

gearsensor.com

gearsensor.com manual

Version: V5

Valid from: 14.1.2015



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www.gearsensor.com

What is it gear sensor?

This unique patent pending system developed and made in Czech Republic is based on intelligent gear sensor fixed on shifting cable, which is cutting off motor drive when the rider activates gear shifting. This brand new technical solution eliminates user-unfriendly and noisy rear derailleur shifting which is caused by chain over straining. Even the gear sensor in combination with front derailleur allows smooth shifting if the e-bike is equipped by double/triple chainwheel BB motor.

Programmable processors enable individual time setting for gear shifting up and down, and adjust micro movement sensitivity of inner cable to avoid motor cut off caused by cable vibration during riding e-bike.

GearSensor models

The GearSensor is divided into these different models:

1) Model GS-D is a universal model for both derailleurs (front and rear). In this model restart of the motor depends on the FINISH of the shifting cable movement. This is because system has to wait until finish of the movement of the chain to choose a sprocket or a chainring.

MODEL GS-D IS MARKED ON CABLE BY WHITE STICKER.

2) Model GS-I is a model for INTERNAL GEAR HUBS. In this model restart of the motor depends on the START of the shifting cable movement, plus defined time period. This is because system does not need to wait until finish of the movement of the chain to choose a sprocket or a chainring. . **MODEL GS-i IS MARKED ON CABLE BY RED STICKER.**

Factory setting:

gear sensor model	model no.	SW version	adjusted time periods (for turn on motor) on actual samples
derailleur	GS-D	2013-04	0,2s after shifting cable movement finish
rear internal gear hub	GS-I	2013-04	0,1s after shifting cable movement start

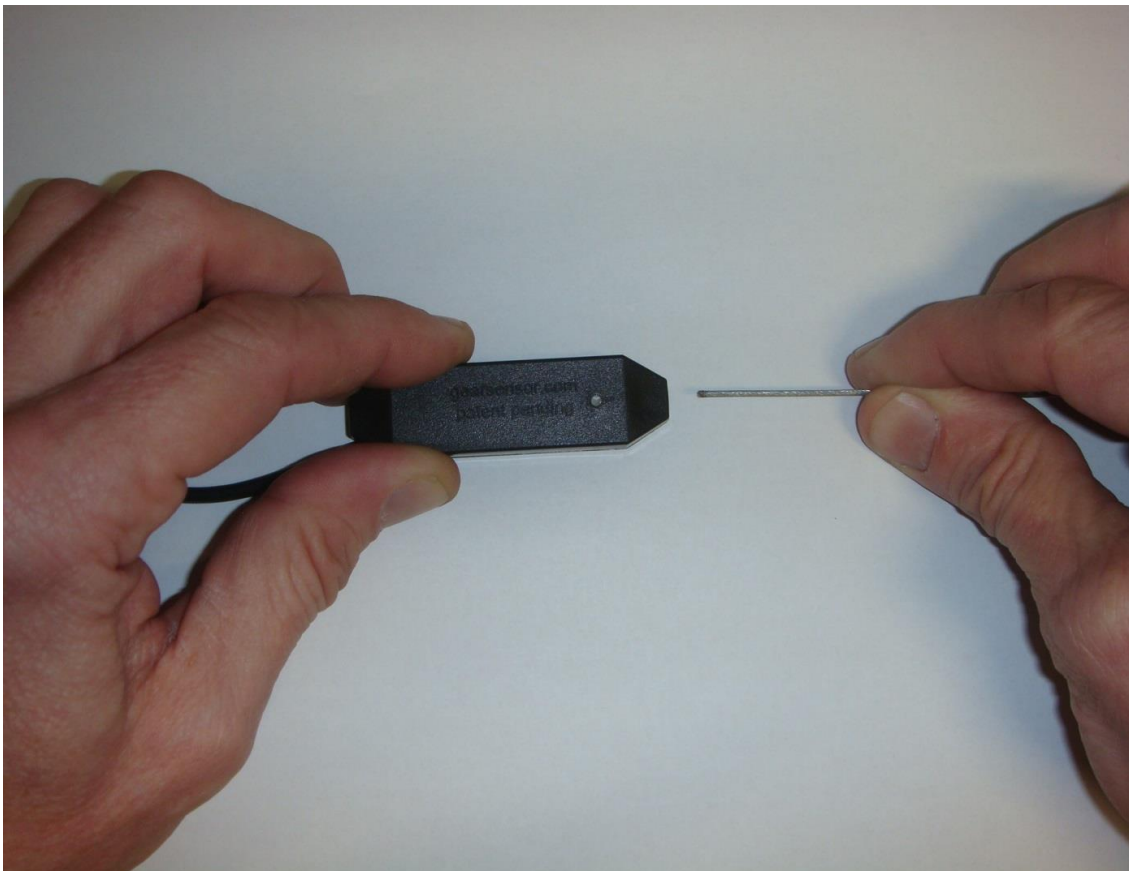
Assembling instructions

The most important information:

- DO NOT OPEN THE PLASTIC CASE DURING ASSEMBLING. You do not need to do that.
- How to get to know that gear sensor is working properly? If the gear sensor is connected correctly, when you turn on the control unit on your e-bike (display) the gear sensor LED indicator will flash twice. Also when shifting process is activated, then LED indicator blinks once.

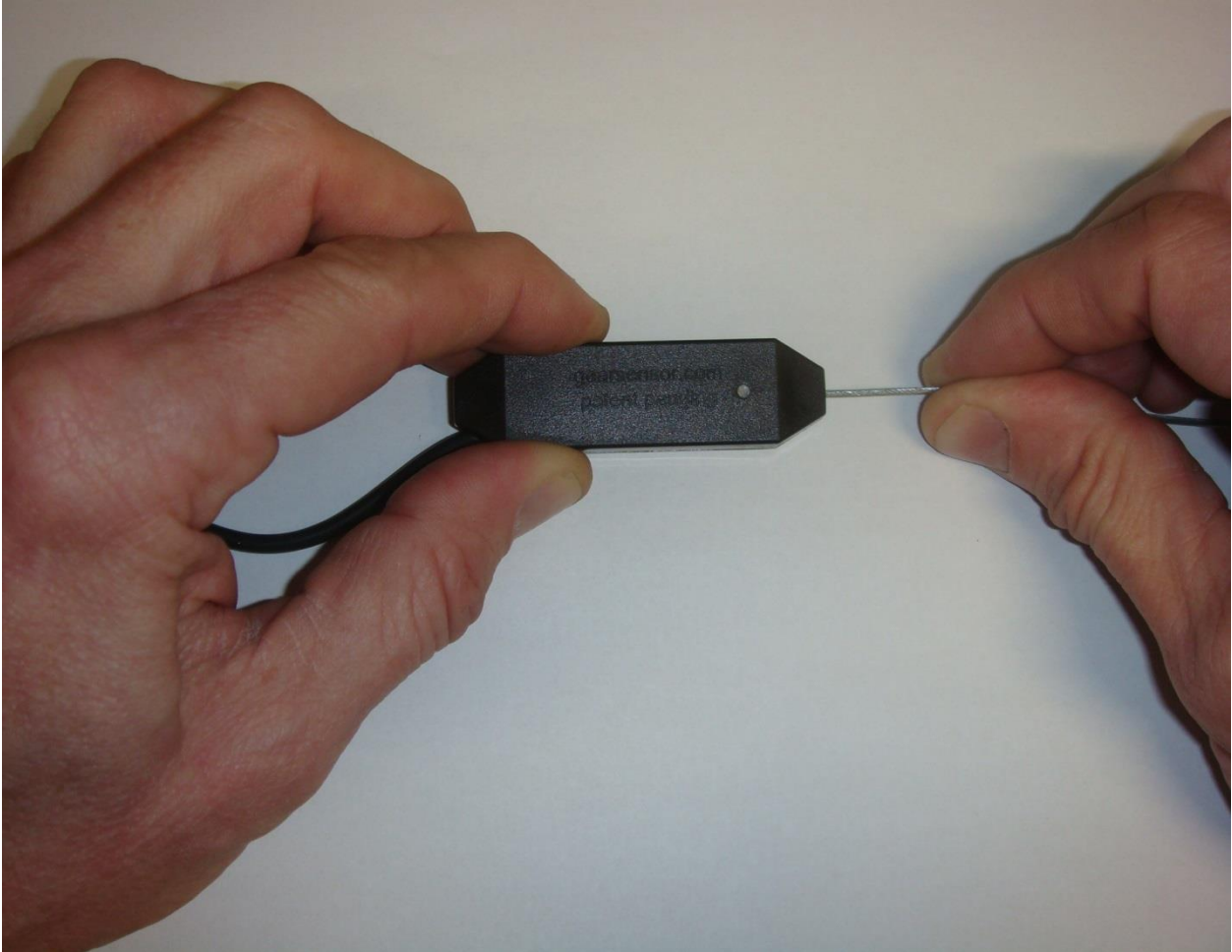
First step :

Start pushing inner cable into the plastic case from the side where is situated LED light. Please notice that the inner cable has to be pushed into the case in longitudinal axis of the case (as you can see on the picture). When pushing inner cable into the case, keep inner cable vertical and horizontal direction as much as possible parallelly with longitudinal and width axis of the housing, with maximal tolerance ± 3 degree.



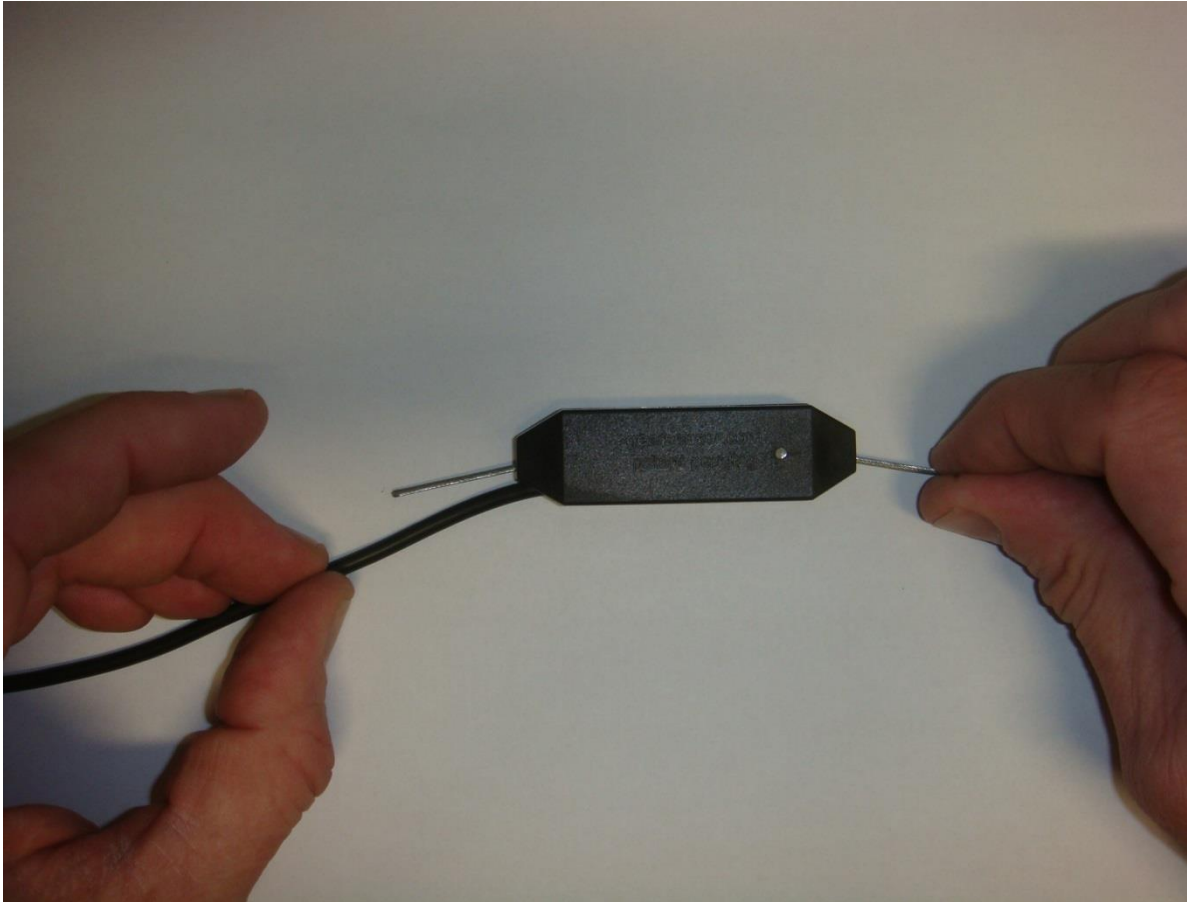
Second step:

Now you are with the cable inside of the housing and you have to push stronger until the inner cable will go out of the case from the other side. When pushing inner cable into the housing, keep the inner cable vertical and horizontal direction as much as possible parallelly with housing longitudinal and width axis, with maximal tolerance ± 3 degree.



Third step:

In this picture inner cable is correctly fixed into the case.



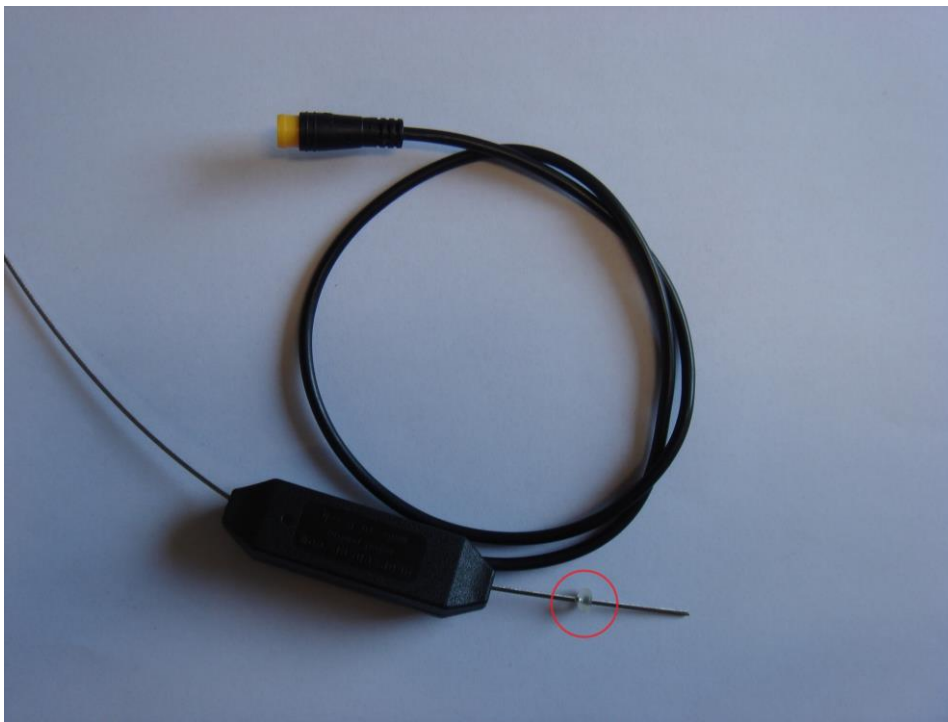
Fourth step:

In this picture you can see where to fix the small rubber o-ring. The small rubber o-ring has to be fixed on the one side only - where shifting cable goes out of the case and it has to be orientated in the direction to the shifter (not to the internal gear hub direction). Please notice that this small rubber o-ring is supplied only for GS-I. Do not use it for GS-D. Here is the reason why to use the small rubber o-ring:

Peddalling is accompanied with torque on the cranks. When rider activates shifting, internal gear hub doesn't change gear until torque on cranks is reduced to some required level which allows to internal gear hub system change the gear. This is typical situation when riding up to hill and rider activates shifter in order to change the gear from higher gear number to lower gear number. Then happen situation in which the shifter already released inner cable, but internal gear hub mechanical system could not tight inner cable, because of torque on cranks is over limit.

Solution:

1. during gear shifting rider has to apply standard pedalling style (same style as on standard bike without central drive system). Means rider's legs has to reduce force when changing gear.
2. O-ring is made by flexible material, this flexibility helps cable routing system avoid undesirable inner cable/outer casing releasing.



Fifth step:

Fix the cable outer casing. Choose correct side for placing small rubber o-ring according to remarks mentioned in "Fourth step".

Sixth step:

In this picture assembling is already done.

**Last step:**

How to connect the GearSensor to the controller (controller input cable)? If the GearSensor is not equipped by connector, then please see below wires description of the GearSensor:

Black wire – Ground zero

Green or Blue wire – signal

Red wire - Voltage supply