

VICTORIA PROPELLER LTD.

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Two locations on Vancouver Island
in Beautiful, British Columbia, Canada.

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Prop Calculator



Data Input

Waterline length in feet:	21.3 feet
Beam at the waterline in feet:	7.55 feet
Hull draft in feet (excluding keel):	2.13 feet
Vessel weight in pounds:	7716 lbs
Engine Horsepower:	15 HP
Number of engines:	1
Total Engine Horsepower:	15 HP
Engine R.P.M. (max):	3600 RPM
Gear Ratio:	2.35:1
Shaft R.P.M. (max):	1532 RPM
Number of shaft bearings (per shaft):	1
Desired speed in Knots:	6 knots

Horsepower Calculations

This will calculate the maximum horsepower and torque available at the prop(s).	
Total available horsepower at the engine(s):	15 HP
Total available torque ft/lbs at the engine(s):	22 ft/lbs
Horsepower loss of 3% per gearbox:	- 0.4 HP
Horsepower loss of 1.5% per shaft bearing:	- 0.2 HP
Total horsepower available at the propeller(s):	14.3 HP
Total torque ft/lbs available at the propeller(s):	49 ft/lbs

Speed & Power Calculations

Basic displacement speed and horsepower required	
Displacement hull speed (1.34 X sqrt of waterline length):	6.18 Knots
Minimum horsepower required at propeller(s) for Hull speed:	16.8 HP
Calculations based on desired speed and available HP	
HP required at propeller(s) for desired 6 knots speed:	14 HP
Estimated maximum speed with existing 15 horsepower: This is the speed we will use for the propeller size.	6.02 Knots
At this point it is important to note that all of the calculations above are based on full RPM and HP. Most engines are rated to run at a percentage of thier full RPM. This is what will determine your maximum cruising speed. The propeller sizing calculations below are based on 90% of full RPM. This gives the engine some reserve power to allow for variable loading in the vessel.	

Propeller Size

Number of blades	Diameter (inches)		Pitch (inches)
2 Blade	14.0	X	7.8
3 Blade	13.3	X	7.8
4 Blade	12.5	X	7.6
The propeller sizes shown above do not contain calculations for cavitation or blade loading. If you find that the recommended propeller is too large to fit your vessel, you can try increasing the shaft speed. Failing this, you can reduce the diameter and increase the pitch at the expense of your propeller efficiency. The rule of thumb is 1 inch of diameter is equal to 1 1/2 to 2 inches of pitch.			

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