

Performance examples – 200hp and guidance for choosing a propeller



Introduction

When choosing a propeller for an outboard motor, there are always many different factors that affects the decision and the outcome.

For example;

The characteristics of the boat;

Length, speed, draft and weight must be taken into consideration.

There are also other circumstances to keep in mind, such as;

What is the preferred performance?

A high top-speed or perhaps a strong high-torque boat?

Is the boat usually used with a light load and small crew,
or perhaps with a bigger load and large crew?

It's a diesel & it can change gear ratio

The main difference between the OXE and an ordinary outboard is that the OXE is powered by a turbodiesel engine

For the 200hp OXE the maximum rpm is 4300, lower than most gasoline outboards in the same power segment

The OXE also has several unique features, one being the primary belt drive. The housing can easily be turned upside down and thereby changing the ratio for the outboard

The different gear ratios are;

High Torque - 1:2.17 and High speed - 1:1.73

A frame of reference

Since it is near impossible to say which propeller that will work best with a particular boat, the following examples are only provided as a reference

There is no guarantee that any similar boat, propeller and condition will perform just as shown in these test results

The idea is instead to use these examples as a guide, to narrow down the options, in order to facilitate the choosing of a propeller

Key figures – propeller shaft rpm

Engine RPM	1000	2000	3000	4200	Ratio setting
High speed	598	1197	1796	2515	1 : 1.73
High Torque	460	920	1380	1930	1 : 2.17

Key figures – theoretical speed

[knots]

	Engine RPM	Engine RPM	Engine RPM	Engine RPM	Fuel Consumption	Ratio setting
Propeller	1000	2000	3000	4200	litre/NM @4200	Ratio setting
16" pitch	6,9	13,8	20,7	29	1,55	High speed
16" pitch	5,5	11	16,5	23,1	1,95	High Torque
18" pitch	7,7	15,4	23,1	32,3	1,39	High speed
18" pitch	6,2	12,4	18,6	26	1,73	High Torque
21" pitch	8,9	17,8	26,7	37,4	1,2	High speed
21" pitch	7,1	14,2	21,3	29,8	1,51	High Torque

Included examples

Tideman RBB 700

A1 Marine Tech RIB

POCA 600

ASIS Tour 12

Polarcirkel 750

Jiang Xi Weimin RIB 10

Tideman RBB 700

Single engine

Length 750cm

Width 250cm

Height 270cm

Weight 1600kg

Max load 600kg

Crew (max) 7 pax



Tests performed with approx.
100kg of fuel and 2 pax crew

Tideman Performance – High torque

Propeller	Blades	Diameter"	Pitch"	Fwd Pull kg	Fwd RPM	Speed - knots	Reverse pull kg	Reverse RPM
Mercury Enertia eco	3	16	19	860	4000	27.5@4370	100	2830
Mercury Enertia eco	3	16	21			30.5@4350		
Mercury Bravo 1	4		28			31.5@4150		
OSI By Turbo	4	15	24	690	3500	30@4250	140	2820
Power Tech	4		28			32@4050		
Power Tech LFS5R19	5	16	19	920	3600	28.5@4350	140	2810
Power Tech OFS5R	5	15¼	28			32@3900		

Tideman Performance – High speed

Propeller	Blades	Diameter"	Pitch"	Fwd Pull kg	Fwd RPM	Speed - knots	Reverse pull kg	Reverse RPM
Mercury Enertia eco	3	16	19	750	3730	33.5@4100	180	2820
Power Tech LFS5R19	5	16	19	800	2550	31@3750	190	2820

A1 Marine Tech RIB

Single engine

Length 835 cm

Waterline 645 cm

Width 290 cm

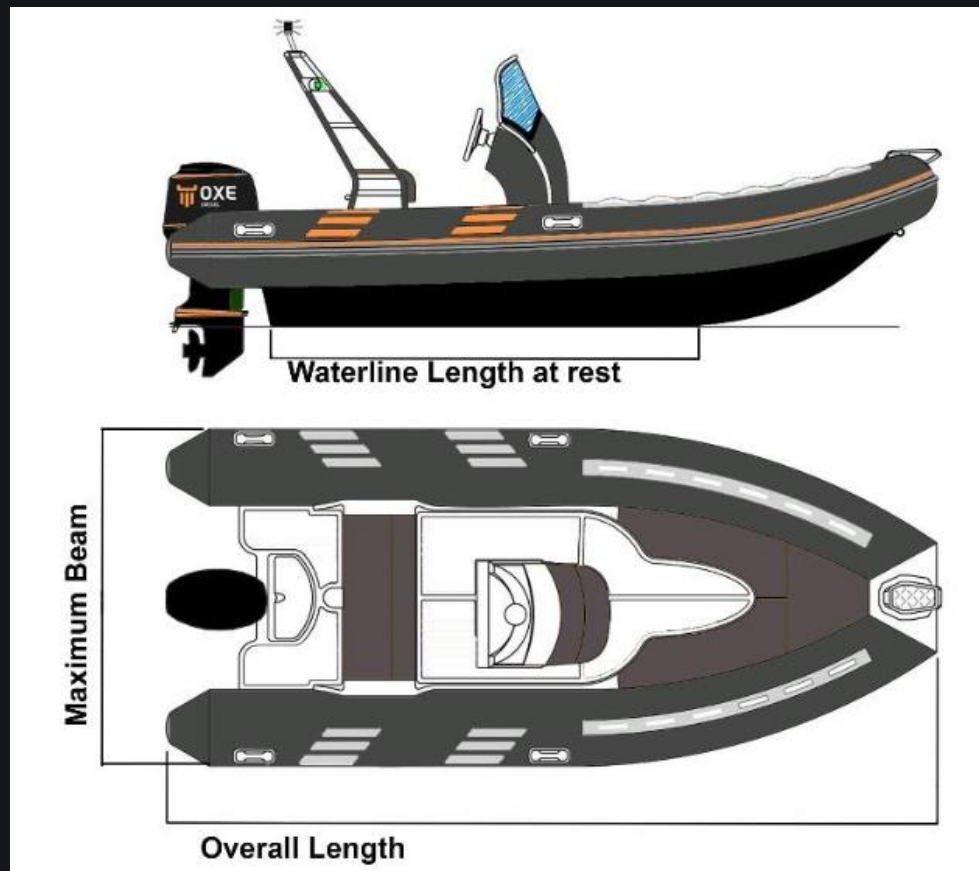
Height 270 cm

Weight 1600 kg

Max load 600 kg

Crew (max) 7 pax

Tests performed with approx.
200kg of fuel and 2 pax crew



A1 Tech RIB Performance – High torque

Propeller	Blades	Diameter"	Pitch"	Fwd Pull kg	Fwd RPM	Speed - knots	Reverse pull kg	Reverse RPM
Mercury Enertia eco	3	16	19	830	3840	27@4370	120	2840
Mercury Enertia eco	3	16	21	800	3620	30@4350	125	2820
Turbo 2+2	4	14¼	18	510	4350	22@4280	115	2830
Mercury Marine Revolution 4	4	14 5/8	19	820-860		23		
OSI By Turbo	4	15	24	720-750		33		
Evinrude RX4	4	15	24	520	3450	33@4330	90	2820
Power Tech LFS5R17	5	16	17	760	3600	27@4350	95	2840
Power Tech LFS5R19	5	16	19	970	3600	28@4350	110	2840

A1 Tech RIB Performance – High speed

Propeller	Blades	Diameter"	Pitch"	Fwd Pull kg	Fwd RPM	Speed - knots	Reverse pull kg	Reverse RPM
Stiletto	3	14¼	17				105-120	
Stiletto	3	14¼	19	500	3400		110-120	2800
Mercury Enertia eco	3	16	21				110-120	
OSI By Turbo	4	15	24				130-145	
Evinrude RX4	4	15	24				115	2800
Power Tech LFS5R19	5	16	19	600	2550	31	120	2800

POCA 600

Single engine

Length 600 cm
Width 242 cm
Weight 800 kg
Max load 1400 kg
Crew (max) 10 pax



POCA 600 performance

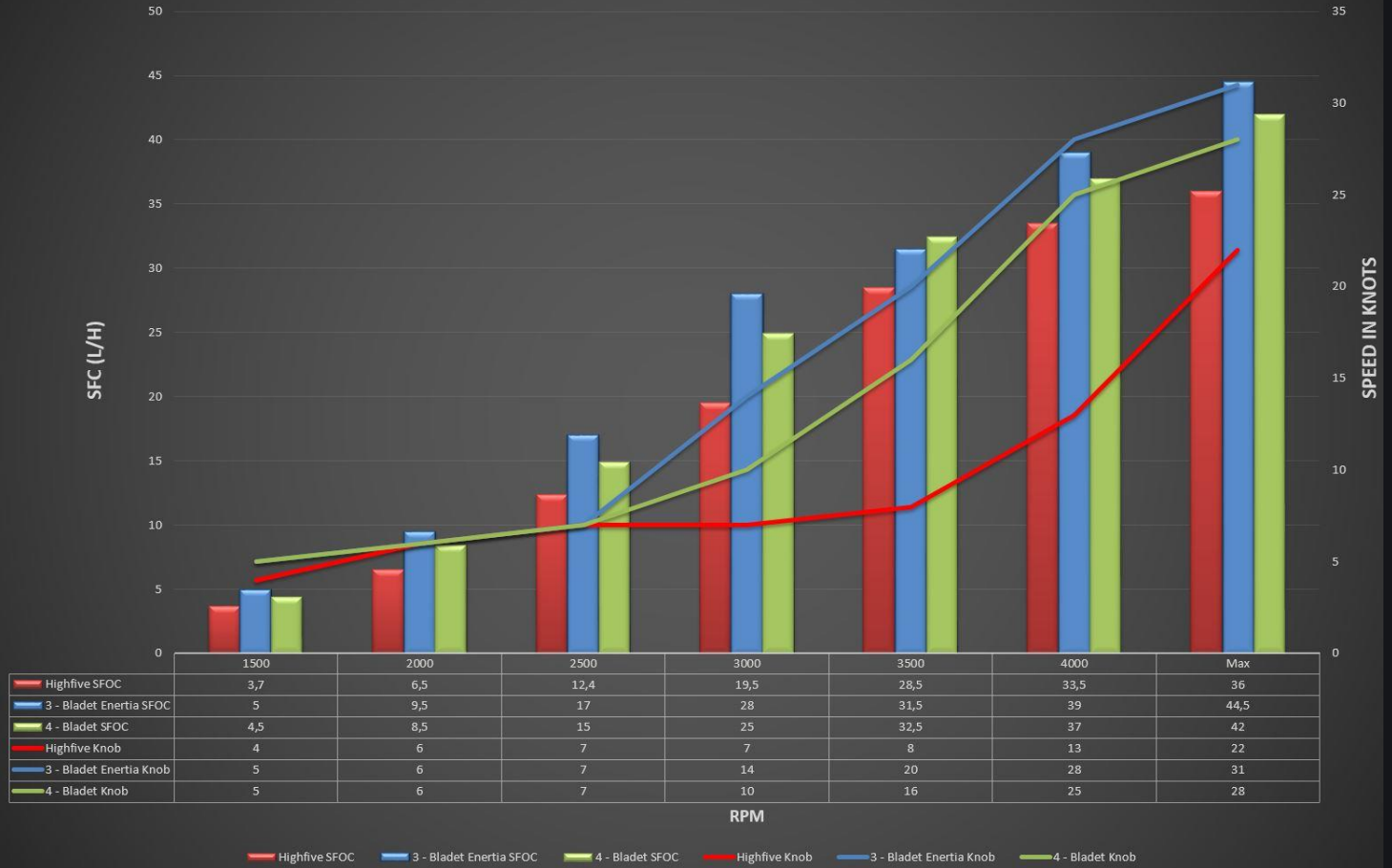
POCA SETUP						
Date	17.8.2016	17.8.2016	17.8.2016	17.8.2016	17.8.2016	17.8.2016
Time	10:20	10:44	10:57	11:17	11:51	12:07
No of blades	4	3	5	5	3	4
Diameter/Pitch ["]	14x21	16x23	13¼x23	13¼x23	16x23	14x21
Gear ratio 1:	2,17	2,17	2,17	2,17	2,17	2,17
Knots	32	36	30	22	31	28
Mph	36,8	41,4	34,5	25,3	35,7	32,2
Engine rpm	4350	4350	4400	4400	4300	4300
Fuel consumption l/h	36,7	37	31	36	44,5	42
<u>Load [kg]</u>						
Misc gear wheight	100	100	100	100	100	100
Watertank	100	100	100	100	100	100
Additional water	0	0	0	800	800	800
Crew (*85kg)	255	170	170	170	255	255
Boat	900	900	900	900	900	900
Total weight	1355	1270	1270	2070	2155	2155

POCA 600 performance

SFC = Specific fuel consumption [liters/h]

Performance Chart w Load	RPM	1500	2000	2500	3000	3500	4000	Max
"Highfive"	Knots	4	6	7	7	8	13	22
"Highfive"	SFC	3,7	6,5	12,4	19,5	28,5	33,5	36
3-Blade "Enertia"	Knots	5	6	7	14	20	28	31
3-Blade "Enertia"	SFC	5	9,5	17	28	31,5	39	44,5
4-Blade	Knots	5	6	7	10	16	25	28
4-Blade	SFC	4,5	8,5	15	25	32,5	37	42

OXE Diesel Performancechart loaded 800 l water



ASIS Tour 12

Twin engine

Length 1190 cm

Width 377 cm

Weight 2500 kg

Max load 1220 kg

Crew (max) 25 pax



Suzuki SST propeller 16" diameter – 17" pitch

Top speed 41mph – 35.5 knots

Polarcirkel 785

Single engine

Length	785 cm
Width	271 cm
Weight	1350 kg
Max load	2250 kg
Crew (max)	15 pax

4-blade 16" diameter – 18" pitch

Top speed 33,3mph – 29 knots



Jiang Xi Weimin RIB 10

Twin engine

Length 1000 cm

Weight 2500 kg (total)

Crew (max) 10 pax

Propeller

Solas Lexor L3 Plus 16" diameter – 19" pitch

4300 rpm - ~40 knots (fast acceleration)

Planned trials with 22" pitch for ~45 knots



Jiang Xi Weimin RIB 10

Additional photos – hull shape



Malaysia RIB

Single engine

Length 1000 cm

Weight 2500 kg (total)

Crew (max) 10 pax

Propeller;

Solas Lexor L3

D 15 3/4" P 21"

~40 knots



