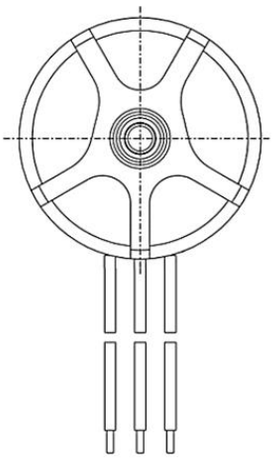
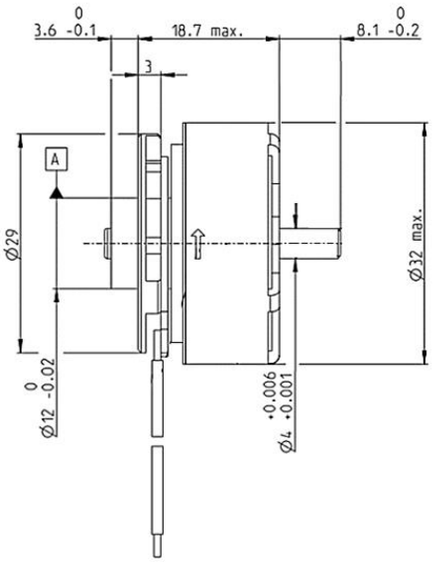
ECX 32 flat UAV

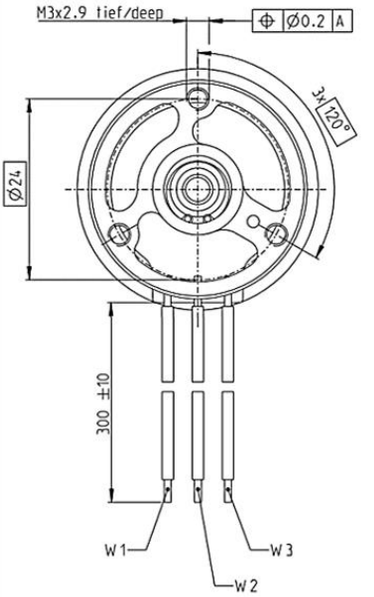
∅32 mm, brushless

NEW

high power to weight ratio





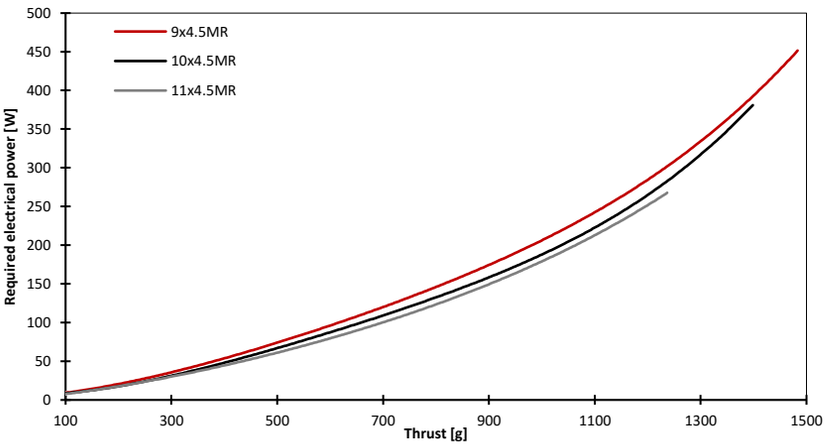


	Sensorless
Part Number	
CW:	753441
CCW:	755637

Motor Data

	Values at nominal voltage		
1	Nominal voltage	V	16
2	No load speed	rpm	13400
3	No load current	mA	393
4	Nominal speed	rpm	10200
5	Nominal torque (max. continuous torque)	mNm	104
6	Nominal current (max. continuous current)	A	8.08
7	Stall torque	mNm	442
8	Stall current	A	99.8
9	Max. efficiency	%	87.8
	Characteristics		
12	Terminal resistance phase to phase	Ω	0.16
13	Terminal inductance phase to phase	mH	0.0949
14	Torque constant	mNm/A	11.3
15	Speed constant	rpm/V	847
16	Speed/torque gradient	rpm/mNm	12
17	Mechanical time constant	ms	3.87
18	Rotor inertia	gcm²	30.7

Propeller selection



Specifications

	Thermal data	
19	Thermal resistance housing-ambient[1]	3.85 K/W
20	Thermal resistance winding-housing[1]	2.99 K/W
21	Thermal time constant winding	10.9s
22	Thermal time constant motor	137s
23	Ambient temperature	-40…+100°C
24	Max. winding temperature	+155°C
	Absolute winding temperature	+180°C
	Mechanical data (preloaded ball bearings)	
25	Max. speed	14'000 rpm
	Other specifications	
26	Number of pole pairs	6
27	Number of phases	3
28	Weight of motor (incl. 300mm cable)	55.2g
29	Recommended propeller sizes	9"…11"

Values listed in the tables are nominal.

Connection

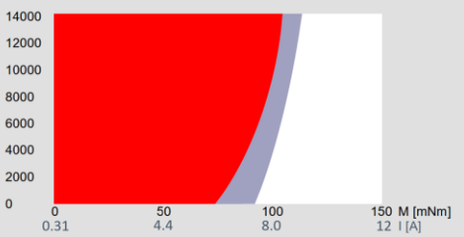
W 1 Motor winding 1
W 2 Motor winding 2
W 3 Motor winding 3

Cable

Connection cable PTFE, L = 300 mm
AWG 20

[1]At nominal working point

Operating Range



Comments

Continuous operation
In observation of listed thermal resistance (lines 19 and 20) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient. = Thermal limit.

Continuous operation
Thermal resistance Rth2 reduced by 50%.

Short term operation
The motor may be briefly overloaded (recurring).

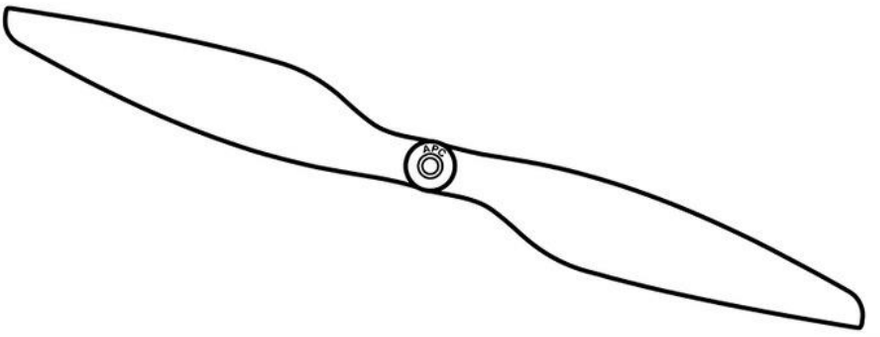
Notes

Please contact aerospace@maxongroup.com

Propeller 9x4.5MR

propeller recommendation

maxon recommended propeller for ECX 32 flat



Supplier Propeller Specification

1	Diameter	9'' (228.6 mm)
2	Pitch	4.5'' (114.3 mm)
3	Interface thickness	8.6 mm
4	Shaft diameter	6.4 mm
5	Weight of Propeller	11.1 g
6	Material	reinforced plastic compound

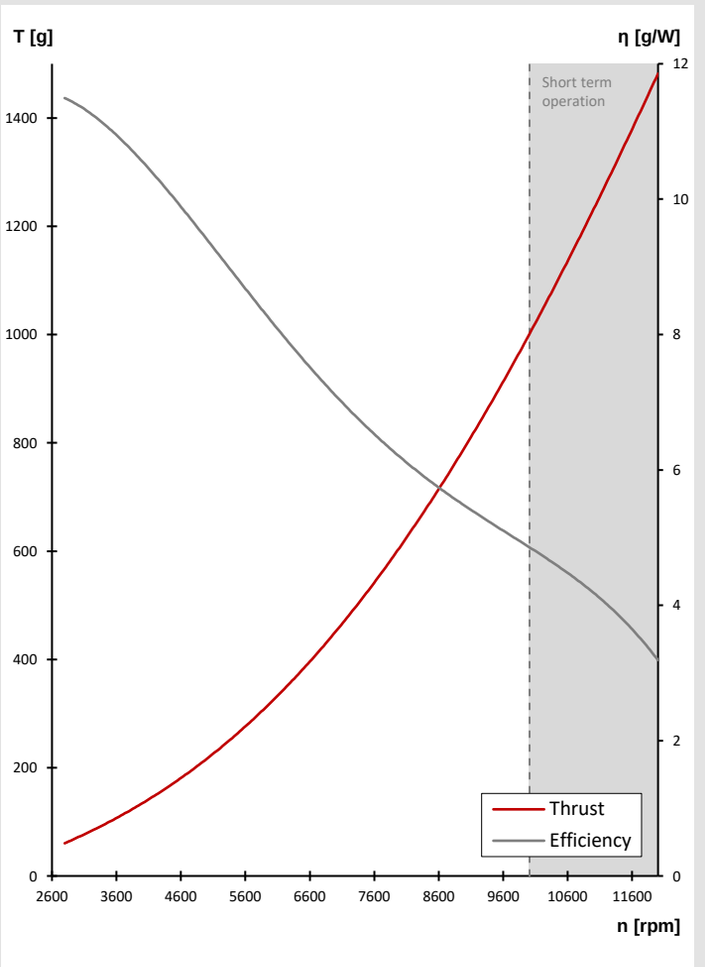
Motor Propeller Combination

Motor Operational Data

Adjusted motor data for use with specified propeller (active cooling)

7	Nominal speed	rpm	10000
8	Nominal torque (max. continuous torque)	mNm	152
9	Nominal current (max. continuous current)	A	14.5
10	Max. continuous power output	W	159
11	Max. peak power output	W	
12	Thermal time constant winding	s	16

Propulsion System Efficiency



Propulsion System Performance Table

ESC supply voltage: **25.2V** (6S max LiPo voltage)
Ambient temperature: **20°C**
Elevation (AMSL): **475m**

	Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
	continuous operation *(T_w<155°C)*					
	2800	0.2	12	62	5	11.3
	3200	0.3	15	82	7	11.3
	3500	0.4	18	99	9	11.2
	3900	0.5	22	127	12	10.8
	4200	0.6	26	149	14	10.4
	4600	0.8	31	182	18	9.9
	4900	0.9	35	208	22	9.4
	5300	1.1	40	246	28	8.9
	5600	1.3	45	278	32	8.6
	6000	1.6	52	320	40	8.1
	6300	1.9	57	355	46	7.7
	6700	2.3	65	410	55	7.4
	7000	2.6	71	447	63	7.1
	7400	3.2	81	519	76	6.8
	7800	3.7	89	577	89	6.5
	8100	4.1	95	617	99	6.2
	8500	4.9	107	694	118	5.9
	8800	5.6	116	753	134	5.6
	9200	6.4	128	832	155	5.4
	9500	7.2	135	888	172	5.2
	9900	8.4	150	983	202	4.9
4S (16.8V)	***short term operation***					
10'100 rpm	10200	9.3	159	1046	223	4.7
	10600	10.8	175	1140	259	4.4
	10900	12.0	185	1208	287	4.2
	11300	13.7	198	1289	327	3.9
	11600	16.1	213	1386	383	3.6
	12000	18.2	229	1483	452	3.3

Bench test data for reference only. Direct comparison with datasheets from other manufacturers can be misleading.

Notes

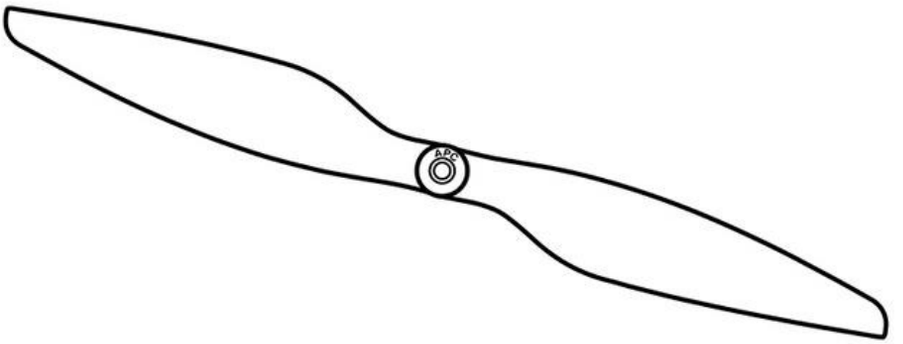
Propeller interface not directly compatible with motor interface (adapter requiered)

Please contact aerospace@maxongroup.com

Propeller 10x4.5MR

propeller recommendation

maxon recommended propeller for ECX 32 flat



Supplier Propeller Specification

1	Diameter	10'' (254.0 mm)
2	Pitch	4.5'' (114.3 mm)
3	Interface thickness	8.9 mm
4	Shaft diameter	6.4 mm
5	Weight of Propeller	15.0 g
6	Material	reinforced plastic compound

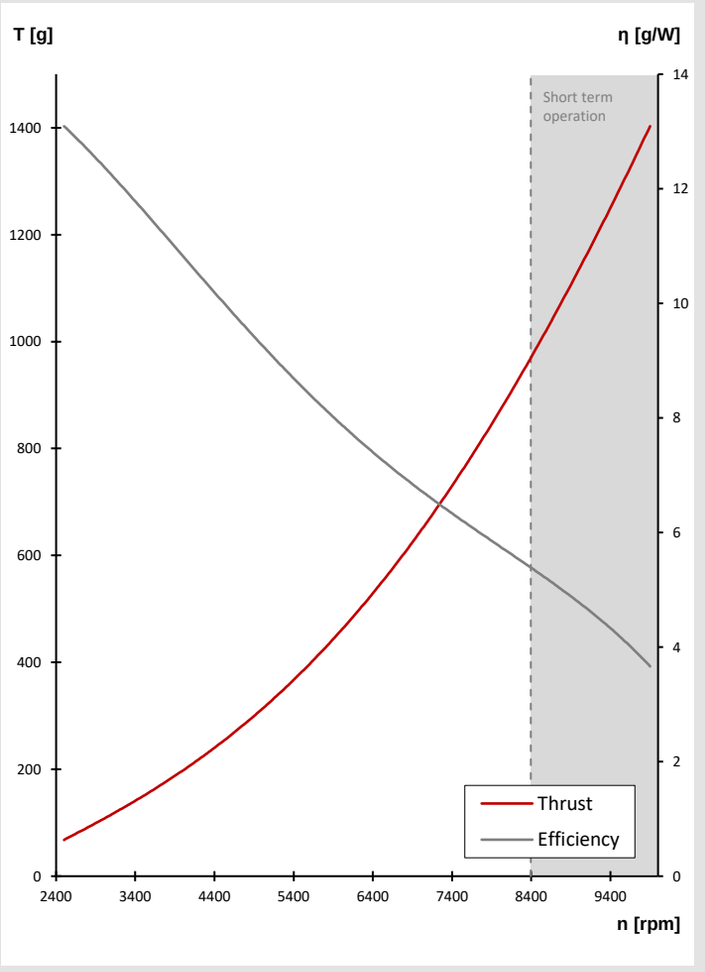
Motor Propeller Combination

Motor Operational Data

Adjusted motor data for use with specified propeller (active cooling)

7	Nominal speed	rpm	8400	
8	Nominal torque (max. continuous torque)	mNm	148	
9	Nominal current (max. continuous current)	A	13.9	
10	Max. continuous power output	W	131	
11	Max. peak power output	W	195	<15s
12	Thermal time constant winding	s	16	

Propulsion System Efficiency



Propulsion System Performance Table

ESC supply voltage: **22.2V** (6S nominal LiPo voltage)
Ambient temperature: **20°C**
Elevation (AMSL): **475m**

	Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
	continuous operation *(T_w<155°C)*					
	2500	0.3	13	72	6	12.9
	2800	0.3	15	91	7	12.9
	3100	0.4	19	113	9	12.3
	3400	0.5	22	138	12	11.8
	3600	0.6	25	155	14	11.4
	3900	0.8	29	186	17	11.0
	4200	0.9	34	219	21	10.4
	4500	1.1	39	252	25	10.0
	4800	1.4	45	287	30	9.5
	5100	1.7	52	335	37	9.1
	5300	1.8	56	360	40	8.9
	5600	2.1	61	398	47	8.5
	5900	2.5	68	447	55	8.1
	6200	2.9	74	485	64	7.6
	6500	3.3	82	539	74	7.3
	6800	3.9	91	600	86	7.0
	7100	4.5	101	665	100	6.6
	7300	5.0	108	716	112	6.4
	7600	5.7	117	766	125	6.1
	7900	6.6	129	848	145	5.8
	8200	7.5	139	920	165	5.6
	short term operation					
	8500	8.6	152	1004	190	5.3
	8800	9.9	164	1081	217	5.0
4S (16.8V)	9000	10.7	171	1129	236	4.8
9'200 rpm	9300	12.3	185	1219	271	4.5
	9600	14.6	200	1317	322	4.1
6S (25.2V)	9900	17.5	213	1398	385	3.6
10'000 rpm						

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Notes

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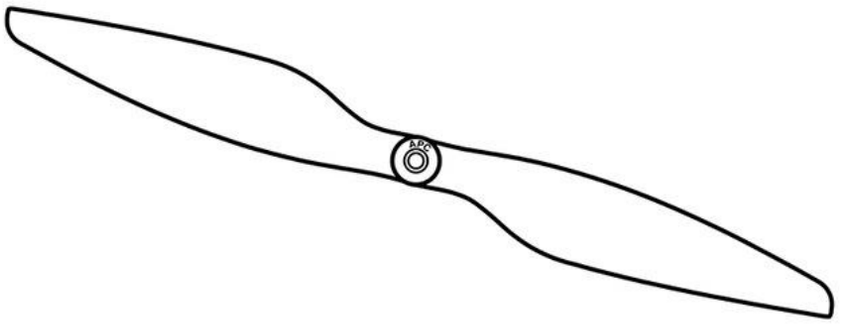
Propeller 11x4.5MR

propeller recommendation

maxon recommended propeller for ECX 32 flat



Supplier Propeller Specification

1	Diameter	11'' (279.4 mm)
2	Pitch	4.5'' (114.3 mm)
3	Interface thickness	8.9 mm
4	Shaft diameter	6.4 mm
5	Weight of Propeller	17.0 g
6	Material	reinforced plastic compound

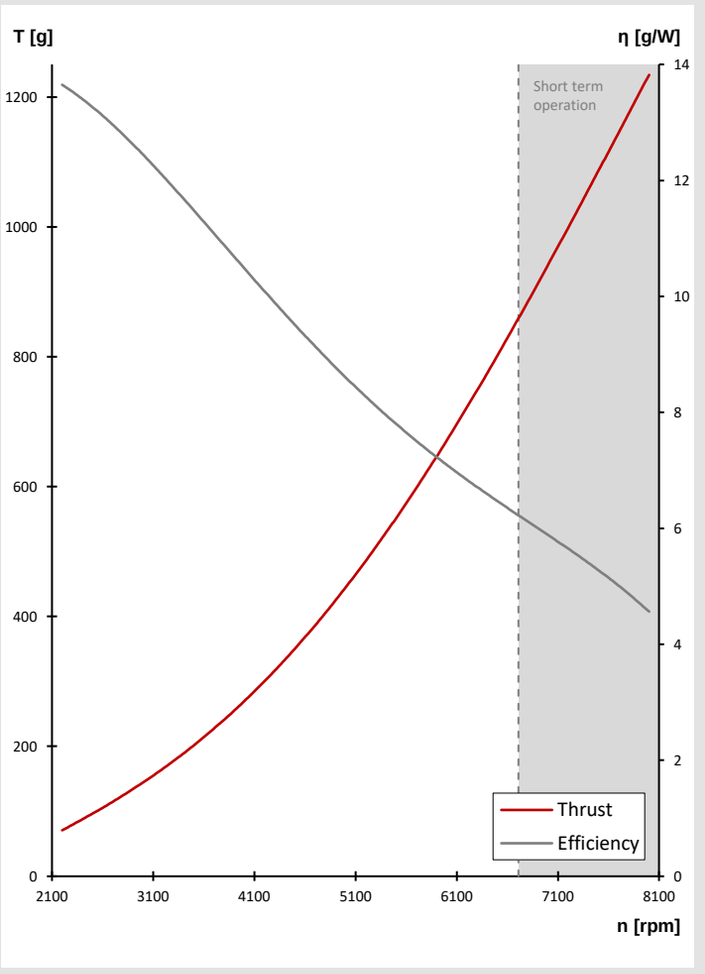
Motor Propeller Combination

Motor Operational Data

Adjusted motor data for use with specified propeller (active cooling)

7	Nominal speed	rpm	6710
8	Nominal torque (max. continuous torque)	mNm	140
9	Nominal current (max. continuous current)	A	12.6
10	Max. continuous power output	W	99
11	Max. peak power output	W	
12	Thermal time constant winding	s	16

Propulsion System Efficiency



Propulsion System Performance Table

ESC supply voltage: **16.8V** (4S max LiPo voltage)
Ambient temperature: **20°C**
Elevation (AMSL): **475m**

Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
continuous operation *(T_w<155°C)*					
2200	0.3	16	72	5	13.6
2400	0.4	18	87	7	13.3
2600	0.5	21	104	8	13.2
2900	0.6	25	132	10	12.7
3100	0.7	29	153	12	12.3
3300	0.9	33	176	15	11.8
3500	1.0	37	201	17	11.5
3800	1.3	45	244	23	10.8
4000	1.6	49	273	26	10.5
4200	1.8	53	300	30	10.0
4400	2.1	59	336	35	9.7
4700	2.5	67	386	42	9.1
4900	2.9	73	420	48	8.7
5100	3.2	79	460	54	8.5
5300	3.7	86	503	62	8.1
5500	4.2	94	551	70	7.9
5800	5.0	106	625	84	7.4
6000	5.7	114	678	95	7.1
6200	6.3	122	719	105	6.9
6400	7.0	131	777	118	6.6
6700	8.2	142	850	137	6.2
short term operation					
6900	9.1	152	912	152	6.0
7100	10.1	161	967	168	5.7
7300	11.4	173	1037	189	5.5
7600	13.2	185	1113	219	5.1
7800	14.5	195	1170	240	4.9
8000	16.1	205	1237	267	4.6

Bench test data for reference only. Direct comparison with datasheets from other manufacturers can be misleading.

Notes

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