means, the time up to ignition is calculated. 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 Mounting

- The mounting position of the pickup is determined by the position of installation and connection of the stator. First, remove two of the three M5-stator screws and replace them with the supplied threaded bolts and washers.



Figure 1 Threaded rods with spacer.

- Then remove the central nut from the rotor and screw again the driver sleeve but tighten only slightly.



Figure 2 Centre nut.

- Now fit the pickup plate onto the threaded bolts and push the magnetic disk so far onto the driver that the magnets in the disk are in the same height as the sensors.

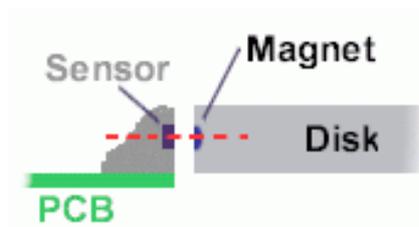


Figure 3 Sensor alignment.

- If the driver overlaps it should be reduced by this amount (file, angle grinder or lathe), so that the cover can be fitted as close as possible. If everything fits, then the driver will be fully tightened.
- With a little patience and talcum powder the pickup cable can be pushed through the rubber grommet. Otherwise an additional groove for the pickup lead (+ provided grommet) must be made into the generator cover next to the existing grommet.

met.



Figure 4 Connecting the pickup.

3 Electrical Connections

The wire cross section of the ground cable should not be below 1.5 mm² and should be kept as short as possible. The wire cross-section of the other cables should not be below 0.5 mm².

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

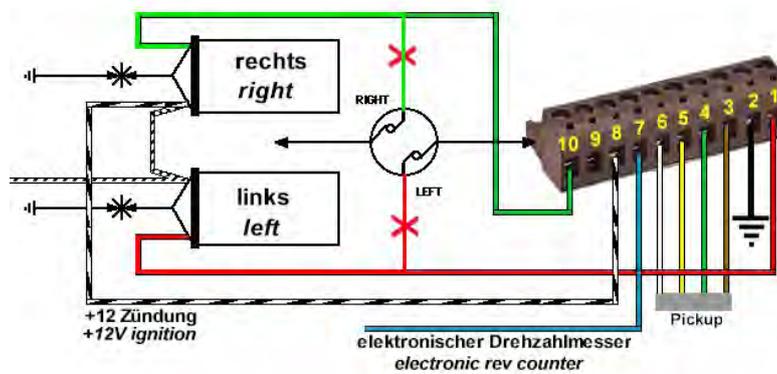


Figure 6 Ignition circuit diagram, breaker points replacement

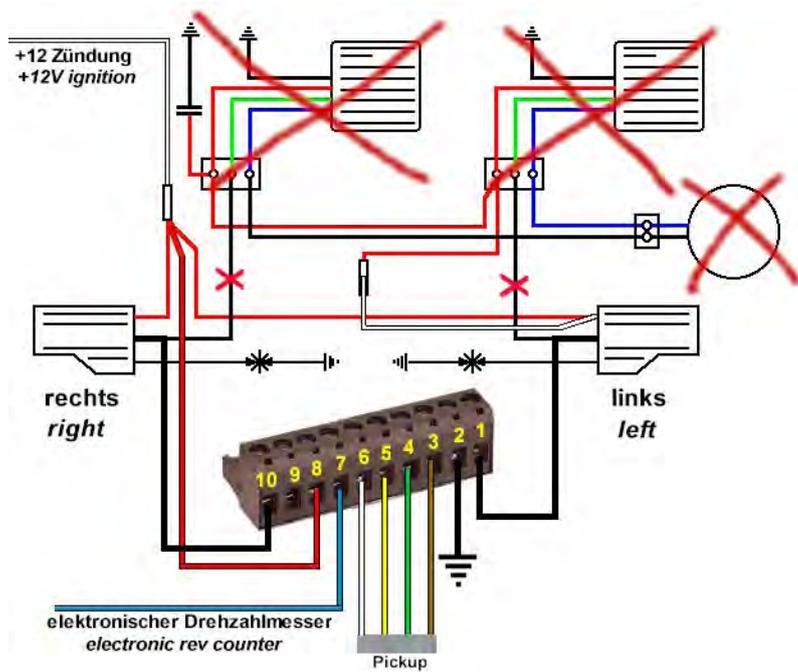


Figure 5 Ignition circuit diagram, Motoplat replacement

Connector	Function
1	Ignition coil cylinder left –
2	Ground
3	Pickup lead, brown
4	Pickup lead, green
5	Pickup lead, yellow
6	Pickup lead, white
7	Output for electronic tachometer
8	+12 supply voltage, switched
9	Ground (same as #2)
10	Ignition coil cylinder right –

4 Settings

- Bring the right piston into TDC position.
- Rotate the disk in rotation direction until the 'S'-marked Magnet is close to the sensor. Take care that the magnets in the disk are approximately in the same height as the sensor.

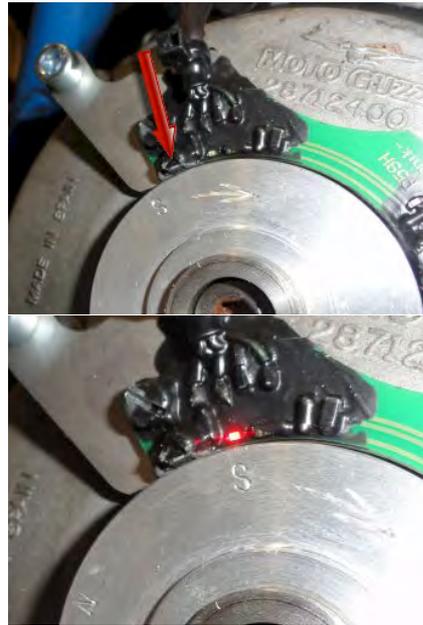


Figure 7 Adjust the sector disk so that the LED toggles.

- Turn on the ignition switch.
- Go on rotating the disk. The LED near the sensor should light up when the 'S'-marking passes the sensor (red arrow). It is possible that the LEDs already indicating at power on.
- Rotate 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. Make this adjustment very accurately!

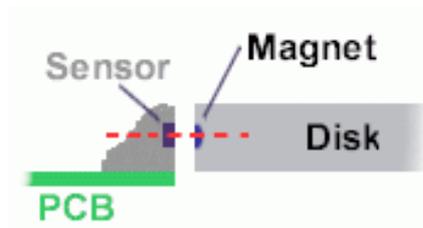


Figure 8 Ensure correct alignment of magnet disk and sensor.

- Notice: you can't switch the LED on only by turning back. Therefore the ignition must be switched off/on or the disc be turned back to the 'S' marked magnet.
- **If the engine is running please secure the set screws with medium strength thread locker.**
- At last, if possible, check the timing with a timing lamp.

The DIP switches can be found 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 8600 rpm
down 7800 rpm



Figure 9 DIP switches and rotary switch.

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 unit and coils. But it doesn't test the pickup.

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

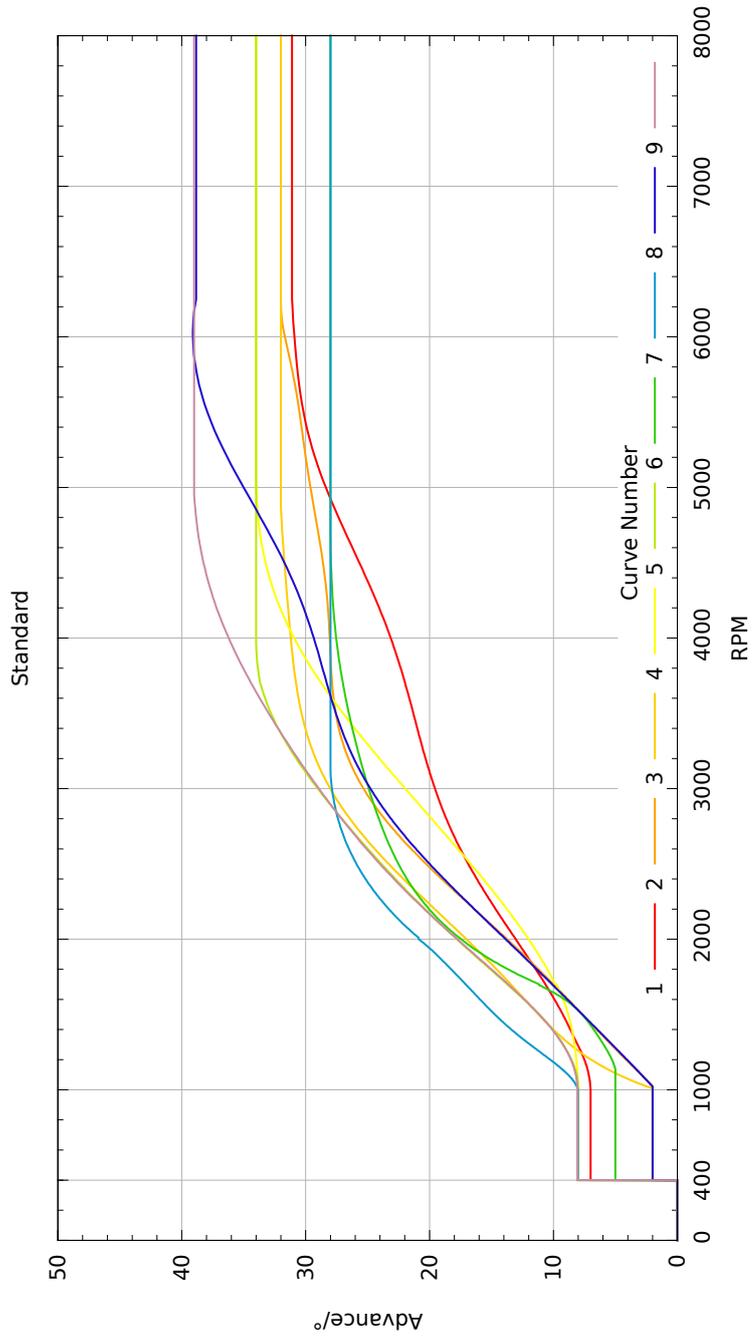


Figure 10 Selectable ignition curves.

5 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 braklers 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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