

Mounting Instructions Digital Ignition ZDG3

Version 3.2

Moto Guzzi with Saprisa Alternator

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A Guzzi engine with a Saprisa alternator allows the use of Hall sensors for signal recording, because the stray magnetic field is not nearly as strong as at the Bosch alternator. A further advantage is that the sensor plate also requires less space.

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 following computation of ignition timing is divided into 4 ranges:

- | | | |
|----|----------------|--|
| 1. | 0-400 rpm | Starting range, ignition always at TDC |
| 2. | 400-1000 rpm | Idling range, 2° to 8° advanced ignition, depending on curve selection |
| 3. | 1000-6200 rpm | Partial load range, the spark advance adjustment occurs here |
| 4. | 6200-10000 rpm | maximum load range, constant maximum advanced ignition, depending on curve selection |

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- remove the two top screws of the alternator and replace them with the threaded rod, bolt and washer.
To get the correct depth in the crankcase screw the M5 screw in one side and the rod in the other side of the bolt. (1) + (2)
- Remove the screw again and loosen the bolts again slightly.
- Fit the sensor plate with two M5 screws but do not tighten them.
Tighten the bolts now (3) and then the screws.



- Unscrew the central screw and tighten it again with the driver sleeve (4)
- push the disk onto the driver, but tighten the set screws not yet (5)
- 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.

When fitting the generator cover, two 6mm washers must be placed on each of the four screws between the cover and ring as a spacer to ensure that the pulse disc does not scrape the cover. Usually only one is necessary, but this should be checked in each individual case. *Tip: this distance can be tested by placing a little plasticine or putty on the pulse disc.*

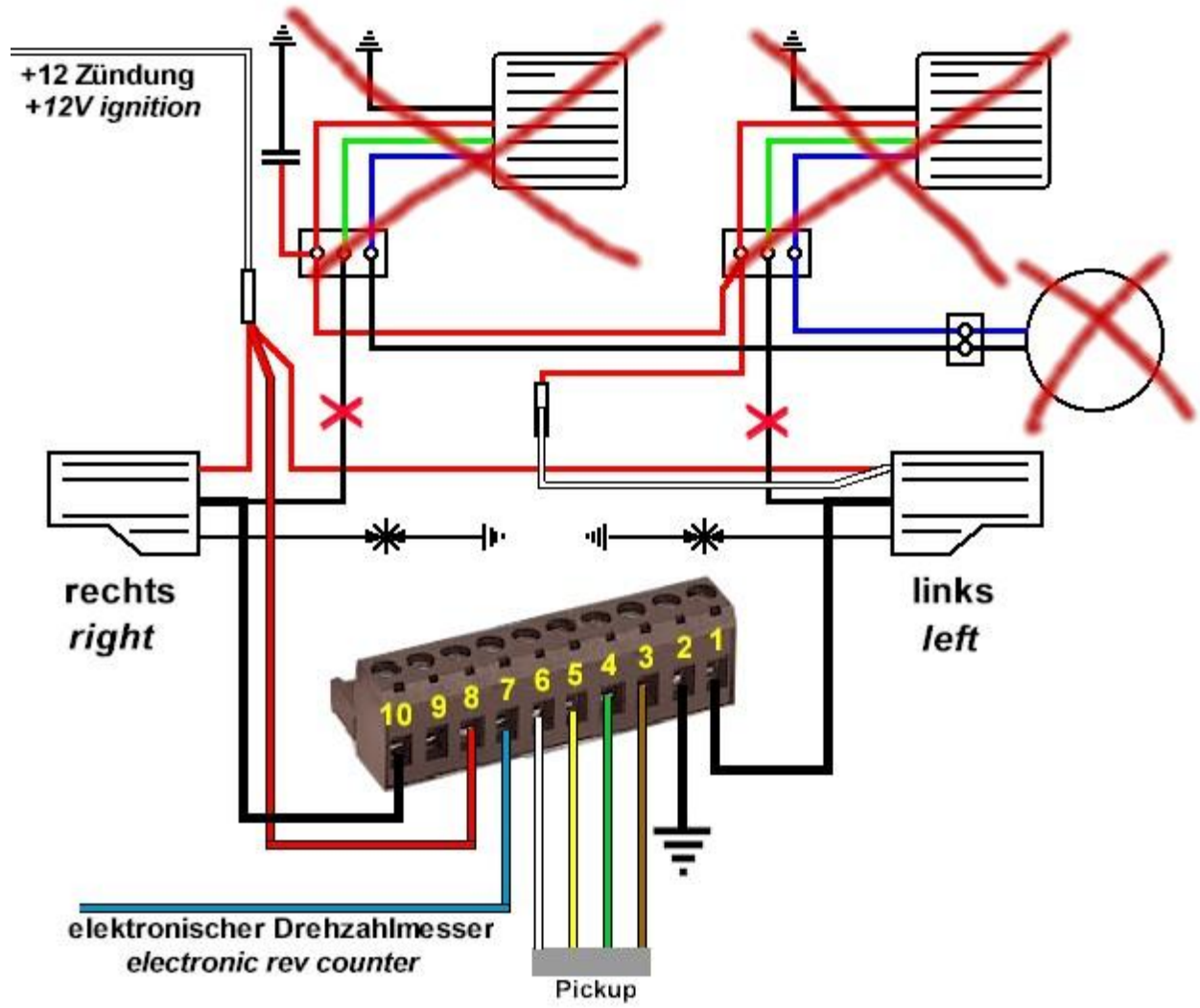
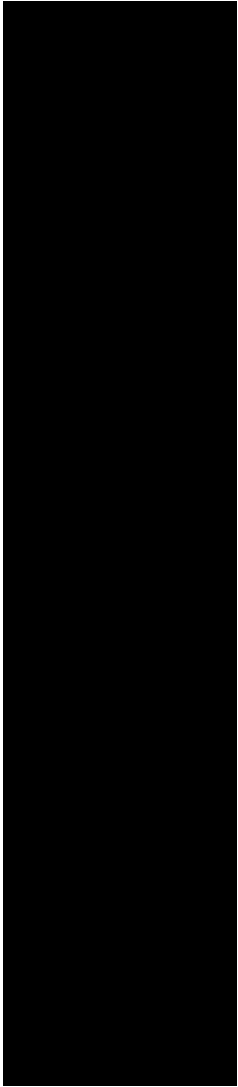


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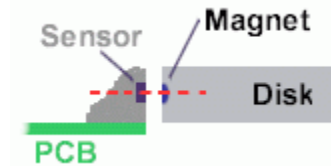
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- Bring the right piston into TDC position
- rotate the disk in rotation direction until the 'S'-marked Magnet is close to the sensor. Take care that the magnets in the disk are approximately in the same height as the sensor.



- 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!
- 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 possible, check the timing with a timing lamp.
- At last and if the engine is running please secure the set screws with a little bit medium strength thread locker.

The Rev Limit DIP switch No 1 can be found at the front of the ignition box , shown here in the down position :
DIP Switch 2 should be in the "up" position for Crankshaft counter frequency selection.

Curve selection switch shown at the right hand side, is currently in test mode selection.



rotary switch (curve selection)	1-9	advance curves 1-9
	0	test mode, continuous firing
dip switches	1	overspeed protection at switch down: 7600 rpm switch up: 8200 rpm
	2	rev. counter output frequency switch up: crankshaft switch down: camshaft

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Only use interference-free cap(s) for the spark plug(s)!
(recommended are NGK caps with 5kOhm internal resistance)

Doesn't start:

If the engine should not start, or the starting procedure is suddenly strangled, 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. 7V).

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 (Killschalter, 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 brakers 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.

