

Spin vs Spiral

A SPIN is a condition of stalled flight in which the aircraft follows a spiral path towards the ground with the controls almost ineffective.

If the aeroplane stalls with no movement in yawing or rolling planes, the nose can be expected to drop, while the wings remain level. Recovery is easily effected straight ahead. If however, the aircraft yaws at the moment of stall, the wing on the outside of the yaw will move faster than the wing on the inside, producing more lift. The inner wing slows, becomes more stalled and will drop. This drop will cause the inner wing to meet the air at an even greater angle of attack, further exacerbating its stalled condition. Meanwhile, the outer wing may even become un-stalled, and with its unbalanced lift would cause the aeroplane to "roll over the top" if the nose was not yawing away from it. This condition is known as auto-rotation.

The aircraft will descend with its fuselage rotating around its centre of gravity. The angular momentum gained by the mass of the aircraft in front of the CoG and the mass of that behind couples to keep the aircraft rotating like a pirouetting ballet dancer. Because the aircraft is falling 'flat' it is producing so much drag that it does not accelerate. Its speed remains near to its basic stalling speed. The airframe vibrates - sometimes violently - and the controls are largely ineffective.

A SPIRAL DIVE often appears to the pilot as a spin. However, at least one wing is stalled in a spin, but in a spiral dive, neither wing is stalled, and the manoeuvre is merely an accelerating diving steep turn in which the aeroplane is flying in a tight descending spiral around a vertical axis. If accidentally entered, it is easily classed as "a loss of control". The most common circumstances under which pilots do enter a spiral dive are either when attempting to enter a deliberate spin in an aircraft which is spin resistant, or when control is lost as a result of the pilot being deprived of the aircraft's attitude with respect of the horizon. **This will occur if the VFR pilot enters cloud.**

