# USER MANUAL

MA00244 Version 4.4.2013


***PreciSensorTM System***
***Precision Balanced Rotor***
***New StockSpec magnet***
***NOSRAM Pure2 Coolmax housing***

## *Pure2 SpecRacing*

*for distributor address, see packaging*
***www.nosram.com***

## *Warning Notes*

***Do not use aggressive advanced timing speed-control profiles with Pure2 SpecRacing motors!***
Because of it's unique design with HVS Technology and PreciSensor System, such profiles are not required to gain same performance as normal motors (with extreme speed-control timing advance) and with Pure2 SpecRacing such profiles only result in higher motor temperature but not higher performance!

***No toy. Not suitable for children under 14 years. Keep the product out of the reach of children.***

***Pay close attention to the following points, as they can destroy the product and void your warranty. Nonobservance of these points can lead to property damage, personal and severe injuries!***

- Never leave the product unsupervised while it is switched on, in use or connected with a power source. If a defect occurs, it could set fire to the product or the surroundings.
- Avoid incorrect connections or connections with reversed polarity of the product.
- All wires and connections have to be well insulated. Short-circuits can possibly destroy the product.
- Never allow this product or other electronic components to come in contact with water, oil or fuels or other electroconductive liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully.
- Avoid overtightening the motor screws. Damaged threads are not covered under warranty!
- Avoid overloading the motor due to wrong or too long gear ratios.
- Never apply full throttle if the motor is not installed. Due to the extremely high RPMs without load, the motor can get damaged.
- Always wire up all the parts of the equipment carefully. If any of the connections come loose as a result of vibration, you could loose control over your model.
- Avoid soldering longer then 5 seconds per soldering joint when replacing the power wires to prevent possible damage to the product due to overheating of the components. Use a high power soldering station with at least 60W for soldering.

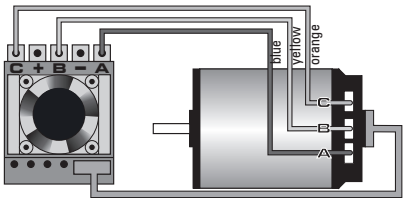
***The manufacturer can not be held responsible for damages, which are a result of non-observance of the warning notes and security advices.***

## *Installation & Connections*

***HALL-SENSOR WIRE:*** This bi-directional multipole wire, which is supplied with all Nosram sensored brushless speed-controls, connects the speedo and the motor. Do not alter or modify this cable! Make sure, that the plugs have a proper and tight fit and are always clean.

***POWER WIRES:*** The unique splitted solder-tabs allow easy and convenient replacement of the power wires. Nevertheless some soldering skills are required. Talk to your local hobbyshop if you are concerned about soldering the wires yourself.
***Caution:*** Avoid soldering longer then 5sec per soldering joint to prevent possible damage to the motor due to overheating of the inner components!

- Install the motor in the model.
  ***Caution:*** The maximum length of the motor screws shall not exceed **8mm**.
- Connect the power wires of the speed-control and the motor.
  Make sure, that the sequence is correct by checking the color code and the letters:
  - MOT.A = blue wire
  - MOT.B = yellow wire
  - MOT.C = orange wire
- If you're using a sensored speed-control: attach the hall-sensor wire to motor and speedo now.
- Finally check all the connections before using the motor.



Hall-Sensor wire

## *PreciSensor™ System*

NOSRAMs exclusive PreciSensor positioning system allows precise control for best and most efficient performace. Fast, simple and super-accurate timing adjustment using the five supplied timing inserts (27.5°, 30°, 32.5°, 35°, 37.5°). By altering the timing, you move the powerband and alter the characteristics of the motor.

**New:** our PreciSensor assembly is now coated with a special liquid to make it fully waterproof! All you have to do, when running in wet/damp conditions, is to protect the sensor wire lead (using rubber gum!) and of course the rest of your electronics such as the speed-control, receiver, etc.

**Four important things to remember about timing adjustments:**
1. Higher timing results in higher rpm but worse efficency/torque and vice versa.
2. Higher timing requires shorter gearing!
3. Timing adjustments should be done by experienced racers only, others please leave timing on standard (27,5°) setting!
4. Proper direction of the timing insert is if the degree letters are facing you with the insert installed in the motor.

**To alter the timing, proceed as following:**
1. loosen the center endcover screw and remove screw and plastic endcover.
2. change to desired timing insert and rotate sensor assembly slightly.
3. reattach endcover and tighten M2 screw carefully (do not overtighten this screw!

Finished!

## *Spare- and Optional-Parts*

| Order No. | |
|---|---|
| 925307 | Sensor-Wire „HighFlex" 70mm |
| 925310 | Sensor-Wire „HighFlex" 100mm |
| 925315 | Sensor-Wire „HighFlex" 150mm |
| 925320 | Sensor-Wire „HighFlex" 200mm |
| 92505 | Power-Wire Set Brushless 2.6mm² (red, black, blue, orange, yellow) |
| 92506 | Power-Wire Set Brushless 3.3mm² (red, black, blue, orange, yellow) |
| 90637 | StockSpec 694ZZ ABEC5 Ball Bearings (2pcs) |
| 90632 | Small Parts Set (includes: screws, endcover, timing inserts, shims, o-ring) |
| 90656 | Pure2 SpecRacing Aluminium Front Housing |
| 90633 | PreciSensor Assembly (complete replacement sensor assembly, ready to use) |
| 90636 | Aluminium Endcover with cooling fins |

Thank you for your trust in this NOSRAM product. By purchasing a NOSRAM Pure2 SpecRacing brushless motor, you have chosen a highly developed competition brushless motor full of innovative features. NOSRAMs R&D team took all the experience and testing results from our worlds-winning motors to design these Pure2 SpecRacing motor line. IFMAR World Champion Brushless Motor Technology:

- Splitted soldertabs for easy installation
- Waterproof PreciSensor System
- Oversized ball bearings
- NOSRAM Pure2 Coolmax housing
- Precision balanced rotor, strongest Neodym magnet
- Optimised racing stack

Please read the following instructions carefully before you start using your product. This user guide contains important notes for the installation, the safety, the use and the maintenance of this product. Thus protecting yourself and avoid damages of the product.

Proceed according to the user guide in order to understand your product better. Please take your time as you will have much more joy with your product if you know it exactly. This user manual shall be kept in a safe place. If another customer is using this product, this manual has to be handed out together with it.

## *Specifications*

| | 17.5T | 13.5T | 10.5T |
|---|---|---|---|
| Order No. | 91854 | 91844 | 91834 |
| Voltage Input | 3.7 - 14.8V | 3.7 - 11.1V | |
| RPM | 16280 | 22570 | 26640 |
| Specific RPM/V | 2200kV | 3050kV | 3600kV |
| Power | 192W | 253W | 321W |
| Efficiency | 93% | 92% | 92% |
| Weight | 165g | | |
| Magnet Material | Sintered 12.45mm, StockSpec | | |
| Sensor Assignment | Compliant to all worldwide organizations rules | | |

Specifications subject to change without notice. Measured at 7.4V

## *Gearing Advise*

Please pay special attention to our gear ratio recommendations! A wrong gear-ratio causes excessive heating and may result in motor damage or thermal shutdown of your speed-control. Take your kits manual to find the correct pinion. Motor temperatures should be monitored, they should never exceed 100°C (= 210°F).

The following gear ratios are only a recommendation and a good starting point for use with 2S LiPo batteries (e.g. 7.4V). The perfect ratio may vary due to different speed-controls and it's profiles, track size, track conditions and batteries.

***Also make sure you stay within the recommended voltage range for each motor type!***

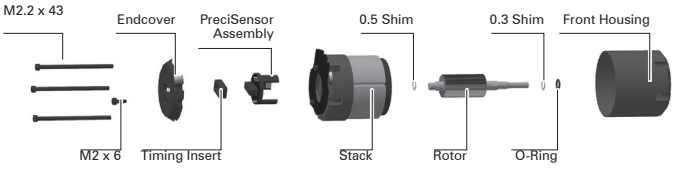
| | Volts | 17.5T | 13.5T | 10.5T |
|---|---|---|---|---|
| Touring Car | 7.4 | 4.0:1 | 6.0:1 | 6.5:1 |
| 1:12 | 3.7 | 68mm | 53mm | 44mm |
| 2wd + 4wd off-road | 7.4 | 6.0 | 7.0 | 8.0 |
| Truck Off-road | 7.4 | 7.0:1 | 8.0:1 | 9.0:1 |

## *Disassembly & Maintenance*

Due to the maintenance free design of the Pure2 SpecRacing it is not necessary to open the motor frequently under normal conditions. It is just recommended to check that it's screws are always securely fastened and that you maintain the ball bearings frequently (clean, check, oil, replace if needed!) in order to achieve best performance. Of course you can also disassemble the motor entirely if you wish to do so.

***Disassembly of the motor:***
1. Loosen the center endcover screw and remove screw, plastic endcover and timing insert.
2. Remove PreciSensor™ assembly by pulling gently at sensor connector.
3. Loosen and remove the long/outer 3 screws and gently slide off the front aluminium housing.
4. Carefully pull the rotor out of the housing and place it in clean towel or designated rotor container.
5. Remove the o-ring and shims from the shaft.
6. You have now access to both ball bearings for cleaning, maintenance and replacement. You may also use compressed air to clean the inside of the motor after you have removed the bearings.

***Be careful with correct shims/o-ring position during re-assembly and avoid overtightening the screws!***




## *Repair Procedures / Limited Warranty*

All products from Nosram are manufactured according to the highest quality standards. Nosram guarantees this product to be free from defects in materials or workmanship for 90 days (non-european countris only) from the original date of purchase verified by sales receipt. This limited warranty doesn't cover defects, which are a result of misuse, improper maintenance, outside interference or mechanical damage. „This applies among other things on:

- Overload (for example: unsoldered wires inside motor)
- Excessive amounts of dirt inside the motor
- Rotor damage due to debris inside motor
- Mechanical damage due to external causes
- Rust"

To eliminate all other possibilities or improper handling, first check all other components in your model and the trouble shooting guide, if available, before you send in this product for repair. If products are sent in for repair, which do operate perfectly, we have to charge a service fee according to our pricelist.

With sending in this product, the customer has to advise Nosram if the product should be repaired in either case. If there is neither a warranty nor guarantee claim, the inspection of the product and the repairs, if necessary, in either case will be charged with a fee at the customers expense according to our price list.

A proof of purchase including date of purchase needs to be included. Otherwise, no warranty can be granted. For quick repair- and return service, add your address and detailed description of the malfunction.

If Nosram no longer manufactures a returned defective product and we are unable to service it, we shall provide you with a product that has at least the same value from one of the successor series.

The specifications like weight, size and others should be seen as guide values. Due to ongoing technical improvements, which are done in the interest of the product, Nosram does not take any responsibility for the accuracy of these specs.

**Nosram-Distributor-Service:**

- Package your product carefully and include sales receipt and detailed description of malfunction.
- Send parcel to your national Nosram distributor.
- Distributor repairs or exchanges the product.
- Shipment back to you by COD (cash on delivery), but this is subject to your countries Nosram distributor's policy.

The crossed-out wheeled bin means that within the European Union the product must be taken to seperate collection at the product end-of-life. Do not dispose of these products as unsorted municipal waste.