

MPI Promax Cobalt Motor

Introduction:

Congratulations on your purchase of the Promax Cobalt Motor! The Promax Cobalt Motor utilizes state of the art design and material to maximize quality and performance. All motors are subjected to a series of tests, including a two-hour break-in, and a 500 V short insulation test. With proper care, it will give you years of reliable service. Please follow the instruction to achieve best performance.

Key Features:

- The highest-grade samarium cobalt magnets are used to guarantee peak performance under severe temperature and current conditions,
- Compact light weight design,
- No protruded brush holders to simplify installation,
- Replaceable silver graphite brushes are used for better efficiency and heat dissipation,
- Large air inlets and open brush are built-in to allow maximum cooling,
- Silicon steel lamination armature is dynamically balanced for maximum RPM with minimum vibration and wear,
- Epoxy impregnated windings are used for best heat conduction and electric insulation,
- Noise suppressing capacitors installed internally,
- Timing is adjustable for high efficiency or high output operations.

Instructions:

1. DO NOT apply excessive voltage (too many cells), premature damage can occur.
2. Oil ball bearings occasionally to maintain proper lubrication.
3. Maintain at least 90% contact surface between brushes and commutator.
4. Keep the commutator surface clean and free of any debris to maintain peak performance.
5. If you install a fuse, a 40 amp use is recommended for this motor.
6. DO NOT dismantle the motor unnecessarily. Before dismantling the motor, scribe both motor case and end bells to maintain their relative positions.
7. During motor and battery installation, keep in mind, proper cooling enhances the motor and the battery performance. At the end of a flight, both motor and battery should feel warm not hot.
8. All motors are timed at the factory for general normal rotation applications. To advance the timing, loosen the two bolts on the rear endbell and rotate the endbell opposite the rotation of the armature. To find neutral timing, run the motor without load and adjust the rear endbell to obtain minimum amps drawn from the battery. Note the amps drawn. It should be very close to the specified value, if not there could be something wrong with the motor, and it should be inspected. From this position the timing should be advanced to an amperage of neutral no load current plus 10% of anticipated operating current (2.5 amps + (15 amps x .1) = 4.0 amps advanced no load current). This will be the best position for brush wear and efficiency for most applications. Operating the motor at no load current will create a lot of heat. Do not operate the motor in this condition for extended periods of time as damage may occur.
9. Timing must be reversed for spur gear type gearboxes. To reverse the motor, find neutral timing and switch the polarity of the leads. Advance the timing as described above.

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SPECIFICATIONS

	0505	0506	1507	1510	2006	2008	4014	4013	4011	4812	4811	4809
Winding	5	6	7	10	6	8	14	13	11	12	11	9
Wire Gauge	18	19	20	21	19	20	24	23.5	22.5	22.5	22.5	21
Length, in	2.55	2.55	2.55	2.55	2.73	2.73	1.96	1.96	1.96	2.125	2.125	2.125
Diameter, in	1.32	1.32	1.32	1.32	1.32	1.32	1.09	1.09	1.09	1.14	1.14	1.14
Weight, oz	6.5	6.5	6.5	6.5	7.9	7.9	3.5	3.5	3.5	4.1	4.1	4.1
Shaft Dia., in	5/32	5/32	5/32	5/32	5/32	5/32	1/8	1/8	1/8	1/8	1/8	1/8
Max # of cells	7	8	12	14	12	14	13	12	10	12	12	11
Max Current	40	35	35	30	30	35	20	22	25	22	25	30
Typical # of cells	6-7	7-8	7-10	10-12	10-12	12-14	7-8	7-8	7-8	7-8	7-8	7-8
Test prop.	7x6	7x6	7x6	7x6	7x6	7x6	6x4	6x4	6x4	6x4	6x4	6x4
Test Voltage	7.0	7.0	8.5	12.0	10.0	13.0	8.0	8.0	8.0	8.0	8.0	7.0
Static RPM	14,200	12,200	12,500	13,700	16,000	15,900	14,400	14,900	16,100	15,600	16,100	17,000
Static Amps	46.0	30.3	27.5	22.5	38.0	28.0	15.3	16.9	23.5	19.2	21.7	30.3
Static power, Watts	322	212	234	270	380	364	122	135	188	154	174	212
Static thrust, ozs	41	31	32	39	52	52	18	19	22.5	21	22.5	25
Motor Constants												
KV (rpm/volt)	2675	2140	1834	1284	1888	1396	2290	2430	2900	2423	2675	3344
Rm, Ohm	.030	.040	.049	.077	.040	.057	0.108	0.088	0.072	.082	.077	.064
Io, neutral no load current	4.9	3.7	3.0	2.2	4.0	3.7	2.5	2.9	3.5	2.0	2.3	2.9

- All static tests were done with APC Electric propellers.
- All motors have been run-in and timed for best power and efficiency, not for maximum power.
- The best power duration (minutes) = Battery capacity (amp-hr)/ Flight amps x 60

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