

KDE DIRECT XF SERIES HIGH-PERFORMANCE BRUSHLESS MOTORS GEARING RECOMMENDATIONS

The new XF Series High-Performance Brushless Motors are designed to push the boundaries of technology and bring a whole new level of flight performance to the world of RC Helicopters. In this regard, choosing the appropriate gearing to reach the level of flight performance is critical for proper operation.

The gearing details listed in this document are recommendations provided by in-flight testing with Castle Creations ICE series of electronic speed controllers (ESCs). In collaboration with Castle Creations, the XF Series of Brushless Motor have been optimized to run smoothly and efficiently with the ICE series of ESCs, providing the ability to be governed to power-levels and near-flawless control never before achieved.

All of the gearing recommendations listed in this document utilize the Helicopter Governor-Mode algorithm of the ESC, which is ideal for RC Helicopter flight. Please familiarize yourself with the proper install, operation, and programming of such devices before attempting to power the system and achieve flight. KDE Direct is not responsible for the use of such products, or any damage or injuries caused as a result of its usage. It is the responsibility of the owner to operate all models in a safe manner and KDE Direct assumes no liability for the use of these products.

Updated: 08/21/2011



**KDE DIRECT 700XF-495 HP BRUSHLESS MOTOR
700-CLASS SETUP, MOD 1.0 GEARING**

| | STOCK GEARING | KDE DIRECT RECOMMENDED GEARING | | | |
|-----------------------------------|----------------------|---------------------------------------|-------|---------|------------|
| LIPO CELLS [#S] | 12 | 12 | 12 | 12 | 12 |
| CELL VOLTAGE [V] | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| MOTOR KV [RPM/V] | 495 | 495 | 495 | 495 | 495 |
| PINION TEETH [#T] | 12 | 11 | 12 | 13 | 14 |
| MAIN GEAR TEETH [#T] | 115 | 115 | 115 | 115 | 115 |
| GEARING RATIO [-] | 9.583 | 10.455 | 9.583 | 8.846 | 8.214 |
| MAGNET POLES [#P] | 8 | 8 | 8 | 8 | 8 |
| MAXIMUM HOVER RPM [100% THROTTLE] | 2293 | 2102 | 2293 | 2484 | 2676 |
| RECOMMENDED GOVERNOR RPM [CC ESC] | 2050 | 1875 | 2050 | 2225 | 2225+ |
| FLIGHT CLASSIFICATION | 3D | MILD 3D/F3C | 3D | HARD 3D | EXTREME 3D |

**KDE DIRECT 600XF-530 HP BRUSHLESS MOTOR
600-CLASS SETUP, MOD 1.0 GEARING**

| | STOCK GEARING | KDE DIRECT RECOMMENDED GEARING | | |
|-----------------------------------|----------------------|---------------------------------------|-------|---------|
| LIPO CELLS [#S] | 12 | 12 | 12 | 12 |
| CELL VOLTAGE [V] | 3.7 | 3.7 | 3.7 | 3.7 |
| MOTOR KV [RPM/V] | 530 | 530 | 530 | 530 |
| PINION TEETH [#T] | 13 | 12 | 13 | 14 |
| MAIN GEAR TEETH [#T] | 112 | 115 | 115 | 115 |
| GEARING RATIO [-] | 8.615 | 9.583 | 8.846 | 8.214 |
| MAGNET POLES [#P] | 8 | 8 | 8 | 8 |
| MAXIMUM HOVER RPM [100% THROTTLE] | 2731 | 2456 | 2660 | 2865 |
| RECOMMENDED GOVERNOR RPM [CC ESC] | 2250 | 2025 | 2175 | 2350 |
| FLIGHT CLASSIFICATION | 3D | MILD 3D/F3C | 3D | HARD 3D |

**KDE DIRECT 600XF-1175 HP BRUSHLESS MOTOR
600-CLASS SETUP, MOD 0.7 AND MOD 1.0 GEARING**

| | STOCK GEARING | KDE DIRECT RECOMMENDED GEARING (MOD 0.7) | | | KDE DIRECT RECOMMENDED GEARING (MOD 1.0) | | |
|-----------------------------------|---------------|--|--------|---------|--|--------|---------|
| LIPO CELLS [#S] | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| CELL VOLTAGE [V] | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| MOTOR KV [RPM/V] | 1175 | 1175 | 1175 | 1175 | 1175 | 1175 | 1175 |
| PINION TEETH [#T] | 14 | 15 | 16 | 17 | 10 | 11 | 12 |
| MAIN GEAR TEETH [#T] | 170 | 164 | 164 | 164 | 115 | 115 | 115 |
| GEARING RATIO [-] | 12.143 | 10.933 | 10.250 | 9.647 | 11.500 | 10.455 | 9.583 |
| MAGNET POLES [#P] | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| MAXIMUM HOVER RPM [100% THROTTLE] | 2148 | 2386 | 2545 | 2704 | 2268 | 2495 | 2722 |
| RECOMMENDED GOVERNOR RPM [CC ESC] | 1750 | 1950 | 2075 | 2225 | 1850 | 2050 | 2225 |
| FLIGHT CLASSIFICATION | SPORT | MILD 3D/F3C | 3D | HARD 3D | MILD 3D/F3C | 3D | HARD 3D |

**KDE DIRECT 600XF-1175 HP BRUSHLESS MOTOR
550-CLASS SETUP, MOD 0.7 AND MOD 1.0 GEARING**

| | STOCK GEARING | KDE DIRECT RECOMMENDED GEARING (MOD 0.7) | | | KDE DIRECT RECOMMENDED GEARING (MOD 1.0) | | |
|-----------------------------------|---------------|--|-------|---------|--|-------|---------|
| LIPO CELLS [#S] | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| CELL VOLTAGE [V] | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| MOTOR KV [RPM/V] | 1175 | 1175 | 1175 | 1175 | 1175 | 1175 | 1175 |
| PINION TEETH [#T] | 16 | 16 | 17 | 18 | 11 | 12 | 13 |
| MAIN GEAR TEETH [#T] | 170 | 164 | 164 | 164 | 115 | 115 | 115 |
| GEARING RATIO [-] | 10.625 | 10.250 | 9.647 | 9.111 | 10.455 | 9.583 | 8.846 |
| MAGNET POLES [#P] | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| MAXIMUM HOVER RPM [100% THROTTLE] | 2455 | 2545 | 2704 | 2863 | 2495 | 2722 | 2949 |
| RECOMMENDED GOVERNOR RPM [CC ESC] | 2025 | 2075 | 2225 | 2350 | 2050 | 2225 | 2425 |
| FLIGHT CLASSIFICATION | SPORT | MILD 3D | 3D | HARD 3D | MILD 3D | 3D | HARD 3D |

**KDE DIRECT 500XF-1450 HP BRUSHLESS MOTOR
500-CLASS SETUP, MOD 0.6 GEARING**

| | STOCK GEARING | KDE DIRECT RECOMMENDED GEARING | | |
|-----------------------------------|----------------------|---------------------------------------|--------|---------|
| LIPO CELLS [#S] | 6 | 6 | 6 | 6 |
| CELL VOLTAGE [V] | 3.7 | 3.7 | 3.7 | 3.7 |
| MOTOR KV [RPM/V] | 1450 | 1450 | 1450 | 1450 |
| PINION TEETH [#T] | 13 | 15 | 16 | 17 |
| MAIN GEAR TEETH [#T] | 162 | 162 | 162 | 162 |
| GEARING RATIO [-] | 12.462 | 10.800 | 10.125 | 9.529 |
| MAGNET POLES [#P] | 8 | 8 | 8 | 8 |
| MAXIMUM HOVER RPM [100% THROTTLE] | 2583 | 2981 | 3179 | 3378 |
| RECOMMENDED GOVERNOR RPM [CC ESC] | 2125 | 2450 | 2600 | 2775 |
| FLIGHT CLASSIFICATION | SPORT | MILD 3D | 3D | HARD 3D |

**KDE DIRECT 450XF-3850 HP BRUSHLESS MOTOR
450-CLASS SETUP, MOD 0.5 GEARING**

| | STOCK GEARING | KDE DIRECT RECOMMENDED GEARING | | |
|-----------------------------------|----------------------|---------------------------------------|--------|---------|
| LIPO CELLS [#S] | 3 | 3 | 3 | 3 |
| CELL VOLTAGE [V] | 3.7 | 3.7 | 3.7 | 3.7 |
| MOTOR KV [RPM/V] | 3850 | 3850 | 3850 | 3850 |
| PINION TEETH [#T] | 14 | 12 | 13 | 14 |
| MAIN GEAR TEETH [#T] | 150 | 150 | 150 | 150 |
| GEARING RATIO [-] | 10.714 | 12.500 | 11.538 | 10.714 |
| MAGNET POLES [#P] | 8 | 8 | 8 | 8 |
| MAXIMUM HOVER RPM [100% THROTTLE] | 3989 | 3419 | 3704 | 3989 |
| RECOMMENDED GOVERNOR RPM [CC ESC] | 3275 | 2800 | 3025 | 3275 |
| FLIGHT CLASSIFICATION | HARD 3D | MILD 3D | 3D | HARD 3D |