

Locking Tailwheel System as found on early model Seabees



The operation is really simple. The cockpit lever at the bottom of the right side of the panel is locked in the forward position, unlocked aft as pictured above (See photo below). There is just a bit of spring tension on the cable, but barely enough to move the lever. The left side of the dash panel is cut to allow a forward and aft position. To move the lever forward (unlock), you move it left toward your leg to release it from the indentation in the panel. There is a small spring in the pivot mechanism to hold the lever to the right, and it will go forward to lock. Unlocking, just pull the lever aft and the lever should fall into the detent. Of course a gentle hand will save wear on the system!

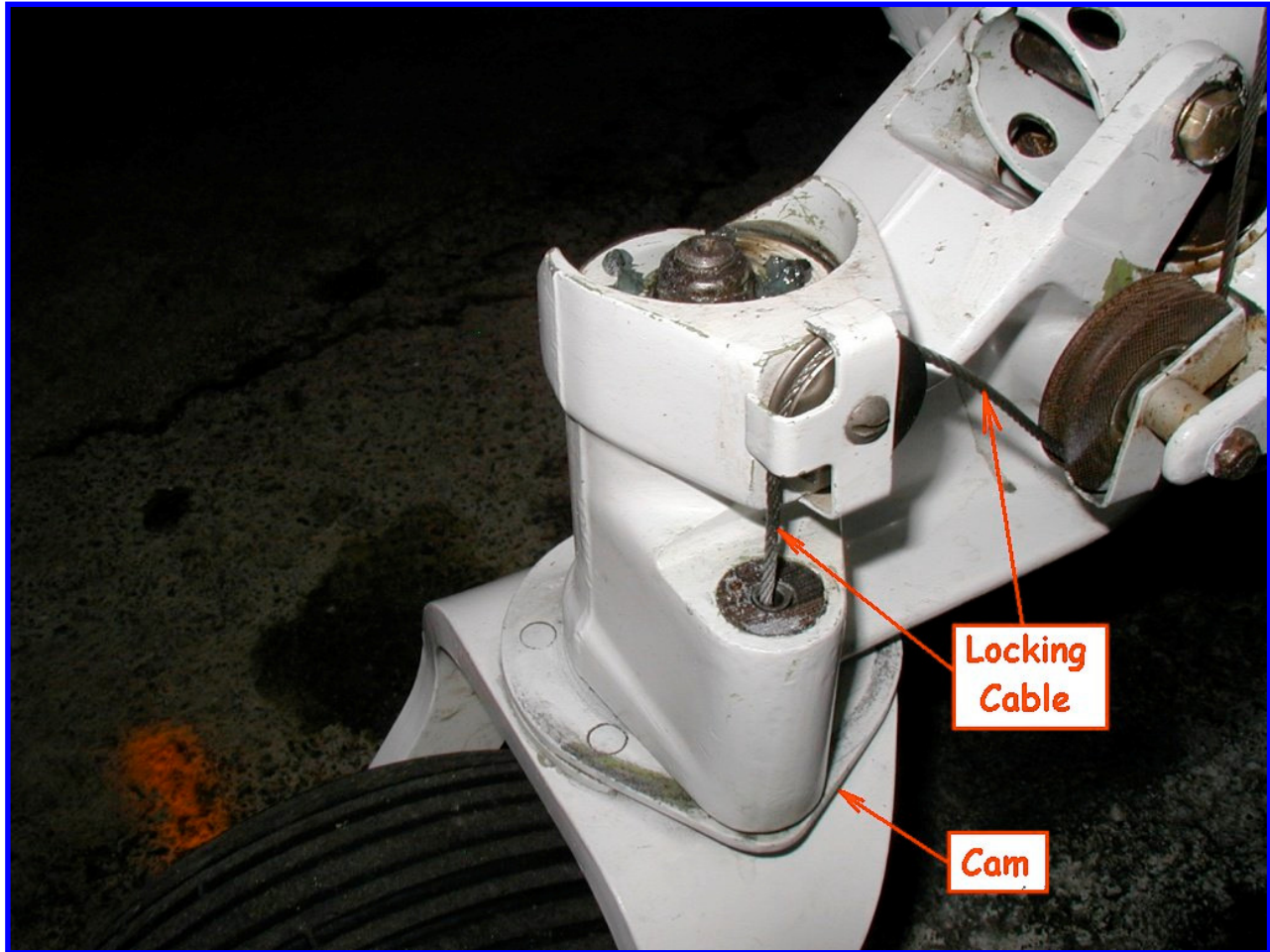
In reality, if there is any side load on the piston pin back at the tailwheel, the locking pin won't release. You need to release the pressure on the pin. You can still move the lever, as there are two springs in the system; one small one in the tailwheel assembly itself and one "Screen Door" type spring on the cable about mid tail boom. You should

be able to feel the tension in the lever when you unlock it if there is any side load on the tailwheel. More about this below . . .

Note the cam profile shaped plate riveted to the top of the fork (photo next page). The spring loaded stainless piston pin operates in a phenolic sleeve and drops into a hole in the cam shaped plate.



The cockpit lever can be placed in the locked position (left photo) when the tailwheel is not straight. The piston will simply slide on the cam shaped plate until the tailwheel becomes straight and then the small spring in the assembly will drop the pin in the hole. As mentioned above when unlocking with a side load on the tailwheel such as landing or taxiing with a crosswind, or trying to turn with the pin in the locked position, it will not release the pin. You must try to turn in the opposite direction to

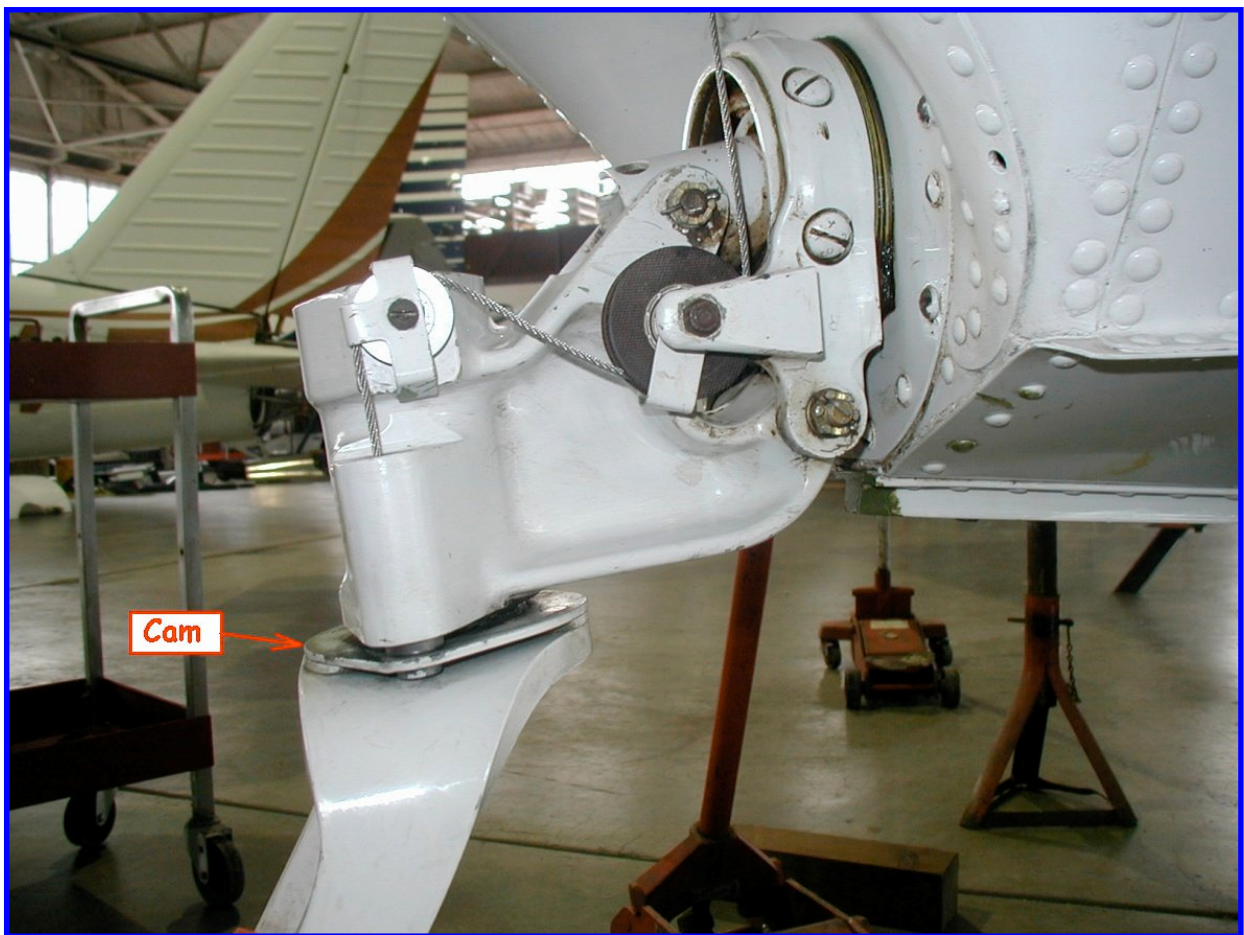


release the pressure first. If the wind is strong, or you initiated your turn before unlocking it, this might require a slight tap on the brake to get it to release.

You use the lock for takeoff, landing and long straight taxiways if you desire. You can steer a bit with the system locked since there is some roll in the tire, slop in the system and just the geometry of the airplane.

- Note - If the wind is blowing hard in a crosswind taxi, the airplane will still want to weathervane and you may not be able to track centerline. The roll in the tire and lock are not enough to overcome the tendency to point into the wind, brakes may be required and proper aileron use always helps.

I've found that I can criss-cross the taxiway to minimize the brake use. Meaning that the crosswind has forced me to the upwind side of the taxiway, I'll release the lock and point the nose back downwind to correct my position. This of course will require some downwind brake to release the pin and once my corrected course is set, re-engage the lock with the nose pointed 10-30 degrees downwind of the taxiway centerline. As you taxi with full downwind rudder and occasional brake you'll follow a long curved path back past the centerline and eventually back to the upwind side of the taxiway and repeat the process. You should taxi around a bunch with little or no wind to get a feel for how the system works. If you don't play with it first it can take some real getting used to.



So, normal operation is to have it locked while parked and a single side chocked is usually fine for short term and I usually set the brakes too. If you expect someone to move your airplane at an FBO be advised that most of them are unfamiliar with the system. You'd be best to leave it unlocked and chocked if you think someone might move it. Unlock for taxi, if you start moving and notice you're starting out in a crosswind, you might have to first try to turn downwind momentarily to release the



pin. Since there is no steering, you just have prop blast across the rudder and brakes to steer. Sometimes when I have a long taxi, I use beta to control my speed, but be cautious using beta while taxiing if the tailwheel is unlocked. The flat pitch blade angle will block the rudder and you'll lose that directed thrust. It can surprise you if you're not ready for it.

When ready for takeoff, as you move onto the runway with the tailwheel unlocked, I position the lock lever forward as I'm turning to align with the centerline. As I use opposite rudder to stop my turn I can feel tailwheel lock when it becomes straight. If there's any question, walking the rudder pedals as you add power will just rock the wings and cause very little turning if it did in fact lock. You'll still have plenty of steering for takeoff alignment corrections with it locked. "Tailwheel Locked" should be on your takeoff checklist. You can take off with it unlocked, but it's not "happy" landing with it unlocked, it can have a tendency to do the "shopping cart caster" wobble that will tear the crap out of a good tire.

When landing - if you happened to take off with it unlocked or were playing on the beach and forgot to lock it, now's a good time to make sure it's locked. The geometry of the cable should have just enough slack to lock it when it hangs down so it won't flop when retracted. (Locking tailwheel airplanes don't have the rubber bumper on the hull!) But if the handle is not in the lock position before you land, as soon as it touches down it will be unlocked and it can do the shopping cart dance . . . not only is it hard on the tire but the vibration can cause stress on the whole assembly, especially the little ears on the collar if those bushings are worn. When rolling out and you want to make that next taxiway, if the airplane won't turn when you unlock the lever, remember the side load if you're trying to turn, remember? It's easier to unlock when you have a little forward speed (air across the rudder) then when you get real slow and may require a tap on the brake if there is any wind.

It's all pretty simple if you understand the system and just takes a little getting used to. Another thing you always want to be careful of with a Bee with the locking system is to guard the rudder at all times when parked. There is nothing to keep the rudder from banging back and forth against the stops. Parking in a gusty tailwind can cause major damage. I always use a rudder lock when I leave the airplane unattended, or if it's not protected in a hangar. But that's another story. Rudder Locks are covered in a separate article that you can see right here in the "tips and Tricks" on the Seabee Club website: www.republicseabee.com/Tips-tricks.html#RudderGustLock.

Hope this helps . . . Bee Sea N'ya,
Bruce Hinds