Flight Check Solutions

RV-8 N8ZN Pilot Reference Handbook

Aircraft Configuration

- Engine: Lycoming IO-360-EXP
- Propeller: Whirlwind 200RV
- Ignition: Dual P-MAG electronic ignition
- EFIS: Dynon D100
- EMS: Dynon D120
- GPS/NAV: Garmin Aera 660 (VFR)
- Transponder: Bendix King KY97
- NAV/COM: King KX125
- ADS-B In/Out: Garmin GDL-50R/GDL-82

Cockpit Controls Overview

- Ignition: Two independent toggle switches (LEFT/RIGHT P-MAG)
- Starter: Momentary toggle switch adjacent to ignition controls
- Flaps: Electric via thumb momentary switch (left side) on control stick
- Trim: Electric trim via thumb switch on control stick
- Fuel Boost Pump: Switch located on lower left subpanel
- Cowl Flap: Three-position toggle switch (OPEN / NEUTRAL / CLOSED) lower left subpanel
- Avionics Master: Located on the lower right side breaker switch panel

RV-8 V-Speeds Quick Reference (KIAS)

Code	Speed	Description
Vs	51	Stall (clean)
Vso	44	Stall (landing config)
Vx	75	Best angle of climb
Vy	100	Best rate of climb
Vfe5	95	(5-degrees)
Vfe	87	Max flap extension
Va	119	Maneuvering speed (gross wt)
Vno	160	Max structural cruise
Vne	200	Never exceed
Vbg	100-105	Best glide (empty wt-maximum wt)
Vref	70	Final approach (flaps)
Vbase	80-85	Base
Vr	60–65	Rotation

Color Arc Reference (Airspeed Indicator, KIAS)

- White Arc (Flap Operating Range): 44–87
- Green Arc (Normal Operating Range): 51–160
- Yellow Arc (Caution Range): 160–200
- Red Line (Never Exceed): 200

Standard Operating Procedures

1. Preflight Inspection

- Confirm aircraft documents onboard
- Verify oil level (6–7 quarts)
- Check fuel quantity, caps secure
- Walkaround inspection: control surfaces, hinges, static ports, fuel vents, propeller, cowling secure

2. Cockpit Pre-Start

- Battery Master: ON

- Avionics Master: OFF
- Fuel Selector: Desired tank
- For priming:
    - Open throttle and mixture
    - Boost Pump: ON for 2–3 seconds (warm weather), 3–4 seconds (cold weather), then OFF
- Throttle and mixture settings for engine start:
    - **Cold Start**: Throttle CLOSED
    - **Hot Start**: Mixture IDLE CUTOFF, Throttle open 1/4 inch
- P-MAG Switches: ON (LEFT/RIGHT)

3. Engine Start

- Clear prop area
- Engage STARTER momentary switch
- When engine fires:
    - Immediately move mixture to RICH and pull throttle to IDLE
- Adjust throttle to 900 RPM
- Avionics Master: ON (lower right breaker switch panel)
- Check oil pressure (within 10 seconds)
- Monitor EMS

4. Before Taxi

- Check EFIS/EMS operation (Dynon D100/D120)
- Set COM/NAV: KX125, Aera 660 for situational awareness
- Confirm transponder (KY97) squawking 1200 and ON

5. Taxi

- Check brakes and steering
- Observe engine temps, oil pressure

6. Run-up

- Set brake, full elevator UP, throttle 2,000 RPM
- Verify ignition check LEFT/RIGHT (P-MAG drop not to exceed 150 RPM)
- Check engine gauges, temperatures, voltage
- Cycle propeller three times (verify RPM drop)

7. Takeoff

- Flaps: As required
- Trim: Set for takeoff
- Boost Pump: ON
- Cowl Flap: As needed (OPEN if warm day)
- Full throttle, monitor EMS for power and temps

8. Climb

- 100–120 KIAS climb speed
- Boost Pump: OFF 1000’ AGL, established climb and pressure stable
- Cowl Flap: Adjust for cooling

9. Cruise

- Power set per engine recommendations
- Lean mixture using EMS
- Monitor Dynon D100/D120 for stability

- Cowl Flap: CLOSED unless cooling required

10. Descent & Approach

- Plan descent to manage cooling
- Boost Pump: ON below 1000’ AGL
- Flaps: As required via stick switch
- Trim: Adjust as needed

11. Landing

- Maintain stabilized approach
- Flaps full (as needed)
- Cowl Flap: NEUTRAL or OPEN
- After touchdown: flaps UP, boost pump OFF

12. Shutdown

- Avionics: OFF
- Mixture: IDLE CUTOFF
- Ignition switches: OFF
- Battery Master: OFF

Emergency Procedures (Selected)

Engine Failure After Takeoff

- Airspeed: 90 KIAS
- Select landing site
- Fuel: Selector - switch tanks

- Boost Pump: ON
- Ignition switches: Confirm ON
- Flaps: FULL if able and committed ot landing

Electrical Failure

- Check Master
- Cycle alternator field if equipped
- Land as soon as practical

Engine Fire in Flight

- Mixture: CUTOFF
- Fuel selector: OFF
- Boost pump: OFF
- Master: OFF
- Initiate emergency descent
- Land as soon as possible

Notes

- P-MAGs are self-generating once above ~800 RPM
- Dynon displays should be cross-checked with steam gauges if installed

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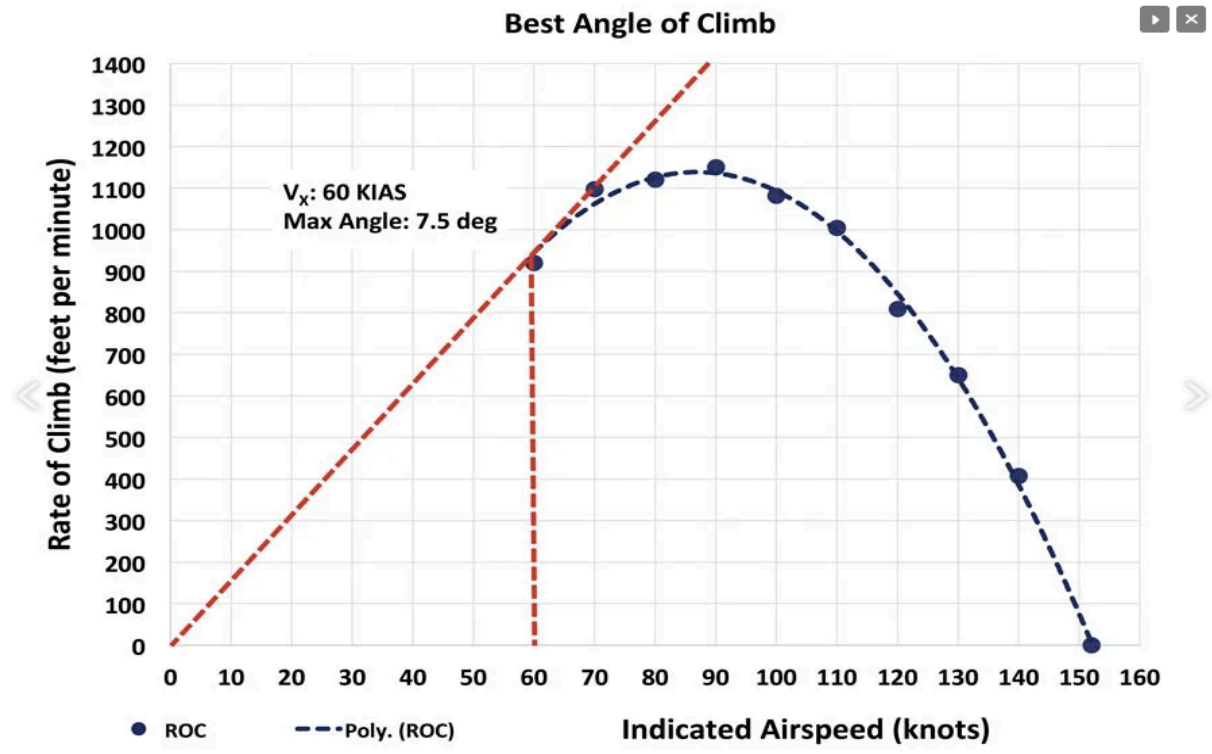
Training Focus Areas

- Familiarization with Dynon D100/D120
- Emergency procedures involving dual P-MAG systems

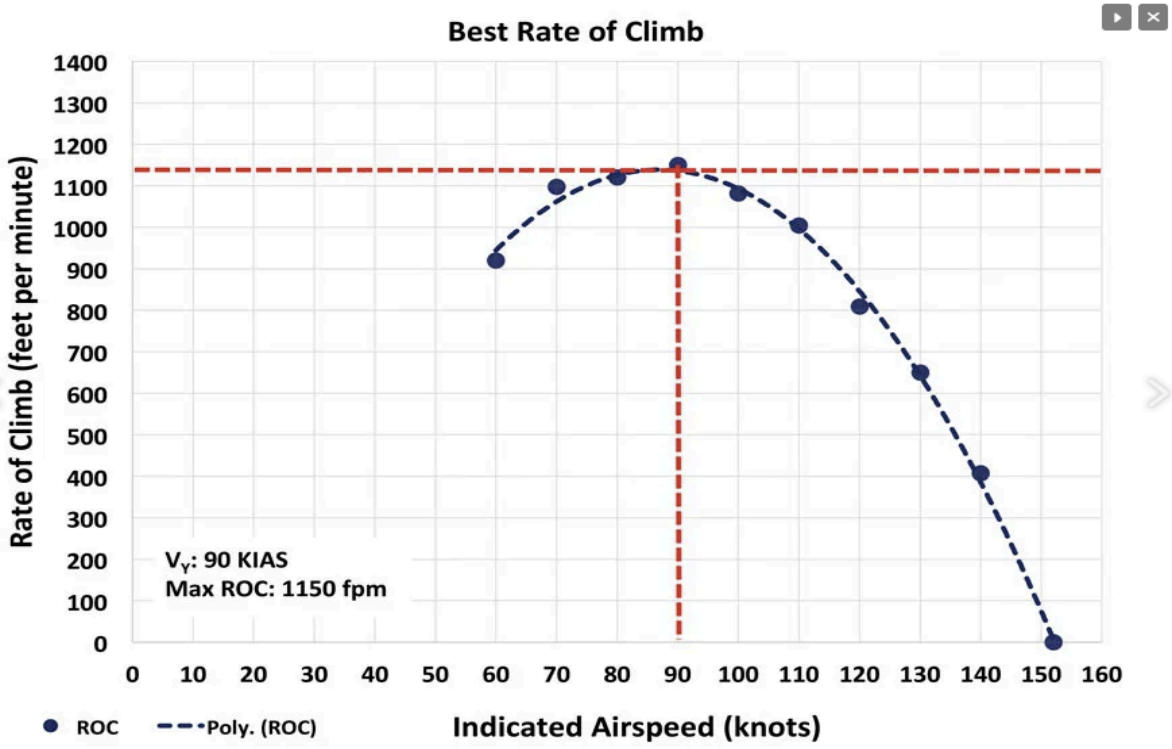
- Stick switch operation: flaps and trim
- Efficient use of cowl flap and cooling management
- Use of Aera 660 for situational awareness
- Radio communications using KX125

Performance Charts

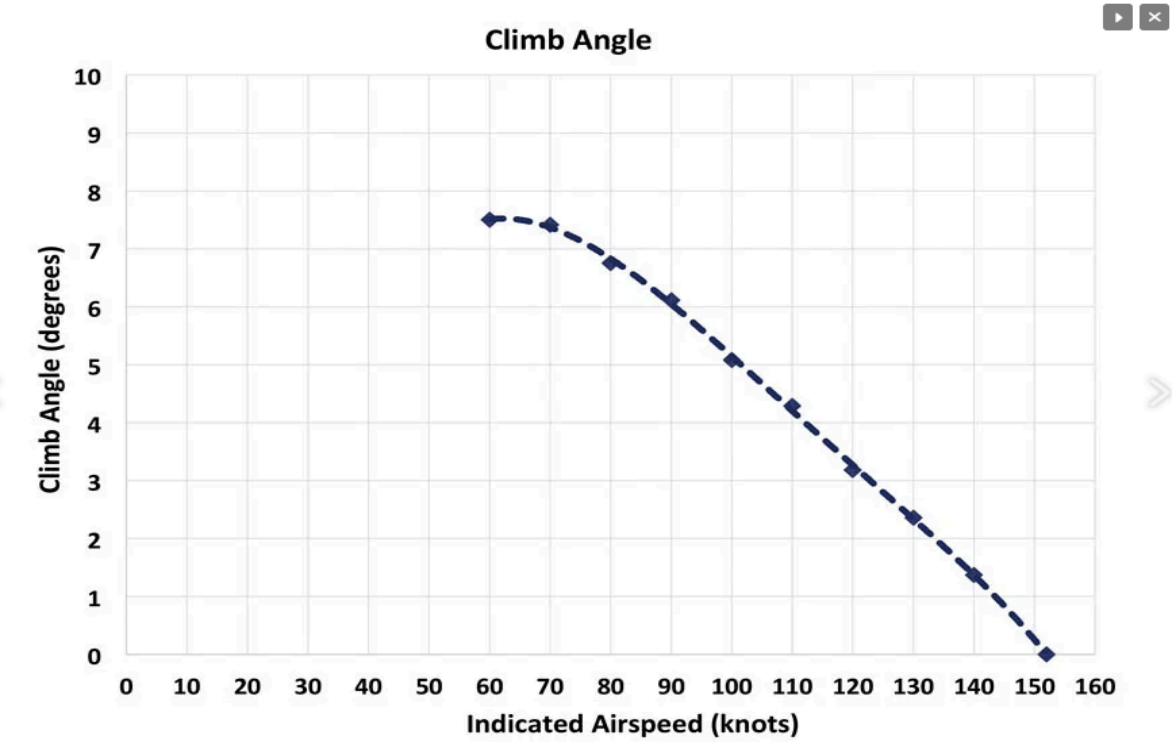
Source: Sawtooth Climb Performance, *A traditional flight test technique for determining Vx and Vy,* Nigel Speedy, December 2018



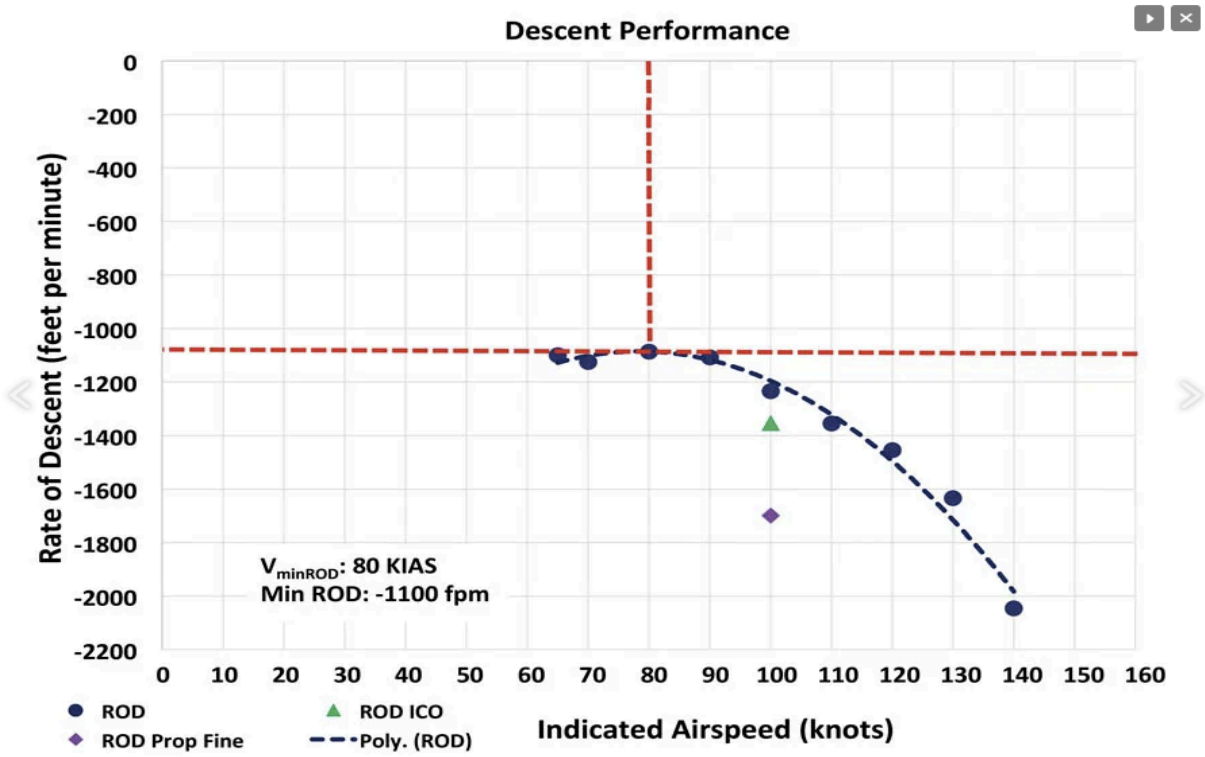
Best angle of climb is 7.5 degrees at 60 KIAS. Image 3 of 10



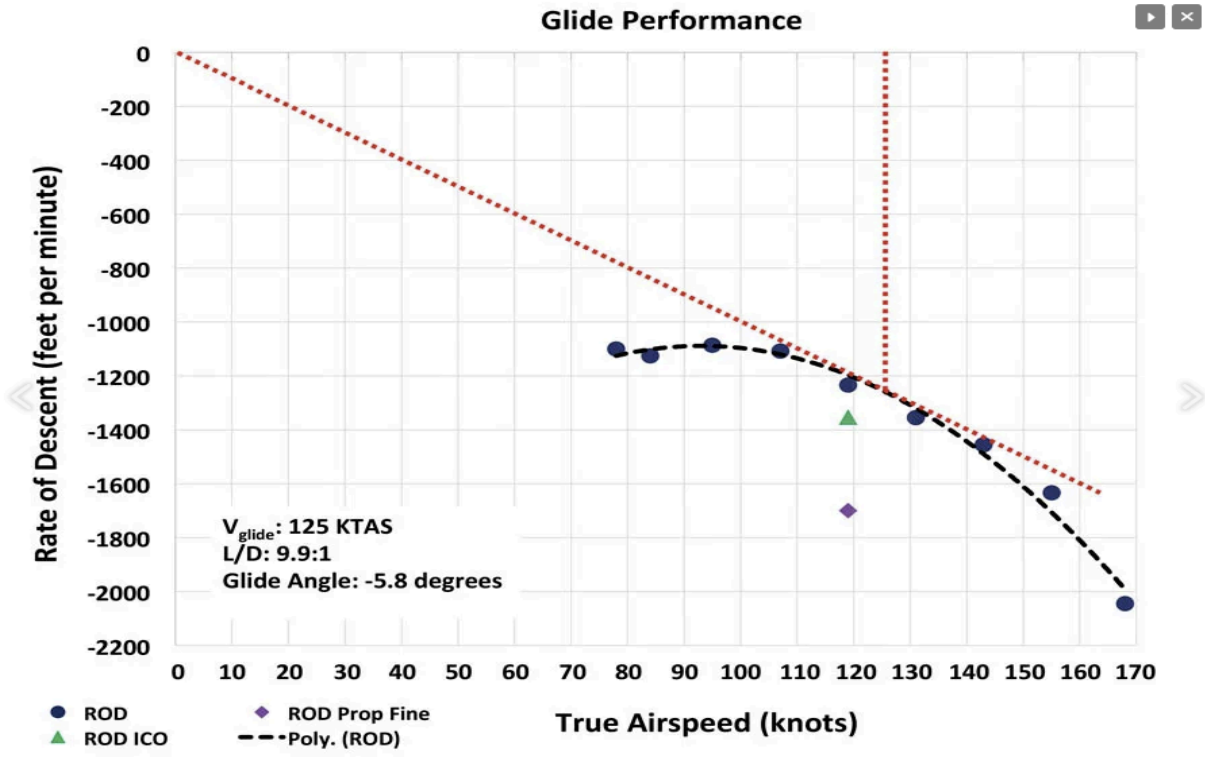
Best rate of climb is 1150 feet per minute at 90 KIAS. Image 5 of 10



As airspeed increases the climb angle decreases. Image 4 of 10



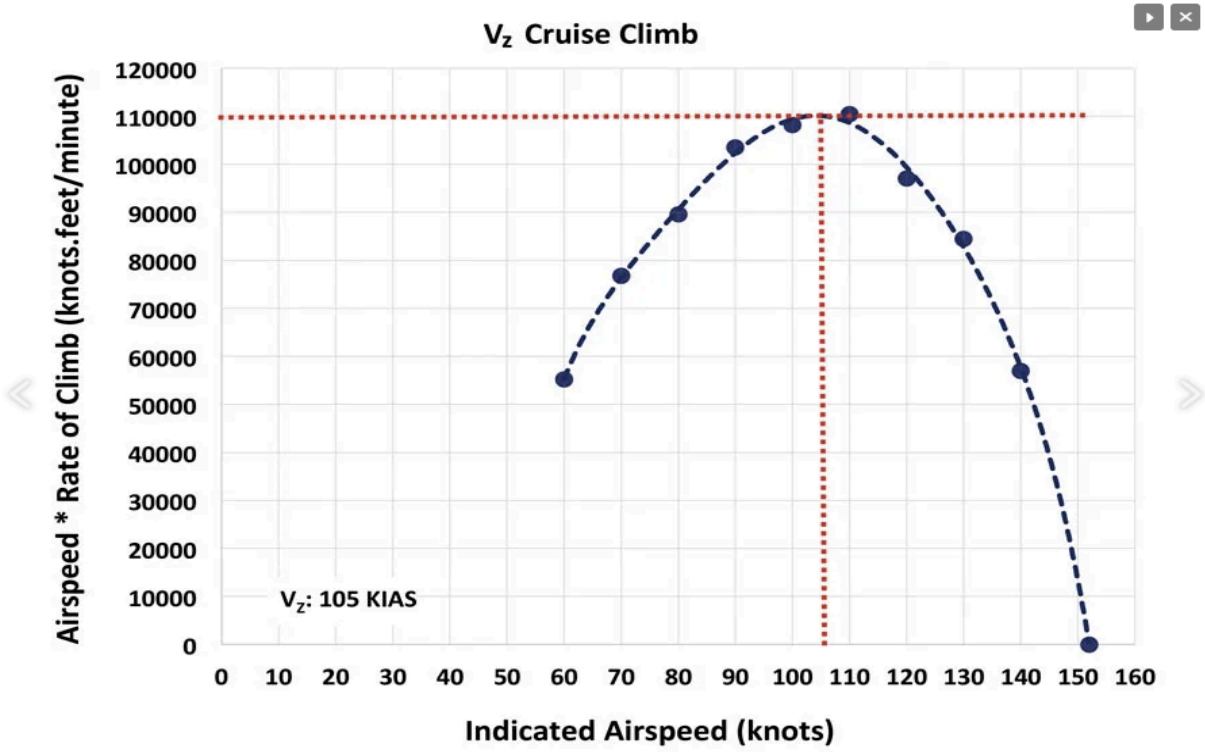
Minimum rate of descent is -1100 feet per minute at 80 KIAS. Image 7 of 10



Best angle of glide airspeed is 125 KTAS (105 KIAS). Image 9 of 10

Climb Parameter	Speed
Best Angle of Climb, V_X	7° at 75 KIAS
Best Rate of Climb, V_Y	1150 fpm at 90 KIAS
Cruise Climb, V_Z	105 KIAS
Glide Parameter	**Speed**
Minimum Descent Rate, V_{minROD}	-1100 fpm at 80 KIAS
Maximum Glide, V_{Glide}	9:1 at 105 KIAS

Image 10 of 10



Best efficiency of climb (aka cruise climb) is 105 KIAS. Image 6 of 10

Cockpit View

End of Handbook