



HAND PROPPING – Notes extracted from FAA
'Introduction to Flight Training'

Even though most airplanes are equipped with electric starters, it is helpful if a pilot is familiar with the procedures and dangers involved in starting an engine by turning the propeller by hand (hand propping). Due to the associated hazards, this method of starting should be used only when

absolutely necessary and when proper precautions have been taken. An engine should not be hand propped unless two people, both familiar with the airplane and hand propping techniques, are available to perform the procedure. The person pulling the propeller blades through directs all activity and is in charge of the procedure. The other person, thoroughly familiar with the controls, must be seated in the airplane with the brakes set. As an additional precaution, chocks may be placed in front of the main wheels. If this is not feasible, the airplane's tail may be securely tied. Never allow a person unfamiliar with the controls to occupy the pilot's seat when hand propping. The procedure should never be attempted alone. When hand propping is necessary, the ground surface near the propeller should be stable and free of debris. Unless a firm footing is available, consider relocating the airplane. Loose gravel, wet grass, mud, oil, ice, or snow might cause the person pulling the propeller through to slip into the rotating blades as the engine starts. Both participants should discuss the procedure and agree on voice commands and expected action. To begin the procedure, the fuel system and engine controls (tank selector, primer, pump, throttle, and mixture) are set for a normal start. The ignition/ magneto switch should be checked to be sure that it is OFF. Then the descending propeller blade should be rotated so that it assumes a position slightly above the horizontal. The person doing the hand propping should face the descending blade squarely and stand slightly less than one arm's length from the blade. If a stance too far away were assumed, it would be necessary to lean forward in an unbalanced condition to reach the blade. This may cause the person to fall forward into the rotating blades when the engine starts. The procedure and example commands for hand propping are:

Person out front says, "Fuel ON, SWITCHES OFF, THROTTLE CLOSED, BRAKES SET."

Pilot seat occupant, after making sure the fuel is ON, mixture is RICH, ignition/magneto switches are OFF, throttle is CLOSED, and brakes SET, says, "Fuel ON, SWITCHES OFF, THROTTLE CLOSED, BRAKES SET." Person out front, after pulling the propeller through to prime the engine says, "BRAKES ON, THROTTLE SET, CONTACT." Pilot seat occupant checks the brakes SET and turns the ignition switch ON, moves the Throttle to the idle position then says, "BRAKES ON, THROTTLE SET, CONTACT." The propeller is swung by forcing the blade downward rapidly, pushing with the palms of both hands. If the blade

is gripped tightly with the fingers, the person's body may be drawn into the propeller blades should the engine misfire and rotate momentarily in the opposite direction. As the blade is pushed down, the person should step backward, away from the propeller. If the engine does not start, the propeller should not be repositioned for another attempt until it is certain the ignition/magneto switch is turned OFF. The words CONTACT (mags ON) and SWITCH OFF (mags OFF) are used because they are significantly different from each other. Under noisy conditions or high winds, the words CONTACT and SWITCH OFF are less likely to be misunderstood than SWITCH ON and SWITCH OFF. When removing the wheel chocks after the engine starts, it is essential that the pilot remember that the propeller is almost invisible. Incredible as it may seem, serious injuries and fatalities occur when people who have just started an engine walk or reach into the propeller arc to remove the chocks. Before the chocks are removed, the throttle should be set to idle and the chocks approached from the rear of the propeller. Never approach the chocks from the front or the side. The procedures for hand propping should always be in accordance with the manufacturer's recommendations and checklist. Special starting procedures are used when the engine is already warm, very cold, or when flooded or vapor locked. There will also be a different starting procedure when an external power source is used.

