

**FUSION PHASE 3
MOTOR-SERIES**

**FUSION PHASE 4.1
MOTOR-SERIES**

**LRP-HPI CHALLENGE
MOTOR-SERIES**

USER GUIDE



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WARNING NOTES

IMPORTANT: Never leave your RC model unsupervised when the battery is plugged in. If a defect occurs, it could set fire to the model or the surroundings.

IMPORTANT: Pay close attention to the following points, as they will destroy the motor and void your warranty:

- Avoid soldering longer than 5sec per soldering joint when replacing the power wires or the brushes to prevent possible damage to the motor due to overheating!
- Never connect the motor incorrectly or with reversed polarity.
- All wires and connections have to be well insulated. Short-circuits can destroy the motor.
- Avoid overtightening the motor screws. Damaged threads are not covered by warranty!
- Avoid overheating the motor due to wrong or too long gear ratios.

GEARING

Always check, that your cars drivetrain runs free and doesn't stick. Never overgear your motor, as a too long gear ratio causes excessive motor wear. Take your kits instruction manual to find the correct pinion. The following recommendations are a good starting point but may vary due to different tracks, models and batteries:

	7 Turns	8 Turns	9 Turns	10 Turns	12 Turns	14 Turns	17 Turns	LRP-HPI Stock Challenge Motor	LRP-HPI 17T Challenge Motor
Touring Car	10.1:1	9.6:1	9.0:1	8.5:1	7.0:1	6.5:1	6.0:1	5.5:1	6.6:1
Off Road	--	--	12.5:1	12.0:1	10.4:1	9.0:1	7.8:1	7.0:1	8.0:1

Always let the motor cool down after usage. Never run several battery packs in a row!

CAUTION: If the brushes get unsoldered during your run or the endbell melts, the motor is overloaded. Use a shorter gearing.

MAINTENANCE

All **Fusion Phase 4.1** and **LRP-HPI Challenge** motors come with the LRP P-Brush (#65911) and extra-hard springs (#61304). This combination offers maximum performance and unbeatable lifetime! On the **LRP-HPI 17T Challenge** motor, you have to solder on the brushes and suppression capacitors yourself. Pay attention during soldering, that the brush wire does not get soaked completely by the solder. By using too much solder, the wire gets inflexible. Ask your local hobby shop for further information.

All **Fusion Phase 3** motors come with the LRP Allround Brush (#65921) and hard 180° springs (#6131). This combination offers optimum performance with high lifetime and low current consumption.

We recommend to check your motor every 5-10th run for excessive wear. Remove the motor from your car, pull out the springs and brushes and clean the commutator and brushes with a cotton stick and LRP Xtra Cleaner 2 (#65120). Replace brushes which are discolored or too short (min. 5mm) immediately! Also use some LRP Ball Bearing Oil 2 (#65430) on the ball bearings inside the can and the endbell.

We recommend to cut the commutator when replacing the brushes in order to obtain best performance. Be sure to cut the commutator at least after 30 runs. Ask your local hobby shop if you don't have a commutator-lathe or send your motor to your countries LRP-distributor for maintenance.

REPAIR PROCEDURES/LIMITED WARRANTY

All products from LRP electronic (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 from the original date of purchase verified by sales receipt. This limited warranty doesn't cover defects, which are a result of normal wear, misuse or improper maintenance. This applies among other things on:

- Overload (for example: melted endbell, unsoldered brushes)
- Excessive wear of brushes/commutator due to lack of maintenance
- Excessive amounts of dirt inside the motor
- Damaged winding due to dirt inside the motor
- Mechanical damage due to external causes
- Not rebuildable motors, which are disassembled by the customer
- Rust

To eliminate all other possibilities or improper handling, first check all other components before you send in this product for repair or warranty. Products sent in for repair, that operate perfect have to be charged with a service fee.

By sending in this product, you assign LRP to repair the product, if it is no warranty case. The original sales receipt 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.

Dear Customer,

thank you for your trust in this LRP product. By purchasing this LRP motor, you have chosen a high-performance modified motor. All components in these motors have been tested and approved by our race team. Especially the Fusion Phase 4.1 motors use the exact same components as the motors, which are used by our race team.

Please read and understand these instructions completely before you use this product!
With operating this product, you accept the LRP warranty terms.

SPECIFICATIONS

Fusion Phase 4.1:

Type	Name	Order#	RPM*	Power*
7x2	Eraser	52072	56.000	256W
8x1	Typhoon	52081	52.500	252W
8x2	Vampire	52082	53.000	250W
9x2	Invader	52092	48.000	245W
10x1	Macho	52101	44.000	240W
10x2	Psycho	52102	44.500	239W
12x1	Cool Man	52121	40.500	234W
12x2	Mr. TC	52122	41.000	233W

Fusion Phase 3 / LRP-HPI Challenge motor:

Type	Order#	RPM*	Power*
8x2	55208	49.800	232W
10x2	55210	44.500	221W
12x2	55212	39.500	215W
14x2	55214	35.000	206W
17x2	55217	31.500	195W
LRP-HPI 17T Challenge	57772	31.000	185W
LRP-HPI Stock Challenge	58862	24.000	125W

*Measured at 7.2V.
Specifications subject to change without notice.

TUNING

LRP offers many accessories to maintain your motor and to obtain maximum performance with your LRP motor. Of course you can also use these accessories for other electric motors. The following table will give you some information about the differences of the available accessories:

Racer	Order#	Type	Runs	Power
Street	65901	Motor-Brushes Sagami-2 „L“, Longlife	30 - 50	**
Hobby	65921	Motor-Brushes Allround, Hard	15 - 30	***
Sport	65941	Motor-Brushes Hyper-T7, Medium	5 - 10	****
Professional	65911	Silver Motor-Brushes, P-Brush	40 - 60	****
Professional	65961	Motor-Brushes Xmax-T7, Soft	3 - 5	*****
All	61301	Motor-Springs Medium (Rot)		***
All	61302	Motor-Springs Hard (Purple)		****
All	61304	Motor-Springs Extra-Hard (Chrom)		*****

CAUTION: Stiffer motor-springs increase power but will create higher motor wear!

TIMING

You can change the timing on all **Fusion Phase 4.1**, **Phase 3** and **LRP-HPI Stock Challenge** motors. The **LRP-HPI 17T Challenge** motor has a fixed timing, which can not be changed.

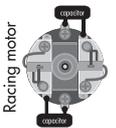
To change the timing, you have to loosen the screws on the endbell. After that, you can adjust the timing by turning the endbell. The timing mark on the can helps you to find the exact timing settings. The recommended range for the timing is 4 to 7.

CAUTION: Higher timing will give higher RPM and power but the downside is shorter runtime and higher wear.

MOTOR SUPPRESSION

All electric motors need to have a suppression in order for the motor and the speed-control to work properly. Motors with no capacitors or not enough capacitors may interfere with the speed-control. To avoid this, solder the supplied capacitors to your motor (see picture).

NOTE: All Fusion Phase 4.1 motors are already factory equipped with high-performance SMD capacitors.



Our limited warranty liability shall be limited to repairing the unit to our original specifications. In no case shall our liability exceed the original cost of this unit. Because we don't have control over the installation or use of this product, we can't accept any liability for any damages resulting from using this product. By installing or operating this product, the user accepts all resulting liability.

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 usually by COD (cash on delivery), but this is subject to your national LRP distributor's general policy.