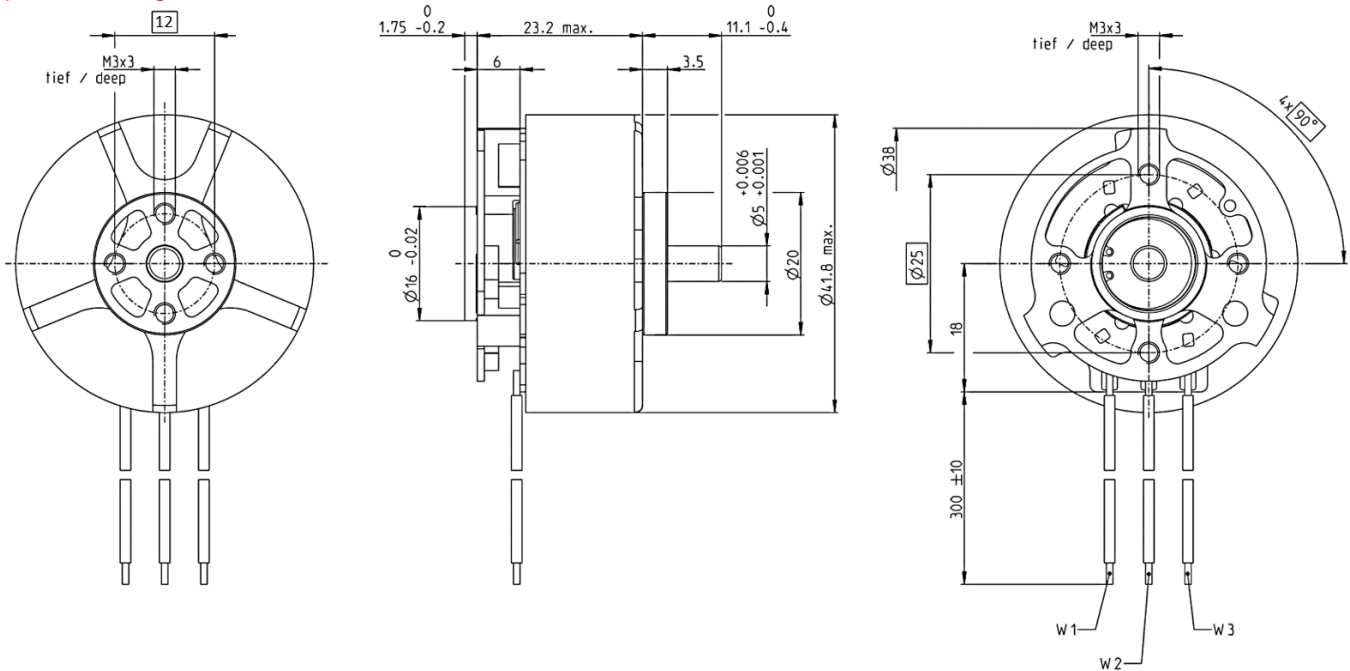


ECX 42 flat UAV

high power to weight ratio

Ø42 mm, brushless

NEW



Part Number

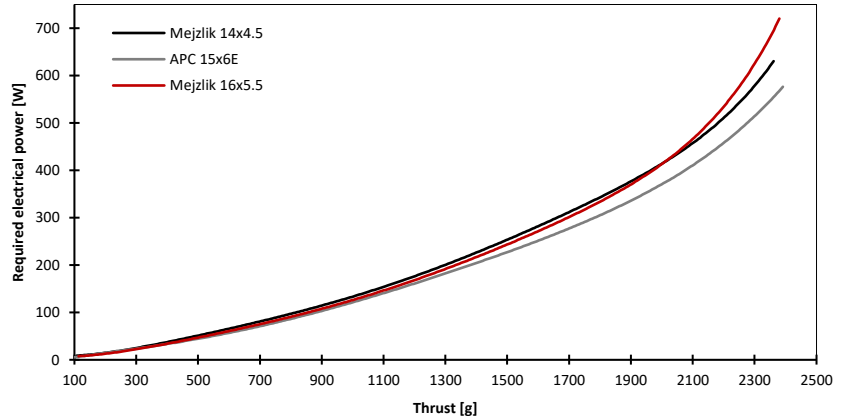
Sensorless 815589

Motor Data

Values at nominal voltage			
1	Nominal voltage	V	24
2	No load speed	rpm	13700
3	No load current	mA	917
4	Nominal speed	rpm	11300
5	Nominal torque (max. continuous torque)	mNm	241
6	Nominal current (max. continuous current)	A	13.4
7	Stall torque	mNm	1630
8	Stall current	A	258
9	Max. efficiency	%	88.5

Characteristics

12	Terminal resistance phase to phase	Ω	0.0931
13	Terminal inductance phase to phase	mH	0.0507
14	Torque constant	mNm/A	16.5
15	Speed constant	rpm/V	580
16	Speed/torque gradient	rpm/mNm	3.28
17	Mechanical time constant	ms	2.96
18	Rotor inertia	gcm ²	86.2



Specifications

Thermal data			
19	Thermal resistance housing-ambient ¹	2.11 K/W	
20	Thermal resistance winding-housing ¹	1.49 K/W	
21	Thermal time constant winding	7.5 s	
22	Thermal time constant motor	117 s	
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	10'000 rpm
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Other specifications

26	Number of pole pairs	8
27	Number of phases	3
28	Weight of motor (incl. 300 mm cable)	105 g
29	Recommended propeller sizes	14"...16"

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 18

¹At nominal working point

maxon Accessories

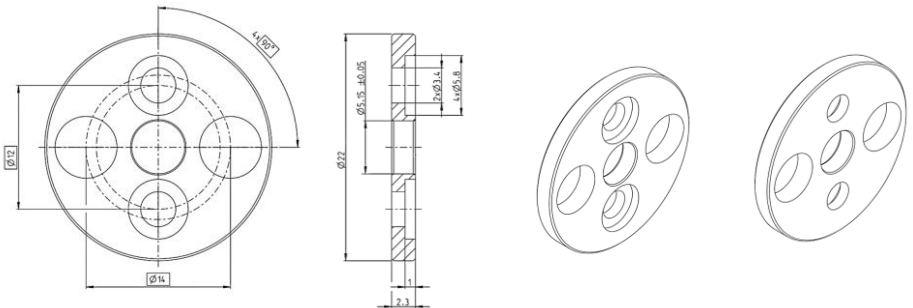
Propeller adapter: 806748

The adapter is designed for mounting the maxon recommended propellers.

Screw length table:

2 x Socket Head Screw ISO4762 M3

Please choose the screw length carefully according to the thickness of the propeller hub. Insufficient screw length may damage the motor.



Notes

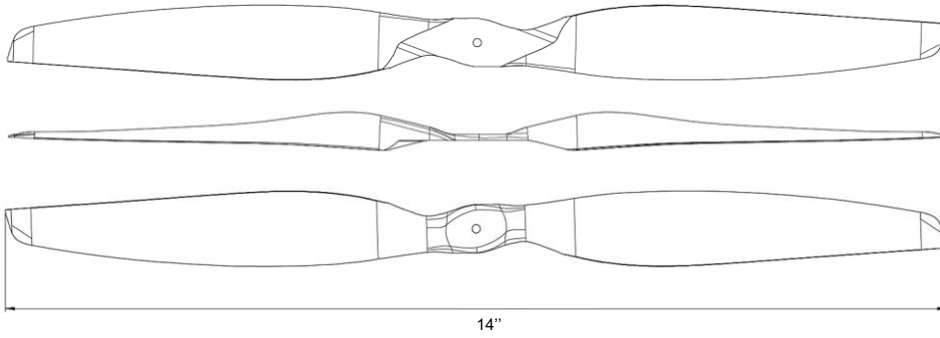
Please contact aerospace@maxongroup.com

Propeller 14x4.5

propeller recommendation



maxon recommended propeller for ECX 42 flat



Supplier Propeller Specification

1	Diameter	14" (355.6 mm)
2	Pitch	4.5" (114.3 mm)
3	Interface thickness	2.7 mm
4	Drill pattern	maxon specific
5	Weight of Propeller	15 g
6	Max. recommended speed	12'900 rpm
7	Material	carbon/glass fiber

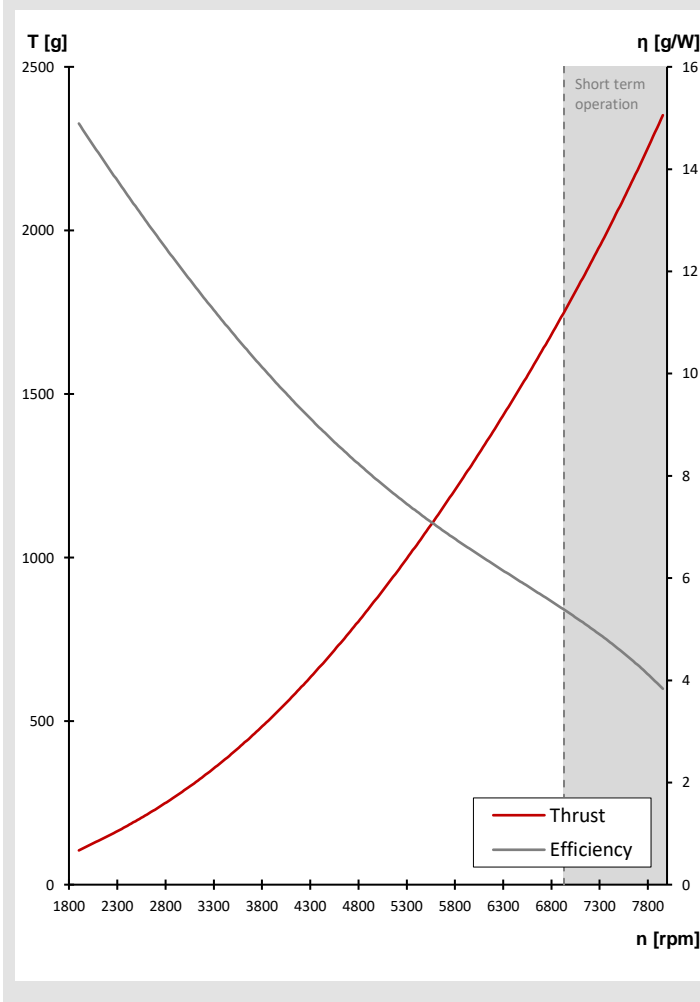
Motor Propeller Combination

Motor Operational Data

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

8	Nominal speed	rpm	6935
9	Nominal torque (max. continuous torque)	mNm	345
10	Nominal current (max. continuous current)	A	
11	Max. continuous power output	W	
12	Max. peak power output	W	
13	Thermal time constant winding	s	

Propulsion System Efficiency



Propulsion System Performance Table

ESC supply voltage: 44.4V (12S nominal LiPo voltage)
 Ambient temperature: 20.5°C
 Elevation (AMSL): 475m

Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
continuous operation ($T_w < 155^\circ\text{C}$)					
1900	0.2	24	108	7	15.0
2100	0.2	29	132	9	14.0
2400	0.3	37	179	13	13.7
2600	0.4	44	212	16	13.3
2800	0.5	51	248	20	12.3
3100	0.6	62	311	27	11.6
3300	0.7	71	357	32	11.2
3500	0.9	80	406	38	10.7
3800	1.1	95	485	48	10.1
4000	1.3	106	543	56	9.7
4200	1.5	117	604	65	9.3
4500	1.8	134	699	80	8.8
4700	2.1	147	770	91	8.5
4900	2.4	161	839	103	8.1
5200	2.8	182	956	125	7.6
5400	3.2	197	1032	141	7.3
5600	3.6	214	1120	159	7.0
5900	4.3	240	1250	190	6.6
6100	4.8	257	1342	210	6.4
6400	5.6	283	1483	246	6.0
6600	6.3	303	1586	274	5.8
6800	7.0	323	1687	306	5.5
short term operation					
7100	8.2	352	1845	360	5.1
7300	9.0	369	1946	396	4.9
7500	10.1	391	2062	441	4.7
7800	12.1	428	2245	532	4.2
7955	14.3	451	2362	633	3.7

6S (22.2V)
7955 rpm

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

Notes

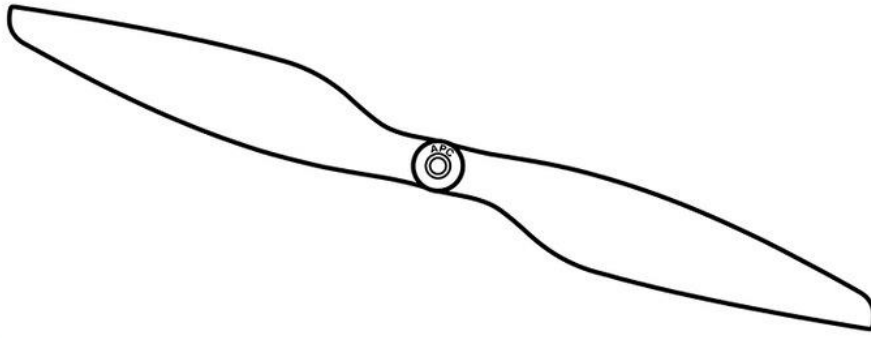
Please contact aerospace@maxongroup.com

Propeller 15x6E

propeller recommendation



maxon recommended propeller for ECX 42 flat



Supplier Propeller Specification

1	Diameter	15" (381.0 mm)
2	Pitch	6" (152.4 mm)
3	Interface thickness	12 mm
4	Shaft diameter	6 mm
5	Weight of Propeller	45.1 g
6	Material	reinforced plastic compound

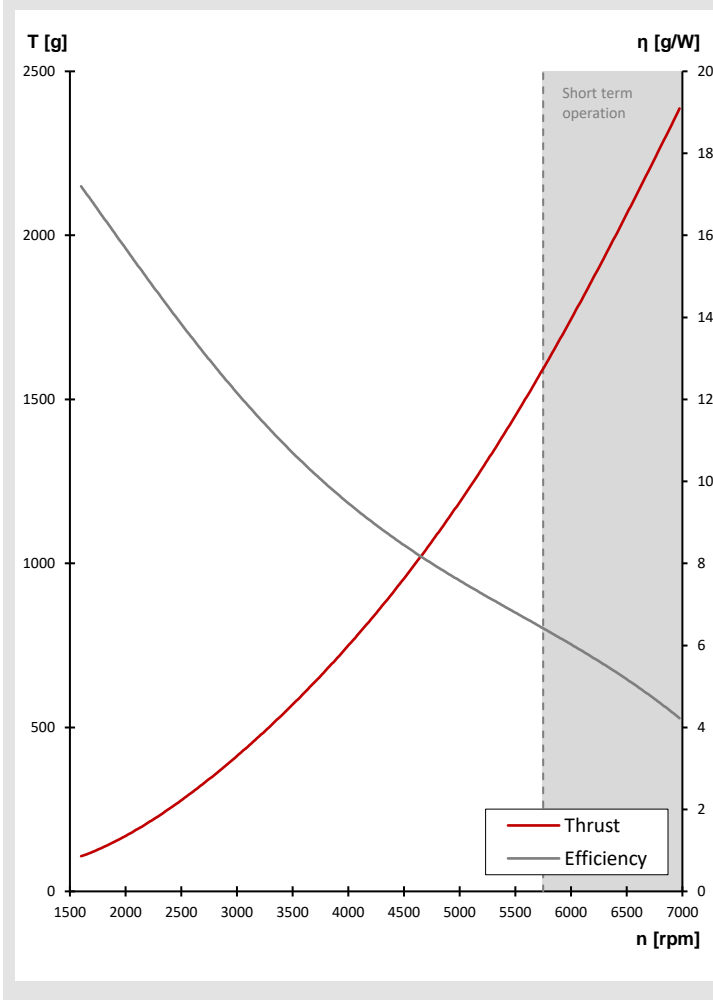
Motor Propeller Combination

Motor Operational Data

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

7	Nominal speed	rpm	5750
8	Nominal torque (max. continuous torque)	mNm	303
9	Nominal current (max. continuous current)	A	
10	Max. continuous power output	W	
11	Max. peak power output	W	
12	Thermal time constant winding	s	

Propulsion System Efficiency



Propulsion System Performance Table

ESC supply voltage: 44.4V (12S nominal LiPo voltage)
 Ambient temperature: 20.8°C
 Elevation (AMSL): 475m

Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
continuous operation ($T_w < 155^\circ\text{C}$)					
1600	0.1	28	104	6	17.4
1800	0.2	33	136	9	15.9
2000	0.3	40	172	11	16.0
2200	0.3	47	212	14	15.0
2400	0.4	56	255	18	14.3
2600	0.5	65	303	22	13.4
2800	0.6	75	355	28	12.7
3000	0.8	85	410	34	12.0
3300	1.0	103	502	45	11.2
3500	1.2	115	569	53	10.7
3700	1.4	127	636	62	10.2
3900	1.6	140	709	73	9.7
4100	1.9	156	794	85	9.3
4300	2.2	171	874	98	8.9
4500	2.6	187	957	113	8.5
4700	2.9	203	1049	129	8.1
4900	3.3	221	1138	148	7.7
5100	3.8	238	1236	167	7.4
5300	4.3	257	1340	189	7.1
5500	4.8	274	1439	214	6.7
5700	5.5	297	1557	241	6.5
short term operation					
5900	6.2	322	1689	272	6.2
6100	7.0	346	1804	310	5.8
6400	8.4	379	2013	371	5.4
6600	9.6	408	2139	422	5.1
6800	11.1	433	2248	487	4.6
6975	13.0	458	2392	576	4.2

6S (22.2V)
6975 rpm

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

Notes

Please contact aerospace@maxongroup.com

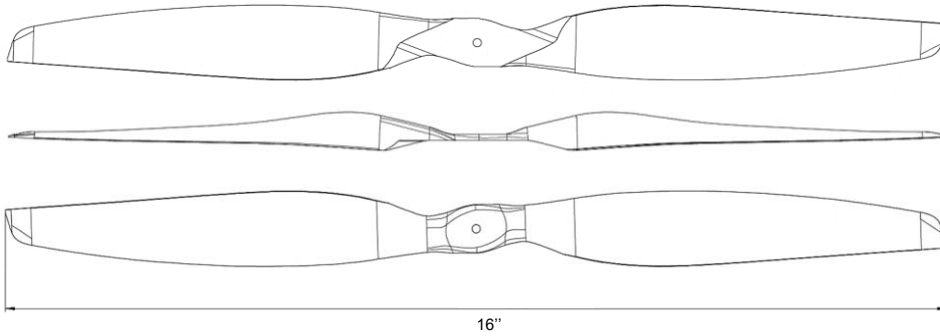
Propeller interface not directly compatible with motor interface (adapter required).

Propeller 16x5.5

propeller recommendation



maxon recommended propeller for ECX 42 flat



Supplier Propeller Specification

1	Diameter	16" (406.4 mm)
2	Pitch	5.5" (139.7 mm)
3	Interface thickness	2.85 mm
4	Drill pattern	maxon specific
5	Weight of Propeller	20 g
6	Max. recommended speed	11'300 rpm
7	Material	carbon/glass fiber

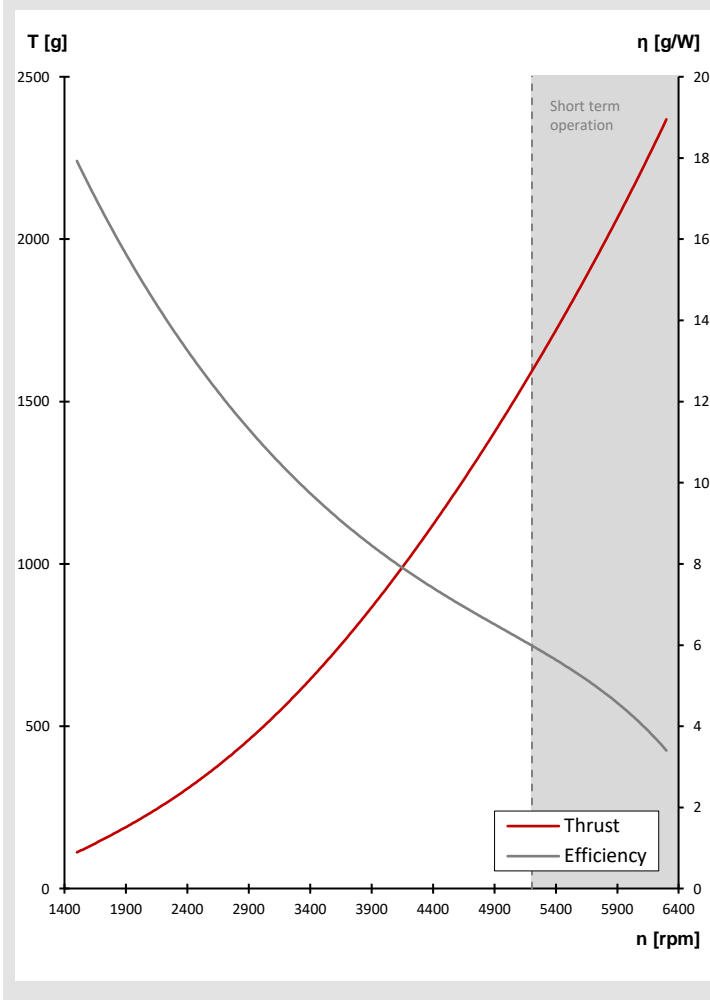
Motor Propeller Combination

Motor Operational Data

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

8	Nominal speed	rpm	5205
9	Nominal torque (max. continuous torque)	mNm	353
10	Nominal current (max. continuous current)	A	
11	Max. continuous power output	W	
12	Max. peak power output	W	
13	Thermal time constant winding	s	

Propulsion System Efficiency



Propulsion System Performance Table

ESC supply voltage: 44.4V (12S nominal LiPo voltage)
 Ambient temperature: 20.5°C
 Elevation (AMSL): 475m

Speed [rpm]	Current [A]	Torque [mNm]	Thrust [g]	el. Power [W]	Efficiency [g/W]
continuous operation ($T_w < 155^\circ\text{C}$)					
1500	0.1	31	114	6	17.9
1700	0.2	38	148	9	16.8
1900	0.3	46	188	12	15.6
2100	0.4	55	233	16	14.7
2200	0.4	61	255	18	14.3
2400	0.5	72	309	23	13.2
2600	0.7	85	364	29	12.4
2800	0.8	98	428	37	11.6
3000	1.0	113	494	45	10.9
3200	1.2	128	568	55	10.3
3300	1.4	136	605	60	10.0
3500	1.6	153	686	72	9.5
3700	1.9	172	773	86	9.0
3900	2.3	193	864	102	8.5
4100	2.7	214	965	119	8.1
4300	3.2	236	1064	140	7.6
4500	3.7	258	1172	162	7.2
4600	4.0	270	1234	175	7.1
4800	4.6	296	1340	203	6.6
5000	5.3	322	1461	233	6.3
5200	6.1	350	1597	267	6.0
short term operation					
5400	7.0	378	1735	308	5.6
5600	8.1	406	1861	356	5.2
5700	8.6	418	1917	382	5.0
5900	10.0	446	2057	443	4.6
6100	11.9	479	2197	527	4.2
6300	16.2	522	2381	721	3.3

6S (22.2V)
6300 rpm

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

Notes

Please contact aerospace@maxongroup.com