

# Bungee Starting

by Hank Palmer

*Here's a little known piece of starting trivia a few of you may recall. If you should choose to try this method, you're on your own, but this article should give you some guidance on the tool and procedures used.*

I am amazed at how many pilots and mechanics, even old timers like me, have never heard of such a thing. In the Navy before and after the War, every Aircraft Service Organization had one or two in the tool shed, and every Aviation Machinist's Mate knew how to make one if needed. The first one I ever saw was at the Coast Guard Air Station in St. Petersburg. In 1938 or '39 they had a big Hall Flying Boat, a PH-1, an all metal biplane with Wright Cyclones hanging on struts between the wings. These probably had either hand or electric inertia starters, I don't know which.

But I do know they also carried a bungee that could be hooked over a propeller tip, out to a pulley at the bottom of an interplane strut, then back toward the engine. In this case they had a block and tackle between the bungee and a fitting at the bottom of the interplane strut.

One or two crewmen would walk in-board along the lower wing, and stretch the bungee with the block and tackle, while another man would give the prop a push off center, and the bungee would do the rest. They could do this while the ship was afloat at sea.

I have used a bungee to start everything from a Stearman to the Hellcat, and in the 1950's when I was flying C-46s in air freight service all over Central and South America we always carried one in the belly, along with a spare set of spark plugs and a spare mag. To start these bigger engines it usually takes four men to stretch it, or in most cases we used a Jeep.

To make a bungee, you first need to sew up a leather push or boot, shaped to fit LOOSELY over the tip of the prop. (See the illustration on this page.) The open end of the boot should be cut off at about 45 degrees, and then hemmed to receive an eye splice in a piece of 1/2" manila or nylon line. This splice should be just large enough to go around the prop at a 45 degree angle. This line should be about the same length as

the prop. A small eye splice in the other end is connected to a 6 foot length of bungee cord, which is then connected to another length of line with several figure 8 knots tied near the other end, so a man can pull on it, without it slipping through his hands. For a 220 hp Continental, one strand of 1/2" bungee cord is adequate. For an R-2800 I think we used four strands, and it may have been larger than 1/2".

**WARNING:** It is important that the boot fit LOOSE enough so that it will be thrown off the prop tip on the first half of a revolution, otherwise the bungee could get wound up in the prop, and that could be disastrous.

It is also important for the person or persons pulling the bungee that they line up just slightly ahead of the rotational plane of the blades, so it will lay across the hub, on top of the hub (or spinner if it has one), but will not be caught by a blade and wind up in the prop when the engine starts. Failing to keep the bungee and line clear of the prop could have dire consequences.

The person pulling the bungee will be standing right in line to be hit in on the head by the boot after it leaves the prop tip, so he needs to be ready to duck. I never saw anybody hurt in this way.

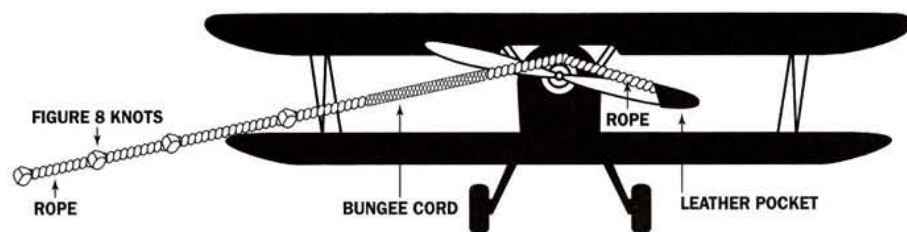
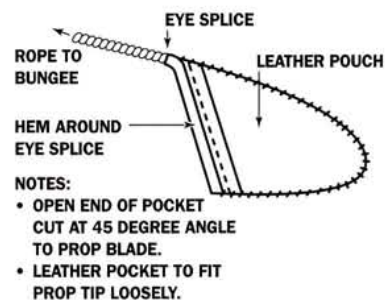
If you use a Jeep or other vehicle, it's

best to hook up to the front bumper, and back up to stretch the cord, so the driver can see the operation in front of him.

You are probably thinking, "why go to all that trouble for a 220 Continental, as they are easy enough to crank by hand." Sometimes when an airplane first comes out of overhaul, with newly honed cylinders and new stiff rings, before the rings get seated they provide more friction than compression. They can be very hard to crank by hand in this condition. Also, in very cold weather, if you don't have a way to preheat the oil, it can be very hard to crank.

*Editor's Note: Of course, cranking a very cold engine without a preheat brings a whole set of engine wear probabilities into play, but this method may be good to get you out of a tight jam if you're really stuck somewhere without a preheat. When these procedures were developed for use by the military, they may not have been as concerned about getting a long time interval between overhauls as you are today!—HGF*

A bungee will snap it through much faster than anyone I know can do it. The illustrations should be adequate for you to figure out how this was used. Pretty clever! 🐼



AFTER BUNGEE IS STRETCHED, ONE MAN MOVES PROP PAST CENTER. THE BUNGEE DOES THE REST.

