MOUNTING AND OPERATING INSTRUCTIONS

QUICK SHIFT SYSTEM

KLS MQS LSL

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).

For the user interface of the shift device "LSL" please refer to the "LSL" user description.

A."MQS-LSL" Electronic black box

1. Mounting of the black box:

Caution!: For the best performance keep the cables as short as possible and mount the electronic box close to the C.D.I. ignition box. When mounting the electronic box please protect it against vibrations and direct impact of water.

2. Electric connections on the black box :

2.1. Interruption cables (2 x red):

2.1.1 Bring together the common (= common colours) cables coming from the coils into one cable. Cut that cable, mount plugs and connect each end to the red interuption cables of the shifter.

2.2. Connection to Power Supply (12 V, DC) and "ON/OFF"-Switch; 5-pole round plug

2.3.1. Power supply: Connect cables (red & red/black) to 12 V/DC source.
Best use DC-power supply switched by the main power switch of the bike!
Note: red = positive pole, red/black = negative pole.

2.3.2. ON/OFF-switch (as delivered): The ON/OFF-switch is best mounted near the handlebars for easy operation. In case of problems it is 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: The MQS is working.
Depending on the actual position of the sensorbox slide
- When green LED lights up: the ignition is not interrupted (and it indicates too, that the power source for the shifter is O.K.)
- When red LED lights up: ignition is interrupted.

ON/OFF-switch in "OFF"- position: In case of electric problems caused by the shifter all quick shift functions can be switched off and no influence of the shifter to the ignition is possible!

2.3. Connection of yellow cable for the LSL shift light

Connect the yellow cable to one "live" cable (= different colours!) of any one ignition coil.

2.4. Connection to Sensor-Box; 7-pole round plug:

Connect the two 7-pole plugs together for the sensor box to work with the electronic-box.

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:

- 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:

- *"Pushing Mode" (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 "Pulling Mode":*
  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.
  Note: Be sure to put distance washers between sensor box and alloy holder plate again.
  The "STOP/RESTART" screws will now be at the opposite side of the gear lever mounting!

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:

Connection of the 7-pole plugs of the electronic box and the sensor box. Fix the two cables coming out of the sensorbox to 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: To avoid a excessive wear a teflon-spray or similar can be used for the the slider.
No grease or oil to avoid dirt adhering to and grinding the slider!

C1. Adjusting switching points for ignition-interrupt

Note: 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 sliderscrews 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 other gears!)

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 or is not possible!

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 the KLS 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!

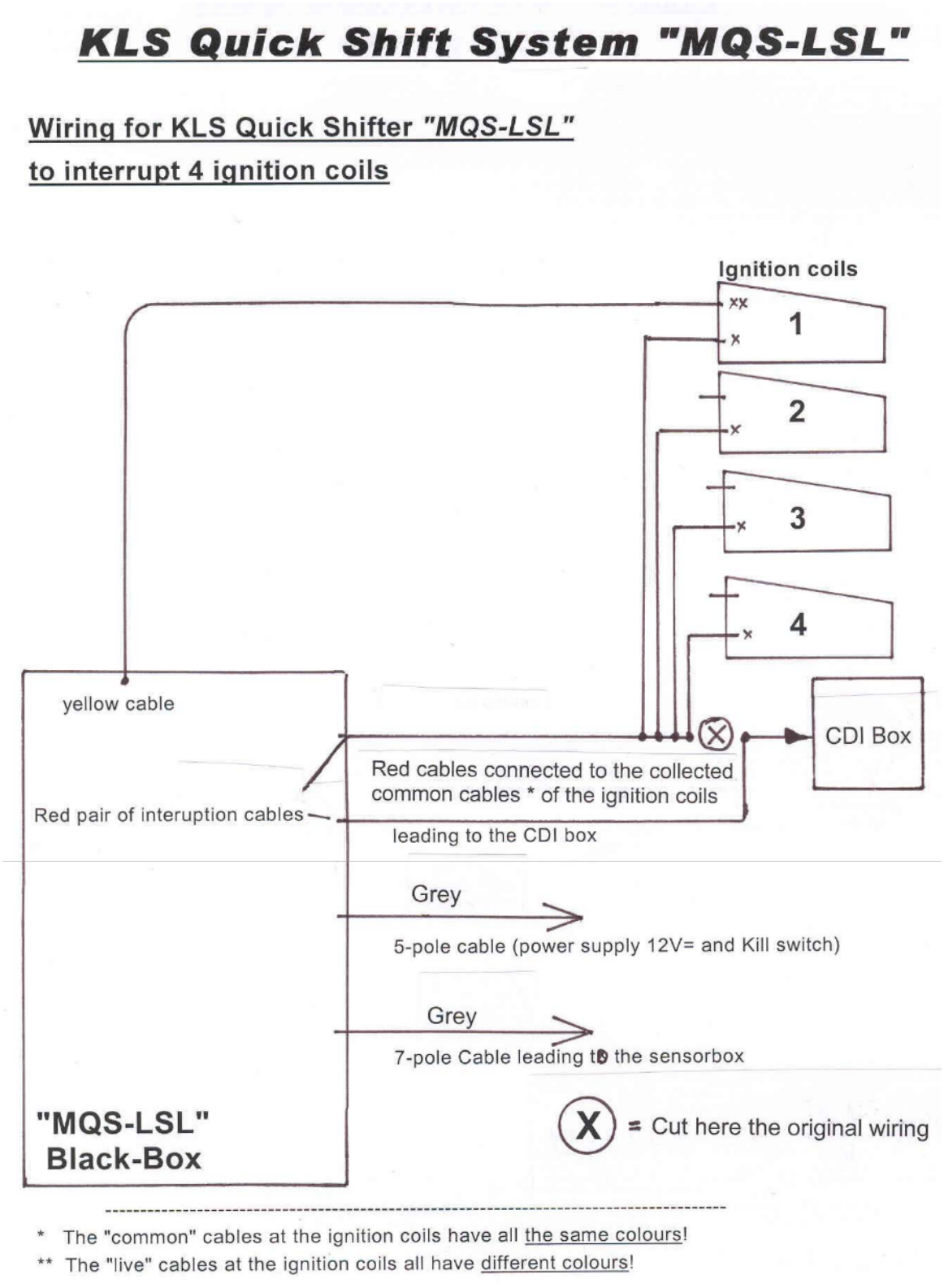
Caution!: If any ignition-problems occur, which probably could be caused from the gear-shifter the ON/OFF-switch should be switched to the "OFF"- position immediately whilst driving! If problems continue, other reasons must be found!

The red LED-light indicates only the switching point for adjustment! The real maximum time of igniton interruption is only about 80 ms! Using KLS quick shifter whilst driving, a gear change lasts about 25 ms if the setup is made correctly! In case of a gear lever movement (e.g. made by error) 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 the engine (e.g. if motorcycle is standing still with low rpm)!

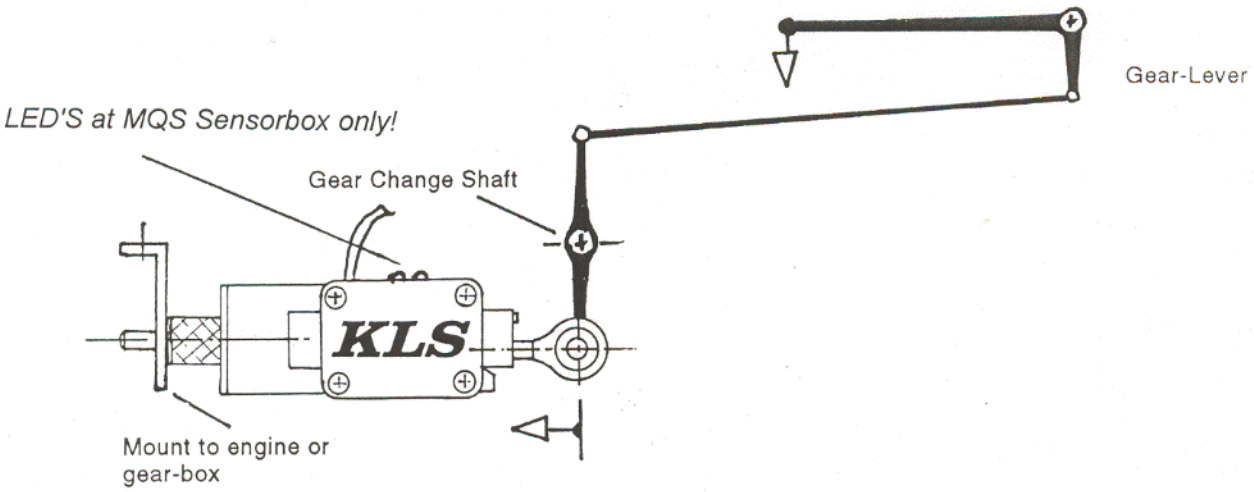
C3. Warranty, Service

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!

D. WIRING DIAGRAM for

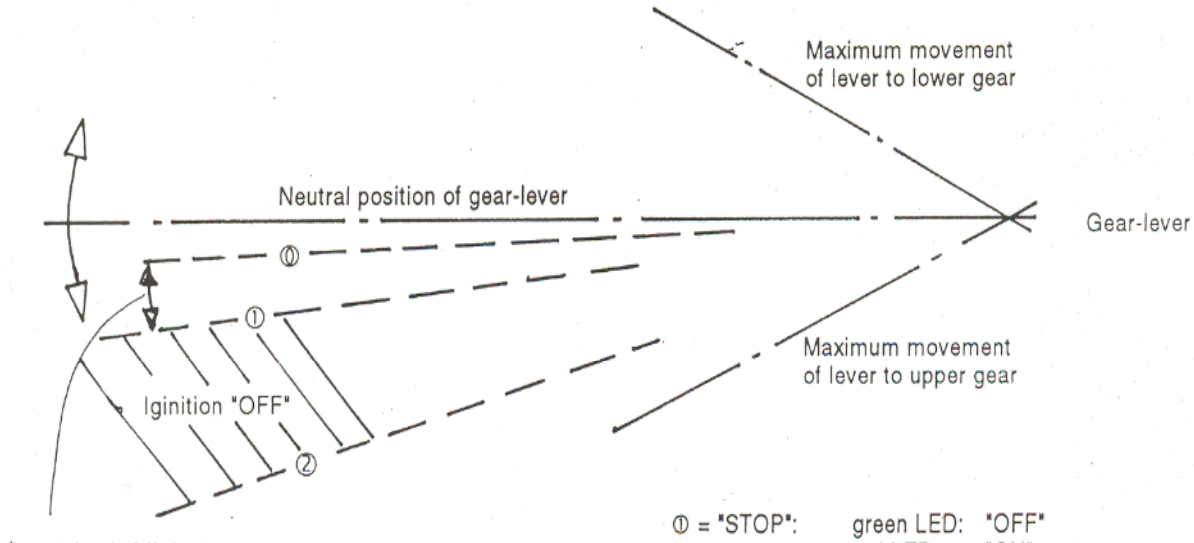


E. MOUNTING-DIAGRAM



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



Important: Minimize this distance!

① = "STOP": green LED: "OFF"
red LED: "ON"
② = "RESTART": red LED: "OFF"
green LED: "ON"
⓪ = The first mechanical resistance of the gear lever,
(selector drum starts to move.)

Oberdiller Strasse 29
81479 München
FON D-089-799 472
FAX D-089-791 990 43
WEB WWW.KLS.DE
E-MAIL INFO@KLS.DE