

Manual for Booster



For LEMCO ® brushed DC motors

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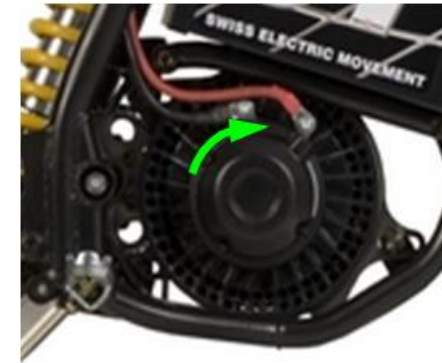
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Caution:

The Booster Kit is designed for motors that **spin clockwise** when looking onto the brush plate, and must only be used with those.

In principle, it is possible to also use it with motors that spin counter-clockwise after some modifications.

Please contact picoamps in this case.



Recommended Usage of the Booster

As a consequence of the strong excess heat the booster may only be used for short time intervals. Between those intervals the motor has to be allowed to cool down while driving with part load.

Typical Usage scenarios are

- Excess speed for overtaking
- Excess speed on short straights

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Make sure before driving:

- ✓ The Bowden cable should be placed under the tank covering avoiding sharp bends and giving sufficient play for moving the handle bar.
- ✓ If the finger lever is placed on the left side of the handle bar underneath the break lever, **the brake lever the must not be blocked or obstructed by the finger lever for the booster.**
- ✓ Pulling the finger lever causes a small rotation of the brush plate
- ✓ After releasing the finger lever the brush plate must rotate back to zero position instantly.



Usage of the Booster

When pulling the finger lever of the Booster the top speed will be increased. Depending on the used transmission gear factor, losses in bearings and transmission chains and other factors an increase of up to 30% is possible.

Acceleration from stop or low speed should be performed **without Booster**.

When the acceleration with full throttle (without booster) is decreasing, it is the right time to pull the Booster successively to get additional torque and acceleration.

Abruptly using the maximum Booster does not provide the maximum acceleration. The rider has to find the optimum balance between Booster value and speed to get the maximum extra acceleration by the booster.

When releasing the finger lever, the Booster effect will be switched off.

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Functional Principle

By pulling the booster lever the setting angle of the brush plate will be changed.

Depending on the setting angle of the brush plate the motor characteristics is different. The range of the booster lever allows to change the characteristics of the motor between maximum torque and maximum RPM.

In starting position the motor provides maximum torque. In maximum booster position the torque is reduced by about 40% whereas the idle RPM is increased by about 40%.

Due to RPM dependent and aerodynamic losses the achievable maximum speed is less than 40%, typically about 30 %.

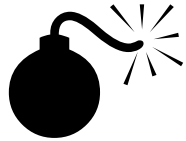
When using the Booster, the current limit of the controller will run through the motor even at higher RPM values. This causes excess heat in motor and battery.

Excessive usage of the Booster may at the worst cause damage to motor or battery.

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Using the Booster increases the excess heat in all components. Herby motor and battery may overheat.

This is even worse under the following conditions:

- Using the Booster from stop or at low speeds
- Using large transmission gear ratios
- Continuously driving at maximum speed
- Driving uphill at high speed
- Driving in deep sand
- Large mechanical friction losses in bearings and transmission chains



As protective measure we recommend

- Apply additional cooling to the motor
e.g. Heavy Duty Kit, Tuning Kit 1 or Tuning Kit 2 according to the load
- Use shortest possible transmission gear factor
- Use the Booster **exclusively** for short sprints
- Do not increase the current settings in the controller
- Apply a sensor for the temperature of the motor
- Keep bearings and transmission chains clean and well greased