

Instructions for the installation and description of the functions for *Sachs* mid-motor design



...for further information visit... www.BIKESPEED.DE



Note about this printed manual

Congratulations on the purchase of your bikespeed-RS. You are holding the original manual for the bikespeed-RS and bikespeed-RSc for Bosch mid-mounted motors in your hands.

Printed manuals may not be up to date for technical, logistical, and economic reasons. This applies, for example, to the listed compatible motors, displays and model years. You can find a current version of the manual for download on our homepage (<https://www.bikespeed.de>) If you are unsure, please feel free to contact us.

Product description

The bikespeed-RS is a simple and compact kit to bypass the speed limit of 25 km/h of bikes with Sachs RS mid-design. The installation is completely invisible.

The bikespeed-RS is also available in a customizable version, called bikespeed-RSc (custom). You can find more information about this on page 13 of this manual. For the sake of simplicity and a better overview, the bikespeed-RSc is the same as the bikespeed-RS except for the personalization and therefore only the term bikespeed-RS is used in these instructions.

In contrast to other commercial tuning kits for pedelecs the bikespeed-RS displays the "real" speed on the tachometer instead of the half value. The data of the cycled distance, average/maximum speed, calculated range, ... are usable without any limitations. The levels of support as well as any special profile will be certainly maintained. Light activation is also

unnecessary, and you can use the tuning if you have an additional lighting system powered by the battery.

The tuning makes the final speed void, that means the terminal velocity is only limited by the power of the drive and the muscular strength invested.

We designed the installation as simple as we could. All the necessary connections are pluggable and consequently they can be removed without any traces.

Deactivation of the speed limit at 25 km/h is possible with the help of a key sequence on the actuator (see page 9, paragraph “description of functions”).

The tuning will adapt to your pedelec when it is activated. During this process the drive, the display and the size of the tires will be recognized automatically. The tuning is thus universally applicable, and you do not have to adjust anything.

Compatibility list

Please note that the following list may not be up to date. At the time of printing this manual, the bikespeed-RS is compatible with the following motors and displays. If updates are made to your pedelec, it is also possible that compatibility may no longer be given. You can find an up-to-date list on our homepage (<https://www.bikespeed.de>).

This bikespeed-RS is compatible with the following mid-range motors and displays:

- Sachs RS motors from year 2020 up to 2024
- Sigma EOX Remote 500 from year 2020 up to 2024
- Sigma EOX View 1200 from year 2020 up to 2024
- Sigma EOX View 1300 from year 2020 up to 2024
- BMZ 14D from year 2020 up to 2024 (only with optionally available adapter set)

Safety instructions, product liability and exclusion of liability

By using the bikespeed-RS on your pedelec, a relevant safety feature (the speed-dependent limitation of the motor power) is overridden. You must assume that your pedelec is not suitable for this and e.g., frame, brakes, chassis, tires, etc. are not designed for the higher speed. The conversion must be carried out by a specialist (e.g., the manufacturer of the pedelec or an authorized specialist workshop) who will also check other components on your pedelec accordingly and convert them if necessary.

Tuning an ordinary pedelec with a maximum speed of 25 km/h is not recommended for the ordinary user, as S-pedeles are intended for reaching higher speeds with the corresponding legal requirements, in particular the approval of the Federal Motor Transport Authority of your country (in Germany KBA/Kraftfahrtbundesamt).

We have not been able to conclusively clarify whether operation with the bikespeed-RS installed but deactivated is permitted on public roads. Therefore, we expressly point out that the mere presence of the tuning can constitute an offence in the sense of the Road traffic regulations or riding without insurance, §6 Compulsory Insurance Act!

A modified bicycle may only be used by an authorized, trained and instructed person. We assume the following level of training:

| Function | User |
|-------------------------------------|---|
| Operator | Only persons trained and instructed about the special dangers |
| Maintenance personnel / technicians | Only the manufacturer of the pedelec or an authorized specialist workshop by persons with the appropriate expertise |
| Trainees or apprentices | the use is prohibited |
| General public | the use is prohibited |

Trained users should be made aware of the increased risk when using the modified pedelec:

Increased risk of impact: Due to the increased speed, obstacles are reached more quickly, and reaction time may not be sufficient to brake or swerve in time.

Increased braking distance: The increased speed also increases the braking distance. Furthermore, it must be checked before use whether the installed brake system is designed for the increased speed.

Increased risk of discomfort / neurological disorders: Due to the increased speed, vibrations can increase, which can lead to discomfort. Furthermore, due to the increased speed, more concentration is required from the user. This can lead to increased stress during use. Therefore, only persons who do not have any physical, mental, or neurological disorders may be users.

Possible loss of control: The increased speed can make it easier to lose control of the pedelec. The user must therefore be of age and equipped

with suitable protective clothing (helmet, protectors, etc.) to be adequately protected from injury in the event of a fall.

Modified bicycles may only be used on fenced private property. Furthermore, it must be ensured before use that there is sufficient space to obstacles on the route. (e.g., stones, trees, water areas, etc.).

No other persons are allowed on the fenced off area during use and precautions must be taken to ensure that no other person can enter the area during use.

The converted pedelec must be equipped with a warning notice that is clearly visible before the pedelec is used. The warning notice must prohibit the use by untrained persons and outside the fenced private area.

Operation on public roads is expressly prohibited by the Road traffic regulations!

The bikespeed-RS is installed and operated at your own responsibility; any liability for damage or consequential damage, as well as legal consequences for bikespeed or the manufacturer of the pedelec are excluded in any case.

Before using the system, please enquire about the legal consequences that may arise for you because of the installation.

We expressly point out that the use of bikespeed RS will result in the loss of the manufacturer's warranty. Furthermore, the manufacturer and bikespeed have no product liability for your pedelec.

Bikespeed or the manufacturer of your pedelec cannot guarantee that brakes, frame, chassis, tires, etc. are designed for the use of the tuning part.

Before use, the more highly stressed components of the pedelec (e.g., frame, brakes, tires, bearings, and suspension, etc.) must be tuned by the manufacturer or tested and approved by a suitable testing Centre (e.g., TÜV or Dekra). If the speed is doubled, it must be considered that the acting forces are quadrupled. In accordance with EN 15194, it must therefore be checked that the modified pedelec still meets the requirements. It is to be assumed that the higher stress is permanently given.

If a component of the pedelec cannot withstand the higher stress, it must be upgraded by the manufacturer of the pedelec or by an authorized specialist workshop, or the bikespeed-RS must not be installed.

Description of functions

The bikespeed-RS removes the limit at 25 km/h of your pedelec. All other features and functions of your bike remain as usual. This also includes the protective measures installed by the manufacturer (e.g., short circuit, overcurrent, power, torque, temperature, etc.), except for the safety device for limiting the maximum speed.

After activating your pedelec the display will show an animation of the battery's capacity on your Sigma Remote. If the capacity runs from empty (1 bar) to full (5 bars) your pedelec will support you with motor power even if you exceed 25 km/h. If the capacity runs from full to empty the support will end at 25 km/h.

To switch on or off the support above 25 km/h please change the level of support down, up, down, and up again. If the procedure was successful, you will see the animation of the battery's capacity once more just like when you activate your pedelec and this way you are informed about the current setting.

Here is an example beginning on the level 3 bars:

Pushbutton down (new level: 2 bars)

Pushbutton up (new level: 3 bars)

Pushbutton down (new level: 2 bars)

Pushbutton up (new level: 3 bars)

If you have a bikespeed-RSc you use the combination you chose beforehand. (see page 13, paragraph „Description of the custom-variant“)

Please enter the combination quickly without a pause of 3 seconds between two keys. Repeat the procedure, if necessary, to obtain the desired setting.

Furthermore, please note that you must switch the stages to enter the combination. For example, you cannot enter a combination that starts with the "down" key from the "off" level (or a combination that starts with the "up" key from the highest level). If the combination consists of several keys in one direction, you must therefore start the input at a sufficiently low or sufficiently high level.

Hint: A switched off bikespeed-RS cannot be switched on with the combination for service-mode (see on page 11)!

Hint for the odometer

Please note that after the deinstallation of the bikespeed-RS your odometer may show a lower value under certain circumstances like you are traveled with your bike. This behavior is caused by the design and not a fault.

Please note this primarily when selling your bike.

Important hint when visiting the repair-shop or software-updates on your pedelec

Important: If you have in mind to update your pedelec software or wish to perform the Sachs-system with a customer service, **please first have a look on bikespeed** and check on our website www.bikespeed.de, whether the tuning continues to work with a later software or not. You can find out the software approved for your tuning by checking the line with the purchase date for your tuning, as well as your motor and display.

We would like to point out that the warranty for your tuning is not valid if you install an update on your bike that has not been approved by us for your bikespeed-RS!

For a software-update to your Sachs- or Sigma-system you have to uninstall the bikespeed-RS. Alternatively, there is the service mode on the bikespeed-RS that needs to be activated at your retailer.

Therefore, change the level of support 3x down and then 3x up. Please enter the combination continuous without a pause longer than 3 seconds between two keys. Begin on the highest level. In case of success the entire battery index will blink 3x and meanwhile the software version of the bikespeed-RS will be shown on the speed indicator. Now the tuning is in service mode and maintenance as well as software updating can be executed.

Please note that the software version as just described is only displayed correctly if you have set the display in metric units and therefore km/h.

If you have a bikespeed-RSc you use the combination you chose beforehand. (see page 13, paragraph „Description of the custom-variant“)

This state is maintained even after deactivating the system. That is why there will not be an animation of the battery's capacity informing about the state of the tuning.

For the deactivation of the service-mode please use the same key-combination as for the activation or the combination you chose for activating and deactivating the tuning. Please keep in mind that in service-mode the support of the drive ends at 25 km/h.

Hints:

- If you are not sure, whether the service-mode is activated, please uninstall the bikespeed-RS before you update!
- Please activate the service-mode only for updates on your pedelec!
- A switched off bikespeed-RS cannot be switched on again with the combination for service-mode!

After activating the service mode, we recommend switching off the bike without moving it again. If a speed is displayed it could change the trip, avg- or max-speed.

Description of the *custom-variant* (bikespeed-RSc)

After many requests of our customers, we offer a new feature of the bikespeed-RS additionally. The individual customer configuration gives you the opportunity with you selectable personal setting to protect your tuning for discovering.

With your individual key combination, you can decide if the tuning should be displayed its status with an animation above the battery indicator or not. The tuning can be switched on/off at any time and you can control the behavior (tuning on/off) after on switching your bike.

The configuration options can be found in the shop on our website. There all possibilities are described with many tips and videos.

If you are interested to upgrade your standard bikespeed RS on a custom version, you can feel free to contact us.

Help in case of problems

If your bikespeed-RS does not work correctly at any given time, please check the following steps to help yourself.

Should you still have problems please write an email before sending back the bikespeed-RS.

| Cause | Solution |
|---|--|
| - bicycle does not start or deactivates itself immediately | - Please check whether the battery is properly engaged in the bracket. - Please check the 6-pole connector from the tuning to the motor and to the display. |
| - no animation visible when starting the bicycle | - Please check if the service-mode is activated as by entering the combination. - Check the 4-pole connector from bikespeed-RS to the 1m cable in the direction of the motor. - Check the 3-pole connector from this cable to the motor. |
| - no support or rather only briefly when starting - no speed-indication (0 km/h) | - Check the 4-pole connector from bikespeed-RS to the 1m cable in the direction of the motor. - Please check the 3-pole connector from this cable to the motor and to the speed-sensor |
| - support only until up to 25 km/h are reached - miles are missing | - Check if the tuning is activated and service-mode is off. |

Continue next page.

Help in case of problems (continue)

| | |
|--|---|
| <ul style="list-style-type: none">- bikespeed-RS (c) cannot switched on or off | <ul style="list-style-type: none">- Keep in mind you have to switch the stages to enter the combination.- Please start in a sufficient high or low stage.- Please enter the combination continuous with a pause from one to three seconds between two keystrokes. |
|--|---|

In our experience, the cause for problems most often are connectors which are not correctly plugged in. Therefore, please always check if they are set correctly and plugged in the correct socket. Please insert the connectors as far as you cannot see the seals anymore. If that is not possible, please apply some Vaseline onto the seals for greasing. The plugs are coded and only fit in one direction. Please do not use force!

Notes on installation, removal, storage, maintenance, and use

Installation, repair, commissioning, and decommissioning may only be carried out by the manufacturer of the pedelec or an authorized specialist workshop.

During installation, ensure that the ergonomic principle and functionality of the pedelec are not changed or impaired.

The protection class of the bikespeed-RS is IP64. The bikespeed-RS does not require a separate power source. It is supplied with energy from the battery of the pedelec in which the tuning is installed. This battery is charged via the power supply unit provided by the manufacturer of the pedelec.

No maintenance or service is required on the bikespeed-RS. After decommissioning, no special precautions need to be taken to put the product back into operation.

If the product is stored in a dismantled state, this must be done in a dry place between 0 and 40 degrees Celsius and 30 to 70 % relative humidity.

Use in the installed state may only be carried out by specially trained and adult users without physical and physical limitations.

The use is not limited in time but may only take place as long as the physical and mental condition of the user allows to operate the pedelec under full concentration.

Example installation on a Nox XC Trail (2020)

Since we cannot provide detailed installation instructions for every bike available on the market with this motor and display, we have decided to use this installation example. This example will give you an overview of the work to be done and you can transfer it to your bike. If you still have questions, please feel free to contact us at any time.

To access the connectors for connecting the bikespeed RS, a cover on the motor must be removed and a cable pulled through the frame. Please follow the instructions on the following pages.

Required tools: - different Allen keys
 - different Torx

Optional: - Underlay blocks for the handlebars
 (e. g. 2 squared timbers 10 x 10 cm)

For the installation of the bikespeed-RS, it is best to turn the bike upside down. It is recommended to place spacers under the handlebar grips beforehand to prevent the bike from resting on the display, brake levers, or shift levers. In our example, we are using wooden blocks measuring 10 x 10 cm.

The installation may only be carried out by an expert!

All statements without guarantee!

1. Please turn off the bike and remove the battery from the frame.

Then remove the shown cover on the motor by loosening the 3 screws. Underneath you will find various connectors to the motor.

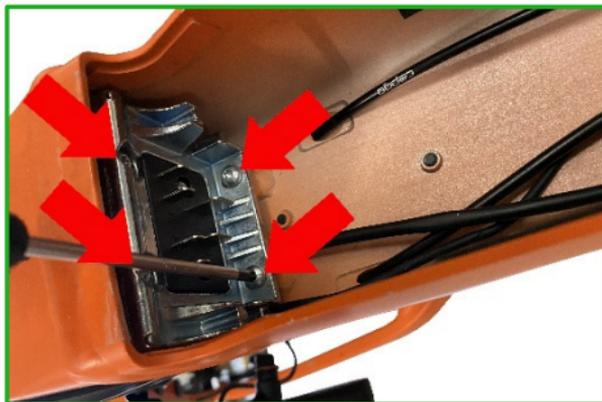


2. It is best to disconnect all connectors on the motor to give yourself some space for the next steps.

The connectors are coded and cannot be plugged back in incorrectly later. You can also take a photo to remember the Position.

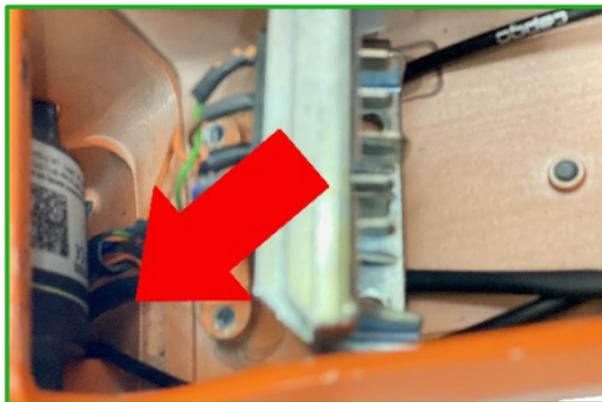


- 3.** Unfasten the lower battery holder by removing the 4 screws shown. Please note that the holder is connected with cables. Avoid Pulling on These.



- 4.** Thread a pull wire through underneath the motor. Start doing this behind the holder for the battery that you just removed.

The target of the pull wire is the opening of the cover removed in step 1.



- 5.** Tie the supplied approx. 1m long cable to the pull wire. It is recommended to pull a loop of this cable under the motor first. (see next step). The black 4-pin connector must go into the battery bay, the end with the two 3-pin connectors remains out of the opening of step 1.



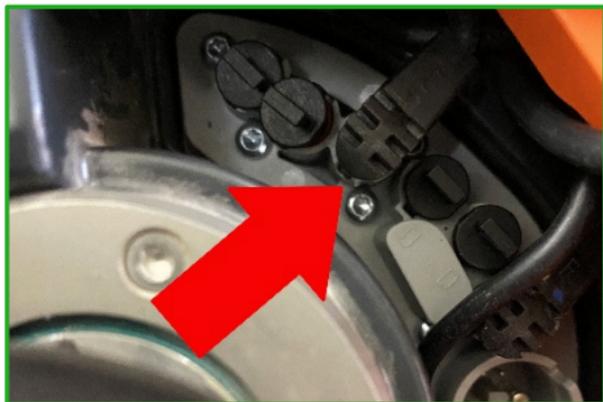
6. When you have pulled the loop of the cable below the motor, then carefully pull the end with the 4-pin connector. The 4-pin connector must then be in the battery compartment, and the two 3-pin connectors through the opening from step 1.

Please pull carefully so as not to tear off any connector. If something gets stuck, stop, and try to move the other cables out of the way, then start over.

If you cannot get the connector under the motor, it might help to loosen the front mounting screws of the motor on some frames. Then the motor can be folded up a little to create a little more space.



- 7.** Now connect the 3-pin connector of the retracted cable to the connector of the speed sensor. Plug the other 3-pin connector of the retracted cable into the connection on the motor to which the speed sensor was previously connected:



The connectors are coded. Please do not use force to plug a connector. If you cannot plug in a connector easily, please check that you are using the correct slot and that the connector is plugged in the right way round.



- 8.** Pull the approx. 1m long cable into the battery compartment. The 4-pin connector must reach up to the top of the upper battery holder.

Then plug all the other connectors removed in step 2 back into the motor. Use the slots from which you previously removed the plugs.

Again, the connectors are coded and can only be inserted the right way round and into the appropriate slot.

Then stow all cables in the opening and close the cover removed in step 1. Screw it back in place with the 3 screws.

Also screw the lower battery holder from step 3 back on.



- 9.** Now remove the upper battery holder by first removing the 4 screws shown and then removing the holder.



- 10.** Now guide the cable threaded in steps 4 to 8 upward through the battery bay. Make sure that the cable does not get in the way when inserting the battery. If necessary, you can use cable ties to fix the cable in place.



- 11.** You can now connect the 4-pin connector of the pulled-in cable to the corresponding counterpart on the bikespeed-RS. Here, too, the connectors are coded and can only be plugged together the right way round.



- 12.** Next, remove the cable grommet through which the cable to the display is routed into the frame.



- 13.** Disconnect the black round connector to the display. The end that comes out of the frame through the cable guide that has just been removed can be pushed back into the frame.

Then, inside the frame, connect the two black, round connectors of the bikespeed-RS to the connectors of the display that have just been disconnected.

The best way to do this is to first connect the cable that has been pushed back into the frame and then guide the other connector on the bikespeed-RS through the opening of the cable gland to the outside and connect this to the connector of the display.

Important: If you have installed a Sigma Remote 500 together with a Sigma View 1200 display on your bike, the display and the remote are connected to the motor via a Y-cable. The bikespeed-RS must then be connected between the motor and this Y-cable, **not** between the display and the remote!

If you have a Bloks display (e.g. the BMZ 14D), you will need an optionally available adapter set to connect these round connectors.

Then screw the cable grommet removed in step 12 back on.

- 14.** The connections are now complete. Stow the bikespeed-RS in the upper area of the frame and screw the upper battery holder removed in step 9 back into place.



Hint for disposal

Electric and electronic devices that have become waste are called old devices. Owners of such old devices have to bring these to recycling facilities, where these are handled and recorded separately from urban solid waste. Old devices must not end up in the household refuse. In fact, they have to be collected in special collecting and recycling systems.

Owners of old devices from private households can dispose these at the public waste disposal authorities or bring them to producer or seller related disposal locations. You can find these disposal locations online:

<https://www.ear-system.de/ear-verzeichnis/sammel-und-ruecknahmestellen.jsf>

The labelled symbol showing the „crossed out waste container“ on electric and electronic equipment indicates that the concerning equipment has to be disposed separately from urban solid waste.



As a producer in terms of the German ElektroG we are registered with the German registration authority Stiftung Elektro-Altgeräte-Register (Benno-Strauß-Str. 1, 90763 Fürth), having been granted the following WEEE registration number: **DE 87104747**

As well at the Elektro Recycling Austria (ERA) GmbH with contract number: **40624**

EG Konformitätserklärung / EU Declaration of Conformity

Wir, die Firma

We, the company

bikespeed GmbH

Huberstr. 17

97084 Würzburg

erklären in eigener Verantwortung, dass das weiter unten aufgeführte Produkt

declare under our sole responsibility that the following product

Geräteart / Type of Product:

Tuningkit

Modell

bikespeed-RS

weitere Angaben

für Sachs Motoren

die grundlegenden Anforderungen der aufgeführten EU-Richtlinien erfüllt:

2014/30/EU

Richtlinie über die elektromagnetische
Verträglichkeit

2011/65/EU

Richtlinie zur Beschränkung bestimmter
gefährlicher Stoffe in Elektro- und Elektronikgeräten

2006/42/EG

Maschinenrichtlinie

meets the essential requirements of the following EU-Directives:

| | |
|------------|--|
| 2014/30/EU | Directive on Electromagnetic Compatibility |
| 2011/65/EU | Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment |
| 2006/42/EC | Machinery directive |

angewandte Standards und Verordnungen / applied standards and regulations:

EN 15194:2017
EN 12100:2011
EN 62321:2009
EN 61000-3-2:2014
EN 61000-3-3:2013

Bevollmächtigter zur Zusammenstellung der technischen Unterlagen:

Authorized person for technical documentation:

Name/Name, Position:

Matthias Braun, CEO

Würzburg,

01.05.2014



Datum / Date

Unterschrift / Signature