EAA
THE SPIRIT OF AVIATION

HOW-TO
SERIES

EAA Flight Test Manual
Test Card Book

Version 1.1 | May 2021

VERSION HISTORY

VERSION	DATE	CARDS AFFECTED	DESCRIPTION OF CHANGE
1.0	October 2018	N/A	Initial Release
1.1	May 2021	12 13 14 15 16 17 18	Corrected typographical errors Corrected transposition in the static \longitudinal stability procedure Amended CG guidance for several tests

***A Note on Testing at Heavy-Aft CG**

Use extreme caution when testing your aircraft at its aft CG, and double-check your weight and balance calculations and loading. Ensure that you account for changes caused throughout the flight by fuel consumption. Methodically approach the aft CG limits of your aircraft incrementally over successive test flights, at your discretion. Never exceed any applicable manufacturer's limit or recommendation. Do not hesitate to consult a flight instructor, EAA flight advisor, or test pilot/additional pilot with regards to aft CG flight characteristics. While always important, free and clear control travel is especially critical, as is proper control deflection, when flying at aft CG.

Submit Corrections

Have a correction or a question about anything in the Flight Test Manual or Test Cards? Please email FTM@EAA.org.

Table of Contents

EAA FTM Test Card 0
Fuel Flow Test

Risk Designation: Medium

Date	N-number	Start Time
Test Conductor		
Observer		
Location		
Fuel Quantity		

Procedures

Cowl removed; inspection covers for all fuel pumps and valves removed. Observer with fire extinguisher.

Possible emergencies: Fire, fuel spill.

1. Set fuel selector to Off position.
2. Fill each tank to minimum takeoff fuel level.
3. Check for fuel system leaks.
4. Secure and stabilize the aircraft in selected attitude.*
5. Set up a fuel-safe container and ground it to the aircraft.
6. Disconnect fuel line from induction system and drain to fuel-safe container.
7. Determine fuel flow from each tank including switchover from one tank to another. Run fuel pump if applicable.
8. Ensure operation is correct for each selected tank and the Off position.
9. Ensure fuel flow from each tank exceeds 150 percent of fuel flow required for rated takeoff power.
10. Check for fuel system leaks.
11. Document and record findings.
12. Ensure all disconnected fuel lines and inspection covers are properly reconnected.

*AC 90-89B recommends testing at 5 degrees above takeoff climb attitude, but carefully consider your plan for safely securing your aircraft in the chosen attitude and use your discretion.

Notes

EAA FTM Test Card 1
Engine Run & Taxi Tests

Risk Designation: Low

Date	N-number	Start Time	Shutdown Time
Pilot		Observer	
Airport			
Weight/CG			

Procedures
Cowl removed.
Fuel: At least 20 minutes.
Observer with fire extinguisher.

Possible emergencies: Engine start malfunction, fire, emergency shutdown.
Conduct multiple runs if necessary.

1. Start: Verify oil pressure.
2. Engine: Record engine instruments when stabilized.
3. Idle speed: Record (adjust if necessary).
4. Idle mixture: At idle, reduce mixture and record rise in rpm (minimum 50).
5. Taxi: Straight, left turns, right turns. Note tracking, under-steer/over-steer, and turn radius with and without brakes.
6. Brakes: Wear in according to the manufacturer's recommendation.
7. Shutdown: Normal method (usually retard mixture).
8. Shutdown: Alternate method (usually turn off magnetos).
9. Shutdown: Emergency method (usually select fuel valve to Off).

Notes

Stabilized Engine Readings

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Engine Idle		Comments
Idle Rpm		
Idle Mixture		Record Rpm Rise

Taxi Tests	Satisfactory?	Comments
Taxi Straight		
Taxi Turns		
Taxi W/O Brakes		

Break Wear-In	Satisfactory?	Comments
Break Wear-In		

Shutdown	Satisfactory?	Comments
Normal (Mixture Cutoff)		Note Time
Alternate (Mags)		
Emergency (Fuel Valve Off)		Note Time

Notes

EAA FTM Test Card 2
First Flight

Risk Designation: High

Date	N-number	Start Time	Shutdown Time
Pilot		Observer	
Airport (Takeoff)		Airport (Land)	
Takeoff Weight	Takeoff CG	Takeoff Fuel	Land Fuel

Est. V_S (Flaps Up)	x 1.4 =	x 1.5 =	x 2.0 =	x 2.5 =

Procedures
CG: One-fourth to one-third back from front of envelope.
Fuel: One hour minimum (maintain well below maximum gross weight). Ground observer with fire extinguisher and radio.

Possible emergencies: Engine failure on takeoff, in-flight fire, cockpit smoke, vibration, control difficulties, engine failure, pitot-static failure, EFIS failures.

Using appropriate checklists:

1. Start: Normal.
2. Flaps: Retracted (if permitted).
3. Record engine readings when stabilized.
4. Takeoff: Flaps up, leave landing gear extended.
5. Climb: 1.5 times estimated V_S.
6. Twenty degrees nose-up max (or the highest used in the ground fuel flow test).
7. Perform 180-degree turn at 2,000 feet AGL to orbit airport.
8. Use gentle aileron and elevator inputs.
9. Check engine instruments in the green.
10. Level off: Orbit at 5,000 feet AGL.
11. Set power to maintain 1.5 to 2.0 times V_S.
12. Trim elevator, rudder, and ailerons for straight-and-level flight.
13. Release controls and note airplane response.

Notes

14. Record engine instrument readings or radio to ground crew.
15. Aileron check: In level flight, check ailerons are faired with wing.
16. Rudder check: Yaw nose 5 degrees left and right, note input travel and return to straight flight after removing input. Apply corrections as needed.
17. Slow flight: Reduce power to maintain 1.5 times $V_{S.}$
18. Retard throttle to idle: Pause at 5-knot/mph increments during deceleration and descend as necessary to control rate of deceleration.
19. Slow to comfortable limit of control authority or onset of stall buffet.
20. Simulate landing at 5,000 feet AGL.
21. Report progress to ground crew.
22. Fly simulated approach at 1.4 times V_S or buffet speed plus 15 knots/mph (whichever is higher).
23. Record power settings and rate of descent.
24. Note controllability.
25. Simulate beginning of flare.
26. Landing: Fly approach at 1.4 times V_S or buffet speed plus 15 knots/mph (whichever is higher).
27. Shutdown: Normal.

Notes

EAA FTM Test Card 3
Gear & Flap Operation

Risk Designation: Medium

Date	N-number	Start Time	Shutdown Time
Pilot		Observer	
Airport (Takeoff)		Airport (Land)	
Takeoff Weight	Takeoff CG	Takeoff Fuel	Land Fuel
Est. V_S T/O Flaps	Est. V_S Full Flaps	1.4 x Full Flap V_S	

Procedures

CG: One-fourth to one-third back from front of envelope.
Fuel: One hour minimum.
Ground observers: As desired, one with radio.
Chase aircraft: If appropriate.

Possible emergencies: Landing gear failure, asymmetric flap setting.

1. Start: Normal.
2. Flaps: Retracted.
3. Record engine readings when stabilized.
4. Takeoff: Flaps up, leave landing gear extended.
5. Climb: 1.5 times estimated V_S.
6. Fifteen degrees nose-up maximum.
7. Perform 180-degree turn at 2,000 feet AGL to orbit airport.
8. Check engine instruments in the green.
9. Level off: Orbit at 5,000 feet AGL.
10. Set power to maintain 1.5 to 2.0 times V_S, trim for straight-and-level flight.
11. Record engine instrument readings.
12. Retract gear and note indications.
13. Extend gear and note indications.
14. Retract gear.
15. Radio results to ground crew.

Notes

16. Slow to V_{FE} or approximately 1.5 times flaps-up $V_{S.}$
17. Extend flaps to takeoff position in small increments; add power to maintain straight-and-level flight.
18. With takeoff flaps set, retard throttle to idle.
19. Decelerate in 5-knot/mph increments to onset of stall buffet or comfort level of control authority; note speed.
20. Retract flaps, climb back to starting altitude, and repeat test for other flap settings up to full flaps.
21. Simulate landing at 5,000 feet AGL.
22. Fly simulated approach at 1.4 times full-flap V_S or buffet speed plus 15 knots/mph (whichever is higher).
23. Record power settings and rate of descent.
24. Note controllability.
25. Simulate beginning of flare.
26. Landing: Normal — gear down**.**
27. Shutdown: Normal.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Stabilized Engine Readings (5,000 Feet Orbit)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Landing Gear Check	Operations and Indications Correct?	Comments	
Retract Gear			
Extend Gear			
Retract Gear			
Flap Check	**Minimum Speed Attained**	**Buffet Speed (If Reached)**	**Comments**
Takeoff Flaps Slow Flight			
Full Flaps Slow Flight			

Simulated Landing Comments

Notes

EAA FTM Test Card 4
Rough Pitot-Static Check

Risk Designation: Low

Date	Time	Fuel	Weight/CG

Procedures
CG: In the recommended envelope.
Fuel: One hour minimum.
Alternate static (if installed): Off.
Precompute desired test speeds and write on test card.
Ground observer: As desired.

1. Start: Normal.
2. Record engine instrument readings when stabilized, before takeoff.
3. Normal takeoff and climb.
4. Level off: Straight-and-level flight at 3,000 feet AGL.
5. Record pressure altitude if possible.
6. Configure and trim airplane according to test card.
7. Record outside air temperature.
8. Fly first heading absolutely straight and level with minimum control inputs and no power changes.
9. When speed and altitude have been stable for at least 15 seconds record GPS groundspeed and indicated airspeed.
10. Turn to successive headings; stabilize on same IAS with no power or altitude changes and record GPS and IAS data.
11. Repeat test for each airplane configuration.
12. Record engine data after high-speed run.
13. Landing: Normal.
14. Shutdown: Normal.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Local Altimeter Setting				GPS Groundspeed			
Configuration	OAT	IAS	P Alt	360°	90°	180°	270°
Flaps Up Speed 1.3 x V_s							
Takeoff Flaps Speed 1.3 x V_s							
Full Flaps Speed 1.3 x V_s							
Flaps Up Speed Intermediate							
Flaps Up Speed V_H - 10							

Stabilized Engine Readings (After High-Speed Run)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

EAA FTM Test Card 5
Longitudinal Control

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures

CG: Fly test twice, first at light forward and again at light aft.
Fuel: One hour minimum.

1. Normal start and takeoff.
2. Climb to at least 5,000 feet AGL.
3. Configure the airplane as indicated.
4. Quickly extend or retract flaps to test position.
5. Transition to indicated power and speed — do not retrim.
6. Record data and comments.
7. Climb to start altitude, return to starting configuration.
8. Test next flap increment.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Configuration: Trim speed: V_{FE}. Flaps: Up. Idle power.

Quickly Extend Flaps To:	Pitch Control	Pitch Force	Roll Force	Yaw Force	Comments
First Notch Slow To Approach					
Second Notch Slow To Approach					
Full Extension Slow To Approach					

Configuration: Trim speed: Approach. Idle power.

Quickly Retract Flaps From:	Pitch Control	Pitch Force	Roll Force	Yaw Force	Comments
First Notch Add Full Power Climb Speed					
Second Notch Add Full Power Climb Speed					
Full Extension Add Full Power Climb Speed					

Notes

EAA FTM Test Card 6
Wings-Level Stall

Risk Designation: High

Date	Time	Fuel	Weight/CG

Procedures
CG: As indicated in the EAA FTM flight test matrix, start with forward CG locations. If your airplane has retractable gear, fly the tests with the gear up and with it down.
Fuel: One hour minimum, to full fuel as required by the EAA FTM flight test matrix.

Possible Emergencies: Loss of control, spin. If you are not spin-qualified and comfortable, hire a professional test pilot for these tests.

1. Normal takeoff and climb to safe altitude, at least 3,000 feet AGL in smooth air; 8,000 feet AGL is preferred.
2. Level off, trim to desired speed, and configure the airplane (flaps).
3. Power to idle.
4. Decelerate at 1 knot/mph per second.
5. Note IAS at stall buffet or stall warning.
6. Positive control force? Slower speeds need more stick/yoke pull.
7. Any control reversal? Slower speeds need stick/yoke push.
8. Note IAS at stall break.
9. Note roll direction and amount at stall break.
10. Recover from stall.
11. Return to safe altitude and make subsequent runs.
12. Normal landing and shutdown.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Configuration: Idle power, flaps up. Trim Speed:

Run	Stall Warning IAS	Run	Stall Warning IAS	Run	Stall Warning IAS
1					
2					
3					

Configuration: Idle power, takeoff flaps. Trim Speed:

Run	Stall Warning IAS	Positive Stick Force?	Control Reversal?	Roll At Stall (Deg, L/R)	Stall IAS
1					
2					
3					

Configuration: Idle power, full flaps. Trim Speed:

Run	Stall Warning IAS	Positive Stick Force?	Control Reversal?	Roll At Stall (Deg, L/R)	Stall IAS
1					
2					
3					

Notes

EAA FTM Test Card 7
Determine V_X & V_Y

Risk Designation: Low

Date	Time	Fuel	Weight/CG

Procedures
CG: Heavy forward.

Possible Emergencies: Engine overheat. Target airspeeds: Between 1.1 V_s and 1.5 V_s in 5-knot/mph increments.

1. Normal takeoff and climb to 1,000 feet AGL; check for traffic above.
2. Set GPS to distant waypoint perpendicular to wind aloft.
3. Note engine readings.
4. Record pressure altitude, if possible.
5. Apply full power and raise nose to target airspeed.
6. When speed stabilizes on target, start stopwatch and note altitude.
7. Record data at 30-second intervals.
8. Note engine readings after climb run.
9. Descend below the base altitude; repeat climb on reciprocal heading.
10. Normal landing and shutdown.
11. Refuel and repeat test at next airspeed until series complete.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Use winds aloft forecast for OAT if no gauge is available in the aircraft.

Target Airspeed:				Climb Test Heading:		
Time	IAS	Press Alt	OAT	Rpm	MAP	Comments
0:00						
0:30						
1:00						
1:30						
2:00						
2:30						
3:00						

Target Airspeed:				Reciprocal Heading:		
Time	IAS	Press Alt	OAT	Rpm	MAP	Comments
0:00						
0:30						
1:00						
1:30						
2:00						
2:30						
3:00						

Notes

Stabilized Engine Readings (After Climb)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

EAA FTM Test Card 8
Best Glide Speed

Risk Designation: Low

Date	Time	Fuel	Weight/CG

Procedures
CG: Heavy forward.
Fuel: Full.

Possible Emergencies
Engine quits in extended glide.
Target airspeed: V_Y -10 knots/mph; V_Y; V_Y+10 knots/mph

1. Normal takeoff and climb to 5,000 feet AGL.
2. Clean aircraft configuration; on desired heading.
3. Power: Idle.
4. Prop: Coarse pitch (low rpm).
5. Trim for target airspeed.
6. When speed stabilizes, start stopwatch and record data.
7. Recover from glide; climb back to start altitude.
8. Repeat test on reciprocal heading.
9. Normal landing and shutdown.
10. Refuel and repeat test at next airspeed until series is complete.

Notes

Stabilized Engine Readings (Before Glide)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Glide Test Target Airspeed

Heading:			Reciprocal:		
Time	Altitude	GPS Distance	Time	Altitude	GPS Distance
0:00			0:00		
0:30			0:30		
1:00			1:00		
1:30			1:30		
2:00			2:00		
2:30			2:30		
3:00			3:00		

Stabilized Engine Readings (After Glide)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

EAA FTM Test Card 9
Range & Endurance

Risk Designation: Low

Date	Time	Fuel	Weight/CG

Procedures
CG: As desired for the test within fore and aft limits.
Fuel: At least two hours.
Start: Normal.

Possible emergencies: Engine idle failure.

1. Configure airplane appropriately for test, CG, weight, etc.
2. Perform takeoff best suited for conditions.
3. Confirm engine readings in the green.
4. Fly the planned configuration, altitude, power, and speed.
5. Stabilize engine and airframe settings.
6. Switch to the full tank for at least half an hour.
7. Switch back to the tank used for takeoff and climb.
8. Perform landing, top off, and fly next test in series.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Wind Speed/Direction:			Alt Setting:		
Rwy Heading:					
Run	Power Setting	GPH	IAS	Press. Altitude	OAT
1					
2					
3					
4					
5					
6					

Notes

EAA FTM Test Card 10
Takeoff Performance

Risk Designation: Low

Date	Time	Fuel	Weight/CG

Procedures
CG: As desired for the test, within fore and aft limits.
Fuel: At least two hours.
Observer: On ground near expected liftoff point with test card.

Possible emergencies: Overheating, fuel starvation.

1. Start: Normal.
2. Configure airplane appropriate for test.
3. Taxi to predetermined start position on runway.
4. Confirm engine readings in the green.
5. Hold brakes.
6. Apply full power.
7. Release brakes when engine is developing full power.
8. Accelerate and lift off at speed appropriate for airplane.
9. Fly standard traffic pattern, land, and fly next test in series.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Wind Speed/Direction:			Press. Altitude:
Rwy Heading & Surface:			Rwy Slope:
Run	T/O wt	Flaps	Comments
1			
2			
3			
4			
5			
6			

Notes

Takeoff Performance - Observer Card

Wind Speed/Direction:					Press. Altitude:
Rwy Heading & Surface:					Rwy Slope:
Run	T/O wt	Flaps	OAT	T/O Roll	Comments
1					
2					
3					
4					
5					
6					

Notes:

Notes

EAA FTM Test Card 11
Landing Performance

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures
CG: As desired for the test, within fore and aft limits.
Fuel: At least two hours.
Observer: On ground with test card near expected touchdown and stopping point.

Possible emergencies: Engine idle failure.

1. Start: Normal.
2. Configure airplane appropriately for test.
3. Perform takeoff best suited for conditions.
4. Confirm engine readings in the green.
5. Climb to safe altitude for steady three-fourths rudder sideslip.
6. Measure crab and bank angles generated at three-fourths rudder deflection.
7. Return to airport and fly an appropriate traffic pattern and approach.
8. On final, set up for the specified condition for landing distance tests.
9. Confirm engine operation.
10. Stabilize speed appropriate for airplane.
11. Perform landing and fly next test in series.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Constant Ground Track Three-Fourths Rudder Sideslip		Bank ∠:	Heading Δ:
Wind Speed/Direction:		Press. Altitude:	
Rwy Heading & Surface:		Rwy Slope:	
Run	Ldg wt	Flaps	Comments/Configuration
1			
2			
3			
4			
5			
6			

Notes

Landing Performance - Observer Card

Wind Speed/Direction:					Press. Altitude:
Rwy Heading & Surface:					Rwy Slope:
Run	T/O wt	Flaps	OAT	Ldg Roll	Comments
1					
2					
3					
4					
5					
6					

Notes:

Notes

EAA FTM Test Card 12
Accelerated Stalls

Risk Designation: High

Date	Time	Fuel	Weight/CG

Procedures
CG: As indicated on the test matrix; start with light forward.
Fuel: One hour minimum.

Possible emergencies: Loss of control, spins. If you are not spin-qualified and comfortable, hire a professional test pilot for these tests.

1. Normal takeoff and climb to 8,000 feet AGL.
2. Verify engine readings in the green.
3. Trim airplane to 1.5 times estimated stall speed.
4. Set the flaps (and landing gear) appropriate to test.
5. Power to idle (carb heat).
6. Establish and maintain a coordinated 30-degree bank turn.
7. Decelerate at 1 knot or mph per second.
8. Note positive stick/yoke force: It should increase.
9. Note control reversal: Abort if evident.
10. Note speed of prestall buffet.
11. Recover, climb to starting altitude, and continue series until complete.
12. At stall note indicated airspeed, pitch changes, roll direction, and amount.
13. Recover, climb to starting altitude, and continue series until complete.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Configuration: Idle power, flaps up.

30-Degree Bank	Stall Warning IAS	Positive Stick Force?	Control Reversal?	Roll At Stall (Deg, L/R)	Stall IAS
Left					
Right					

Configuration: Idle power, takeoff flaps.

30-Degree Bank	Stall Warning IAS	Positive Stick Force?	Control Reversal?	Roll At Stall (Deg, L/R)	Stall IAS
Left					
Right					

Configuration: Idle power, full flaps.

30-Degree Bank	Stall Warning IAS	Positive Stick Force?	Control Reversal?	Roll At Stall (Deg, L/R)	Stall IAS
Left					
Right					

Notes

EAA FTM Test Card 13
Trim Check

Risk Designation: Low

Date	Time	Fuel	Weight/CG

Procedures
CG: Three test configurations: Heavy forward, then light aft, then heavy aft.*
Fuel: One hour minimum

Possible emergencies: Loss of control, spins. If you are not spin-qualified and comfortable, hire a professional test pilot for these tests.

1. Normal takeoff and climb to at least 5,000 feet AGL.
2. Configure airplane as indicated.
3. Trim for hands-off flight.
4. Rate trim effectiveness: Mark NA (no authority), reduced (needed input), or trims airplane for hands-off flight.
5. Note trim's ability to hold altitude, speed, and heading.
6. Reconfigure airplane for next test condition.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Rate trim effectiveness: Mark NA (no authority), reduced (needed input), or trims airplane for hands-off flight.

Configuration	Aileron	Rudder	Elevator	Comments
Power: Full Speed: V_H Flaps: Up	NA Reduced Hands-Off	NA Reduced Hands-Off	NA Reduced Hands-Off	
Power: Full Speed: V_X Flaps: Up	NA Reduced Hands-Off	NA Reduced Hands-Off	NA Reduced Hands-Off	
Power: Full Speed: V_Y Flaps: Up	NA Reduced Hands-Off	NA Reduced Hands-Off	NA Reduced Hands-Off	
Power: Approach Speed: Approach Flaps: Landing	NA Reduced Hands-Off	NA Reduced Hands-Off	NA Reduced Hands-Off	
Power: Approach Speed: Approach Flaps: Up	NA Reduced Hands-Off	NA Reduced Hands-Off	NA Reduced Hands-Off	

Notes

EAA FTM Test Card 14
Static Longitudinal Stability

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures

CG: Three test configurations: Heavy forward, then light aft, then heavy aft.*

Fuel: One hour minimum; extra as required by CG.

1. Normal takeoff and climb to at least 5,000 feet AGL.
2. Configure airplane as indicated on test card.
3. Trim for hands-off flight at the designated speed.

Pull Test

1. From the trim position, pull the stick/yoke back and stabilize in 10-knot/mph increments until reaching a speed 30 knots/mph slower than trim (or 10 knots/mph above stall speed, whichever is first).
2. Note stable slope (faster speeds need more push) in check box.
3. Slowly release the pull to zero and allow the airplane to return to trim speed.
4. Note variation from original trim speed in comments block.

Push Test

1. From the trim position, push the stick/yoke forward and stabilize in 10-knot/mph increments until reaching a speed 30 knots/mph faster than trim (or V_{FE} if the flaps are extended, whichever is first).
2. Note stable slope (slower speeds need more pull) in check box.
3. Slowly release the push to zero and allow the airplane to return to trim speed.
4. Note variation from original trim speed in comments block.
5. Return to starting altitude and reconfigure airplane to next item on test card until test complete.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Trim Configuration	Trim IAS	Stable Slope	Comments
Power: Full Speed: V_Y Flaps: Takeoff		Push	
		Pull	
Power: As Required Speed: V_H - 30 Flaps: Up		Push	
		Pull	
Power: Approach Speed: Approach Flaps: Full		Push	
		Pull	

Notes

EAA FTM Test Card 15
Static Directional Stability

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures
CG: Three test configurations: Heavy forward, then light aft, then heavy aft*
Fuel: One hour minimum; extra as required by CG.

1. Normal takeoff and climb to minimum safe altitude, at least 3,000 feet AGL in smooth air.
2. Configure airplane as indicated on test card.
3. Trim for the designated speed.
4. Slowly add left rudder to full deflection in one-quarter increments.
5. Keep wings level with aileron; stop test at full aileron deflection.
6. Maintain test speed with pitch.
7. Slowly release rudder; note return to coordinated flight in check box and comments.
8. Repeat procedure with right rudder.
9. Reconfigure airplane for next test condition and repeat yaw tests.

Notes

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Trim Configuration	Trim IAS	Rudder Return		Comments
		Left	Right	
Power: Level Flt Speed: Approach Flaps: Up				
Power: Level Flt Speed: Approach Flaps: Full				
Power: Level Flt Speed: V_H - 30 Flaps: Up				

Notes

EAA FTM Test Card 16
Static Lateral Stability and Spiral Stability

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures

CG: Three test configurations: Heavy forward, then light aft, then heavy aft*

Fuel: One hour minimum; extra as required by CG.

1. Normal takeoff and climb to at least 5,000 feet AGL.
2. Configure airplane as indicated on test card.
3. Trim for the designated speed.
4. Establish 10-degree bank to left.
5. Maintain heading with opposite rudder.
6. Release stick/yoke and attempt to raise low wing to level flight with rudder input
7. Record results of maneuver.
8. Repeat procedure with 10-degree bank to right.
9. Reconfigure airplane for next test condition and repeat left and right tests.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Trim Configuration	Trim IAS	10-Deg Bank Rudder Return		Comments
		Left	Right	
Power: Level Flt Speed: Approach Flaps: Up				
Power: Level Flt Speed: Approach Flaps: Takeoff				
Power: Level Flt Speed: Approach Flaps: Full				
Power: Level Flt Speed: V_H - 30 Flaps: Up				

Circle the response observed at the hands-free trim points: Rolls In — bank angle increases beyond 30; Stable — bank angle doesn't change; Rolls Out — Bank angle decreases to less than 30 degrees.

Trim Configuration	Trim IAS	30-Deg Bank Hands-Free Trim		Comments
		Left	Right	
Power: Level Flt Speed: Approach Flaps: Up		Rolls In Stable Rolls Out	Rolls In Stable Rolls Out	
Power: Level Flt Speed: Approach Flaps: Takeoff		Rolls In Stable Rolls Out	Rolls In Stable Rolls Out	
Power: Level Flt Speed: Approach Flaps: Full		Rolls In Stable Rolls Out	Rolls In Stable Rolls Out	
Power: Level Flt Speed: V_H - 30 Flaps: Up		Rolls In Stable Rolls Out	Rolls In Stable Rolls Out	

Notes

EAA FTM Test Card 17
Longitudinal Dynamic Stability

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures
CG: Three test configurations: Heavy forward, then light aft, then heavy aft*
Fuel: One hour minimum; extra as required by CG.

Possible emergencies: Loss of control, inadvertent stall.

1. Normal takeoff and climb to at least 5,000 feet AGL.
2. Configure airplane as indicated on test card.
3. Trim for the designated speed.
4. Slowly push the stick/yoke forward until the speed stabilizes 20 knots/mph faster than trim.
5. Release the stick/yoke.
6. Record the number of climb/descent cycles it take to resume level flight.
7. Reconfigure airplane for next test condition and repeat the test.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Trim Configuration	Trim IAS	Cycles To Level Flt < 7	Comments
Power: Level Flt Speed: V_H - 30 Flaps: Up			
Power: Level Flt Speed: Approach Flaps: Up			
Power: Level Flt Speed: Approach Flaps: Full			

Notes

EAA FTM Test Card 18
Runaway Electric Pitch Trim

Risk Designation: Medium

Date	Time	Fuel	Weight/CG

Procedures
CG: Three test configurations: Heavy forward, then light aft, then heavy aft*
Fuel: One hour minimum; extra as required by CG.

Possible emergencies: Jammed trim.

1. Normal takeoff and climb to at least 5,000 feet AGL.
2. Configure airplane as indicated on test card.
3. Trim for the designated speed.
4. Actuate the trim in the direction and time noted for one second. Continue if handling is acceptable.
5. Actuate the trim in the direction and time noted for two seconds. Continue if handling is acceptable.
6. Actuate the trim in the direction and time noted for three seconds.
7. Reconfigure airplane for next test condition and repeat the test.

Stabilized Engine Readings (Before Takeoff)

	Cyl 1	Cyl 2	Cyl 3	Cyl 4	Cyl 5	Cyl 6	Comments
CHT							
EGT							

Oil Press		Volts	
Oil Temp		Amps	
Fuel Press		Fuel Flow	

Notes

Trim Configuration	Control Forces Acceptable?		Attitude Change Acceptable?		Safe Flight Possible?	
	Nose Up	Nose Down	Nose Up	Nose Down	Nose Up	Nose Down
Power: Full Speed: V_H Flaps: Up						
Power: Full Speed: V_X Flaps: Takeoff						
Power: Level Flt Speed: Approach Flaps: Full						

Notes