• If you are at 100 ft and less than about 25 mph, there is not enough energy to make a safe landing – no matter how good you are!
• If you are flying at 30 mph at 25 ft, you don't have enough energy if the engine quits!
• If you are flying low, close to the ground, under the lower "ledge" of the HV curve, you probably can make a safe landing – with adequate proficiency!

How can you get into trouble with the HV curve?

Figure 2 – Vertical Descent:
Remember it mostly only matters if your engine is not available, or quits while you are within the HV curve. Refer to Figure 2, the Vertical descent scenario. This is where we see a lot of people venturing, probably unaware of the risk! It looks spectacular, really impresses the uninformed gyro crowd, but is highly dangerous! Descending at near zero airspeed to just a few feet above the ground, and then applying power to fly out in a spectacular power dive to ground level! Opening the throttle quickly on many engines, after a period of idle power, is just where most engines are likely to sputter, or cough – or die! If it does, you just made a pancake of you and your gyro! Go up to 1000 ft or so, establish a vertical descent with engine at idle, and, at a noted altitude, lower the nose to attain enough airspeed to simulate a flare to landing – see how much altitude you really need – that is the top of your HV curve!

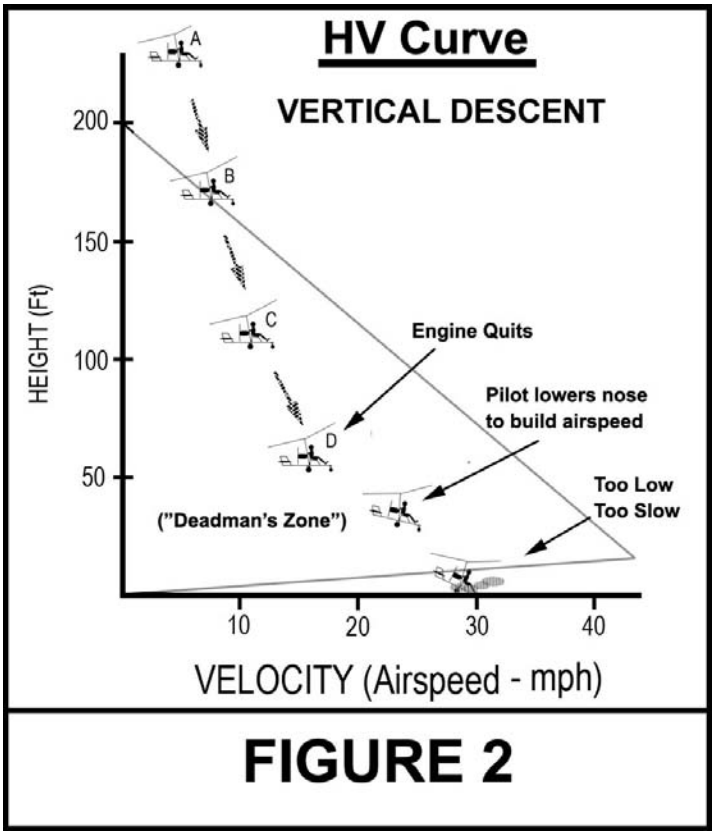

FIGURE 2

Figure 3 – Show off zoom takeoff:
We see this a lot also. A major reason we teach people to accelerate in ground effect to their best rate of climb airspeed before starting to climb is to avoid climbing into "Deadman's Zone." Again, this "hot dog" takeoff looks spectacular and wows the crowd – at least the unaware crowd! Allowing your gyro to climb into "Deadman's Zone" before you attain adequate airspeed invites injury or worse, even if your engine just coughs a bit! In a steep and slow climbout, the nose is high. If the engine coughs or quits, the aircraft will slow immediately and quickly. Pilot reaction would and should be to quickly lower the nose to maintain and restore airspeed before losing more airspeed in the climb! But, this is a particular problem for autorotating rotors – such as on our gyroplanes! The steep, "hanging on the prop" or riding the momentum of a zoom has the rotor slower than normal already. But, the act of pushing the nose lower further spikes a lower G-Load on the rotor, immediately slowing the rotor RPM even more. Severe or rapid nose down pitch, as might be excited upon engine failure in a steep, nose-up climb, can radically slow the rotor. But, then suddenly, as the airframe attitude gets to level or nose lower, the rotor suddenly has full G-load presented to it – with a slow rotor! This can be essentially like "over-running" the rotor on takeoff – the air forced through the rotor is more than the rotor can accept at that lower rotor RPM, and the rotor does not quickly restore its RPM. The result is a rather surprising rapid altitude loss – even if the pilot puts the nose down steeply to try to restore airspeed. In fact, the act of lowering the nose too quickly too far at any time, can immediately lower rotor RPM and the subsequent re-loading of the rotor to full airflow and G-Load might not allow quick recovery of the rotor RPM – basically "over-running" the rotor in flight! In the extreme, the rotor could actually violently "flap" - hit the teeter stops!

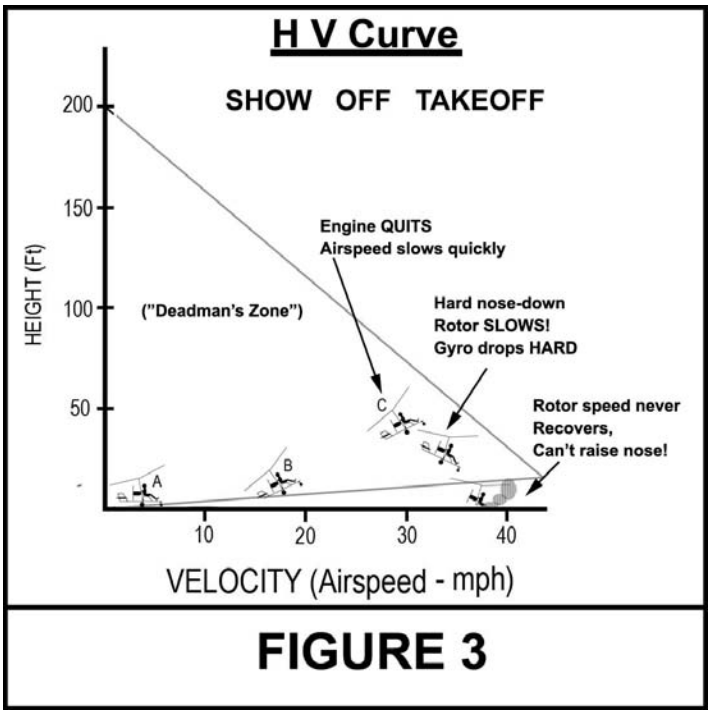

FIGURE 3

Try this at altitude also: In a power off vertical descent, near zero airspeed, lower the nose and see what the rotor RPM does and how much altitude it requires. Repeat this with gradually more rapid lowering of the nose to steeper nose-down attitudes. You will discover that, when you too steeply lower the nose too rapidly – to quickly recover airspeed - you may restore airspeed quickly, but the rotor RPM lags behind and the gyro continues to lose altitude, dropping like a rock until the rotor RPM catches up. In this demonstration, notice that a more gradual lowering of the nose actually results in less altitude loss to attain adequate rotor and airspeed energy to be able to make a safe landing flare. But, in a steep and slow