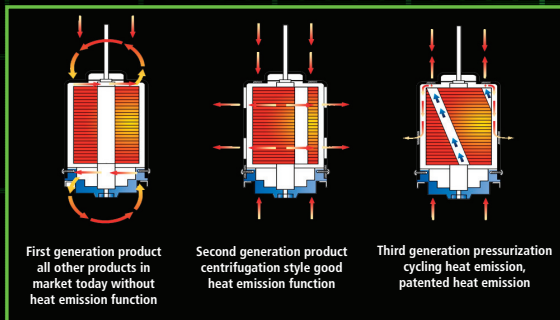




# ULTIMATE<sup>®</sup> INFINITY Motors

The **ULTIMATE** in performance and durability



First generation product all other products in market today without heat emission function

Second generation product centrifugation style good heat emission function

Third generation pressurization cycling heat emission, patented heat emission

Back cover made of polymer to prevent short circuit

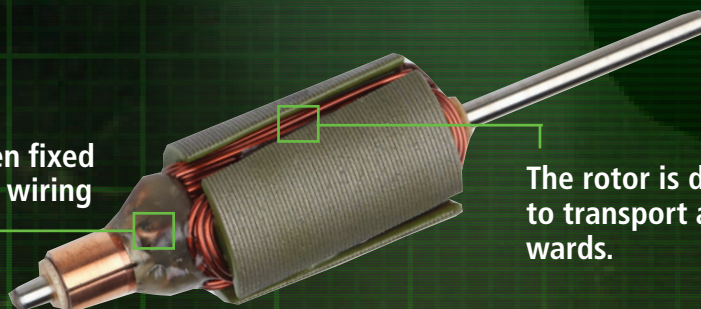


Changeable ball-bearings

Air inlet for maximum cooling and debris prevention

The hardness of the pinion gear is 50-55 HRC.

The copper wiring has been fixed with epoxy to prevent the wiring from detaching



The rotor is designed to transport air upwards.

01010100011010000110011100011000  
00010010111112000110010100100000010101  
1000011001010110110001101100



Thicker copper wiring prevents overheating and offers less electrical resistance

Changeable ball-bearings

The brushes has a larger surface area then competing brands therefore have a better connection

### Service & Maintenance

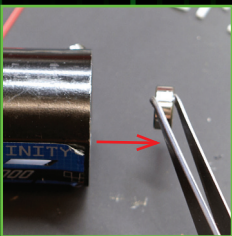
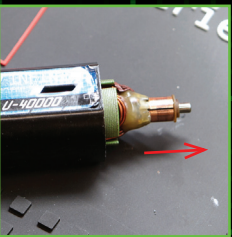
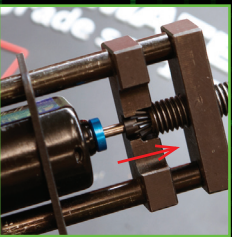
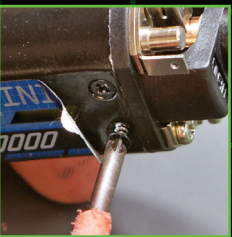
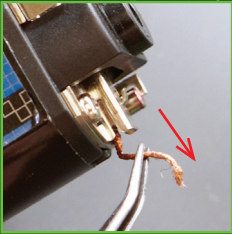
1. No oil or lubrication of the motor is recommended
2. It is recommended to replace the Carbon brushes after 100.000 shots or when approx. 50% of it, is worn out.
3. Rotor is designed to make minimum 200.000 rounds. After 300.000 it is recommended to refresh the surface of the back end where the carbon brushes have contact. This shall be done in a turning lathe machine. As long as the rotor keeps it's performance, it isn't necessary to replace it.
4. Front bearing is recommended to replace after 100.000 shots. Both bearings should be replaced after 200.000 shots.
5. Make sure that the back cover is correctly installed during assembling
6. Make sure the u-spring is mounted correctly inside the housing to keep the magnets in position.
7. Only use ULTIMATE carbon brushes for replacement. The size and the wire thickness is callibrated to the motor and use of alternative brushes will strongly diminish the performance or damage the motor.
8. Motor can be used immediatly after replacement of any spare part.

# INFINITY Motors

## Disassembly

### Disassembling goes in four steps.

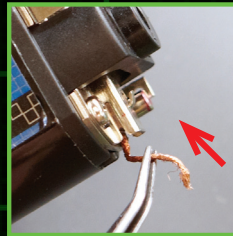
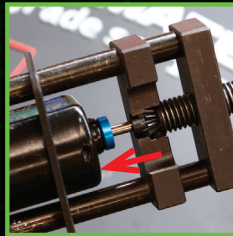
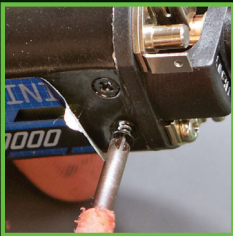
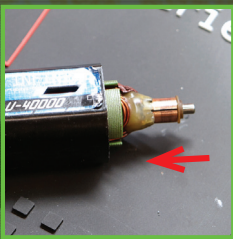
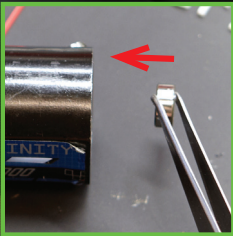
1. Remove the carbon brushes.
2. Unscrew the screws holding the back motor cover in position.
3. Gently hit the axle on the top so the rotor comes out of the magnetic housing.
4. Ball bearings should be pressed out. Hitting them is not allowed/recommended as it can cause damage to the bearings.



## Assembly

### Assembling the motor.

1. Front bearing should be mounted in the housing with a special tool.
2. Rotor axis is placed in the magnetic housing with a special tool.
3. Carbon brushes must move freely without resistant in the groove. Wire must be set correct and fixed on the top of the groove to avoid short circuit during operation(See pictures) After installing the carbon brushes the motor should be turned by hand a few times.
4. When back cover is pushed into the magnetic housing. Pay attention to the position so that plus/plus is in the same side(red markings on magnet and on the cover) when the cover is pushed on.
5. No oil or grease is allowed during assembling neither on the ball bearings.
6. Run in of motor is not needed after assembling.



## Trouble shooting

1. If carbon brushes doesn't move freely in the groove or is stocked - the motor might not run or have low torque performance.
2. Magnets in the housing is loose - motor won't rotate or start. Loose magnets is caused by heat or that the motor has been dropped on a hard surface.
3. Motor won't rotate. Carbon dust is accumulated in the patch on the rotors back end where the carbon brushes have contact. Clean it!
4. The rotor wire isn't properly fixed on the back end of the rotor. Motor won't start or caused by the gravity at high rpm the motor start and stop repeatedly.
5. The motor only start when the axle is in certain positions. Cause, a broken wire on the rotor. By measuring the resistance in  $\Omega$  Ohm for each wire. If high resistance is measured the wire is broken full or partly and rotor have to be replaced.
6. Back end of rotor is damaged or burned. Is caused by higher voltage than 12v which is the maximum accepted voltage for the rotor.
7. Magnets will be damaged if the temperature rises above 180 °C.
8. Motor do no longer have optimum torque. Carbon brushes is probably worn out and need to be replaced.
9. Pinion gear is designed to fit as many gear modules as possible. If it is worn out easily it is recommended to try another type/brand for the specific upgrade.

# INFINITY Motors spare parts list

The ULTIMATE® INFINITY motor series consists of 9 complete motors in three classes and with three different axle lengths:

**INFINITY U-40000** motors are high speed/ low torque motors with short, medium and long axles

**INFINITY U-35000** motors are standard speed/ normal torque motors with short, medium and long axles

**INFINITY U-30000** motors are low speed/ high torque motors with short, medium and long axles.

## Motors

16956	U-40000, short axle
16957	U-40000, medium axle
16958	U-40000, long axle
16953	U-35000, short axle
16954	U-35000, medium axle
16955	U-35000, long axle
16950	U-30000, short axle
16951	U-30000, medium axle
16952	U-30000, long axle



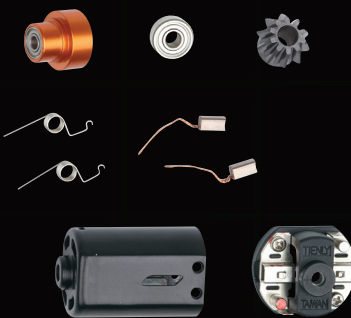
## Unique spare parts

<b>U-40000</b>	16977	Motor axis, HS/LT, short axle
	16978	Motor axis, HS/LT, medium axle
	16979	Motor axis, HS/LT, long axle
<b>U-35000</b>	16974	Motor axis, SS/NT, short axle
	16975	Motor axis, SS/NT, medium axle
	16976	Motor axis, SS/NT, long axle
<b>U-30000</b>	16971	Motor axis, LS/HT, short axle
	16972	Motor axis, LS/HT, medium axle
	16973	Motor axis, LS/HT, long axle



## Universal spare parts

16965	Axis fixer bearing, short axle
16966	Axis fixer bearing, medium axle
16967	Axis fixer double bearing, long axle
16968	Axis fixing spring, short axle
16969	Axis fixing spring, medium axle
16970	Axis fixing spring, long axle
16959	Motor upper cover set
16960	Carbon brush spring, 2 pcs.
16961	Carbon brush, 2 pcs.
16962	Motor shell & reinforced magnet set
16963	Front and back bearing of motor
16964	High tensile steel tooth
16980	Maintenance tool



For more information on the ULTIMATE® upgrade series, and the different upgrade parts, go to [www.actionsportgames.com](http://www.actionsportgames.com)