

The Situation

Every approach and landing is going to be different. I will attempt to generalize an idealized approach, flare and landing. We are landing into a constant velocity direct headwind. We have established a stabilized approach on final. The aircraft will fly hands-off, on gross weight airspeed, and glide path that assures touchdown in the first third of the runway.

The Approach:

On the approach path you select an aiming point related the runway. You use this point to determine if you are either high, low or all right for your planned flare and landing. If you are on glide slope the selected point will maintain a constant position on the windshield only to pass under the aircraft during the flare.

If you are high, you have a sequence of three corrective actions while maintaining the constant approach speed. First, put in maximum flaps for wind conditions. Second, reduce power incrementally as required to stabilize your aiming point on the glide path. Third and last, reduce the airspeed to increase the sink rate over distance. If the desired slope cannot be acquired, go-around.

If you are low, you have one best option besides the go-around. Apply full power while holding the POH approach speed. Hold a rigid lock on the yoke for an estimated number of seconds you think will be required to reach the optimum approach slope. Do not re-trim. At the end of the selected time reduce power to 1500 rpm and allow the aircraft to re-establish its stabilized approach. Any other corrective actions have hazards that may be beyond the skill level of the pilot.

Where you look as you get close the round-out will significantly affect the effectiveness of the flare. Looking too far down the runway can result in flying into the ground. Looking too close to the aircraft can result in an excessively high flare. Do not change your sighting point until the previously selected approach point has passed. At the POH gross weight recommended approach speed we can expect to have several hundred feet of float before touchdown.

The Round-out:

You have already acquired the sighting skill needed for the round-out and flare. It is the same as the one you use while driving at the equivalent speed. Use it until the rising nose causes the runway to disappear. This is going to be very near level flight. The roundout should be planned to bring the wheels to about a hip high height. Any higher will reduce the effectiveness of ground effect. Too low will likely result in a yoke reaction accentuated by the ground effect to give a balloon.

Ground Demonstration:

Student to sit in the cockpit with seat adjusted for flight. Hold yoke partially back as though in level flight. Student to look over level nose with wide view of horizon to each side. Instructor will slowly lower the tail to the ground. At the same time the student will, using only one or two fingers below the horn of the yoke, slowly initially but with a logarithmically increase in speed pull the yoke both back and up for its full travel.

This procedure should be repeated until the yoke movement and the tail lowering reach the end of their travel simultaneously. It should be noted that holding the yoke with a full grip will most likely limit the

yoke travel. The geometry of the arm and yoke cause this. By using the finger tips and lifting you will find that the last few inches of yoke travel include an upward moment. Do this until you get it right.

Now the instructor should swing the tail to each side so the student can observe how the movement of the horizon can be used to detect yaw. Explain that any time the nose rises above the horizon an ever increasing P-factor will pull the nose to the left. Increasing right pressure on the rudder is required as the nose rises. This counters the P-factor and aligns the nose with the flight direction. You do this in anticipation not in reaction.

The Flare:

At this point you should use a wide peripheral view to note the position of the horizon to each side of the nose. What you are trying to do in the flare is to maintain the horizon as a constant level as you lose airspeed and raise the pitch attitude. Every yoke movement should be back but stopping is all right. Every power change should be a reduction but not reducing is all right. The coordination of the two can be used to correct any rise or fall of the horizon.

In the round-out as the aircraft loses speed you will learn to sense a kinesthetic sinking as in a very slow elevator. At the very first sensation you should begin and continue the yoke movement as practiced previously. If you observe the horizon falling, it means that the aircraft is rising. A rising horizon means the aircraft is sinking. What you are trying to do is to maintain the horizon in a stable position as you gradually increase the pitch attitude. Any abrupt or instinctive movement of yoke or power will be counter productive. All movements must be in anticipation not reaction.

Salvaging the Landing:

How do you know how and when to salvage a landing? Can some poor approaches and flares be safely corrected? The answer is yes. You must have very deep pockets to afford salvaging landings. As previously indicated. Your best option will be the go-around. Judicious additions of power may be applied and be successful. A combination of luck and experience may work. My recommendation is that all salvage efforts be delayed until you are using your own airplane.

An old PTS guide once said that the ideal landing occurred when at the moment of touchdown, the yoke was all the way back, the power was reduced to off, and the stall warner would bleep. As the pilot you are striving for this ideal. It does not occur often. The flare and landing is an act of faith. You must believe that the runway will be there. You will not know just when the landing will occur.