

# DUNNRITE PROPELLERS

## PROPELLER TIPS FOUR

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Founded in 1995, Dunnrite Propellers are specialists in supplying, tuning and repairing marine propellers. A personal professional experience is assured when you deal with Dunnrite Propellers.

This has been put together by Dunnrite Propellers so that boaties may better understand Propeller Terminology including Diameter, Pitch, Cupping, Rake, and Ventilation.

## SOME PROPELLER TERMINOLOGY

### **Propeller Size**

The size of a propeller is usually described by a set of numbers. Two numbers indicate the sizes of diameter and the pitch respectively. Hence, we express the size of a propeller as diameter x pitch (D x P).

### **Diameter**

Propeller diameter is twice the distance from the centre of the hub to the tip of the blade as a propeller rotates.

### **Pitch**

Pitch is the theoretical forward movement that a propeller travels during one revolution. Because of slip the actual distance a propeller travels is about 10 to 20 percent less than the design pitch. Slip is the difference between actual and theoretical movement. It varies from boat to boat for various reasons such as the weight of the boat and blade surface area of the propeller.

### **Cupping**

A propeller is said to have a cup if the trailing edge of the blades is formed or cast with the edge curled. Cupped blades improve the grip of the propeller into the water, reduce cavitation and allow the boat to reach higher top speed. Cupping benefits are so desirable that almost all modern recreational, high performance propellers have some degree of cup. Compared with an un-cupped propeller with the same pitch, the cupped one will reduce Wide Open Throttle engine speed. Single cup/100-200rpm. Double cup/300-400rpm.

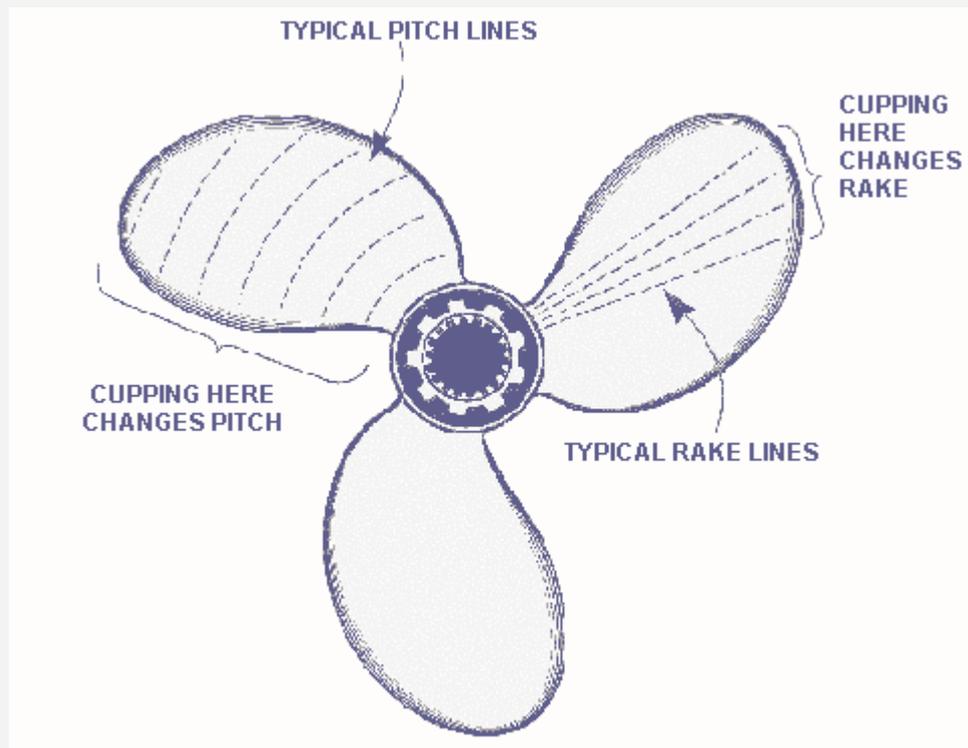
### **Ventilation**

Ventilation is the introduction of exhaust gases into the propeller. Ventilation can be useful in the bottom end acceleration by allowing the propeller to slip a regulated amount, allowing the engine to rev higher during initial acceleration. Usually achieved by ventilation holes at the base of each blade on thru-hub exhaust propellers. Can also be achieved by fitting a propeller that has a smaller diameter propeller barrel than the original propeller, commonly referred to as a thru hub over hub propeller.

**CAUTION:** Ventilation of propellers should not be confused with a "ventilating propeller". A ventilating propeller sucks air from the surface, causing the propeller to slip and the boat to lose drive.

### Rake

Blade rake is the angle of attachment of the blade to the hub of the propeller. Higher rake can improve performance in higher engine elevation and/or ventilating or cavitating situations. Lower rake is typically used in heavier boats with fully submerged propellers. Rake should not be confused with pitch.



### PROPELLER ROTATION

Many people get confused about propeller rotation.

Asking some people whether their propeller is Left or Right Hand, Clockwise Rotating or Counter Clockwise Rotating can often generate a blank look.

The following works and even better, it is not too hard to remember.

Place the propeller on the ground in front of you and between your two feet.

Try placing your Left foot on any blade left of the centre of the propeller. If your foot sits on the blade like it were a footrest, the propeller is Left Hand or Counter Rotating.

NOTE: The Right foot will not be able to rest on any blade right of centre of the propeller, but will kick into the edge of the propeller instead.

Conversely if you can place your Right foot on any blade right of the centre of the propeller like it were a footrest, the propeller is Right Hand or Clockwise Rotating.

NOTE: The Left foot will not rest on any blade left of centre of the propeller, but will kick into the edge of the propeller instead.

Try it. It works and it does not matter whether the propeller is sitting on the ground face up or face down.

**TIP!**

You can't substitute a LH propeller for a RH propeller without making other changes. In many instances you will require a different rotation in the gearbox. This can be somewhat expensive. It is better to buy the correct rotation propeller.

**SUMMARY**

I trust the information supplied assists you to better understand the parts and terminology of a marine propeller.

I look forward to assisting you further in the near future

Cheerz

*Ric Dunn*