

Hanscom Aero Club Safety Meeting

28 January 2021



- Hanscom traffic pattern review
- Stalls Speeds vs Bank Angle, Weight, Configuration, CG
- Recent accident review N880Z Dec 27, 2021



V_{so}

V₆₁

V.,

V,

V_{x (25°)}

• Ideal pattern airspeeds (kts) in the Warrior: 90, 80, 70



One can find this sheet on the corkboard in the flight planning room



Hanscom Traffic Pattern Guidelines



- Downwind 90 kts
- Power back to 1500 rpm
- 1 notch of flaps when abeam the numbers

Keep to < 20 deg of bank in the pattern to help avoid stalls



Hanscom Traffic Pattern Guidelines



- Base 80 kts
- 2nd notch flaps
- No more than 20 deg bank angle



Hanscom Traffic Pattern Guidelines



- Final 70 kts
- ^{3rd} notch flaps
- 63 kts short field final (at max gross)

Try to not exceed 20 of bank in the pattern to help avoid stalls



• Stalls occur when the critical angle of attack is exceeded

• An airplane can stall at ANY airspeed!

	Example 1	Example 2	Example 3
Angle of Bank	20	30	45
Load Factor	1.064	1.155	1.414
Stall Speed Scalar	1.03	1.07	1.19
Stall Speed (Vs0 = 44)	45	47	52



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- Forward CG = higher stall speed due to increased wing loading
- Aft CG = lower stall speed
- Adding flaps lowers stall speed
- Contamination (parasite drag) increases stall speed (icing, deformities, etc)



Stall Speed vs Weight Examples

	Example 1	Example 2	Example 3
Pilot/Passenger weight (lbs)	180	360	360
Fuel (gal)	36	48	48
Total weight	1900	2150	2300
Flap Position	0	0	0
Bank Angle (deg)	0	0	0
Stall Speed (kts)	44	48	50

SECTION 5 PERFORMANCE PIPER AIRCRAFT CORPORATION PA-28-161, CHEROKEE WARRIOR II



Example: Gross weight: 2170 lbs. Angle of bank: 20° Flap position: 40° Stall speed, indicated: 44 KTS



Stall Speed Example: Touch and Goes While Heavy

	Downwind to Base	Base to Final
Total weight	2300	2300
Flap Position	10	20
Bank Angle (deg)	20	20
Stall Speed (kts)	50	48

SECTION 5 PERFORMANCE PIPER AIRCRAFT CORPORATION PA-28-161, CHEROKEE WARRIOR II



Example: Gross weight: 2170 lbs. Angle of bank: 20° Flap position: 40° Stall speed, indicated: 44 KTS



- Trend of stalls and crashes on final approach lately
 - Oct 11, 2021: N7022G Cessna 340 Twin, San Diego
 - Dec 27, 2021: N880Z Lear 35A
- Early in investigation, nothing definitive
- ASI Early Analyses showing some trends
 - Both in IFR or low VFR conditions
 - Mostly uneventful takeoff, climb, cruise
 - Trouble on decent, approach, turns while low and slow
 - Both involved circling approaches in faster aircraft than ours

https://youtu.be/S71maBUL5wM



- The speeds recommended for the traffic pattern are based on experience and to help prevent inadvertent stalls
- Low, slow and heavy in the traffic pattern is recipe for potential stall/spin
- Circling approaches are a similar situation, same principles apply
- Watch bank angles, and remember:
- Stalls occur when the critical angle of attack is exceeded
- An airplane can stall at ANY airspeed
- Prevention always better than recovery