(e.g. for Yamaha TZ250)

MOUNTING AND OPERATING INSTRUCTIONS

Please read the following instructions first and use it for mounting and operating!
To learn the functions of KLS quick shifter and sensorbox it can be useful to operate the system before fitting to motorcycle by connecting it to 12 volts and to ON/OFF-switch (See chapter D: Wiring diagram).

## A. ELECTRONIC BLACK BOX

### 1. Mounting electronic black box:

For the best performance keep the cables as short as possible and mount the electronic close to the C.D.I. -ignition box, protected against hard vibrations and direct impact of water.

### 2. Electric connections of black electronic box:

2.1. 5-pole round plug: Connection to Power Supply (12 V, DC), "ON/OFF"-Switch and interuption cable (yellow).

2.1.1. Yellow interruption cable
First connect yellow interruption cable of "MQS-GR" to the black or black&white interruption cable at C.D.I/TZ250 side. (See chapter D.: Wiring Diagram!)

2.1.2. Power supply (red, red/black):
Connect cables (red, red/brown) to 12 V power supply from TZ250.
Note: red cable = positive pole (+12 Volt/DC), red/black = negative pole (ground)

2.1.3. ON/OFF switch (as delivered):
The ON/OFF-switch is best mounted near the handle-bars for easy operation. In case of any shifter problems it is then possible to quickly switch to "OFF"-position whilst riding.
Lead black-covered cables (blue/brown) to handle bars and connect to ON/OFF-switch.

- ON/OFF switch in "ON" position: KLS QUICK SHIFTER is working.
The permanent current consumption is about 50 mA.
Depending on actual position of gear lever (or sensorbox slider):
- Whilst green LED lights: The power supply is O.K. and the ignition is not interrupted;
- Whilst red LED lights: The ignition is interrupted.

- ON/OFF switch in "Off" position:
In case e.g. of firing problems caused by the shifter all quick shift functions can switched off, no influence of the shifter to the ignition is now possible!
"Normal" shifting is necessary now!

2.2. 7-pole round plug (Connection to Sensor-Box)
Connect the two 7-pole plugs together for the sensor box to work with the electronic black box.

(e.g. for Yamaha TZ250)

## B. SENSOR BOX

Note: When changing to upper gear, the gear lever should be pushed (1 up, 5 down)! Pushing the gear lever enables a shorter gear change time, possibly less than 20ms. Pulling the gear lever needs much more time for gear change!

### 1. Mounting SENSOR BOX:

Caution:

- Do not mount the sensorbox near to exhaust system or in contact to the gearbox as maximum temperature of the sensorbox should be no more than 60°C (140°F)!
  If necessary a "heatshield", best made of non metalic material, can be mounted between sensorbox and hot parts of the gearbox or the exhaust pipe.
- Mount both ends of the sensor box to the engine with the two cables to the upperside for draining water out of the box through the two holes at the opposite side.

#### 1.1. Connection of the Rod End Bearing to Gear Change Shaft

To move the switching slide it is the best connecting the rod end bearing to a (additional) lever at the gear change shaft! Minimum length of lever about 45 - 50 mm! When operating gear lever for gear shift, the movement of the slider has to be about 12 - 13 mm in each direction (min. 11 mm, max. 14 mm)!

Caution

Do not use maximum movement of slider (about 17 mm in each direction!) as it will damage the sensorbox!

#### 1.2. Connection of Rubber Element to Engine or Gearbox

Fix light alloy holder using the rubber element to equalize the box movements to the engine or the gearbox (e.g. using a special made holder).

Caution

Don't twist rubber element against the sensorbox as this will cause excessive wear to the slider in the box!

#### 1.3. Control of Switching Slider

Depending on the way of mounting the sensor box the slide will be "pushed" or "pulled", when gear lever is moved to upper gear:

Mode: "Pushing Slider" (factory standard mounting):

The adjusting screws inside the slide for "STOP" and "RESTART" of the ignition are at the same side as rod-end bearing mounted to gear lever.

To change to Mode: "Pulling Slider":

Remove complete sensor box from the light alloy holder, remove the rod-end bearing and fit to the opposit end of the slide. Turn sensor box (back to the front!) and fix it again to the light alloy holder. The "STOP/RESTART" screws will now be at the opposite side of the gear lever mounting!

Caution: Be sure to put distance washers between sensor box and alloy holder plate again.

#### 1.4. Basic Adjustment of Switching Slider

If gear lever is in the neutral position the slider has to be in the middle of the sensorbox (visible distance to edge of each end of the slider is about the same).

### 2. Electric Connection of Sensor Box:

Connect the 7-pole plugs of the electronic box and the sensor box.

Advice: You can fix the cables coming out of the sensorbox using a rivet hole of the sensorbox to prevent braking cables by vibrations.

### 3. Removement / Lubrication / Mounting of the slider

To remove the slider for inspection or cleaning, remove the movement limiting screw from under the sensorbox through one of the two holes.

Note

But do not use grease or oil to avoid dirt adhering to and grinding the slider!


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**MOUNTING AND OPERATING INSTRUCTIONS**

QUICK SHIFT SYSTEM

# KLS MQS GR



(e.g. for Yamaha TZ250)

## C1. ADJUSTING SWITCHING-POINTS FOR IGNITION-INTERRUPT

The final position of the switching points depends on motorcycle and the type of the gear. Therefore the final settings have to be optimized whilst racing! The best adjustment will have been achieved if the gear lever can be operated quickly and without resistance.

### 1. General Functions

The switching points for ignition "STOP" and "RESTART" can be separately adjusted using the two "Allen head" screws at the end of the slide.
From factory, these two screws are visibly at the same level of adjustment.

### 2. Adjusting Switching Points

When moving the slider in the sensor box, the red LED will light exactly at that position of the gear lever whilst the ignition is interrupted! For a first setting, best use 3rd or 4th gear (whilst bike is on his stand), shift to upper gear slowly and set the red light to come "ON" and "OFF". (Then check also from 1st to 2nd gear!)

#### 2.1. Screw "1" for Ignition "STOP", (Mark "1" at Sensor Box)

First check that the slider is central in the sensor box when the gear lever is in neutral position! If not, adjust the rod-end bearing for this purpose!
From this position screw "1" has to be screwed for final optimum adjustment! When changing to upper gear it is the best to interrupt the ignition (red light starts, green light stops lighting) just after the first mechanical resistance of the gear lever, but latest when gear drum starts to move.

Note!: If the interruption is adjusted to early then an incorrect ignition interrupt can be started, e.g. by the vibration of gear lever! If the interruption is to late then the gear change is hard to execute!

#### 2.2 Screw "2" for Ignition "RESTART", (Mark "2" at Sensor Box)

Screw "2" should now to be adjusted for the time, when the ignition should "RESTART". Moving gear lever to upper gear, the ignition must not restart prior (red LED will stop, green light will start lighting) to that moment, when the next gear wheels have successfully selected. Use the position of the gear lever for "RESTART" when you will hear gear drum snap into upper gear position, when moving gear lever slowly!
Note!: A too early "RESTART"-point will not allow the gears to mesh together and will - in worst case - cause gear noise. A too late "RESTART" will not allow the minimum time of gear change.

Note!: To adjust the switching points sooner : Twist adjusting screw clockwise
To adjust the switching points later : Twist adjusting screw anti-clockwise

## C2. USING "MQS"QUICK SHIFTER, MAXIMUM TIME OF INTERRUPT

Now change to upper gear with no clutch- or throttle-movement at the handlebars!
The faster the gear-lever movement, the smoother the gear-change!

Caution!: If any ignition-problems occur, which probably could be caused from the gear-shifter the ON/OFF switch should be switched to the "OFF"- position immediately whilst driving! If problems continue, other reasons must be found!

Remark: The red LED-light indicates only the switching points for adjustment! The real time of igniton-interruption is only about 80 ms! Using KLS-QUICK SHIFTER whilst driving, a gear change lasts about 25 -35 ms if setup is made correctly! In case of a gear lever movement (e.g. made by error or trying to change into "7th gear"!) the ignition will automatically restarted 80 ms if no correct gear lever "RESTART" command is achieved. Moreover a gear-change from first to neutral gear is possible without stopping engine (e.g. if motorcycle is standing still with low rpm)!

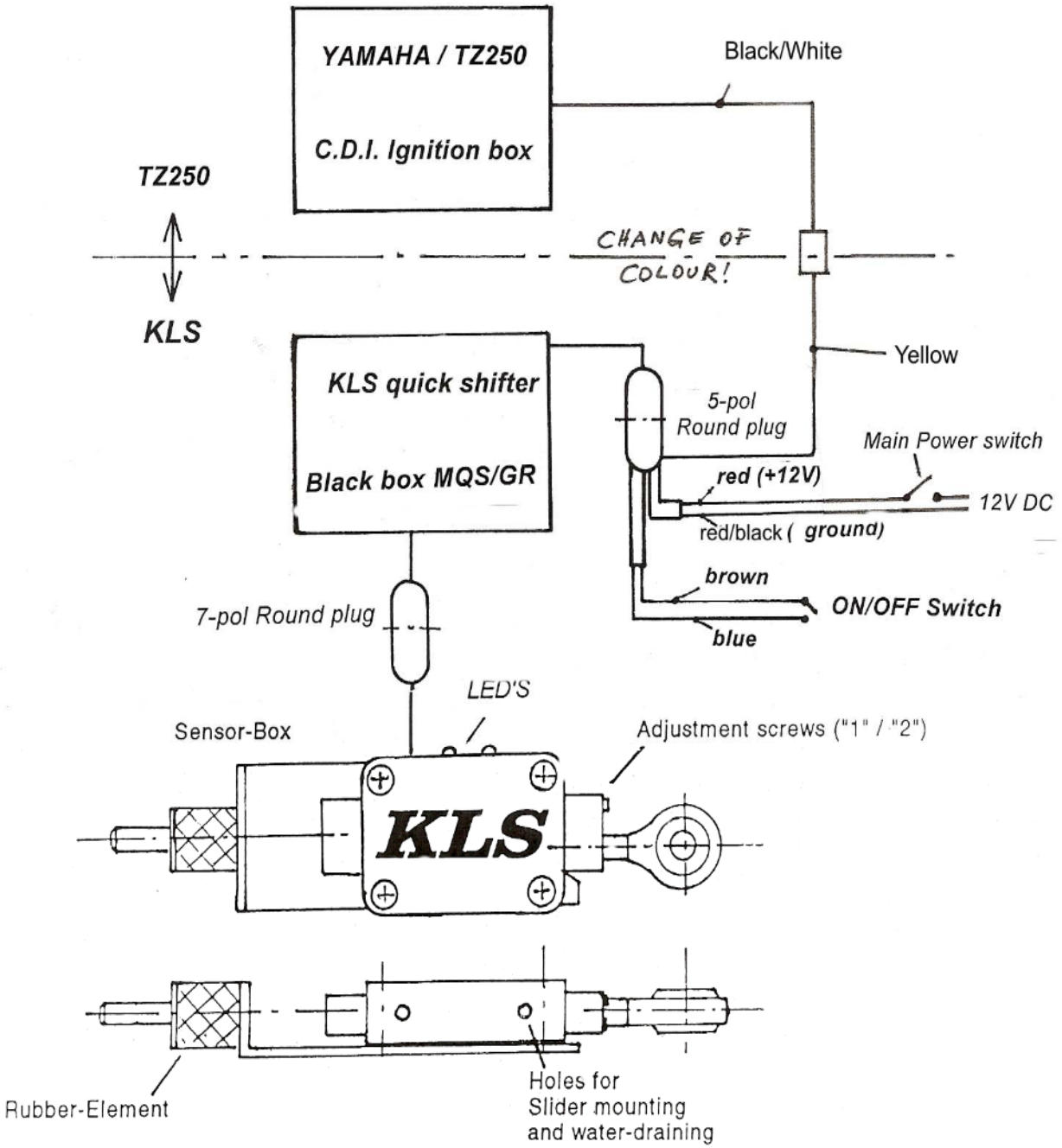
## C3. WARRANTY, SERVICE

Full season warranty, but minimum six month from delivery! Warranty is limited to sensors and electrical wiring. Damage which is caused by improper handling or use of the shifter is not covered!

Note!: If service or repair is necessary please send the complete shifter system to KLS!
From outside Europe please use a "Invoice pro forma" or a "No commercial invoice" with a declared value of maximum 25.- US $ and the advice "value for customs purposes only!"

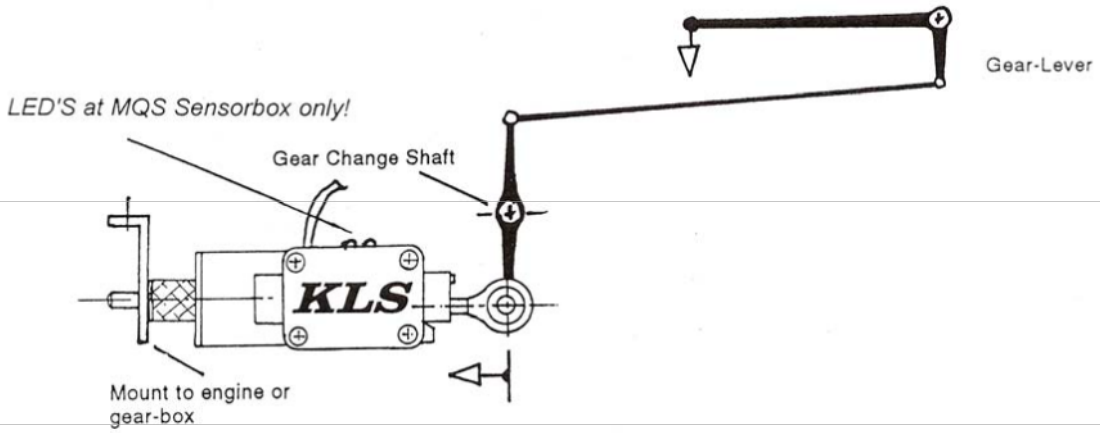
(e.g. for Yamaha TZ250)

***D. WIRING DIAGRAM***



(e.g. for Yamaha TZ250)

## E. Mounting of the Sensorbox:




e.g.: Gear lever will be pushed moving to upper gear!
Showed mode: "Pushing" slider (factory standard mounting):
Change to pulling slider-mode, see chapter C

## *F. SWITCHING-DIAGRAM of the "STOP/RESTART"-points of ignition in relation to the position of the gear-lever*