



## Title: Kick the Tires & Light the Fires"

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What is certified for the speeds of a racecar, is expected to survive instant acceleration, carry the load of an 18-wheeler, but is as small as the wheel on a go-cart? Your aircraft tires!

One of the most important parts of an aircraft, and the most overlooked on preflight, are your aircraft tires. In this month's article let's look at tire considerations and think about applying them when performing your next preflight inspection.

First, it's important to know just what a tire is subject to in its daily life of service.

**Load:** A couple of runway landings would probably blow out a typical automobile tire if it were mounted onto an airplane. Aircraft tires are designed to handle at least 16 times their static load imposed on them and three times the speed of a comparably sized car tire.

**Distortion:** The tire carcass is designed to distort and flex up to 30 percent during normal operation. This is similar to driving straight into a curb at 50 M.P.H. every time you'd park the family sedan.

**Operational Consideration:** Did you know that fast taxi speeds are as stressing to a tire as "cowboy" landings? It can build temperatures of as much as 150 degrees inside the tire casing, with under-inflation adding up to 100 degrees over that. That chirping sound you hear when you land is the sound of tread flattening while accelerating from 0 to whatever your landing speed is!

Consequently, there is no bad aircraft tire. All are designed and constructed to FAA Technical Standard Order C 62 B-D. Your tire is handmade and individually tested to at least these specifications.

Now that we've covered some of the stresses and basics that aircraft tires are subject to, let's go over some preflight items that can be checked:

1. Take a look at the general "roundness" of the tire. I know that this sounds pretty basic, but it's important. Are there any "flat spots"? There are two types of "flat spots" to tires, and the type that's not very well known happens when an aircraft has been parked for a considerable amount of time. The weight of a plane constantly pushing down on one portion of the tire can cause it to form into a "D" shape rather than an "O". A properly inflated tire, operated under normal temperatures, will work this kink out. However, if the tire

pressure is low, that flat spot will only accentuate a bad condition and could cause the tire to fail.

2. The other type of "flat spot" that we're most familiar with is from over zealous break usage. Small flat spots don't pose much of a hazard, but spots that have gone past the tread groove (not the first sign of chord) should be replaced before flight. Heat is concentrated at this spot causing a "weak link" around the tire and below the grooves is proven to be unsafe. Additionally, this is even more of an issue with a re-treaded tire.

3. The sidewall of the tire should be inspected as well. Remember, the brake rotor (including the caliper assembly) is only a few inches away from the sidewall and is dissipating heat while trying to stop the plane. Some of this is being absorbed by the sidewall of the tire. A heavy braked landing can cause a rotor to glow red and "burn" the sidewall. Look for signs of burning when inspecting the sidewall of the tire.

4. Your tire could be holding air perfectly, and still be under inflated! Why? Your tires might be fine on that hot August day before winging off to your favorite pancake breakfast, but in December could turn out to be a drag. An important fact to remember is that for every 5 degrees F (3 degrees C) change in temperature will result in a corresponding 1% change in tire pressure. Tire inflation is the most critical element of the life of the tire and it's important to follow the manufacturer's recommendations for tire pressure of a particular model. Under-inflation produces uneven tread wear and shortens tire life because of excessive flex heating. Over-inflation can cause uneven tread wear, reduced traction, make the tread more susceptible to cutting and increase stress on aircraft wheels. Only dry nitrogen should be used to fill the tire as it will not sustain combustion and will reduce oxidation.

5. Aside from the actual tire, it's important to take a look at the wheel bolts that hold the wheel together. Are they tight in their holes? Any chafing or stressing? If there are any problems with them don't operate the aircraft and have it repaired.

Hopefully, considering the tires in your next preflight will prevent an unavoidable incident. For more information, visit: [www.goodyear.com](http://www.goodyear.com) & [www.michelin.com](http://www.michelin.com).

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## Aviation Safety Seminars

Know of a meeting that could be turned into a “Wings” qualifying program? Contact this office at least three months in advance so that the proper arrangements can be made and we’ll advertise it here?

The Arizona area seminar and special event schedule for February 2002 is as follows: These are *WINGS* qualifying.

### **February 12, 2002 @ 7:00pm:**

**Presented by:** AOPA Air Safety Foundation’s Safe Skies  
**Where:** Mesa Community College; 1833 W. Southern Ave., Mesa, Kirkwood Center, Navajo room.  
**Subject:** “Spatial Disorientation.”  
**Sponsored by:** The FAA Aviation Safety Program.  
AOPA Air Safety Foundation  
Amphi School District  
**Contact:** Robin Sharitz, (301) 695-2175



What’s Inside this Issue

**“Kick the Tires & Light the Fires“**

**Aviation Safety Seminar Notices**

### **February 13, 2002 @ 7:00pm:**

**Presented by:** AOPA Air Safety Foundation’s Safe Skies  
**Where:** Amphi Middle School, 315 E. Prince Rd. Tucson, in the Auditorium.  
**Subject:** “Spatial Disorientation.”  
**Sponsored by:** The FAA Aviation Safety Program  
AOPA Air Safety Foundation  
Amphi School District  
**Contact:** Robin Sharitz, (301) 695-2175

### **February 27, 2002 @ 7:00pm:**

**Presented by:** Tucson TRACON  
**Where:** Pima Community College, 8181 E. Irvington Rd., Tucson, East Campus Community Room.  
**Speakers:** Chuck Mote – General Aviation Procedures for Tucson ATC.  
Lt. Col. Mark Harding – ANG F-16 Operations at Tucson, & Military vs. Civilian Operations.  
Mike Halloran – Meet the FAA, who are we anyway?  
**Sponsored by:** The FAA Aviation Safety Program.  
Pima Community College  
**Contact:** Scott Ladd, (520) 670-5087