



# Maxwell Propulsion's In-Flight Adjustable Propeller

## How does an in-flight adjustable propeller work?

To answer this question lets talk about how propeller pitch affects the aircraft's performance.

A fine pitch propeller has a low blade angle. It moves forward a small distance through the air with each rotation, and take a *small* bite of the air. It requires relatively low power to rotate, allows high propeller speed, but achieves only limited airspeed. This is much the same way that low gear in your car works.

A coarse pitch propeller has a high blade angle. It advances a long distance through the air with each rotation, and takes a big *bite* of the air. It requires greater power to rotate, limits the propeller speed, and achieves high airspeeds. This is akin to high gear in your car.

With a variable pitch propeller, you really have choices. To use the automobile analogy, you have a gearbox that can change gears while on the go. However, you are not limited to a pre-set 4 or 5 gears, but can use any pitch within the 10° minimum to 30° maximum rotation<sup>1</sup>. The propeller pitch can be controlled while in flight and thus improve performance in each phase of flight.

Typically take-off uses a fine pitch (low gear) allowing your engine to develop reasonable revs; then as you accelerate to cruising speed the pitch is coarsened (high gear). When set at a relatively coarse pitch, the miles pass rapidly while the engine gently ticks at a comfortable speed.

CAP 220  
In-Flight Adjustable  
Propeller

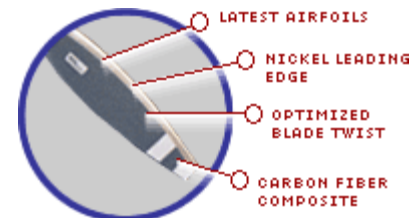
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A variable pitch propeller provides a pilot with many performance advantages, including:

- ✚ **Reduced Take-Off Roll and Improved Climb Performance.** Fine pitch allows the engine to reach maximum speed and hence maximum power at low air speeds. This is vital for take-off, climb, and for a go-around on landing.
- ✚ **Improved Fuel Efficiency and Greater Range.** Coarse pitch allows the desired aircraft speed to be maintained with a lower throttle setting and slower propeller speed, maintaining efficiency and improving cruise speed.
- ✚ **Higher Top Speed.** Coarse pitch ensures your engine does not over speed while the propeller absorbs high power and produces a higher top speed.
- ✚ **Steeper Descent and Shorter Landing Roll.** With a fine pitch and low throttle setting, a slow turning propeller adds to the aircraft's drag, and slows the aircraft more quickly on landing.

## What are the blade cores made of?

The core of the Whirlwind blade is constructed with graphite composite materials. It is solid in some areas and hollow in others. Primarily, it is solid towards the tip and root of the blade and hollow in the center area.



<sup>1</sup> Other pitch ranges available on special request.

**Maxwell Propulsion Systems, Inc.**  
**In-Flight Adjustable Propeller**  
Shown with  
Custom Painted Spinner

- # **Faster Acceleration**
- # **Improved Fuel Efficiency**
- # **Improved Range**
- # **Faster Cruise Speeds**
- # **Quicker Take-Off**
- # **Better Climb Performance**
- # **Quiet Operation / Less rpm**
- # **Longer Engine Life**
- # **Simple & Safe**
- # **Lower Maintenance**

## Features

- # **74" Blades**
- # **Graphite Composite Blades**
- # **Blades Light & Strong**
- # **Nickel Leading Edge**
- # **Electronic Pitch Control**
- # **Adjustable from 10° - 30°**
- # **Billet Aluminum Housing**
- # **28 Pounds Total Weight**
- # **High-Gloss Urethane Finish**
- # **Rated up to 200 hp**
- # **TBO @ 1500 Hours**



### ***Can I use my in-flight adjustable propeller on unapproved airstrips?***

Yes, the MPS CAP 220 is well suited to use under less than optimal landing strip conditions. It can be flown in rain and off unapproved airstrips.

### ***What does the price of the propeller include?***

The quoted price includes the entire propeller system, including hub, blades, spinner, front and rear bulkheads, controller, and mounting hardware. Additional costs include the shipping crate and actual shipping costs. All propellers come with painted blades. Custom colors on the blades and/or spinner components are available on request for an additional charge.

### ***Can I order a custom paint color for my propeller blades?***

MPS offers two standard blade paint schemes at no additional charge – black with red tips or white with red tips. If you want to order a custom blade and/or tip color to match your airplane, we can do this for an additional fee.

### ***What colors are available for the spinner kit?***

The standard spinner kit is spun aluminum. The spinner, backing plate and bulkhead support can be custom painted to match your airplane for an additional charge.

### ***What do I need to do to assemble the propeller?***

The CAP 220 arrives completely assembled and ready to bolt on your airplane. We strongly recommend that you have your system dynamically balanced once it's installed. The fully assembled propeller is shipped in a custom-made shipping container. We recommend that customers keep the shipping container in the event you need to ship your propeller in the future.