

TC-12B Windmill RPM Flight Test Cards

Pertinent Limitations

Vmc

Flaps Up (RED LINE) – _____ KIAS (Consult Raisbeck STC AFMS)

Flaps Approach – _____ KIAS (Consult Raisbeck STC AFMS)

Vsse (intentional one engine inoperative) – 104 KIAS

Stall speeds @ wings level, Flaps Approach, Idle power

10,500 lbs – 82 KIAS

13,500 lbs – 87 KIAS

Approach Flaps limit – 200 KIAS

Vyse – 121 KIAS

Knock-it-off altitude – 3000 AGL

General Procedures

Set Altimeter to 29.92 for all tests

Starting Altitude between 4000-5000 Hpa

Record Average OAT at test altitude band

Airspeed sweep at FI Power (2000 RPM)

Configuration

Confirm Yaw Damp OFF

Confirm Prop Synch OFF

Confirm Autofeather ARM

Confirm Rudder Boost ON

Landing Gear – UP

Flaps – Approach

1. 4000-5000 ft. Hpa, power and trim for level flight at 130 KIAS
2. Set Prop RPM levers Full Forward – 2000 RPM
3. SET both power levers to Flight Idle
4. Pitch down to capture and stabilize on each airspeed below
5. Record stabilized propeller windmill RPM (NP) at each airspeed
6. Record Average OAT in altitude band = _____

Stop testing at 3000 AGL minimum then climb to reset for another descent

Airspeed KIAS	Left Np	Right Np
130		
120		
110		
100		
90 (or $\geq$ Stall Warning)		

Repeat Airspeed sweep at FI Power (1700 RPM)

Configuration

Confirm Yaw Damp OFF

Confirm Prop Synch OFF

Confirm Autofeather ARM

Confirm Rudder Boost ON

Landing Gear – UP

Flaps – Approach

1. 4000-5000 ft. Hpa, power and trim for level flight at 130 KIAS
2. Set Prop RPM levers – 1700 RPM
3. SET both power levers to Flight Idle
4. Pitch down to capture and stabilize on each airspeed below
5. Record stabilized propeller windmill RPM (NP) at each airspeed
6. Record Average OAT in altitude band = _____

Stop testing at 3000 AGL minimum then climb to reset for another descent

Airspeed KIAS	Left Np	Right Np
130		
120		
110		
100		
90 (or $\geq$ Stall Warning)		

Test Hazard Analysis

Hazard Description	Cause	Resulting Effect	Preventative Measures	Corrective Action	Residual Hazard Level	Residual Risk
Loss of Control – <u>Stall</u> with unintentional asymmetric power (engine failure) and insufficient altitude to recover	Testing at low altitude and airspeed with unintentional asymmetric power	Damage/loss to aircraft and/or crew of aircraft involved.	Comply with minimum safe altitude of 3000 ft. AGL during tests All tests will be conducted with symmetrical power, autofeather and rudder boost enabled Observe and comply with stall warning horn; have right seat observer monitor airspeed and call "knock-it-off" if lower than 90 KIAS Pilots familiarize themselves with stall characteristics; consult all available information and/or practice in simulator Apply stall recovery control inputs with any indication of incipient stall characteristics or stall warnings and cautions	Apply stall recovery control inputs - Pitch down to reduce AOA - Add power and accelerate to >104 KIAS and recover to level flight	I - E Catastrophic - Improbable	Low

Hazard Description	Cause	Resulting Effect	Preventative Measures	Corrective Action	Residual Hazard Level	Residual Risk
Loss of Control – Vmc roll with unintentional asymmetric power (engine failure) and insufficient altitude to recover	Testing at low altitude and airspeed with unintentional asymmetric power	Damage/loss to aircraft and/or crew of aircraft involved.	Comply with minimum safe altitude of 3000 ft. AGL during tests All tests will be conducted with symmetrical power, autofeather and rudder boost enabled Have right seat observer monitor engine parameters and call “knock-it-off” if one engine loses power/torque Terminate testing if unintentional asymmetric power suspected or detected.	Recognize incipient Vmc condition (full right rudder no longer able to maintain heading) and apply recovery inputs immediately - Reduce power on good engine - Pitch down to reduce AOA - Accelerate to >104 KIAS and recover to level flight - Perform engine failure checklist	I - E Catastrophic - Improbable	Low
Aircraft overstress or overspeed during testing	Exceedance of airspeed limitations of flaps	Damage to aircraft or aircraft systems	Observe and comply with maximum airspeed limits for approach flaps Use challenge-response procedure to confirm airspeeds before reconfiguring aircraft During aircraft recovery do not exceed 200 KIAS with either flaps Approach, landing gear down	If airspeed exceedance encountered: - Reduced power and pitch up to reduce airspeed - Follow overspeed procedures - Consider landing without reconfiguring flaps or landing gear	III – E Major – Remote	Low

Hazard Levels were rated for severity and mishap probability based on the residual hazard as follows:

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|----------------------------|-----|---|
| <u>Hazard Severity:</u> | I | Catastrophic - may cause death or aircraft loss |
| | II | Hazardous - may cause severe injury or major aircraft damage |
| | III | Major - may cause minor injury or minor aircraft damage |
| | IV | Minor - will not result in injury or aircraft damage |
| <u>Mishap Probability:</u> | A | Frequent - Likely to occur immediately or within a short period of time |
| | B | Probable - Probably will occur in time |
| | C | Occasional - May occur in time |
| | D | Remote - Unlikely to occur |
| | E | Improbable – So unlikely it can be assumed it will not occur |

I'm not sure if this information is needed after seeing the fuel control spline on the right engine twisted off but we were able to complete the test yesterday morning that Les outlined for us to do.

Both tests were completed between 4000' and 5500' PA, the average temperature was 65 degrees F. Flaps were at the approach setting and the landing gear was up.

Airspeed KIAS	Left Prop RPM	Right Prop RPM (Prop levers full forward, throttles closed)	
130	2000	2000	
120	2000	2000	
110	1900	1900	
100	1860	1860	
90	1760	1760	
130	1700	1700	(Prop levers set at 1700 before closing the throttles)
120	1700	1700	
110	1700	1700	
100	1700	1700	
90	1700	1700	