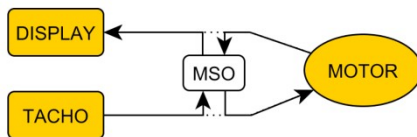


PearTune MSO „Max Speed Off“

Functional description

PearTune MSO xxx is an e-bike „chiptuning“ set (followed „MSO“) used for removing the speed limiter of electric assisted bicycles with centerdrives Bosch, Yamaha, Giant, Brose, Shimano, Panasonic, Bafang, Specialized, OLI Sport and FLYON TQ. The MSO is not stand alone functional. Intallation should be carried out by a qualified personell. The MSO does not need to be configured manually. The entire configuration and adaptation to the particular e-bike is done automatically. The MSO is connected in between the magnetic speed sensor and the motor unit, and in between the display and the motor unit. MSO is powered from the display connector. All readings are correctly displayed (if there is not an exception stated within a given variant). The MSO can be activated or deactivated anytime during the ride by pressing one of the control keys on the display, depending on the factory configuration and particular e-bike system. The device state is indicated by number „9.9“ (PearTune MSO is activated) and „2.5“ or „4.0“ (PearTune MSO is deactivated) for few seconds on the display, so the rider easy recognise whether the device is active or not.



Variants according to the e-bike system

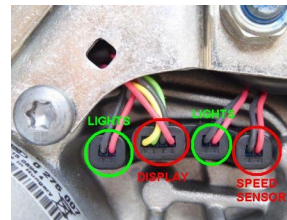
- **"PearTune MSO-B2"** for Bosch Active, Performance, CX Line, Active Line PLUS, all models of Gen 2, 3 a 4
- **"PearTune MSO-Y2"** for PW, Yamaha Synchdrive, PW-X/SE/TE/ST/X2, GIANT Sport/Pro
- **"PearTune MSO-BR2/SP"** for Brose, Specialized
- **„PearTune MSO-OL2“** for OLI Sport motor (Crussis)
- **"PearTune MSO-SA"** for SACHS engine

Installation procedure



MSO-B2: ① remove the pedal arm using a proper equipment and/or just (by 2020 models) the plastic cover of the centerdrive (using TORX screws) on the other side than the sprocket is located. All the needed cables and connectors are hidden under this cover.

② Disconnect the 4-position connector in between the display unit and motor unit (marked as DISPLAY on the picture) aswell as the 2-position connector in between the tacho sensor and motor unit (marked as SPEED SENSOR).



③ Connect both appropriate connectors from the MSO instead of the original connectors into the the motor unit and, the original, previously disconnected connectors into the MSO according to the color coding (red wire side onto the red wire side).

④ To keep the system waterproof, it is recommended to use the heat shrinkable tubing on the both male MSO connectors connected into the original connectors from the tacho sensor and display unit. Place the MSO in a proper position and optionally, fasten the wiring using the electrical ties. Re-attach the plastic cover and pedal arm and the bike is ready to go.



MSO-Y2: ① remove the plastic cover under the centerdrive. Loosen the two of the INBUS screws (those which are closer to the front wheel) and tilt the motor unit towards the rear wheel. Cables and connectors are placed in the space between the motor and bike frame.

② Disconnect the 5-position connector by PW/X/SE/ST/TE/X2/CE (4- position by PW, 8-position by GIANT) in between the display unit and motor unit and the 3-position connector in between the tacho sensor and the motor unit.

③ Connect all four appropriate connectors on the MSO into the four, previously disconnected, mating connectors on the e-bike. All the conectors have a keying which prevents wrong connection, there is only one way all of them can be connected.

④ Place the MSO in a proper position (we recommend into the e-bike frame, if possible) and optionally, fasten the wiring using the electrical ties. Fold back the motor and fasten the previously removed INBUS screws. Re-attach the plastic cover and the bike is ready to go.

MSO-BR2: ① Unscrew the screws and remove the plastic cover, or plastic „cap“, on the other side than the sprocket is located. Bikes without the separated plastic „cap“ in the bottom part will require removing of the pedal arm using a proper equipment. Needed cables and connectors are hidden under this cover.

② Disconnect the 5-position connector in between the display unit and motor unit and the 2-position connector in between the tacho sensor and the motor unit.



③ Connect both appropriate connectors from the MSO instead of the original connectors into the the motor unit and, firmly press the original, previously disconnected connectors into the MSO according to the color coding (red wire side into the red/orange wire side, or **down-facing at the motor body**).



④ To keep the system waterproof, it is recommended to use the heat shrinkable tubing on the both MSO connectors connected into the original connectors from the speed sensor and display unit. Optionally, use glue gun to secure the connectors in the motor body. Place the MSO in a proper position and optionally, fasten the wiring using the electrical ties. Re-attach the plastic cover and pedal arm and the bike is ready to go again.

MSO-OL2: ① remove the plastic cover under the centerdrive.

② Disconnect the 5-pin connector in between the display unit and motor unit and the 3-position connector in between the tacho sensor and the motor unit.

③ Connect all four appropriate connectors on the MSO into the four, previously disconnected, mating connectors on the e-bike. All the connectors have a keying which prevents wrong connection, there is only one way all of them can be connected.

④ Place the MSO in a proper position (we recommend into the e-bike frame, if possible) and optionally, fasten the wiring using the electrical ties. Fold back the motor and fasten the previously removed INBUS screws. Re-attach the plastic cover and the bike is ready to go.

Usage

MSO-B2: the MSO can be activated/deactivated anytime during the ride by once short-press of the walk button OR two quick short presses of + - buttons. Original function of walk button remains unchanged with a long-press. In the case of Smartphone Hub COBI is MSO activated by LONG press of ANY button. PearTune activity is indicated by value of 9.9 km/h or 6.2 mph (PearTune is activated) and 2.5 km/h or 1.6 mph (PearTune is deactivated) for few seconds on the display after activation/deactivation. The device is fully functional with Intuvia, Nyon, Purion, KIOX, COBI and SmartPhone Hub displays and with GEN 2, 3, 4 models of BOSCH engines.

MSO-Y2: the PearTune MSO can be activated/deactivated anytime during the ride by two short presses of LIGHT button in one second or with short-pressing of the LIGHT/WALK button or + - buttons. Original function of these buttons remains unchanged. PearTune MSO activity is indicated by value of 9.9 km/h or 6.2 mph (PearTune is activated) and 2.5 km/h or 1.6 mph (PearTune is deactivated) for few seconds on the display after short press of WALK or LIGHT button or + - buttons.

MSO-BR2: the PearTune MSO can be activated or deactivated anytime during the ride by short-pressing of the LIGHT/WALK button or + - buttons. Original function of these buttons remains unchanged. PearTune MSO activity is indicated by value of 9.9 km/h or 6.2 mph (PearTune is activated) and 2.5 km/h or 1.6 mph (MSO is deactivated) for few seconds on the display after short press of WALK or LIGHT button or + - buttons.

MSO-OL2: the PearTune MSO can be activated or deactivated anytime during the ride by short press of +- during one second. PearTune MSO activity is indicated by value of 9.9 km/h or 6.2 mph (PearTune is ON) and 2.5 km/h or 1.6 mph (PearTune is OFF) for few seconds on the display after short press of + - buttons.

If you are planning to install PearTune MSO on new e-bike, make sure that you ride it for at least 1km before the PearTune MSO is installed.

It is possible that, during a long ride at the speeds of over 25km/h with motor assist, some readings on the display may not immediately respond to their true values. After a certain amount of time without motor assist or at speeds below the 25km/h, these values should always get corrected. After a long trip at higher speeds, we recommend not to turn off the e-bike immediately. The easiest way is to let the e-bike switch off itself automatically.

When using PearTune MSO 3.0 with BOSCH Gen 4 engine (produced in 2020 or later) it is NECESSARY to leave the bike ON after finishing your ride until a value of 0.0 km/h or 0.0 mph is displayed. Then it is safe to turn OFF the bike and you can start it without any error codes or records in diagnostics for your next trip again!

Don't upgrade the software after installing PearTune MSO, the manufacturer is not responsible if the chip does not work properly after the software upgrade.

The installation manuals and videos for all PearTune products are available also on our websites: www.pear-control.com

Manufacturer

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393 01 Pelhřimov
CZECH REPUBLIC
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Technical parameters

Dimension without wiring: 18 mm x 12 mm x 3 mm

Supply voltage range: 5 - 15 V

Maximum current consumption: 100 mA

Maximum power usage: 1.5W

Mass: cca. 4 – 30 g

Legislation

The manufacturer reserves the right to make changes. This manual is an integral part of the equipment sold. By using the equipment PearTune MSO its user agrees that he will use the modified e bike in accordance with the applicable legislation of the target country and so does even off-road; therefore, he is free to use it only on his own land or on land designated for that purpose. The user also acknowledges that the operation of bicycles outside their own land or land designated for this purpose with deactivated, but installed equipment PearTune MSO may not be in compliance with legislation. The manufacturer does not warrant non-infringement of bicycle warranties or impossibility of damage or blockage of the e-bike system. The manufacturer disclaims liability for any damages, whether in health or property associated with installing or using this product.

The manufacturer holds the certificate of electromagnetic compatibility testing - Compliance with EU regulations (CE marking) as well as the certificate of restriction of the use of Hazardous Substances (RoHS label).



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