



Brushless Mafia

USER MANUAL

**1106.3200Kv, 4500Kv, 6500Kv
BRUSHLESS MOTORS**
for 1/32nd & 1/24th scale slot cars



Thank you for purchasing this product, this is a powerful slot car product rather than a toy. It must be operated with care and common sense of safety. Any wrong operation may cause personal injury or damage to the product. Children under the age of 14 should only use it with the direct supervision of an adult. Before installation and use, please read and follow the operating procedures contained in this manual. We do not assume any liability arising from the use of this product, including but not limited to compensation for incidental or indirect loss; at the same time, we do not assume any liability from unauthorized modifications to the product.

WARNINGS

- The use of safety glasses while operating the motor off track is highly recommended.
- During installation, be sure the operating voltage is reasonable. The ESC will typically fully commute at 4vdc and until the motor installation is complete the recommended maximum voltage is 6vdc.
- Do not over tighten the screws when installing the motor. Torque to 2.8 to 3.7 in-lbs (0.3 to 0.5 Nm). Be sure to use the appropriate mounting screw length where the screw does not touch the windings.
- Before connecting the motor, ensure that the wiring is properly insulated, a short circuit will destroy the product and possibly the ESC.
- Full throttle operation is not advised before the gear is installed. High-speed

operation without load may damage the motor.

- Be sure to connect the components correctly; Wrongly connected slot car motor may not work properly, or the components may be damaged or other unpredictable conditions.
- To extend motor life avoid operating at temperatures exceeding 125°F (52°C). High temperatures: above 150°F [66°C] may damage motor windings.
- Do not touch the motor after use to avoid scalding and burns. Wait for the motor to cool down completely before touching it.

FEATURES

- Factory installed shaft for slot car operation
- JST 2.54 Male Connector for Connection to the ESC
- N52 magnets allowing more powerful throttle response and higher RPM's to be achieved. More torque is generated, allowing racers the flexibility to comfortably meet the demands of any racetrack.
- Synthetic grease filled bearings to eliminate oiling and bearing maintenance.
- Precision Balanced Rotor, Smoothness for Best Reliability and Maximum RPM.
- Aluminum Alloy front-end integrated casing design, high-speed operation, stable and reliable.
- Universal fit in brushless slot car multi-mounting-systems for M2.0 screws on a 9mm bolt circle.

INSTALLATION AND CONNECTION

1. Install the motor

The motor mounting screw holes are four M2.0x0.4 threaded holes. Typical screw lengths are 3-4mm depending upon the mounting bracket thickness in the slot car. Care must be taken to ensure that the base of the screw DOES NOT come in contact with the motor windings and short out the motor.

2. Motor Connection

When using a Brushless Mafia ESC a mating header pin connection has been provided on the ESC. Plug the connector on the motor onto the ESC. Check the direction of the motor rotation with 9 volts applied to the slot car. If the rotation of the motor is incorrect; unplug the motor connector then flip the connector over and reconnect to the ESC to change direction.

PINION INSTALLATION

We recommend using Loctite® 271 to install the pinion. Place a small drop in the pinion hole and install the pinion on the motor output shaft. Rotate the pinion a half turn to fully apply the adhesive on the shaft and pinion bore. Loctite® 271, a high strength thread-locker, typically reaches full cure strength in 24 hours. It sets in about 10 minutes but needs 24 hours to fully cure.



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TEMPERATURE & GEAR RATIO

The reasonable choice of gear ratio is very important, and an inappropriate gear may cause heavy loads on the motor. Please observe the following points to choose the correct gear ratio!

1. The working temperature of the motor

When the motor is working the temperatures should be lower than 125°F (52°C), when the temperature becomes higher than 150°F, the coils may be locally burned and short-circuited, which may cause large current damage to the ESC. Choosing a suitable gear ratio can effectively prevent the motor from overheating.

2. The principal of Gearing

The principal of selecting gear ratio. To avoid the possible damage to the ESC and motor caused by the overheat, please start with a small pinion/a big spur and check motor temperature regularly. If the motor and ESC temperatures always stay low, even during operation, change to a larger pinion/smaller spur and continue to monitor the motor temperature to ensure that the new gear selection is acceptable. **(Note: For the safety of electric devices, please check the ESC and motor temperature regularly.)** Heat resultant damages are not covered under warranty, as such misuse/error is not a manufacturing defect.

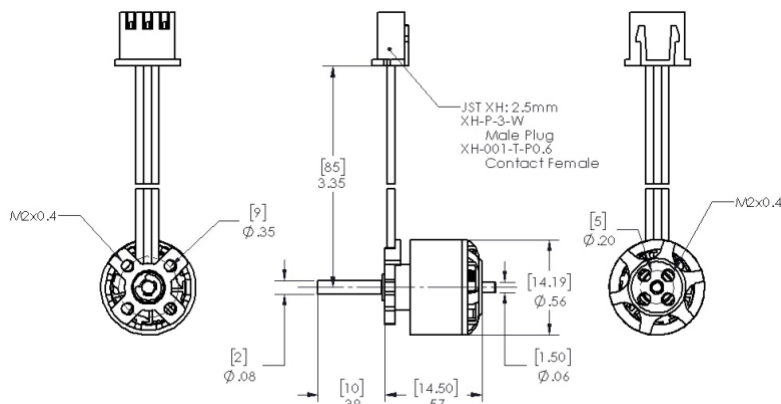
Stuttering or Cogging

1. Track calls are particularly difficult for starting an uncensored brushless motor when you have the controller at full throttle. The explanation of this process is quite detailed and covered in other documents. It is recommended that on a track call you start at zero or a low partial throttle so the ESC can perform the sync of the ESC to the motor. Failure to follow this procedure can result in the motor stuttering (moving back and forth looking for the correct direction to rotate).
2. At any time if you continue to power the motor when it's stuttering both the motor, and the ESC will get extremely hot. You run the risk of burning out not only the motor, but also the ESC. This can happen within milliseconds! When stuttering occurs let off the throttle and reapply. If it continues to stutter remove the car from the track and investigate the cause.

SPECIFICATIONS

PRODUCT	Config	Resistance	Wind	Kv (rpm/volt)	Application	Weight (g)	Pinion Shaft (mm)	Length of pinion shaft (mm)
BM1106.3200Kv	9N12P	540 mΩ	Star	3200	Road / Drag	8.0g	2	10
BM1106.4500Kv	9N12P	260 mΩ	Delta	4500	Road / Drag	8.1g	2	10
BM1106.6500Kv	9N12P	150 mΩ	Delta	6500	Road Only	8.1g	2	10

In order to make the motor more efficient and have a longer life, we recommend that you regularly inspect the motor and ESC for track debris and clean if necessary.



All product specifications and images are for reference only. Due to ongoing technical improvements and other production changes, we cannot guarantee the accuracy of the specifications or images.

Who is the Brushless Mafia-

The Brushless Mafia is a renegade collective of slot car racers and tech enthusiasts who, in the early 2020s, rejected the limitations of traditional brushed motors. Frustrated by their wear and inefficiency, these innovators—scattered across online forums, local tracks, and YouTube channels—embraced brushless motors from RC and drone tech for their superior power and durability. Not a formal group but a shared ethos, they're defined by their relentless drive to make slot cars faster, lighter, and smoother. These figures have become legends, sharing gritty videos and late-night hacks on wiring ESCs to conquer the track's demands.

Despite early struggles with laggy controls and braking quirks, their persistence paid off. By 2025, brushless cars were dominating races like the ISRA Worlds, silencing critics who called them hobby-wreckers. Today, the Brushless Mafia's influence runs deeper—they've pushed brushless tech into mainstream slot car products, from motors to purpose-built chassis. Their evolved mantra, "Advance, Promote, Share," reflects their mission: innovate relentlessly, spread the gospel of brushless, and keep the community tight. They're not just racers; they're the vanguard reshaping slot car racing's future.