FT-12 STABILITY & CONTROL

N997CZ RV-10 — Phase 1 flight test cards. EAA Flight-Advisor Script+Card format. Conservative: mid/fwd CG, generous floors. Built 2026-06-03.

Pre-Maneuver / Area Set-Up (FT-12 STABILITY & CONTROL)

FT-12-1 — SCRIPT

Purpose

• Establish a safe, repeatable test block before any FT-12 stability maneuver. Same block used for 12-2 through 12-5.

Pre-conditions

• Day VMC, smooth air, ceiling/vis ≥ 5,000 / 5.
• Loaded MID-to-FORWARD CG (record actual). NOT aft CG this sortie.
• Working CO detector ON (slow speeds reached in 12-4 sideslips).
• Fuel: adequate on the SELECTED tank; note selector position.

Set-up

• Climb to test block: enter maneuvers AT OR ABOVE 7,500 ft MSL.
• Hard floor: recover/terminate ALL maneuvers BY 5,000 ft MSL.
• Clear the area: two 90° clearing turns; note traffic/ground refs.
• Stabilize wings-level, mixture set, engine instruments green.
• Record OAT, pressure alt, weight/CG, fuel state on the card.

If anything is unusual

• Unexpected buffet, control force, or trim behavior → relax back-pressure, return to trimmed cruise, knock it off.
• CO ≥ 5 ppm → fresh air, cabin heat OFF, unload, RTB.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-12-1
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

PRE-MANEUVER / AREA SET-UP

SET-UP (all FT-12)

■ Wx ≥ 5,000/5, smooth, day VMC
■ CG MID/FWD — record
■ CO detector ON
■ Enter ≥ 7,500 MSL · floor 5,000 MSL
■ 2× 90° clearing turns
■ Engine green, mixture set

KNOCK-IT-OFF

■ Odd force/buffet/trim → release, re-trim, stop
■ CO ≥ 5 → air/heat-OFF/unload/RTB

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Static Longitudinal Stability (Trim-Speed Method) (FT-12 STABILITY & CONTROL)

FT-12-2 — SCRIPT

Objective

• Confirm POSITIVE static longitudinal stability: with trim fixed, the airplane should tend to return toward the trim speed. Map stick-force vs speed about a trim point.

Config

• Clean (flaps UP), ~65% cruise power held CONSTANT, mid CG.
• Trim hands-off at reference speed = **120 KIAS**. Do not re-trim for the rest of the run.

Procedure

• From trimmed 120 KIAS, smoothly establish and STABILIZE at each target below by pitch only (power & trim unchanged); hold ~5 s.
• At each point note the PUSH/PULL force needed and its sense.
• Then RELEASE the stick and observe which way speed drifts and where it settles — positive stability returns toward 120.
• Targets: 100, 110, (120 trim), 130, 140 KIAS.
• Repeat the release test from a fast and a slow offset to confirm return tendency.

Watch

• Force should increase with displacement and reverse sense either side of trim.
Light/zero/reversing force = weak or negative stability — document and knock it off.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

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Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

STATIC LONGITUDINAL STABILITY (TRIM-SPEED METHOD)

STATIC LONG. STABILITY

■ Flaps UP · ~65% power CONSTANT
■ TRIM hands-off @ 120 KIAS — lock trim
■ Stabilize each speed by PITCH only (~5s)
■ Note PUSH(+)/PULL(-) force & sense
■ RELEASE → note speed it returns to

Targets (hold power & trim)

Tgt KIAS	Stick force	Push/Pull	Released → returns to
100			
110			
120 (trim)	0	—	—
130			
140			

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Phugoid (Long-Period Dynamic) (FT-12 STABILITY & CONTROL)

FT-12-3 — SCRIPT

Objective

• Characterize the long-period (phugoid) mode: period and damping. Should be lightly damped and self-recovering.

Config

• Clean, trimmed hands-off at ~120 KIAS, ~65% power constant.

Procedure

• From trimmed level flight, smoothly pitch to slow ~10-15 kt below trim, then RELEASE the stick (hands off).
• Do NOT fight it. Let the nose oscillate; keep wings level with rudder/very light aileron only.
• Count cycles, time each cycle (stopwatch), note peak speed/altitude excursions and how many cycles to damp to half-amplitude.
• Recover by 5,000 MSL if not yet damped.

Watch

• Divergent (growing) oscillation = dynamically unstable — knock it off, re-trim. Note any coupling with roll.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-12-3
Date _____ Time _____	OAT _____ Wt/CG _____
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PHUGOID (LONG-PERIOD DYNAMIC)

PHUGOID

- ■ Clean · trim 120 KIAS hands-off
- ■ Pitch -10/15 kt → RELEASE (hands off)
- ■ Wings level w/ rudder only
- ■ Time the cycles · count to half-damp
- ■ Floor 5,000 MSL

Record

Cycle	Period (s)	Speed hi/lo	Alt hi/lo
1			
2			
3			
Cycles to half-amp:			

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Steady-Heading Sideslips (FT-12 STABILITY & CONTROL)

FT-12-4 — SCRIPT

Objective

• Assess directional/lateral control harmony and stability in sideslip: rudder vs aileron, force build-up, any rudder lock or oscillation.

Config

• Clean, ~90 KIAS, mid CG, power for level flight.

Procedure

• Pick a heading reference. Smoothly add rudder in increments; hold heading constant with opposite aileron (ball deflected).
• Build up SLOWLY: small, then moderate, then toward full rudder — stop early if forces or behavior get unusual.
• At each step note rudder & aileron position/force, bank required, and pitch/airspeed tendency. Hold a few seconds.
• Release controls smoothly — should return to coordinated flight.
• Repeat both directions (left & right sideslip).

Watch

• Rudder-force LIGHTENING or reversal near full deflection (rudder lock), nose hunting, or aileron running out = document & knock it off. Keep speed ≥ 80 KIAS.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-12-4
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

STEADY-HEADING SIDESLIPS

STEADY-HEADING SIDESLIPS

■ Clean · 90 KIAS · level
■ Add rudder in steps; hold hdg w/ opp aileron
■ BUILD UP slowly toward full — stop if odd
■ Note rudder/aileron force & bank each step
■ Both directions · keep ≥ 80 KIAS

Record each step

Dir	Rudder	Aileron/bank	Speed/pitch
L small			
L mod			
L max			
R small			
R mod			
R max			

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Spiral Stability Check (FT-12 STABILITY & CONTROL)

FT-12-5 — SCRIPT

Objective

• Gauge spiral mode: with a bank established and controls neutralized, does bank hold, slowly roll out, or steepen?

Config

• Clean, ~120 KIAS, power for level flight.

Procedure

• Establish a coordinated 20–30° bank turn.
• Smoothly NEUTRALIZE all controls (hands light / off aileron).
• Over ~20 s observe bank: decreasing (spirally stable), holding (neutral), or increasing (spirally unstable — common & OK if mild).
• Time how long to double bank if it steepens. Recover normally.
• Repeat both directions. Floor 5,000 MSL.

Watch

• If bank steepens quickly, recover promptly — do not let it develop into a steep spiral. Maintain VMC, watch airspeed.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-12-5
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

SPIRAL STABILITY CHECK

SPIRAL STABILITY

■ Clean · 120 KIAS
■ Establish 20-30° coordinated bank
■ NEUTRALIZE controls (~20 s)
■ Bank decreasing / holding / increasing?
■ Time-to-double if steepening · both ways

Record

Dir	Start bank	After 20 s	Time-to-double
Left			
Right			

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

FT-13 STALL COMPLETION

N997CZ RV-10 — Phase 1 flight test cards. EAA Flight-Advisor Script+Card format. Conservative: mid/fwd CG, generous floors. Built 2026-06-03.

Pre-Stall Set-Up & Recovery Brief (FT-13 STALL COMPLETION)

FT-13-1 — SCRIPT

Purpose

• Common set-up and recovery brief for all FT-13 stall cards. RV-10 is NOT approved for spins — the goal is prompt, positive recovery at the first sign of stall/wing drop.

Pre-conditions

• Day VMC, smooth air, ≥ 5,000 / 5.
• MID-to-FORWARD CG (record). NOT aft CG this sortie.
• **CO detector ON — slow flight is where cabin CO has appeared (F6-F11). Abort the run if CO ≥ 5 ppm.**
• Seats/belts tight, loose items stowed, mixture appropriate for alt.

Set-up

• Enter every stall AT OR ABOVE 7,500 ft MSL; recover BY 6,000 ft MSL.
• Two 90° clearing turns before EACH run.
• Note OAT, pressure alt, weight/CG, power, flap setting on card.

RECOVERY (memorize)

• 1. Reduce AoA — stick forward to unstall.
• 2. Level wings with RUDDER (avoid aggressive aileron at high AoA).
• 3. Add power smoothly as needed.
• 4. Recover to climb, minimize altitude loss; do not let it develop.
• Wing drop → opposite rudder + reduce AoA FIRST.

Data to capture (G3X log + notes)

• Type/degree of stall warning · IAS at warning · IAS at break (reads LOW ~2-3 kt) · nose-down pitch · wing-drop direction/magnitude · altitude lost in recovery.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-13-1
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

PRE-STALL SET-UP & RECOVERY BRIEF

SET-UP (all FT-13)

■ Wx ≥ 5,000/5, smooth · CG MID/FWD
■ **CO ON — abort if ≥ 5 ppm**
■ Enter ≥ 7,500 MSL · recover by 6,000
■ Clearing turns before EACH run

RECOVERY

■ 1 AoA DOWN (stick fwd)
■ 2 WINGS LEVEL w/ RUDDER
■ 3 POWER as needed
■ 4 Min alt loss — don't develop
■ Wing drop → opp rudder + unload

LOG

■ Warning type/IAS · break IAS · wing drop · alt lost

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

1-G Clean Stall — Document the Break (FT-13 STALL COMPLETION)

FT-13-2 — SCRIPT

Objective

• Capture a full, documented clean 1-g stall: warning, break IAS, behavior, recovery — the clean nose break not yet cleanly recorded (F7 reached buffet, no clean break).

Config

• Flaps UP, power IDLE, wings level, mid CG.

Procedure

• From ~80 KIAS level, smoothly reduce to idle and decelerate at ~1 kt/s, holding altitude with increasing back-pressure.
• Call/note: first aerodynamic warning, then any buffet, then the BREAK (nose drops / uncommanded pitch or roll).
• Recover per FT-13-1 at the break. Note altitude lost.
• Repeat x2 for consistency.

Watch

• Wing drop direction; if it rolls off, rudder to level + unload before aileron. Keep ball centered through the entry.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-13-2
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

1-G CLEAN STALL — DOCUMENT THE BREAK

1-G CLEAN STALL

■ Flaps UP · IDLE · wings level
■ Decel ~1 kt/s, hold altitude
■ Note: warning → buffet → BREAK
■ Recover at break (FT-13-1)
■ Repeat ×2

Record (x2)

Run	Warn IAS	Break IAS	Wing drop	Alt lost
1				
2				

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Full-Flap Stall (FT-13 STALL COMPLETION)

FT-13-3 — SCRIPT

Objective

• Document the landing-config stall: warning margin and break IAS with full flaps, power idle.

Config

• Flaps FULL, power IDLE, wings level, mid CG. Below Vfe 87 KIAS before extending flaps.

Procedure

• Slow below Vfe, extend full flaps, stabilize ~70 KIAS.
• Reduce to idle, decelerate ~1 kt/s holding altitude to the break.
• Recover per FT-13-1; expect lower break IAS than clean.
• On recovery, retract flaps incrementally per normal go-around once positive climb established. Repeat x2.

Watch

• Pitch change with flap retraction; sink. Keep CO in scan.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-13-3
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

FULL-FLAP STALL

FULL-FLAP STALL

■ Below Vfe 87 → FLAPS FULL
■ IDLE · wings level · decel ~1 kt/s
■ To the BREAK → recover (FT-13-1)
■ Flaps up incrementally on go-around
■ Repeat ×2

Record (x2)

Run	Warn IAS	Break IAS	Wing drop	Alt lost
1				
2				

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Power-On (Departure) Stall — Build-Up (FT-13 STALL COMPLETION)

FT-13-4 — SCRIPT

Objective

• Characterize the power-on/departure stall and its wing-drop tendency. BUILD UP power gradually — do not jump to full power on the first run.

Config

• Flaps UP first (then T/O flaps on a later run), mid CG, wings level.

Procedure

• Run A: slow to ~70 KIAS, set ~50% power, raise nose to a climb attitude and continue decel to the break. Recover (FT-13-1).
• Run B: repeat with higher power (build up toward climb power) only if Run A behavior was benign.
• Run C: optional, T/O flap setting, moderate power.
• Expect more pronounced wing drop than idle stalls — lead with rudder, reduce AoA promptly, NO aggressive aileron.

Watch

• Torque/P-factor yaw & wing drop, usually LEFT. Right rudder ready. If it rolls past ~30° or yaws sharply, unload + rudder immediately — do not let it become incipient spin.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-13-4
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

POWER-ON (DEPARTURE) STALL — BUILD-UP

POWER-ON (DEPARTURE) STALL

- ■ Flaps UP · wings level · mid CG
- ■ A: ~70 KIAS, ~50% pwr, climb attitude → break
- ■ B: more power ONLY if A benign
- ■ C (opt): T/O flaps, mod power
- ■ Right rudder ready — lead w/ rudder

IF IT ROLLS/YAWS

- ■ Unload + opposite rudder FIRST
- ■ No aggressive aileron · don't develop

Record

Run	Power	Flaps	Break IAS	Wing drop / yaw
A	~50%	UP		
B	more	UP		
C	mod	T/O		

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)

Accelerated / Turning Stall (FT-13 STALL COMPLETION)

FT-13-5 — SCRIPT

Objective

• Document stall in a moderate banked turn (higher load factor, higher break IAS) and confirm benign recovery.

Config

• Flaps UP, power IDLE (or low), mid CG, 30° bank.

Procedure

• Establish a coordinated 30° bank level turn at ~90 KIAS, idle/low power.
• Smoothly increase back-pressure (~1-2 kt/s) until the break — do NOT exceed 30° bank or pull aggressively.
• Recover per FT-13-1; level wings with rudder first if it rolls.
• Repeat both directions. Note break IAS is higher than 1-g.

Watch

• Over-bank / nose slice at the break, especially toward the low wing. Keep ball centered; unload promptly. Floor 6,000 MSL.

✂ cut along the boxed CARD — carry it on the kneeboard; keep the SCRIPT for briefing

N997CZ RV-10	FT-13-5
Date _____ Time _____	OAT _____ Wt/CG _____
Alt block _____ Wx _____	Page

ACCELERATED / TURNING STALL

ACCELERATED / TURNING STALL

■ Flaps UP · IDLE/low · 30° bank MAX
■ From ~90 KIAS, coordinated turn
■ Smooth back-pressure ~1-2 kt/s → break
■ Recover — wings level w/ RUDDER first
■ Both directions · floor 6,000 MSL

Record

Dir	Bank	Break IAS	Behavior at break
Left	30°		
Right	30°		

ASI note: ASI reads LOW ~2-3 kt (F11 cal): CAS ≈ IAS + 2-3 kt. Log TAS/CAS from analysis, not the indicator.
Speeds: Vne 200 / Vno 156 / Va 125 (gross) / Vfe 87 / Vs1 clean ~61 / Vs0 full-flap ~52 (all KIAS, placard)