

VECTOR X20 BL Modified Series

Precision Balanced Rotor
Oversized Ball Bearings
XTEC X20 Coolmax Housing



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Warning Notes

Do not use aggressive advanced timing speed-control profiles with Vector X20 motors!

Because of its 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). With X20 motors 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. Non-observance 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 lose control over your model.
- Avoid soldering longer than 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 LRP 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.

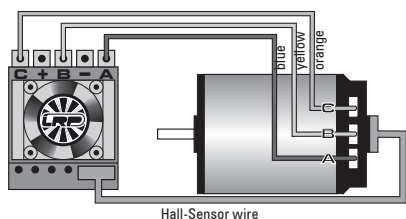
POWER WIRES: The unique splitted solder-tabs allow easy and convenient replacement of the power wires. Nevertheless some soldering skills are required. Talk to your local hobbyshop if you are concerned about soldering the wires yourself.

Caution: Avoid soldering longer than 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 (now WATERPROOF!)

LRP's exclusive sensor positioning system allows precise control for best and most efficient performance. 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 dry/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 efficiency/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 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!)

Spare- and Optional-Parts

LRP offers a comprehensive line of accessories, as well as particular spare- and optional items. Here you find an overview, for a full picture please visit our website at www.lrp.cc:

Spare parts:

- #50627 Ball Bearings (2pcs / 694ZZ - 4x11x4mm - ABEC5)
- #50637 Balanced WorksTeam Rotor 12.5mm
- #50622 Small Parts Set (includes: screws, endcover, timing inserts, shims, o-ring)
- #50623 PreciSensor Assembly (complete replacement sensor assembly, ready to use)

Optional parts:

- #50636 Balanced WorksTeam Rotor 12.0mm
- #50638 Balanced WorksTeam Rotor 13.0mm
- #50626 Aluminium Endcover with cooling fins
- #50614 Fixed 30° timing endcover (plastic)
- #819307 Sensor-Wire „HighFlex“ 70mm
- #819310 Sensor-Wire „HighFlex“ 100mm
- #819315 Sensor-Wire „HighFlex“ 150mm
- #819320 Sensor-Wire „HighFlex“ 200mm
- #81907 3.3mm² Powerwire black (1.0m)
- #81908 3.3mm² Powerwire blue (1.0m)
- #82506 Power-Wire Set Brushless 3.3mm² (red, black, blue, orange, yellow)
- #65790 Works Team Tools, Motor Bearing Replacer
- #82515 Motor Fan (30x30mm) + Aluminium Mounting Clamp
- #82520 Radical Motor Heatsink and Fan, blue (unique „clamp style“ heatsink design, 40mm fan)
- #82521 Radical Motor Heatsink and Fan, gunmetal (unique „clamp style“ heatsink design, 40mm fan)

Thank you for your trust in this LRP product. By purchasing a **LRP Vector X20 Modified** brushless motor, you have chosen a highly developed competition brushless motor full of innovative features. LRP's R&D team took all the experience and testing results from our X12 worlds-winning motors to design this **Vector X20** motor line.

- XTEC X20 Coolmax housing
- Precision balanced rotor, strongest Neodym magnet
- Optimised racing stack
- Waterproof PreciSensor System
- Oversized ball bearings
- Splitted soldertabs for easy installation

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

	10.5	9.5	8.5	7.5	6.5	5.5	5.0	4.5	4.0
Order No.	50643	50644	50654	50664	50674	50684	50689	50694	50704
Voltage input [V]	3.7 - 7.4								
RPM ¹	25160	27380	30340	34040	38480	45140	51060	56240	62900
Specific RPM/V [kV]	3400	3700	4100	4600	5200	6100	6900	7600	8500
Power ¹ [W]	278	300	322	357	414	486	545	593	652
Weight [g]	165								
Magnet material	Balanced WorksTeam Sintered 12.5mm (#50637)								
Winding	Star (Multistrand Copper Winding)								
Sensor assignment	Compliant to IFMAR/EFRA/ROAR/FEMCA/JMRCA/BRCA/DMC rules								

Specifications subject to change without notice. ¹Measured 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. The actual gearing may vary due to different speed-controls, speedo profiles, motor timings, tracks, track conditions and/or batteries:

USAGE	LiPo	10.5	9.5	8.5	7.5	6.5	5.5	5.0	4.5	4.0
TC (small track)	2S / 7.4V	--	--	--	--	8.0:1	8.5:1	9.0:1	9.5:1	--
TC (big track)	2S / 7.4V	--	--	--	--	--	7.5:1	8.0:1	8.5:1	9.0:1
1:12	1S / 3.7V	--	--	--	--	--	38mm	36mm	34mm	32mm
2wd Off-Road	2S / 7.4V	6.5:1	7.5:1	8.5:1	9.5:1	10.5:1	--	--	--	--
2wd Short Course	2S / 7.4V	8.0:1	9.0:1	10.0:1	11.0:1	--	--	--	--	--
4wd Off-Road	2S / 7.4V	--	--	9.0:1	10.0:1	11.0:1	12.0:1	--	--	--

Bold/Italic marked types are the LRP factory-team's recommendations for each class!

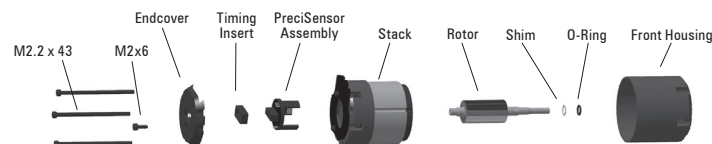
Disassembly & Maintenance

Due to the maintenance free design of the LRP Vector X20, it is not necessary to open the motor frequently under normal conditions. It is just recommended to check that all screws are still securely fastened. Nevertheless, if you intend to check the ball bearings and oil them from time to time or want to change to another rotor type, you can of course disassemble the motor.

Disassemble the motor:

1. Loosen the center endcover screw and remove screw, plastic endcover and timing insert.
2. Remove PreciSensor™ Assembly
3. Loosen and remove the long/outer 3 screws and gently slide off the front aluminium housing.
4. Remove the o-ring and shim from the shaft.
5. Carefully pull the rotor out of the housing and place it in clean towel or designated rotor container.
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 shim/o-ring position during re-assembly and avoid overtightening the screws!



Repair Procedures / Limited Warranty

All products from LRP electronic GmbH (hereinafter called "LRP") are manufactured according to the highest quality standards. LRP 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 LRP 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 LRP 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, LRP does not take any responsibility for the accuracy of these specs.

LRP-Distributor-Service:

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



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