

Landing Gear Systems

usual practice in aviation, the POH accurately reflects the actual tire loading for that specific airplane. The specifications from the manufacturer do not take into consideration the specific tire loading value. In short, the airframe manufacturer knows the specific application; the tire manufacturer doesn't. The single most important preventive maintenance the owner can do is to keep the tire pressure correct at all times. This will produce more landings per tire than anything else will.

When new tires are installed, they typically are inflated without the aircraft weight acting upon them. Because aircraft weight deflects the tire, approximately a 4 percent increase in inflation pressure is required. New tires should be allowed to sit for 24 hours after installation, so they can stretch and adjust to the rims. It is also important to check tire pressure daily during the first week because of probable air leakage.

Tire pressure should be checked with an accurate dial gauge prior to every flight, a preflight item that is seldom done by the average pilot. The heavier the airplane, the more critical this check becomes. It must be done on a cold tire, at least four to five hours since the last use, because a hot tire gives a high reading. When going on a long cross-country flight, tires should be inflated for the coldest condition to be encountered. Ground temperature changes of 50 degrees F or more require greater inflation to compensate for the lower temperature. A good rule of thumb is every 5 degrees Fahrenheit temperature change yields a 1% change in tire pressure.

Improper inflation causes uneven tread wear. An underinflated tire will be subject to excessive wear on the shoulder. This is the worst possible condition because it scars the sidewalls and shoulder as it rubs against the tire-rim flange. The result is faster heat buildup. In extreme cases, tube tires may slip around the rim, shearing off the valve stem. Overinflation, on the other hand, causes excessive wear in the center of the tire, reduces traction and ground-handling ability, increases landing distance, and makes tire treads more vulnerable to cuts and nicks.

Most cuts and nicks can be avoided if the pilot will use caution and always watch the taxiway ahead. Foreign objects on runways and taxiways are a prime cause of cuts and nicks and should be reported immediately. If they are unavoidable, either get out of the airplane and remove them yourself, or call unicom/ground control and ask for assistance. With the price of tires today, patience has never been a greater virtue.

Other common problems are potholes, large surface cracks, and dropoffs between tiedown areas and taxiways. These should be avoided when possible because they really can take a chunk out of a tire. The only solution, if they are unavoidable, is to take them as slowly as possible. Be particularly careful of dropoffs. Not only are dropoffs a problem for the tire, but if deep enough, you may also catch the prop.

The part of the tire that makes contact with the surface is called the "footprint." A tire can be compared to a running shoe: both have tread gripping the ground. The less tread that touches the ground, the less the grip. The groove between treads allows water to pass under the tire without losing its grip on the surface. Skidding, a situation where one tire locks up while the other continues to turn, can result in serious problems. Skidding leads to blowouts, loss of control, and significantly increased landing rolls.