

Scorpion SII-4020-420 Motor Propeller Data

Magnets 14-Pole	Motor Wind 17-Turn Delta	Motor Kv 420 RPM/Volt	No-Load Current Io = 0.91 Amps @ 10v	Motor Resistance Rm = 0.034 Ohms	I Max 70 Amps	P Max (6S) 1500 W
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Stator 12-Slot	Outside Diameter 48.9 mm, 1.925 in.	Body Length 46.2 mm, 1.819 in.	Total Shaft Length 78.4 mm, 3.087 in.	Shaft Diameter 5.98 mm, 0.235 in.	Motor Weight 288 gm, 10.16 oz
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Test Data From Sample Motor	Input 12.0 V	16.0 V	20.0V	24.0V	Measured Kv value 418 RPM/Volt	Measured Rm Value 0.033 Ohms
	Io Value	0.92 A	1.06 A	1.20 A		

Prop Manf.	Prop Size	Li-Po Cells	Input Voltage	Motor Amps	Input Watts	Prop RPM	Pitch Speed in MPH	Thrust Grams	Thrust Ounces	Thrust Eff. Grams/W
APC	16x10-E	4	14.8	29.45	435.8	5,247	49.7	2642	93.19	6.06
APC	16x12-E	4	14.8	37.08	548.7	5,000	56.8	2203	77.71	4.01
APC	17x8-E	4	14.8	29.54	437.2	5,233	39.6	2912	102.72	6.66
APC	17x10-E	4	14.8	35.35	523.2	5,071	48.0	2975	104.94	5.69
APC	17x12-E	4	14.8	40.34	597.0	4,915	55.9	2820	99.47	4.72
APC	18x8-E	4	14.8	32.19	476.4	5,169	39.2	3293	116.16	6.91
APC	18x10-E	4	14.8	37.09	549.0	5,006	47.4	3431	121.02	6.25
APC	18x12-E	4	14.8	49.32	729.9	4,645	52.8	3084	108.78	4.23
APC	19x8-E	4	14.8	41.71	617.4	4,899	37.1	3872	136.58	6.27
APC	19x10-E	4	14.8	42.25	625.2	4,855	46.0	3841	135.49	6.14
APC	19x12-E	4	14.8	48.07	711.4	4,662	53.0	3932	138.70	5.53
APC	20x8-E	4	14.8	43.89	649.6	4,782	36.2	4172	147.16	6.42
APC	20x10-E	4	14.8	50.65	749.5	4,603	43.6	4370	154.15	5.83
APC	20x11-E	4	14.8	53.01	784.6	4,559	47.5	4348	153.37	5.54
APC	20x13-E	4	14.8	56.49	836.0	4,460	54.9	4360	153.79	5.22
APC	20x15-E	4	14.8	65.86	974.7	4,104	58.3	3535	124.69	3.63
APC	21x12-WE	4	14.8	63.09	933.7	4,193	47.6	4852	171.15	5.20
APC	22x10-E	4	14.8	61.12	904.6	4,279	40.5	5077	179.08	5.61
APC	22x12-E	4	14.8	68.65	1016.0	3,979	45.2	5008	176.65	4.93
APC	24x12-E	4	14.8	85.26	1261.8	3,456	39.3	5784	204.02	4.58
MAS	15x7x3	4	14.8	24.58	363.7	5,396	35.8	2604	91.85	7.16
MAS	16x8x3	4	14.8	28.67	424.3	5,264	39.9	3007	106.07	7.09
MAS	16x10x3	4	14.8	36.41	538.9	5,039	47.7	3433	121.09	6.37

Prop Manf.	Prop Size	Li-Po Cells	Input Voltage	Motor Amps	Input Watts	Prop RPM	Pitch Speed in MPH	Thrust Grams	Thrust Ounces	Thrust Eff. Grams/W
APC	14x8.5-E	5	18.5	24.69	456.7	6,824	54.9	2578	90.94	5.64
APC	14x10-E	5	18.5	24.78	458.5	6,825	64.6	2538	89.52	5.54
APC	14x12-E	5	18.5	36.85	681.7	6,432	73.1	2207	77.85	3.24
APC	15x8-E	5	18.5	26.64	492.8	6,756	51.2	2876	101.45	5.84
APC	15x10-E	5	18.5	37.66	696.6	6,390	60.5	3195	112.70	4.59
APC	16x8-E	5	18.5	40.14	742.5	6,335	48.0	3739	131.89	5.04
APC	16x10-E	5	18.5	44.07	815.3	6,214	58.8	3830	135.10	4.70
APC	16x12-E	5	18.5	52.90	978.7	5,678	66.8	3098	109.28	3.17
APC	17x8-E	5	18.5	44.01	814.2	6,202	47.0	4171	147.13	5.12
APC	17x10-E	5	18.5	51.95	961.1	5,956	56.4	4155	146.56	4.32
APC	17x12-E	5	18.5	57.60	1065.5	5,772	65.6	3942	139.05	3.70
APC	18x8-E	5	18.5	45.88	848.7	6,161	46.7	4698	165.72	5.54
APC	18x10-E	5	18.5	53.08	981.9	5,911	56.0	4860	171.43	4.95
APC	18x12-E	5	18.5	69.01	1276.6	5,368	61.0	4155	146.56	3.25
APC	19x8-E	5	18.5	60.77	1124.2	5,685	43.1	5337	188.26	4.75
APC	19x10-E	5	18.5	59.65	1103.5	5,678	53.8	5372	189.49	4.87
APC	20x8-E	5	18.5	62.89	1163.5	5,596	42.4	5875	207.23	5.05
APC	20x10-E	5	18.5	70.03	1295.6	5,300	50.2	5831	205.68	4.50
MAS	14x9x3	5	18.5	33.45	618.8	6,555	55.9	3552	125.29	5.74
MAS	15x7x3	5	18.5	34.94	646.4	6,495	43.1	3812	134.46	5.90
MAS	16x8x3	5	18.5	40.47	748.7	6,323	47.9	4305	151.85	5.75
MAS	16x10x3	5	18.5	51.06	944.6	5,978	56.6	4876	171.99	5.16

Prop Manf.	Prop Size	Li-Po Cells	Input Voltage	Motor Amps	Input Watts	Prop RPM	Pitch Speed in MPH	Thrust Grams	Thrust Ounces	Thrust Eff. Grams/W
APC	13x10-E	6	22.2	38.11	845.9	7,787	73.7	2726	96.16	3.22
APC	14x7-E	6	22.2	33.02	733.0	7,964	52.8	3421	120.67	4.67
APC	14x8.5-E	6	22.2	33.97	754.1	7,930	63.8	3519	124.13	4.67
APC	14x10-E	6	22.2	35.23	782.1	7,884	74.7	3351	118.20	4.28
APC	14x12-E	6	22.2	50.17	1113.8	7,374	83.8	2932	103.42	2.63
APC	15x6-E	6	22.2	34.10	757.1	7,924	45.0	3924	138.41	5.18
APC	15x8-E	6	22.2	37.02	821.8	7,825	59.3	3896	137.43	4.74
APC	15x10-E	6	22.2	52.89	1174.1	7,293	69.1	4078	143.85	3.47
APC	16x8-E	6	22.2	56.56	1255.5	7,160	54.2	4719	166.46	3.76
APC	16x10-E	6	22.2	62.20	1380.8	7,005	66.3	4757	167.80	3.45
APC	16x12-E	6	22.2	70.80	1571.7	6,649	75.6	4043	142.61	2.57
APC	17x8-E	6	22.2	61.71	1370.0	7,029	53.3	5242	184.90	3.83
APC	17x10-E	6	22.2	70.17	1557.8	6,681	63.3	5653	199.40	3.63
APC	17x12-E	6	22.2	75.40	1673.9	6,426	73.0	4902	172.91	2.93
APC	18x8-E	6	22.2	61.04	1355.1	7,001	53.0	6203	218.80	4.58
MAS	13x8x3	6	22.2	31.84	706.9	8,025	60.8	3428	120.92	4.85
MAS	14x7x3	6	22.2	37.26	827.1	7,828	51.9	4282	151.04	5.18
MAS	14x9x3	6	22.2	44.39	985.5	7,584	64.6	4747	167.44	4.82
MAS	15x7x3	6	22.2	46.56	1033.5	7,495	49.7	5104	180.04	4.94
MAS	16x8x3	6	22.2	53.18	1180.5	7,268	55.1	5619	198.20	4.76
MAS	16x10x3	6	22.2	65.97	1464.5	6,785	64.3	6203	218.80	4.24

Propeller Chart Color Code Explanation

- The prop is too small to get good performance from the motor. (Less than 50% power)
- The prop is sized right to get good power from the motor. (50 to 80% power)
- The prop can be used, but full throttle should be kept to short bursts. (80 to 100% power)
- The prop is too big for the motor and should not be used. (Over 100% power)

PLEASE NOTE:

The data contained in this Prop Chart is based on actual measurements, taken in a controlled test environment, at an altitude of 512 feet above sea level. The test voltages used are based on the standard output of a Li-Po battery under load, which is 3.70 volts per cell. If you are using a battery that is larger in capacity than normal, or has a very high C-rating, then your actual voltages will be higher than those shown in the chart, and this will result in a higher current and power value for every prop used. You should always test your actual power system with a watt meter before flying your model to make sure that you are not exceeding the recommended current and power ratings of the motor being used. The prop recommendations in this chart assume that the motor receives adequate cooling throughout its operation. If your motor is being used inside a cowl or fuselage, you must ensure that the motor receives sufficient airflow, and does not get too hot during operation. It is always best to use a prop size that pulls no more than 80% of the motor's maximum recommended current value to ensure safe operation under all conditions.