RV-10 Flight Test Plans
Rev A

Flight Objectives

Flight Number	Duration (hrs)	Objectives	Parameters
1, 2	1 hr 2 hr TT	Engine: Temperatures, prop control Airframe: Control, trim, flap actuation, fuel tank switch over. Avionics: Basic Functionality Maneuvers: Approach to stall, landing	Vso, Vs1
3	1.5 hr 3.5 hr TT	Engine: Parameters at various airspeeds and mixture settings. Airframe: Auto-Pilot servos Avionics: Initial IAS calibration (>75% power).	
4	1.5 hr 5.0 TT	Maneuvers: Climb speed Vy	Vy
5	1.5 hr 6.5 TT	Climb rate versus altitude	
6	1.5 hr 8.0 TT	Maneuvers: Climb speed Vx 45 deg turns (1.5g)	Vx
7	1.5 hr 9.5 TT	Power on Stall 60 deg turns (2.0g)	
8	1.5 hr 11.0 TT	Objectives determined as needed. Last flight of engine break in	
Engine Break-In Complete			
9	1.5 hr 11.0 TT	Power off stalls Slow Flight	Vs0, Vs1
10	1.5 hr 12.5 TT	Drag Polar Curve	Max End Max Range Opt Cruise
11	1.5 hr 14.0 TT	IAS Cal over all airspeeds and configurations	
12	1.5 hr 15.5 TT	Best Glide Speed and glide ratio	
13	1.5 hr 17.0 TT	Weight and Balance Limits	
14	1.5 hr 18.5 TT	Take-off distance to 50' Landing distance over 50'	
15	1.5 hr 20.0 TT	Maneuvers as required	

Test Flight 1

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over airport to 3,500' MSL
Stabilize Airplane, Check flight controls and instruments
Get estimates of stall speeds
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____
Fuel tank for take-off: **Left** Radio: **Comm1**

Flight Procedure

Climb to 3,500' MSL above airport, Maintain 75% power.

Flight Controls

Verify Pitch trim operation. .....☐√

Verify Aileron trim operation.....☐√

Engine

Verify MP and RPM control.....☐√

Note Cylinder head temperatures and EGT....._____

Flight Instruments _____

Compare Altitude and Airspeed PFD with GPS and transponder.....☐√

Flight Controls

Verify roll control to +/- 30 deg bank.....☐√

Verify pitch control to +/- 10 deg pitch.....☐√

Verify yaw control.....☐√

Verify Flaps deploy and retract normally.....☐√

Stall Speeds

0 deg flap: Slow to first indication of stall and note speed....._____

40 deg flap: Slow to first indication of stall and note speed....._____

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 2

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over airport to 3,500', Maintain 75% power.
Fuel tank switch, Mixture Control
Get estimates of stall speeds
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____
Fuel tank for take-off: **Right** Radio: **Comm2**

Flight Procedure

Climb to 3,500' MSL above airport

Flight Controls

Verify Pitch trim operation. .....☐√

Verify Aileron trim operation.....☐√

Switch from Left to Right fuel tank.....☐√

Engine

Verify changes in EGT and fuel flow with mixture control.....☐√

Note Cylinder head temperatures and EGT....._____

Flight Instruments _____

Confirm transponder pressure altitude with tower .....☐√

Flight Controls

Verify roll control to +/- 45 deg bank.....☐√

Verify pitch control to +/- 15 deg pitch.....☐√

Stall Speeds

0 deg flap: Slow to first indication of stall and note speed....._____

40 deg flap: Slow to first indication of stall and note speed....._____

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 3, IAS Cal and Autopilot

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over NE practice area to 4,500', Maintain 75% power.
Engine performance over different airspeeds.
Initial IAS calibration
Auto Pilot Functions
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 4,500' MSL in practice area
Set altimeter to 29.92
Record OAT _____

Engine

Note Cylinder head temperatures and EGT.....
_____
_____

Initial IAS Calibration

Fly out to practice area
Adjust altimeter to Pressure Altitude
Stabilize on IAS and heading.
Fly four courses and record data.
Repeat for second set of redundant data.
Stabilize to next IAS
Repeat

Auto Pilot Check Out

Wing leveler.....☐√
Heading Hold.....☐√
Altitude Hold .....☐√
GPS1 couple. .....☐√
EFIS couple. .....☐√
Climb/Decent to altitude.....☐√

IAS: 130 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 120 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 110 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____

Oil Level: _____ Oil Consumption: _____

Min/Max G's: _____

Test Flight __4__, Climb Performance

Date: _____
Hobbs Start-End: _____

Overview

Take-off, Climb out over practice area to 3,500', Maintain 75% power.
Determine Rate of Climb Curve for determining Vx, Vy
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 2,500' MSL in practice area
Set altimeter to 29.92"
Record OAT at altitude_____
Engine
Note Cylinder head temperatures and EGT.....
Flight Procedure
Fly out to practice area, Level at 2,500' Altitude
Establish constant airspeed climb at take-off power. Full Mixture, Prop and Throttle.
Start timer when crossing 3,000' MSL.
At 1 minute, record feet above 3,000' MSL.
Cruise descend back to 2,500' MSL
Repeat on reciprocal heading and average two readings.

Flight Data: Feet gained in 1.5 minutes.

IAS	Heading ___	Heading ___ + 180 deg	Average
65			
70			
75			
80			
85			
90			
95			
100			
105			
110			
115			

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____ Min/Max G's: _____

Test Flight __5__, Climb Rate vs. Altitude

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over NE practice area to 3,500', Maintain 75% power.
Determine Rate of Climb versus Altitude.
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 3,000' MSL in practice area. Set up for constant IAS climbs.

Engine

Note Cylinder head temperatures and EGT....._____
_____

Flight Procedure

Fly out to practice area. Set altimeter to 29.92"
Level at 3,000' Altitude, record OAT _____
Establish constant airspeed climb at take-off power.
Start timer when crossing 4000' MSL.
Record time crossing each 1000' increment to 10,000' MSL.
Cruise descend back to 3,000' MSL
Repeat

Flight Data: Timer (sec)

Pressure	OAT	Time at Altitude		Time at Altitude	
Altitude	Deg C	Trial 1	Trial 2	Trial 3	Trial 4
3,000		0	0	0	0
4,000					
5,000					
6,000					
7,000					
8,000					
9,000					
10,000					

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 6, Best Angle of Climb

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over NE practice area to 3,500', Maintain 75% power.
Determine Vx
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 3,500' MSL in practice area
Set altimeter to 29.92. Record OAT _____
Engine
Note Cylinder head temperatures and EGT.....
_____
_____
Flight Procedure
Fly out to practice area
Level at 3,500' Altitude, Establish course to IWA
Establish constant airspeed climb at take-off power
When established in climb, note DME to station.
At DME minus 1 nmi, record altitude climbed.
Cruise descend back to 3,500' MSL
Repeat

Flight Data

	Trial 1	Trial 2	Trial 3
IAS	1 nmi Climb	1 nmi Climb	1 nmi Climb
60			
65			
70			
75			
80			

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 7, Power-on Stall, 2 g turn.

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over NE practice area to 3,500', Maintain 75% power.
Perform Power-on stalls
Perform 2 g turns
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____
Fuel tank for take-off:_____

Flight Procedure

Climb to 3,500' MSL in NE practice area, Maintain 75% power.
Verify normal engine readings.
Clear Area

Power-on Stall Procedure
Set flap. Slow to rotation speed
Increase pitch and engine power to 20" x 2200 rpm.
Increase pitch to onset of stall and record speed.
Recover and set up for next stall.

60 deg banked turn
Set flap to cruise. Slow to 120 KIAS.
Monitor g-meter.
Perform 2 g turns.

Flight Data

	Flap			
	0 deg	10 deg	20 deg	40 deg
Trial 1				
Trial 2				
Trial 3				
Trial 4				

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 8, Open Objectives

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over NE practice area to 3,500', Maintain 75% power.
Complete engine break in
Objectives to be determined during test program
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____
Fuel tank for take-off:_____

Flight Procedure

Climb to 3,500' MSL in NE practice area, Maintain 75% power.
Verify normal engine readings.
Clear Area

Complete Engine Break In
Maintain 75% power for remainder of engine break in period.

Other Objectives
Other objectives to be determined during the test program.

Flight Data

As Needed.

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 9: Power Off Stall, Slow Flight

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over SE practice area to 4,500', Maintain 75% power.
Perform Power-off stalls
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 4,500' MSL in SE practice area, Maintain 75% power.
Verify normal engine readings.
Clear Area

Configure for Slow Flight
Reduce Power and increase AOA to slow airspeed and maintain altitude.
Set Flaps
Mix Rich, Prop High RPM, Throttle Set.

Power-off Stall Procedure
Increase pitch and reduce engine power to idle.
Record airspeed when horn sounds. Record Stall speed
Recover and set up for next stall.

Flight Data

	Flap			
	-3 deg	0 deg	15 deg	30 deg
	Horn/Stall	Horn/Stall	Horn/Stall	Horn/Stall
Trial 1				
Trial 2				
Trial 3				
Trial 4				
Trial 5				
Trial 6				

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____

Test Flight 10_____

Date: _____ **Drag Polar Determination**

Hobbs Start: _____

Hobbs End: _____

Overview

Take-off, Climb out over test area to 3,500', 4,500'
Collect data for Power and Drag Curve at various flap settings
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____ ATIS Temp: _____

CG Position: _____ Fuel Level: _____

Flight Procedure

Climb to 3,500' MSL in test area

Engine

Note Cylinder head temperature ..... _____

..... _____

Flight Procedure

Fly out to test area
Set altimeter to 2992
Level at 3,500' with appropriate flap setting and record OAT _____
Trim for Indicated Air Speed
Record TAS, IAS, % power, MP, RPM
Repeat

Flight Data, -3 deg Flap (Reflex)

	Trial 1				Trial 2			
IAS	TAS	% Pwr	MP	RPM	TAS	% Pwr	MP	RPM
60								
65								
70								
75								
80								
85								
90								
95								
100								
105								
110								
115								
120								
125								
130								
135								
140								

Flight Data, 0 deg Flap (122 kts Max)

	Trial 1				Trial 2			
IAS	TAS	% Pwr	MP	RPM	TAS	% Pwr	MP	RPM
60								
65								
70								
75								
80								
85								
90								
95								
100								
105								
110								
115								

Flight Data, 15 deg Flap (96 kts max)

	Trial 1				Trial 2			
IAS	TAS	% Pwr	MP	RPM	TAS	% Pwr	MP	RPM
55								
60								
65								
70								
75								
80								
85								
90								

Flight Data, 30 deg Flap (87 kts max)

	Trial 1				Trial 2			
IAS	TAS	% Pwr	MP	RPM	TAS	% Pwr	MP	RPM
55								
60								
65								
70								
75								
80								

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____

Oil Level: _____ Oil Consumption: _____

Min/Max G's: _____

Test Flight 11

Date: _____
Hobbs Start: _____ Hobbs End: _____

Overview

Take-off
Climb out over practice area to 4,500'
Conduct IAS calibration tests
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 4,500' MSL in practice area
Engine
Note Cylinder head temperatures and EGT....._____
_____

Flight Procedure

Fly out to practice area
Adjust altimeter to Pressure Altitude.
Record OAT ....._____
Stabilize on IAS and heading.
Fly four courses and record data.
Repeat for second set of redundant data.
Stabilize to next IAS
Repeat

In Flight Data

IAS: 100 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 90 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 80 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 70 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 60 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

IAS: 50 kts, Flaps: 0 deg

	Test 1		Test 2	
Track	**GPS Gnd Spd**	**GPS Course**	**GPS Gnd Spd**	**GPS Course**
1				
2				
3				
4				

Post Flight Data

Fuel Level: _____ Consumption: _____ gph: _____

Oil Level: _____ Consumption: _____

Min/Max G's: _____

Test Flight 12

Date: _____
Hobbs Start: _____
Hobbs End: _____

Overview

Take-off, Climb out over NE practice area to 4,500', Maintain 75% power.
Determine Best Glide Speed, Glide Ratio
Return to land

Pre-Flight Data

Take-off weight: _____ Oil Level: _____
CG Position: _____ Fuel Level: _____
Temperature from ATIS: _____

Flight Procedure

Climb to 4,500' MSL in practice area

Engine

Note Cylinder head temperatures and EGT....._____
_____

Flight Procedure

Fly out to practice area
Level at 4,500' Altitude, Establish course to IWA or other suitable waypoint
Establish constant airspeed power-off decent
When established in decent, note DME to station.
At DME minus 1 nmi, record altitude loss.
Cruise climb back to 4,500' MSL
Repeat

Flight Data (Clean Configuration)

	Trial 1	Trial 2	Trial 3
IAS	1 nmi Decent	1 nmi Decent	1 nmi Decent
70			
75			
80			
85			
90			

Post Flight Data

Fuel Level: _____ Fuel Consumption: _____ gph: _____
Oil Level: _____ Oil Consumption: _____
Min/Max G's: _____