

Landing Gear Systems

There is yet another reason to avoid hard braking: tread wear. Friction means something has to give, and tires are much softer than runways. Think of what happens when you're grating a potato to make hash browns for breakfast and your thumb gets in the way: presto—meat and potatoes. In short, the rougher surface will always win. Every time you apply brakes in an airplane or car, you scuff off some of the rubber tread. Tires with little or no tread must be replaced. Figure 10-4 shows an area toward the middle of the tire where the tread has been worn away. Also, hard braking leads to skidding.

The reason the wheels don't lock up immediately when you apply the brakes is the momentum of the airplane combined with ground friction on the tires greater than the force the brake applies to the wheel. If you touch down on a runway with areas of low friction, such as wet spots or patches of ice, and attempt hard braking, one wheel eventually will cross an area of lower friction than the other will. When that happens, the wheel encountering low friction will lock up while the other will continue to turn. Aside from a slight lack of control, this does not produce a problem. It is when the locked-up wheel leaves the patch of ice that the trouble begins. At that instant, the brake-locked, zero-RPM wheel is being dragged over a high-friction surface by the momentum of the airplane.

Speed is a nemesis of tires; whenever safely possible, operate as slowly as you can. Excessive speed produces more internal heat and requires more braking. Touch down as slowly as practical for the conditions; do full-stall landings, then taxi slowly to the tiedowns. While taxiing, be particularly aware of turning. Tight turns are a significant cause of tread wear, especially pivoting about one wheel using the brakes. This creates a terrific



Fig. 10-4. *Center tread worn to bald condition.* (Photo by author, courtesy of Frasca Air Services)