Best Glide Speed and Distance

The General Aviation Joint Steering Committee (GAJSC) has determined that a significant number of general aviation fatalities could be avoided if pilots were better informed and trained in determining and flying their aircraft at the best glide speed while maneuvering to complete a forced landing.

What is Best Glide Speed?

Is it the speed that will get you the greatest distance? Or is it the speed that gets you the longest time in the air? Or are these two the same — the longer you fly, the further you go? Well, as so often is the case, best glide speed depends on what you're trying to do.

Going the Distance

If it's distance you want, than you'll need to use the speed and configuration that will get you the most distance forward for each increment of altitude lost. This is often referred to as best glide speed and, on most airplanes, it will be roughly halfway between V_x (best angle of climb speed) and V_y (best rate of climb speed).

Aircraft	Vx	Best Glide	Vy
C172	53	65	73
AA5A	78	83	91
PA 28 161	63	73	79

Not all manufacturers publish a best glide speed. Here's a few examples of some who do.

Keep in mind that this speed will increase with weight so most manufacturers will establish the best glide speed at gross weight for the aircraft. That means your best glide speed will be a little lower for lower aircraft weights.

Need More Time?

If you're more interested in staying in the air as long as possible to either fix the problem or to communicate your intentions and prepare for a forced landing, then minimum sink speed is what you'll need. This speed is rarely found in Pilot Operating Handbooks, but it will be a little slower than maximum glide range speed.

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What About My Airplane?

If you're wondering about the airplane you fly, you can do some experiments on a dual flight with your flight instructor. Start at V_y or the manufacturer's recommended best glide speed with power off — you did remember the carb heat, didn't you? — and note speed vs. sink rate as you adjust pitch to reduce airspeed. For the most useful results, you should do this as close to typical mission weight as possible. To identify minimum sink speed, look for the highest speed forward that will give you the lowest rate of descent. Knowing these speeds will give you a couple important numbers to have in the back of your mind should a situation ever warrant their use.

How Far Can I Glide?
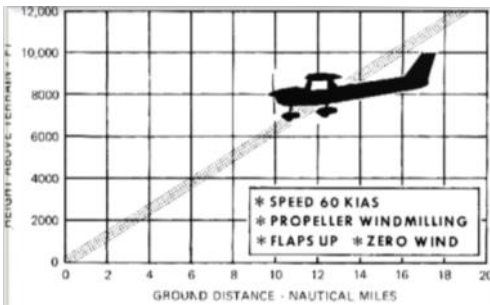
How many miles you can glide per 1,000 feet of altitude is another very useful thing to know. A rule of thumb for Cessna 152s and 172s is 1.5 nautical miles per 1,000 feet of altitude above ground level. Consider experimenting to see how far your aircraft can glide.

Forced Landing Tips

A good way to prepare for a forced landing is to practice power off approaches and landings at typical mission weights. This will keep your skills from getting rusty.

Some pilots will choose a spot between the 1st and 2nd third of the available landing area for an initial aim point. As they see they can make that initial spot, they'll add flaps and perhaps slip the airplane to move the aiming spot to the 1st third of the landing area. This is done to reduce the chance of landing short or a final approach stall while trying to stretch the glide to the runway.

Position is Key

For any type of gliding approach, you'll want to reach a key position on base from which you'll know you can make a successful landing. Until the key position is reached, keep the airplane configured for best glide. After you pass the key position, add flaps and gear to configure the airplane for landing and fly the final approach at 1.3 times the stalling speed in landing configuration (1.3 V_{so}). The FAA's *Airplane Flying Handbook* contains several helpful diagrams for different power-off landing scenarios and corresponding key points.

Resources

- FAA *Airplane Flying Handbook* — Approaches and Landings (Chapter 8): http://go.usa.gov/cKaUJ

- FAA Safety Team (FAASTeam) WINGS Pilot Proficiency Program: www.FAASafety.gov/wings