Miltech Simulations MV-22B Tiltrotor

Performance and Limits

Takeoff/Landing Limitations

Limit	VTOL (Vertical Takeoff and Landing)	STOL (Short Takeoff and Landing	Remarks
MTOW: Maximum Takeoff Weight	52.000lbs (Sea Level)	60.000lbs (Sea Level)	Decreases with altitude.
Max VTOL Altitude	5500ft	N/A	
Nacelle Limits	Typically 90 degrees	60 degrees (Minimum, normal) 75 degrees (Tactical)	
Minimum Required Runway Length	N/A	20ft	Depends on Nacelles Angle, Thrust, Weight and Altitude.

Powerplant & Proprotor Limitations

Limit	Value	Remarks
Gas Generator (Ng)	>98% Ng no longer than 60 segs	Engine shuts down due to damage.
Power Turbine Speed (Np)	>114% Np no longer than 60 segs	Engine shuts down due to damage.
Proprotor Speed (Nr)	Must be >94% and <105% (VTOL/CONV) Must be >82% and <105% (APLN Mode)	
Minimum Hydraulic Pressure for Nacelles	4000 Psi	

Aerodynamic

Limit	Value	Remarks
Airspeed Limitations (APLN) at 84% Nr	280 KCAS or 0.48 Mach, whichever is less.	

Airspeed Limitations (APLN) at 100% Nr	220 KCAS	
Altitude at 84% Nr	25,000 ft	See Table 2 for altitude limitations
Max Airspeed/Mode for Flaps operation	0 deg Flaps; APLN Mode Only 10 deg Flaps; APLN, < 220 KCAS 20 deg Flaps; APLN, < 180 KCAS 40 deg Flaps; All modes, < 180 KCAS Full Flaps; VTOL/CONV, <45 KCAS	Controlled automatically by "Auto" Setting
Max Airspeed for Landing Gear operation	< 140 KCAS	
Ramp Limitations	Max Speed Ramp Open; < 260 KCAS Negative – g are prohibited	
Maximum Touchdown Rate	GW < 46,000 LBS; 720 fpm GW> 46,000 LBS; 600 fpm	
Max Turn Rate, Hover	30 deg/sec	
Max Bank Angle	VTOL: ± 30 deg CONV < 60 KCAS: ± 30 deg CONV/APLN > 60 KCAS: ± 60 deg	
Max Pitch Altitude	< 20 deg Nose Up, all conditions	
Nacelle Angle VTOL/CONV Conversion	See Table 1	
Maximum Descent Rate (Vortex Ring State Protection)	See Table 3	

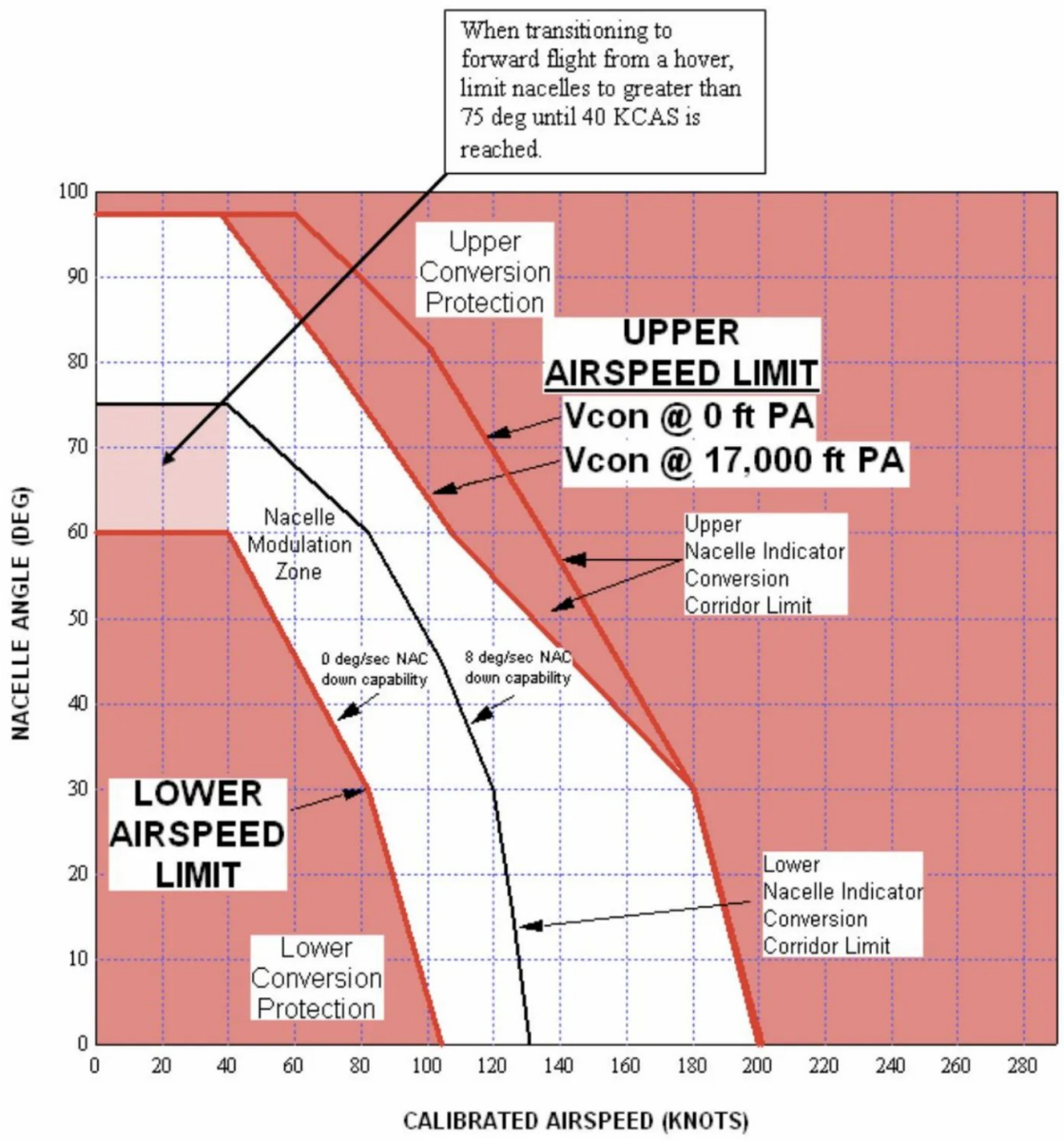


Table 1: VTOL/CONV Mode Conversion

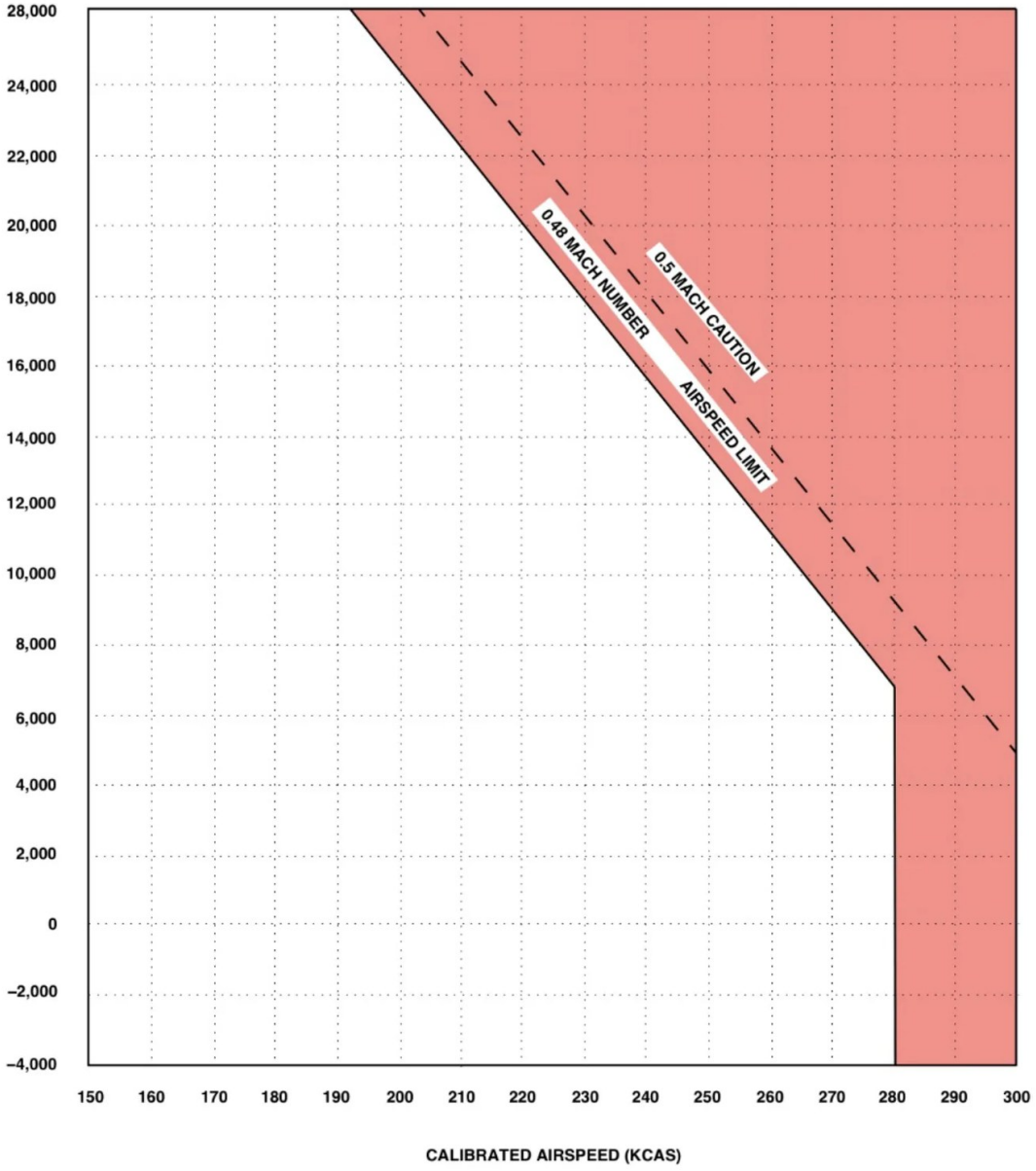


Table 2: APLN Mode (84% Nr) Airspeed

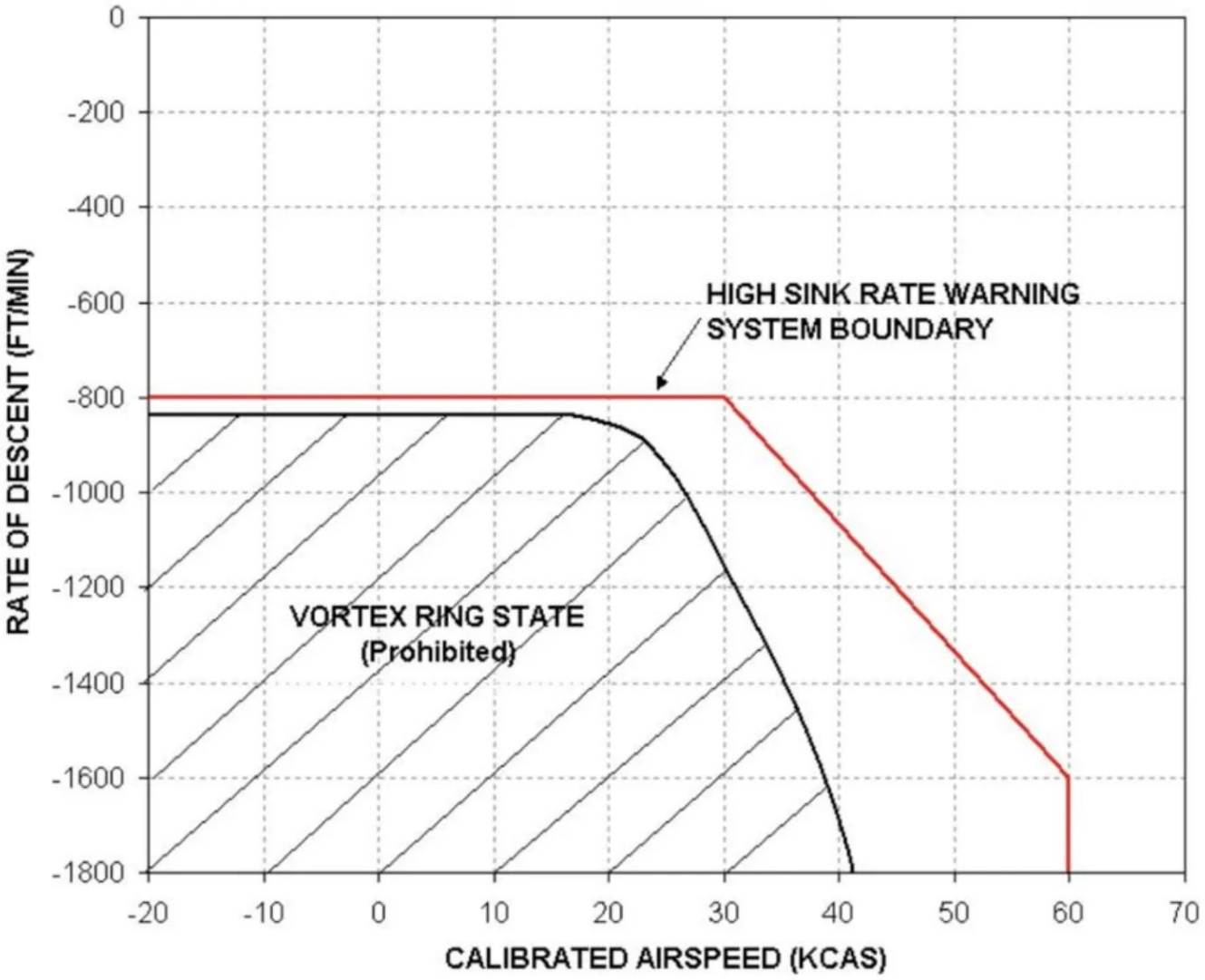


Table 3: Vortex Ring State