

Speed, Angle of Bank and Yaw String.

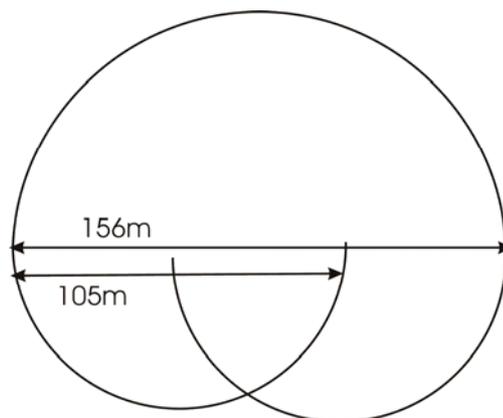
Over the years I have been coaching it surprises me how few pilots are able to fly gliders in circles, in a manner that is necessary to milk the most out of thermals. Hopefully if you put into practice what I will mention in the next few paragraphs you will be able to take a major step forward in your flying performance.

Much is spoken of the importance when thermalling of maintaining a constant angle of bank and speed. Without accuracy your circle will shift erratically and thus any deliberate modification of the circle will be negated by the otherwise inaccurate flying. However how accurate is accurate?

Below is a chart giving angle of bank, on the left, against speed in knots along the top. The figures given in the grid are the diameter of the circle. E.g. a speed of 50 knots and 45° angle of bank will give a circle of 129 meters.

	40	45	50	55	60
30°	145	184	227	275	328
35°	112	152	188	227	270
40°	100	126	156	189	226
45°	82	105	129	156	186
50°	70	89	110	133	159
55°	59	74	92	111	132

Now let us consider a pilot with an angle of bank of 45° and speed from 45 Knots giving a circle of 105 meters diameter. He maintains this for half a turn, and follows it by a further half a turn of 40° at 50 Knots. The very small change in speed and angle of bank but giving 156-metre diameter turn, for the next half circle, It can now be seen that these small changes of speed and angles of bank will move the centre of the original circle by around 25%.

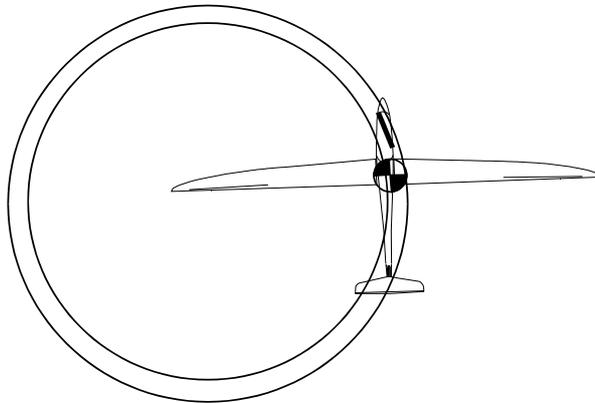


The answer is therefore fly accurately, fly very accurately.

Remember that aileron changes your angle of bank, rudder changes yaw. Pilots find early that they can get the yaw string down the middle by adjusting the aileron or the rudder or a combination of the two. Remember each have a different function. Aileron for angle of bank, rudder for yaw.

How can you be sure to have 45° angle of bank. Simple get two straws and some blue tack from the super market and put them on the inside of your canopy. You can use a piece of paper with a fold at 45° that you will line up with the rudder, so that the edges line up with the straws. Don't worry about people making comments, I have my straws fitted all the time, they act as a continual reminder and reference. The only person laughing will be you when you fly more accurately.

Now I mentioned that pilots try to keep the yaw string straight down the middle, unfortunately this is a false teaching when turning. Examine the diagram of an aircraft circling below and you will see that the air going over the yaw string is at a bit of an angle, as if a little bit of top rudder were applied. Once you fly the glider with this little bit of top rudder, you will find that the gliders desire to drop the nose and pick up speed is reduced dramatically. You can then



bring the speed back to an acceptable level as discussed above, and fly more accurately. Many people have stated that this degree of offset of the yaw string is minimal. Have a flight in a twin from the back seat and look at the front yaw string and the back yaw string, you will see a considerable difference between the two.

Now that you are turning in accurate circles at a suitable speed you can use your skills to find the

core of the thermal, knowing where you are in the sky.

Remember fly 45° , 45knots (Dry Un ballasted) with a little bit of top rudder. Then fly accurately, very accurately.

James Cooper