

Thank you for showing interest in my products. I strongly advise you to read this user manual thoroughly. It contains important instructions about installation, setup and use of the gauge. By obeying these instructions, the product will reward you with long time flawless functionality.

Basic information

The fuel gauge LSK FuelGaugePro measures the level of fuel based on the hydrostatic pressure of the fuel and displays it on a LED sign split into ten bars (barograph). It is to be connected to the fuel hose via supplied ramification plug. After installing, the gauge needs to be calibrated. To ensure that the level showed on the display is stable, an added delay is present in the programme to compensate for level changes during cornering or going over terrain changes. Because of its natural principle, it is **not possible** to connect it to a hose, into which the fuel is pumped by a **fuel pump**.

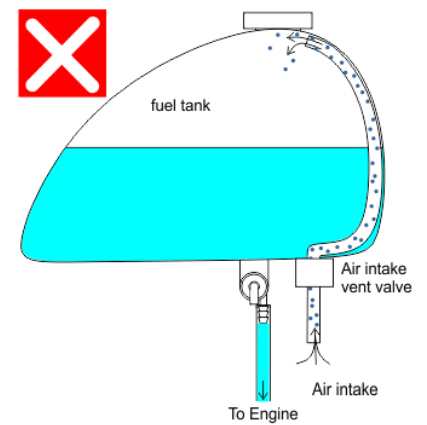
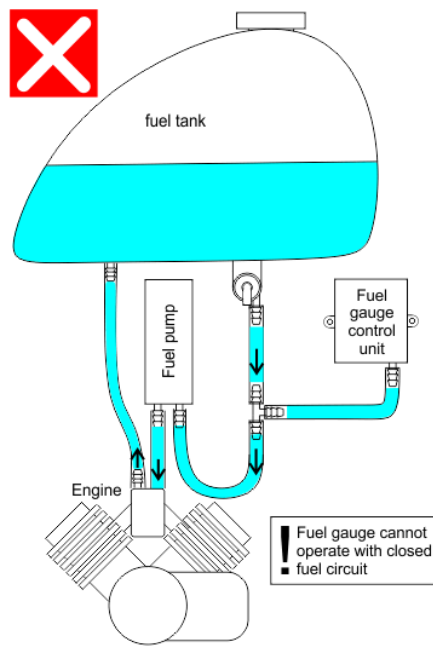
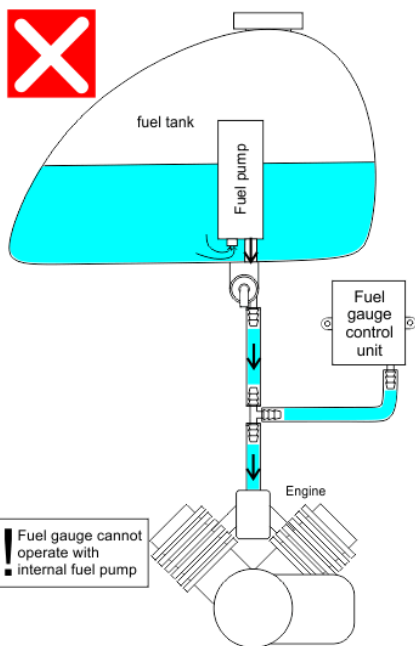
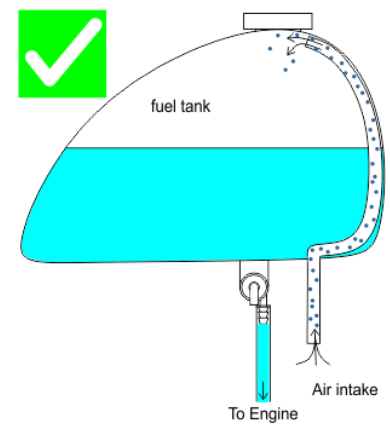
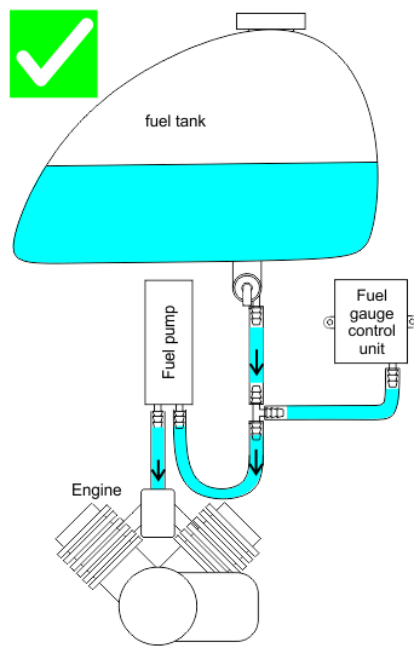
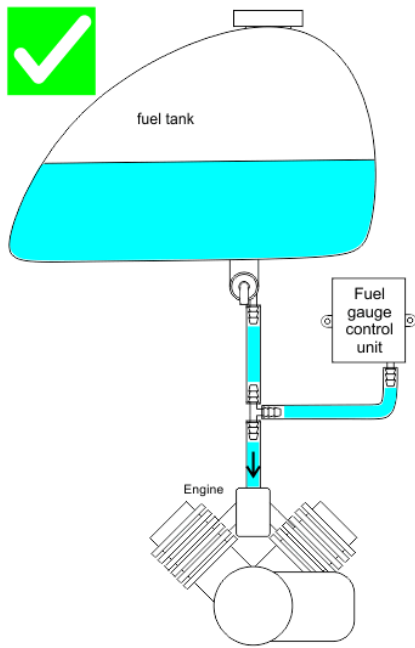
Main functions

- Possibility to calibrate the bars of the gauge LED one by one. That can compensate for fuel tank shape and also allows to show the real amount of fuel in the tank, not just the pressure if the fuel in the hose. (OR only the minimal and maximal fuel level can be calibrated)
- **The intensity** of the display is **automatically** regulated depending on the amount of light in the environment. The intensity can be increased or decreased by the user.
- It is possible to choose from **various ways of displaying** the information. From classical column like, through point like to a special one for multi coloured displays.
- Display can be set to “upside down” mode.
- When low fuel situation reached, the last remaining bar begins to flash (can be turned off)
- In case of any calibration mess ups, **two ways of resetting** the device are possible: reset everything except for the fuel levels, or reset all to basic settings.
- All of the settings are handled by a magnetic button installed on the top side of display panel. You don't need to reach the gauge control unit for changing the settings.
- For a better orientation in menu, simple animations appear on the display.
- Built in resettable fuse (polyswitch) 0,75A – no need to use or change classical fuse.
- Built in protection against short voltage overstress and wrong polarity input voltage

Answers on FAQ:

- The gauge is not affected with fall of the bike on the ground.
- The fuel gauge is linear. Every bar means a tenth of the amount of fuel or a tenth of the pressure generated by the fuel (depends on way that the gauge was calibrated). The showed decline in the fuel amount is therefore absolutely stedy.
- The gauge doesn't lose its memory after being disconnected from power. The data is stored in a FLASH memory that can last years without power.
- The gauge or the sensor do not suffer in rough environment. The terrain change compensation will work very well here too.
- Even when the gauge is broken, the motorcycle can't be affected by this – only if you rip your fuel hose off and the fuel starts to leak.

Usage restrictions



We cannot guarantee the correct function on motorcycles with a fuel pump.
 The external fuel pump may cause problems with measuring on some motorcycles.
 If this problem occurs, you can return FuelGaugePro to us and we will return your money back to you. Device must be in intact condition.

Package contains (can vary with different versions):

- FuelGaugePro1 control unit
- LED display
- Supply leads
- Fuel hose for connecting to the fuel system
- Plastic pipe T shape three way quick connector $\varnothing 6\text{mm}$
- Plastic pipe T shape three way quick connector $\varnothing 8\text{mm}$
- Clips for securing the fuel hoses
- Magnet for setting of the device
- Set of plastic ties
- Cut in connectors for easy supply voltage connection
- Cable shoe for grounding
- This user manual

Technical specification

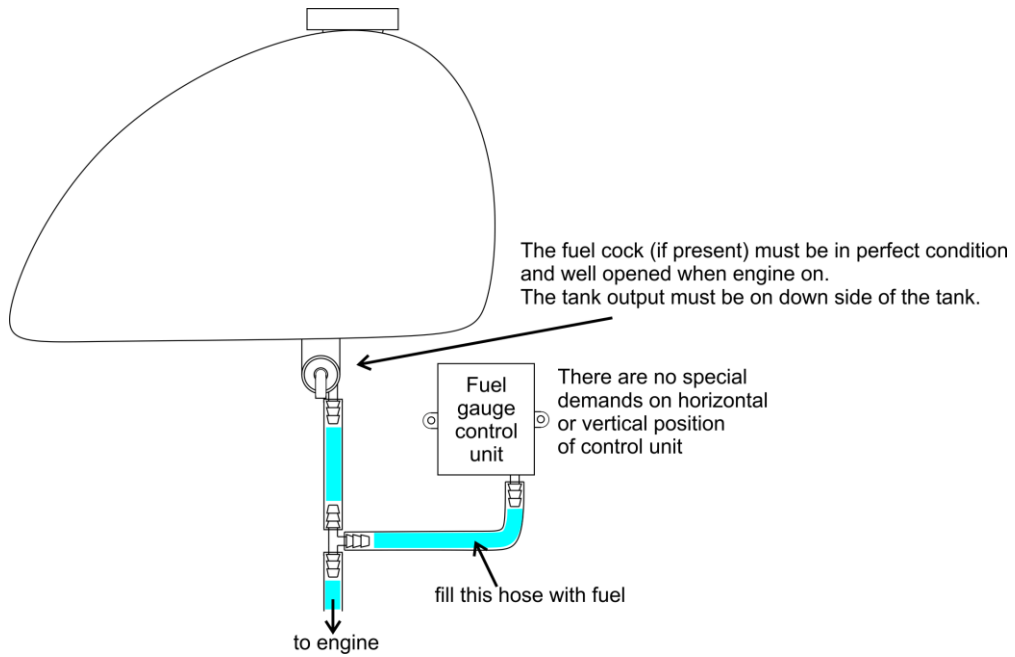
Supply voltage:	7 – 15V DC
Energy consumption:	2W max.
Fuse:	Electronic undestructible fuse (0,75A)
Max. fuel level height:	35cm
Control unit dimensions:	76 x 39 x 20 mm (3 x 1.5 x 0.8 in)
Display panel dimensions:	31 x 21 x 17 mm (1.2 x 0.8 x 0.7 in)

Mounting**1. Pick a suitable place for the control unit.**

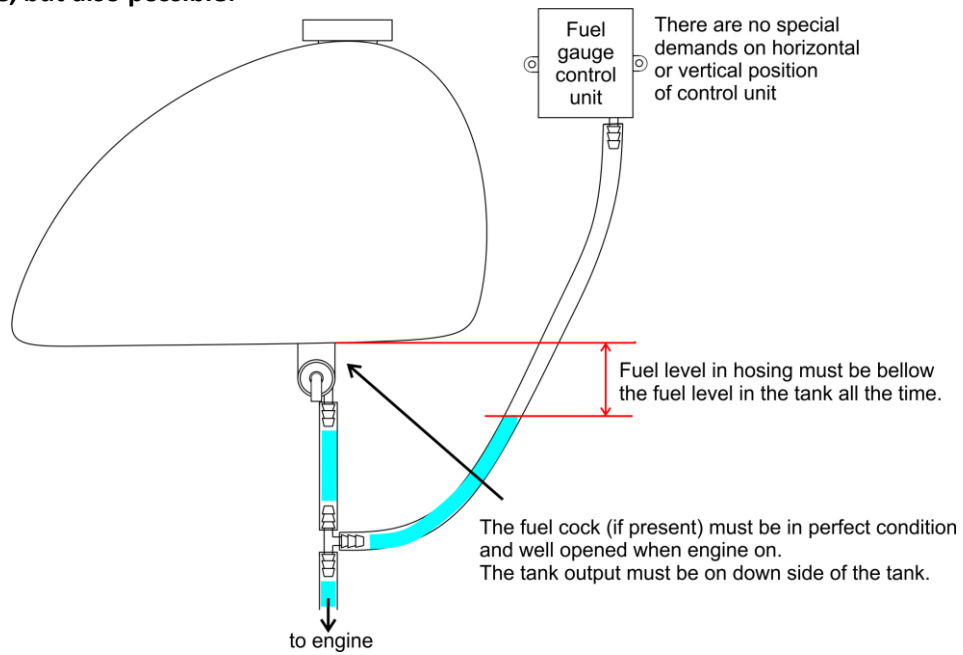
It can be over or under the fuel tank. It is better to mount it under the fuel tank and fill the hose up with fuel. This will make the gauge the most accurate.

- Do not place the unit on hot places. It can handle temperature up to 60°C/140F.
- Check, if the display can reach your desired place (if the cable is long enough).
- If you can, connect the gauge to the hose between the fuel tank and the fuel cock (not necessary, but it's better)
- The control unit can be in any position (lying or even with the fuel hose going up).

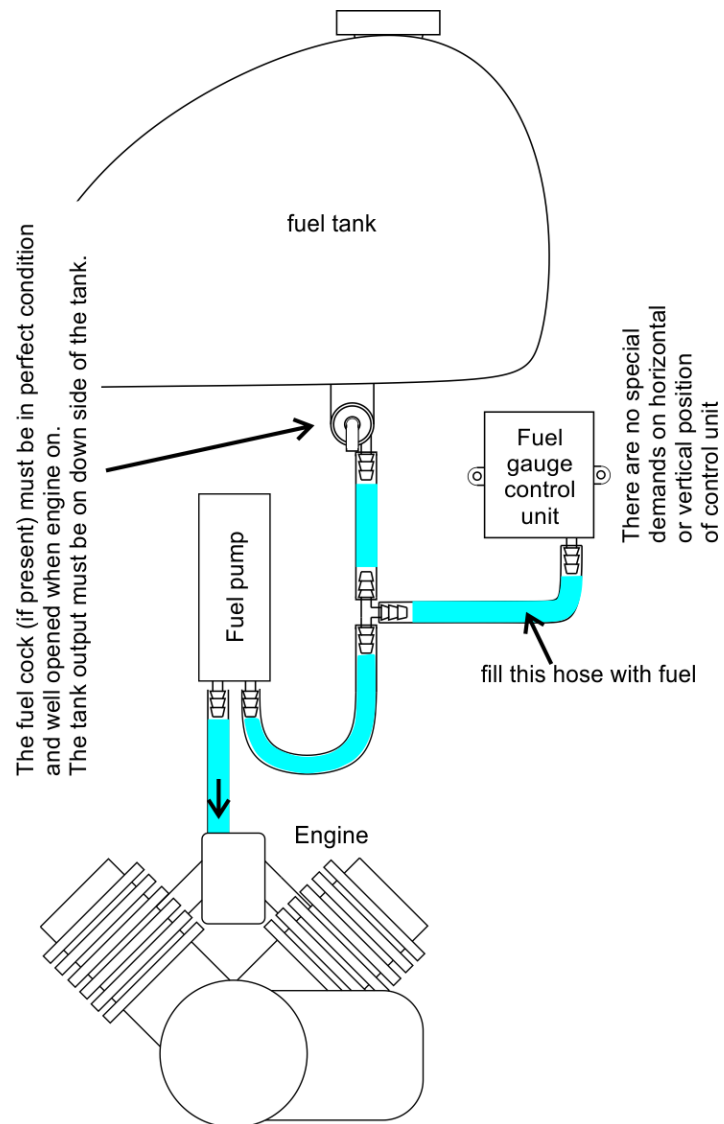
Better placement:



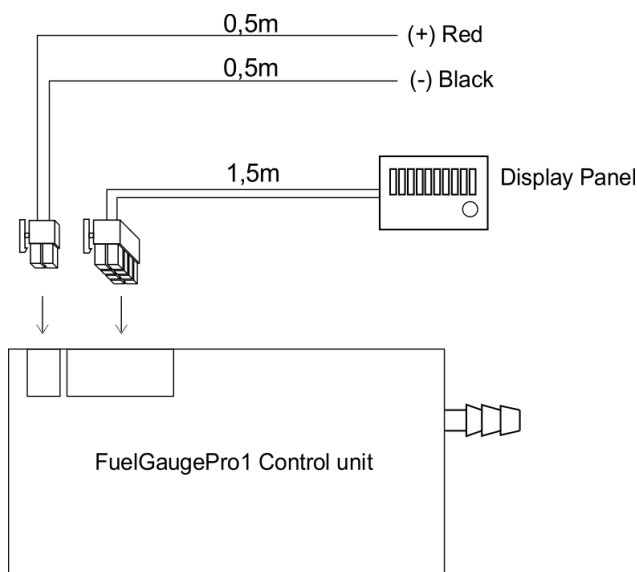
Less suitable, but also possible:



With external (out of the tank) fuel pump:



2. Connect all other electrical parts of the gauge



Display: pick a suitable place and secure it. If you decide to use tape, clean the surface before mounting the display (using ethanol...).

Light sensor: is integrated in the display panel.

Supply leads: connect after the ignition switch, so that the gauge switches itself on with the ignition key.

(-) black cable:

- The best way to connect the (-) pole is to use the wire shoe and screw it on some place of the frame, or even to the (-) pole of the battery. It can be also attached to any other (-) wire (usually black) using the cut in connector included in the package, but you must be 100% sure it is a (-) wire.

(+) red cable:

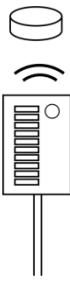
- Use the cut in connector to connect it to another (+) cable that is switched on with the ignition. You can observe that by trying the gauge with its (+) cable on (+) cable of the motorcycle, while switching the ignition key on and off. It is always **better** however, to leave this to a trained technician, who will do it professionally. This will prevent future problems with supply voltage, because cut in connector doesn't ensure 100% durable contact.

3. Connect the gauge to the fuel hose

Connection should be made according to the two pictures on previous page. Do not forget to secure the hoses with the clips included in the package. Check the system for any fuel leaks after a few kilometres and also after longer distances periodically.

- If everything is right and the gauge works, you may proceed to the setup

4. Fuel gauge setup

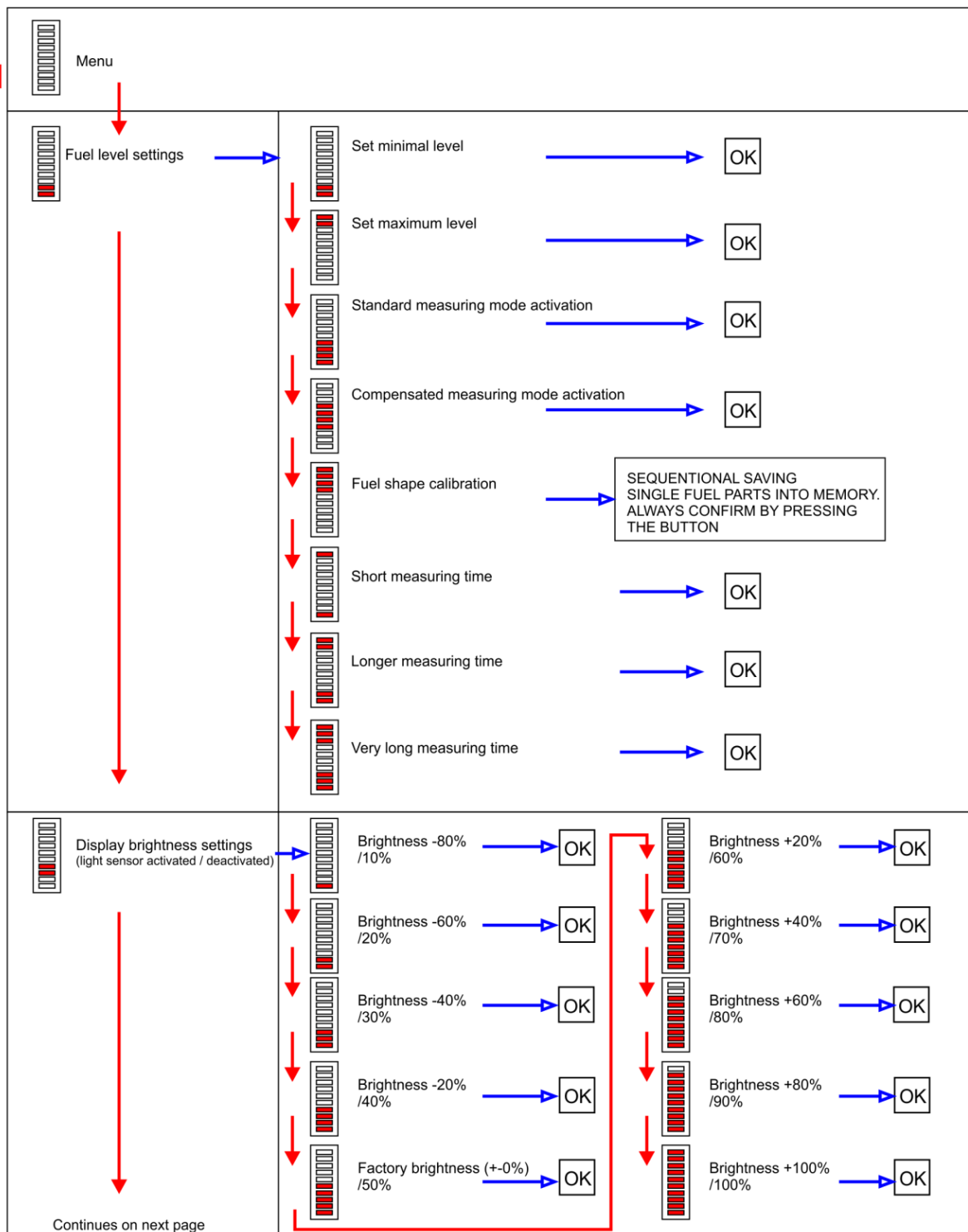


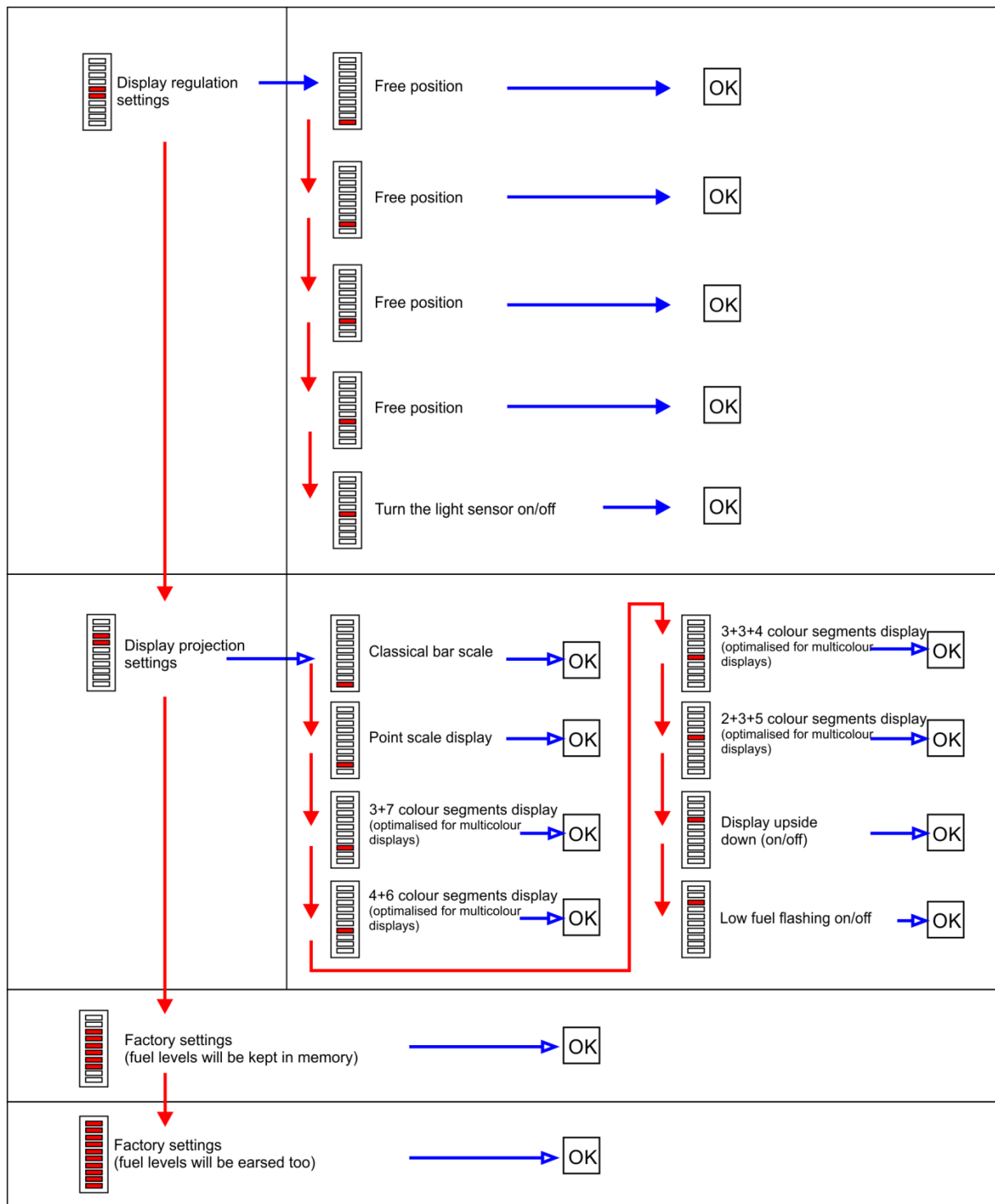
- Prepare the magnet for use (included or any other one)
- After holding it near top side of display panel for ca 3 seconds, you will enter the main menu (display shows nothing).
- Short time holds of the magnet in active area (top side of the display panel)** list in the menu, **long time hold** confirm the selected option. If you don't hold the magnet in active area for 20 seconds, the gauge exits the menu.

Fuel gauge settings

HOLD BUTTON →

**PUSH
BUTTON**





Functions description

Set minimal level (empty tank) – saves what is to be showed as “fuel tank (nearly) empty” (one bar on the display shines only, flashing). This is to be used for measuring purely the fuel pressure without fuel tank shape compensation.

-During the calibration, the **engine should be running (the vacuum fuel cocks will open)**, the motorcycle should stand straight (not on emergency stand) and both the control unit and the fuel tank must be in their final position

-A lower level of fuel than what will be set up as “minimal level” will be showed on the display as zero bars (nothing).

-It is useful to set this “minimal level” in the moment when you switch to reserve in the fuel tank. You can also set this when the tank is empty (even the reserve). In this case, you **must** leave at least 100ml of fuel in the tank, so all the fuel pipes will be filled. If not, the gauge will not work properly.

Set maximum level (full tank) – saves what is to be showed as full tank (all ten bars shine on the display). This is to be used for measuring purely the fuel pressure without fuel tank shape compensation.

-During the calibration, the **engine should be running (the vacuum fuel cocks will open)**, the motorcycle should stand straight (not on emergency stand) and both the control unit and the fuel tank must be in their final position

- A higher level than this “maximum level” will be showed up with all ten bars shining on the display.



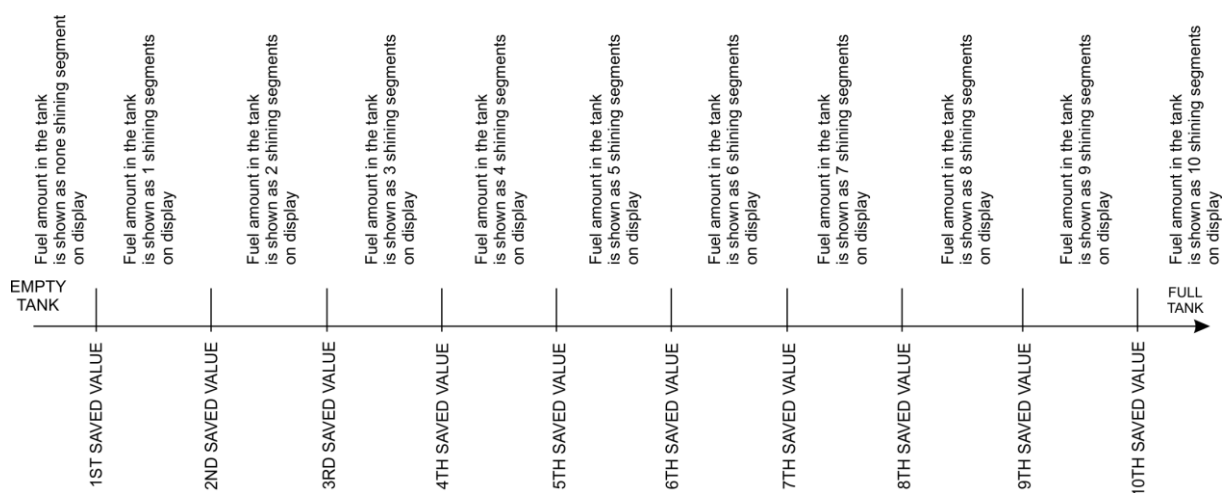
If the minimum level set will be higher than maximum level, an error will occur. That will be indicated with two bars flashing in the middle of the display and the data will not be saved. The gauge needs to be turned off and on after this before attempting to calibrate it correctly.

Standard measuring mode activation – The amount of fuel will be calculated from the previous two levels of fuel. After calibrating one or the other level (minimum or maximum), this mode will be activated automatically

Compensated measuring mode activation – Activates more advanced mode of measuring fuel. This measures the remaining amount of fuel in reality (it doesn't compute it from fuel level). Every one of the ten bars on the display means one tenth of fuel tank capacity. It too needs calibration. That is done using the function described below (Start fuel tank shape calibration). You can set the gauge to this mode even if you did the standard two level calibration or none at all. In these cases, however, the display will not display valid data. If you do the calibration described below correctly, the gauge will enter this mode automatically and will work properly.

Fuel tank shape calibration – After activating it, the user is supposed to fill the empty tank with fuel and confirm the new level by short hold of the magnet in active area. If you want to cancel the unfinished calibration, you can do so by switching the gauge off. The data in this case will not be saved.

The saved data will be (when running the bike) evaluated as showed on the picture below. Understanding that picture will enable you to set the gauge entirely by your liking (so that one bar may mean less than 1/10 of tank around the empty level and more than 1/10 when nearly full).



These levels must be confirmed from the lowest to the highest. If not, an error will occur. That will be indicated with two bars flashing in the middle of the display and the data will not be saved. The gauge needs to be turned off and on after this before attempting to calibrate it correctly.

Calibration procedure (zero bars on display = empty tank):

- Empty the tank so that there is nothing left in it.
- Pour in about 100-200ml of fuel to fill the fuel pipes and the cock to be able to open.
- Compute the amount of fuel equivalent to one bar on the display by:
Divide the volume of your fuel tank by 11. The result is equivalent to one bar on the display.
- Pour exactly that amount of fuel into the tank.
- During the calibration, the **engine should be running (the vacuum fuel cocks will open)**, the motorcycle should stand straight (not on emergency stand) and both the control unit and the fuel tank must be in their final position
- Confirm the step by short holding of the magnet in the active area, if you see one bar flashing on the display.
- Pour the same amount of fuel into the tank once more.
- After that, the procedure is analogic to the first step until you confirm all ten bars.

*Example: The fuel tank volume is 18 litres. $\frac{18}{11} = 1,66$ l of fuel equals one bar of the display.
You put 1,66 litres of fuel into the tank and confirm the flashing one bar.
You put in another 1,66ltr of fuel into the tank and confirm two flashing bars on the display.
... this way, analogically, until you confirm the ten flashing bars on the display.*

Now:

*Display shows zero bars (or one flashing): there is between 0 - 1,66ltrs of fuel in the tank.
Display shows one bar: there is between 1,66 – 3,32ltrs of fuel in the tank. (1 * 1,66 up to 2*1,66)
Display shows five bars: there is between 8,3 – 9,96ltrs of fuel in the tank. (5 * 1,66 up to 6*1,66)
Display shows ten bars: there is between 16,6l– 18ltrs of fuel in the tank. (10 * 1,66 up to 11 * 1,66)*

Note: There is no need to convert litres into gallons if you don't have the volume of your tank measured in litres. Simply divide the volume in gallons by 11 and continue as described above.

Calibration procedure (zero bars = switch to reserve):

- Run the bike until you have to switch to the reserve (or empty the tank and put in the amount of fuel equal to the volume of the reserve tank).
- Compute the amount of fuel equivalent to one bar on the display by using this formula:

$$\text{Volume per one bar} = \frac{\text{fuel tank volume (including reserve)} - \text{reserve volume}}{10}$$

- Start the engine** and leave it idling for about a minute (necessary if you have vacuum fuel cock).
- Confirm the first flashing bar on the display when you have the exact amount of fuel in the tank, so you need to switch to reserve.
- Put the computed amount of fuel into the tank ("volume per one bar") and confirm the flashing bars on the display.
- Continue like so until you confirm ten flashing bars.

Example:

The fuel tank volume is 18 litres and 3 litres are a reserve tank. $\frac{18-3}{10} = 1,5\text{l}$ of fuel per one bar on the display.

- If you have three litres in the tank (the amount of reserve fuel), confirm the one flashing bar on the display. .

- You put in another 1,5ltr of fuel into the tank and confirm two flashing bars on the display.

... this way, analogically, until you confirm the ten flashing bars on the display.

Now :

Display shows zero bars (or one flashing): there is between 0 – 3l of fuel (you run on reserve).

*Display shows one bar: there is between 3 – 4,5l of fuel. $(3 + (0 * 1,5))$ up to $3 + (1 * 1,5))$*

*Display shows five bars: there is between 9 – 10,5l of fuel. $(3 + (4 * 1,5))$ up to $3 + (5 * 1,5))$*

*Display shows ten bars: there is 16,5l of fuel, or more. $(3 + 0 * 1,5, \text{ or more})$*

After this, the compensation measuring mode is activated automatically.

Short measuring time – This option will set short time gaps between fuel measuring during the run. It takes about five seconds. You may use this option, if you have no problem with unstable data showed by the display. This option is set as basic and is used after every setup reset.

Longer measuring time – Will set a bit longer time gaps between fuel measuring during the run. It takes about twenty seconds. This will softly weaken the displays response to the data received from the control unit. Use this setting, when you feel the display information is not stable and keeps oscilating while cornering.

Very long measuring time – Will set very long time gaps between the measuring during the run. It will take about a minute. In this mode, the gauge reacts to the data changes very slowly. This setting should be used, when experiencing big alternations of fuel level showed on the display.

Set display brightness – (default set at fifth column)

If the light sensor is on, this allows you to adjust the overall display brightness in range from -80% to +100%.

Display regulation settings - In this menu, by selecting option number five, you can deactivate or reactivate the automatic brightness control. When the sensor is deactivated, the brightness can be set by "set display brightness" function.

Display projection settings

-By choosing the first option (default), you have classical ten bar scale on the display.

-By choosing the second option, you switch to a point scale display. Then there is just one point on the display showing the amount of fuel.

-Next are options suitable for multi-coloured displays, if you chose to have one yourself. You can see them in detail in set up picture at page six.

-The last option is so called display "upside-down" (full tank = zero bars showed on the display).

Restoring the device to default (fuel levels kept in memory) – This will restore all settings into default values. Only the fuel levels (calibrated either way) stay in the memory unchanged.

Restoring the device to default (fuel levels erased too) – This will restore all settings into default values. You will need to calibrate it again before further use.

5. Possible faults

If you obey all the instructions, this fuel gauge should work properly without any need to change settings or any other problems. In case of any problems, feel free to contact me at info@lskelectronics.com.

- If the gauge doesn't show anything on the display, check out all the connections of the device.
 - If the gauge flash at start but then doesn't show anything, try checking the fuel system (connection, fuel cock on/off).
 - If the gauge shows nonsense and is calibrated correctly, try checking, if you filled up the fuel hoses like explained on page four.
 - Wrong data display is often caused by dirty fuel pipes or just marginally opened fuel cock. In case of problems, try to check for the fuel hose damage. This fault is often represented by the amount of fuel dependant on engine revs. It is not convenient that the pressure sensor should fail. It is high quality product and even if it would fail, it will show nothing on the display.
 - If nothing helps, write at info@lskelectronics.com and request money return.
- Warranty is guaranteed for two years after the day of purchase. We service the device during the warranty time and after the warranty expires too. If you don't obey instructions in this user manual, you can cause the warranty to expire.

6. Safety warnings

- The gauge should be installed by a trained people or by a service. Inproper installation of fuel hoses can cause the fuel to leak and a fire. This can damage the motorcycle and the owners health.***
- Badly executed electric connection can cause damage of this and other electrical devices on the bike.***
- Keep away from children***
- Not approved for the use on public roads. Use only at owners own danger.***

8. Recyclation

Worn out (broken) device should be handed to authorities on places designed for collecting old electrical devices. Packaging should be thrown out into an appropriate bin

Manufactured in compliance with RoHS norm.



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