

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 1 – FIRST TEST FLIGHT	
Pilot: Louis Beaulieu	Date: _____
Time: _____	
Objectives:	
<ul style="list-style-type: none"> • Validate Engine Reliability • Explore Flight Control Characteristics 	
Check	Action
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps, 140°F Oil Temp for T.O.
	Rotate at 55 kt
	Climb out at 87 kt (Vy)
	Do not change throttle settings, mixture, or fuel tanks until established at 3000ft
	Climb to 2500' MSL and level off
	Set Power to 75% ROP
	Remain above the airport for 10 minutes
	<i>CRUISE</i>
	Power to 75% ROP
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	Yaw rudder left and right 5 degrees
	360 degree clearing turns (10 degrees bank)
	360 degree clearing turns (20 degrees bank)
	Continue for 20 minutes @ 75%

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>SLOW FLIGHT</i>
	Climb to 4000 feet
	Slowly decrease speed to 61 kt – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	Increase speed to 70 kt
	Apply half flaps
	Slowly decrease speed to 61 kt – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Apply full flaps
	Maintain 61 kt – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Check engine instruments
	Speed back up to cruise speed (2300 RPM)
	Raise Flaps before 74 kt

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>LANDING</i>
	Use checklists
	Fly pattern at 70 kt, base & final at 65 kt
	USE Full FLAPS for landing pending testing
	Setup 500 fpm decent
	Taxi back and "Grin"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Pull cowlings and inspect engine carefully
	Inspect airframe carefully
	Download data recorder
	Move file in c:\FLIGHT RECORDER/WFDR????10.TXT, to TEMP folder

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 2 – CONFIRM FIRST FLIGHT RESULTS	
Pilot:	Date: Time:
Objectives:	
<ul style="list-style-type: none"> • Re-affirm the first flight findings 	
Check	Action
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps, 140°F Oil Temp for T.O.
	Rotate at 55 kt
	Climb out at 87 kt (Vy)
	Do not change throttle settings, mixture, or fuel tanks until established at 3000ft
	Climb to 2500' MSL and level off
	Set Power to 75% ROP
	Remain above the airport
	<i>CRUISE</i>
	Power to 75% ROP
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	Yaw rudder left and right 5 degrees
	360 degree clearing turns (10 degrees bank)
	360 degree clearing turns (20 degrees bank)

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>SLOW FLIGHT</i>
	Climb to 4000 feet
	Slowly decrease speed to 61 kt – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	Increase speed to 70 kt
	Apply half flaps (20 Degrees)
	Slowly decrease speed to 61 kt – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	Apply full flaps
	360 turns
	Add power, climb like doing a go-around & raise flaps
	Check engine instruments
	Speed back up to cruise speed
	Raise Flaps before 74 kt

NOTES

FLIGHT TEST PROGRAM
RV-9 N178TL

Check	Action
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Pull cowlings and inspect engine carefully
	Inspect airframe carefully
	Download data recorder

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 3 – VALIDATE ENGINE RELIABILITY		
Pilot:	Date:	Time:
Objectives:		
<ul style="list-style-type: none"> • Validate engine operation function properly 		
Check	Action	
	<i>DEPARTURE</i>	
	Start data recorder	
	Record Dynon discrete switch state before TO	
	Do not use flaps for TO	
	Climb out at 87 kt	
	Reduce throttle settings to 75% after 1000' AGL	
	Climb to 7500' MSL and level off	
	<i>CRUISE</i>	
	Limit power to 70% ROP	
	Check engine gauges especially CHT and Oil Temp	
	Trim hands off level flight	
	Apply carb heat and note changes	
	Lean engine and note changes	
	Switch fuel tanks and note changes (Boost Pump On)	
	Operate 5 minutes on magneto only (at 70%)	

NOTES

Stuff to validate: in-flight switch is operational; engine cooling is adequate; leaning function works correctly; record carb heat Temp increase and mag drop, oil pressure, fuel pressure

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	Record engine pressures and temperatures
	<i>POST FLIGHT</i>
	Download data recorder
	Record fuel and oil consumption
	Determine carb heat temp increase
	Determine max oil pressure during flight
	Determine CHT difference when operating on magneto only

NOTES

Set shock cooling alarm to 50F per minute

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 4 – SLOW FLIGHT TEST		
Pilot:	Date:	Time:
Objectives:		
<ul style="list-style-type: none"> • Become familiar with slow flight handling characteristics 		
Check	Action	
<i>DEPARTURE</i>		
	Start data recorder	
	Do not use flaps	
	Climb out at 87 kt	
	Climb to 3000' MSL and level off	
<i>CRUISE</i>		
	Limit prop RPM to 2300	
	Check engine gauges especially CHT and Oil Temp	
	Trim hands off level flight	
	Perform 2 clearing turns	
	Slow to 56 kt	
	Feel untrimmed, then trim and maintain altitude	
	360 turn left, then 360 right, shallow bank	
	Check CHTs & Oil Temp	
	Slow to 52 kt	

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	Trim & Maintain Altitude
	360 turn left, 360 turn right, shallow bank
	Check CHTs and Oil Temp
	Slow to 48 kt
	Trim & maintain altitude
	360 turn left, 360 turn right, shallow bank
	10 degrees flaps, maintain airspeed, 360 left, 360 right
	20 degrees flaps, maintain airspeed, 360 left, 360 right
	30 degrees flaps, maintain airspeed, 360 left, 360 right
	Slow until stall horn activates
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Download data recorder

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 5 – CLIMBS AND DESCENTS	
Pilot:	Date:
Time:	
Objectives:	
<ul style="list-style-type: none"> • Monitor engine performance during climbs and descents 	
Check	Action
<i>DEPARTURE</i>	
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Climb to 3000' MSL and level off
<i>CRUISE</i>	
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	108 kt climb for two minutes – full power
	Record engine temperatures and pressures
	Stabilize temperatures
	87 kt climb for two minutes – full power
	Record engine temperatures and pressures
	Stabilize temperatures

NOTES

To obtain this test flight data you must use common sense. Don't cook your engine! Don't shock cool your engine! Elements of this testing might be done in conjunction with other test flights during several different flights to avoid overheating or shock cooling your engine.

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	Moderate power descent to 3000 ' – do not exceed 156 kt
	87 kt climb for two minutes – full power
	Record engine temperatures and pressures – and OAT
	Stabilize temperatures
	78 kt climb for two minutes – full power
	Record engine temperatures and pressures – and OAT
	Stabilize temperatures
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Download data recorder

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 6 – AIRSPEED IN-FLIGHT ACCURACY CHECK	
Pilot:	Date:
Time:	
Objectives:	
<ul style="list-style-type: none"> • Determine accuracy of the airspeed indicator throughout a range of airspeeds 	
Check	Action
	Determine altitudes at which you desire airspeed data.
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to 1700
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	Set Mixture

NOTES

When you fly the three ground tracks for each power setting the IAS should be exactly the same. If not, make sure you're at the exact same altitude and just be patient --- sometimes it takes a few minutes for the airspeed to settle after a turn and a few burbbles.

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	1700 RPM, constant altitude - 5000 MSL
	<ul style="list-style-type: none"> • Record OAT
	<ul style="list-style-type: none"> • Record MAP
	<ul style="list-style-type: none"> • Fly ground track 360
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 240
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 120
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Record ground track from GPS

NOTES

Altitude: 5000 MSL
Throttle: 1700 RPM

Track	360	240	120
OAT			
IAS			
Ground Speed			

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	Set power 2000 RPM, constant altitude - 5000 MSL
	<ul style="list-style-type: none"> • Reset Mixture
	<ul style="list-style-type: none"> • Record MAP
	<ul style="list-style-type: none"> • Fly ground track 360
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 240
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 120
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS

NOTES

Altitude: 5000 MSL
Throttle: 2000 RPM

Track	360	240	120
OAT			
IAS			
Ground Speed			

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	Set power 2400 RPM, constant altitude - 5000 MSL
	<ul style="list-style-type: none"> • Reset Mixture
	<ul style="list-style-type: none"> • Record MAP
	<ul style="list-style-type: none"> • Fly ground track 360
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 240
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 120
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS

NOTES

Altitude: 5000 MSL
Throttle: 2400 RPM

Track	360	240	120
OAT			
IAS			
Ground Speed			

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	Set power 2600 RPM, constant altitude - 5000 MSL
	<ul style="list-style-type: none"> • Reset Mixture
	<ul style="list-style-type: none"> • Record MAP
	<ul style="list-style-type: none"> • Fly ground track 360
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 240
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS
	<ul style="list-style-type: none"> • Fly ground track 120
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS

NOTES

Altitude: 5000 MSL
Throttle: 2600 RPM

Track	360	240	120
OAT			
IAS			
Ground Speed			

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Calculate True Airspeeds using the attached Excel Spreadsheet (True Airspeed Calculator)
	Update Aircraft Operations Manual
	Download data recorder

NOTES

By using the attached Excel Spreadsheet, your ground track does not have to be exactly on the cardinal heading. If it isn't, record the ground track you did have on the spreadsheet.

What you're testing is the accuracy of your airspeed indicator. Consider doing this test at close to stall speeds w/ & w/out flaps to get an idea of your TAS for stall speed.

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 7 – STALLS	
Pilot:	Date:
	Time:
Objectives: <ul style="list-style-type: none"> • Determine actual stall speeds in landing and takeoff configuration • Setup the StallWarning system • Setup the Dynon angle of attack indicator 	
Check	Action
	<i>PRE-FLIGHT</i>
	Fill fuel tanks to full
	Install stall pressure pickup tube routed to cockpit
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to 2200
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>POWER OFF STALLS</i>
	No flaps
	Slowly decelerate while maintaining altitude
	Keep ball centered with rudder
	Note stall speed and Stall Warning horn speed
	Recover altitude and speed
	Slow down to 85 MPH
	Apply half flaps
	Slowly decelerate while maintaining altitude
	Keep ball centered with rudder
	Note stall speed and Stall Warning horn speed
	Retract flaps
	Recover altitude and speed

NOTES

SPEED IAS (MPH)

POWER-OFF STALL, NO FLAP:

POWER-OFF STALL, ½ FLAPS:

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	Slow down to 74 kt
	Apply full flaps
	Slowly decelerate while maintaining altitude
	Keep ball centered with rudder
	Note stall speed and Stall Warning horn speed
	Retract flaps
	Recover altitude and speed
	<i>POWER ON STALLS</i>
	Set power to 2200 RPM
	Slowly pull back elevator
	Keep ball centered with rudder
	Note stall speed and Stall Warning horn speed
	Recover altitude and speed

NOTES

SPEED IAS (kt)

POWER-OFF STALL, FULL FLAPS:

--

POWER-ON STALL, 2200 RPM, NO FLAP:

--

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	Full power
	Slowly pull back elevator
	Keep ball centered with rudder
	Note stall speed and Stall Warning horn speed
	Recover altitude and speed
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Update POH with actual stall speeds
	Download data recorder
	Redo flight test if Stall Speed does not match SW Horn

NOTES

SPEED IAS (kt)

POWER-ON STALL, FULL POWER:

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 8 – CLIMB SPEEDS	
Pilot:	Date:
Time:	
Objectives: <ul style="list-style-type: none"> • Establish best rate of climb speed (V_y) • Establish best angle of climb speed (V_x) • Establish best glide rates • Learn to visualize power-off glide descent rate 	
Check	Action
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Climb to 2000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to 2200
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight at 2000' MSL, Full rich mixture
	Do 2 clearing turns

NOTES

As mentioned before, use common sense. Don't cook your engine and don't shock cool your engine. These tests might be best done over several flights in conjunction with other tests.

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>CLIMB TEST#1</i>
	Establish 122 kt climb full power - Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Trim Level, Cool Engine
	<i>GLIDE TEST #1</i>
	Descend at 122 kt - Trim hands off
	Record descent rate from VSI
	Perform a 90 degree turn @ 15 deg. bank and record altitude lost
	Perform 180 degree turn @ 15 deg. bank and record altitude lost
	Perform 360 degree turn @ 15 deg. bank and record altitude lost
	<i>CLIMB TEST#2</i>
	Establish 113 kt climb - Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Trim Level, Cool Engine
	Descend at 113 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns

NOTES

IAS	Climbed to:	Climb Rate (FPM)	Descent Rate (FPM)	90 Turn	180 Turn	360 Turn
122						
113						

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>CLIMB TEST#3</i>
	Establish 104 kt climb – Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 2000 MSL
	Trim Level, Cool Engine
	Descend at 104 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns
	<i>CLIMB TEST#4</i>
	Establish 96 kt climb – Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 2000 MSL
	Trim Level, Cool Engine
	Descend at 96 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns

NOTES

IAS	Climbed to:	FPM
104		
96		

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>CLIMB TEST#5</i>
	Establish 87 kt climb - Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 2000 MSL
	Trim Level, Cool Engine
	Descend at 87 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns
	<i>CLIMB TEST#6</i>
	Establish 78 kt climb - Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 2000 MSL
	Trim Level, Cool Engine
	Descend at 78 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns

NOTES

IAS	Climbed to:	FPM
87		
82		

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>CLIMB TEST#7</i>
	Establish 87 kt climb - Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 2000 MSL
	Trim Level, Cool Engine
	Descend at 78 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns
	<i>CLIMB TEST#8</i>
	Establish 73 kt climb - Trim hands off
	Begin 1 minute timer as we pass thru 2500 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 2000 MSL
	Trim Level, Cool Engine
	Descend at 73 kt, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns

NOTES

IAS	Climbed to:	FPM
78		
73		

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LANDING</i>
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Grin"
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption
	Use graph to compute V_y and V_x
	Use graph to compute best glide speed

NOTES

Although this climb test can be done at slower airspeeds, BE CAREFUL! At 70 kt and 61 kt, this aircraft is at a very nose high configuration and is on the back side of the power curve. Unless you have a great deal of prior experience with the RV-series of aircraft, 78 kt is probably as slow as you need to go for these tests.

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 9 – STABILITY AND CONTROL CHECKS	
Pilot:	Date:
Time:	
Objectives: <ul style="list-style-type: none"> • Determine longitudinal stability • Determine lateral-directional stability • Determine spiral stability 	
Check	Action
<i>PRE-FLIGHT</i>	
These tests cannot be accomplished until any necessary trim tabs have been installed so the aircraft can be flown hands off	
<i>DEPARTURE</i>	
Start data recorder	
Do not use flaps	
Climb out at 87 kt	
Climb to 3000' MSL and level off	
<i>CRUISE</i>	
Limit prop RPM to 2300	
Check engine gauges especially CHT and Oil Temp	
Trim hands off level flight	

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LONGITUDINAL STABILITY TEST</i>
	Record airspeed at 2300 RPM (Airspeed ___ = A)
	Lightly pull on stick to reduce airspeed by 10%
	New airspeed: $A - 10\% = \underline{\quad} = B$
	Does the acft. require continued pull force to maintain the new airspeed?
	If yes: Pull stick to reduce airspeed to $A - 20\% = \underline{\quad} = C$
	Does acft. require still more pull force to maintain airspeed C?
	If yes: N178TL has POSITIVE static stability
	If no to either B or C airspeed, N178TL has NEUTRAL static stability
	If N178TL requires a push force for B or C airspeeds, then N178TL has NEGATIVE static stability
	---- repeat test using a PUSH test instead of PULL test
	<i>TEST FOR POSITIVE DYNAMIC LONGITUDINAL STABILITY (SHORT PERIOD)</i>
	Trim for cruise @ 2300 RPM
	Push nose down 5 degrees, then up to level attitude
	As attitude reaches level, release stick
	If N178TL briefly oscillates about the trim attitude before settling at trim attitude then N178TL has POSITIVE DYNAMIC LONGITUDINAL STABILITY (SHORT PERIOD)

NOTES

FLIGHT TEST PROGRAM
RV-9 N178TL

Check	Action
	<i>TEST FOR POSITIVE DYNAMIC LONGITUDINAL STABILITY (LONG PERIOD, PHUGOID)</i>
	Trim for cruise @ 2300 RPM, Record Airspeed ____ = A
	Pull stick for A - 5 kt and release stick
	Expect N178TL to oscillate about the trim speed before in dampens out
	If amplitude INCREASES with time = NEGATIVE DLS
	If amplitude CONTINUES to oscillate = NEUTRAL DLS
	If N178TL returns to cruise trim & speed = POSITIVE DLS
	<i>TEST FOR LATERAL/DIRECTIONAL CONTROL STABILITY</i>
	Set low cruise speed (BELOW MANEUVERING SPEED) & trim
	Slowly enter a sideslip until either full rudder or full aileron deflection
	Release aileron while holding full rudder
	---> low wing should raise to level
	<i>TEST FOR STATIC DIRECTIONAL STABILITY</i>
	Set low cruise speed (BELOW MANEUVERING SPEED) & trim
	Slowly yaw N178TL with rudder while keeping acft level with aileron ----- release rudder
	N178TL should return to no yaw condition

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>TEST SPIRAL STABILITY</i>
	(This will demonstrate the aircraft's tendency to raise the low wing when controls are released in a bank)
	Bank 15 to 20 degrees and release controls
	---> If bank angle DECREASES = POSITIVE SS
	---> If bank angle STAYS THE SAME = NEUTRAL SS
	---> If bank angle INCREASES = NEGATIVE SS
	<i>LANDING</i>
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 10 – ACCELERATED STALLS	
Pilot:	Date:
Time:	
Objectives:	
<ul style="list-style-type: none"> • Further explore stall characteristics of the aircraft 	
Check	Action
<i>DEPARTURE</i>	
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Clear SEA Class B to the south
	Climb to 6000' MSL and level off
<i>CRUISE</i>	
	Limit Airspeed to MANEUVERING SPEED
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>ACCELERATED STALL TEST</i>
	Hold 15 degrees bank and slow the aircraft until stall
	---> Airspeed at stall with 15 degrees bank = ____
	---> Airspeed at stall with 30 degrees bank = ____
	---> Airspeed at stall with 45 degrees bank = ____
	---> Airspeed at stall with 60 degrees bank = ____ (2g)
	<i>LANDING</i>
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 11 – "G" LIMIT TESTING	
Pilot:	Date: Time:
Objectives: Ensure aircraft meets the "G" limit capabilities	
•	
Check	Action
	<i>PRE-FLIGHT</i>
	Ensure Weight & Balance is within Utility limits
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Clear SEA Class B to the South
	Climb to 6000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	Make 2 clearing turns

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 12 – EXPLORE WEIGHT & BALANCE LIMITS	
Pilot:	Date:
	Time:
Objectives: Determine affect of change to aft balance and progressively increasing weights to establish maximum weight <ul style="list-style-type: none"> • Most FWD CG: Pilot + full wing tank 	
Check	Action
	<i>PRE-FLIGHT</i>
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to 2200 except where noted
	Check engine gauges especially CHT and Oil Temp
	<i>SLOW FLIGHT – 1.3Vs</i>
	Trim hands off level flight at 68Kts, 6000ft AGL
Yes / No	Check sufficient stick travel fwd and aft in level flight to provide good controllability, allows reaching stall
Yes / No	360 turns slow flight, check sufficient stick travel left-right to provide good controllability
	Lower flaps and Trim hands off level flight at 58Kts
Yes / No	Check sufficient stick travel fwd and aft in level flight to provide good controllability, allows reaching stall
Yes / No	360 turns slow flight, check sufficient stick travel left-right to provide good controllability

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action																																								
	<i>STALLS – NORMAL AND ACCELERATED</i>																																								
	Record stall speed:																																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">STALL SPEED (Kts)</th> <th style="width: 12.5%;">Flaps Up</th> <th style="width: 12.5%;">1/2 Flap</th> <th style="width: 12.5%;">Full Flap</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">Incrementally increase power setting & stall, check tendency to go into spin</td> </tr> <tr> <td>Full Throttle: _____ rpm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>30° LH Bank</td> <td></td> <td></td> <td></td> </tr> <tr> <td>30° RH Bank</td> <td></td> <td></td> <td></td> </tr> <tr> <td>45° LH Bank</td> <td></td> <td></td> <td></td> </tr> <tr> <td>45° RH Bank</td> <td></td> <td></td> <td></td> </tr> <tr> <td>60° LH Bank</td> <td></td> <td></td> <td></td> </tr> <tr> <td>60° RH Bank</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	STALL SPEED (Kts)	Flaps Up	1/2 Flap	Full Flap	Idle				Incrementally increase power setting & stall, check tendency to go into spin				Full Throttle: _____ rpm				30° LH Bank				30° RH Bank				45° LH Bank				45° RH Bank				60° LH Bank				60° RH Bank			
STALL SPEED (Kts)	Flaps Up	1/2 Flap	Full Flap																																						
Idle																																									
Incrementally increase power setting & stall, check tendency to go into spin																																									
Full Throttle: _____ rpm																																									
30° LH Bank																																									
30° RH Bank																																									
45° LH Bank																																									
45° RH Bank																																									
60° LH Bank																																									
60° RH Bank																																									
	<i>ROLL RATE – 1.3Vs (68Kts)</i>																																								
	Trim hands off level flight at 68Kts																																								
	During roll, hold pedals and check for adverse yaw																																								
Time:	Enter RH turn at 45 deg bank, apply full LH roll command, measure time reach 45 degree LH bank																																								
Yes / No	Adverse yaw ?																																								
Time:	Enter LH turn at 45 deg bank, apply full RH roll command, measure time reach 45 degree RH bank																																								
Yes / No	Adverse yaw ?																																								

FLIGHT TEST PROGRAM
RV-9 N178TL

Check	Action
	<i>LATERAL-DIRECTIONAL STAB – 1.3Vs (68Kts)</i> <i>Static and Sideslips</i>
	Trim hands off level flight at 68Kts
	Input aileron and rudder to get a 10deg bank LH sideslip
Yes / No	Release Aileron (keep rudder input), Do wings level?
	Input aileron and rudder to get a 10deg bank RH sideslip
Yes / No	Release Aileron (keep rudder input), Do wings level?
	Increase altitude 6000ft AGL, lower flaps, and reduce engine speed to idle with 58Kts (1.3Vs)
FPM:	Measure FPM drop with stabilized glide
Yes / No	Enter a RH sideslip with maximum rudder at 58Kts, check for rudder lock?
FPM:	Measure descent rate with RH sidelip
Yes / No	Release controls and check aircraft returns to stabilized glide
Yes / No	Enter a LH sideslip with maximum rudder at 58Kts, check for rudder lock?
FPM:	Measure descent rate with LH sideslip
Yes / No	Release controls and check aircraft returns to stabilized glide

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LONGITUDINAL STABILITY – 1.5Vs (78Kts) Stick Force and Long Period “Phugoid”</i>
	Trim hands off level flight at 78Kts (1.5Vs)
Yes / No	Pull to reduce to 70Kts (1.5Vs-10%), continued pull required: Yes=Positive LS
Yes / No	Pull to reduce to 62Kts (1.5Vs -20%), continued pull required: Yes=Positive LS
	Increase and stabilize airspeed to 70Kts (1.5Vs -10%)
# Cycles:	Release stick (stick free) and let the aircraft “hunt” its trim speed and count the number of cycles to return to level flight (78±2 Kts) (Phugoid)
Pos / Neut / Neg	Make sure maximum and minimum speed reached during cycle does not exceed 20% of trim speed (62 – 94Kts). Positive stability if max/min airspeed during cycle converges to trim airspeed, neutral if constant, and negative if divergent
	Return to trim hands off level flight at 78Kts (1.5Vs)
Yes / No	Push to increase to 86Kts (1.5Vs +10%), continued push required: Yes=Positive LS
Yes / No	Push to increase to 94Kts (1.5Vs +20%), continued push required: Yes=Positive LS
	Reduce and stabilize airspeed to 86Kts (1.5Vs +10%)
# Cycles:	Release stick (stick free) and let the aircraft “hunt” its trim speed and count the number of cycles to return to level flight (78±2 Kts) (Phugoid)
Pos / Neut / Neg	Make sure maximum and minimum speed reached during cycle does not exceed 20% of trim speed (62 – 94Kts). Positive stability if max/min airspeed during cycle converges to trim airspeed, neutral if constant, and negative if divergent

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LONGITUDINAL STABILITY – 1.5Vs (78Kts) Short-Period Response “Doublet”</i>
	Trim hands off level flight at 78Kts (1.5Vs)
	Input doublet pitch command up/down starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Hold stick at trim position and count number of cycles for aircraft to stabilize (stick fixed)
	Trim hands off level flight at 78Kts (1.5Vs)
	Input doublet pitch command up/down starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Release stick at trim position and count number of cycles for aircraft to stabilize (stick free)
	<i>LATERAL-DIRECTIONAL STABILITY – 1.5Vs (78Kts) Dynamic - Dutch Roll</i>
	Trim hands off level flight at 78Kts (1.5Vs)
	Input doublet rudder command starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Hold rudder and stick and count number of cycles for aircraft to stabilize (controls fixed) <i>Note: less than 6 oscillations & >2 osc/sec is considered damped, more than 6 read reference books</i>
	Input doublet rudder command starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Release rudder and stick and count number of cycles for aircraft to stabilize (controls free) <i>Note: less than 6 oscillations is considered damped, more than 6 read reference books</i>
Cycle/sec	Count the number of oscillations per second. <i>Note: 2 or more oscillations per second is considered damped</i>

FLIGHT TEST PROGRAM
RV-9 N178TL

Check	Action
	<i>LATERAL-DIRECTIONAL STABILITY – 1.5Vs (78Kts)</i> <i>Dynamic - Spiral</i>
	Trim hands off level flight at 78Kts (1.5Vs)
	Command stabilized RH turn with 20deg bank
Conv/ Neut/ Div	Release stick 20 sec, if aircraft banks towards 0deg → Convergent, banks towards 40deg → Divergent.
Time:	Measure time to reach 0 or 40 deg bank <i>Note: for divergence in less than 20 sec read reference books</i>
	Command stabilized LH turn with 20deg bank
Conv/ Neut/ Div	Release stick 20 sec, if aircraft banks towards 0deg → Convergent, banks towards 40deg → Divergent.
Time:	Measure time to reach 0 or 40 deg bank <i>Note: for divergence in less than 20 sec read reference books</i>
	<i>LONGITUDINAL STABILITY – 1.5Vs (78Kts)</i> <i>Stick Force for 60deg turn</i>
	Trim hands off level flight at 78Kts (1.5Vs)
Yes / No	Command 60 degree turn LH at 78Kts (1.5Vs) check that firm input required to hold turn.
Yes / No	Command 60 degree turn RH at 78Kts (1.5Vs) check that firm input required to hold turn.

FLIGHT TEST PROGRAM
RV-9 N178TL

Check	Action
	<i>ROLL RATE – Va (103Kts)</i>
	Trim hands off level flight at 103Kts
	During roll, hold pedals and check for adverse yaw
Time:	Enter RH turn at 45 deg bank, apply full LH roll command, measure time reach 45 degree LH bank
Yes / No	Adverse yaw ?
Time:	Enter LH turn at 45 deg bank, apply full RH roll command, measure time reach 45 degree RH bank
Yes / No	Adverse yaw ?
	<i>LATERAL-DIRECTIONAL STAB – Va (103Kts)</i> <i>Static</i>
	Trim hands off level flight at 103Kts
	Input aileron and rudder to get a 10deg bank LH sideslip
Yes / No	Release Aileron (keep rudder input), Do wings level?
	Input aileron and rudder to get a 10deg bank RH sideslip
Yes / No	Release Aileron (keep rudder input), Do wings level?

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LONGITUDINAL STABILITY – 75% Cruise Stick Force and Long Period “Phugoid”</i>
	NOTE: As needed, intermediate test speeds may be added between 1.5Vs and 75% cruise power speed.
V75%:	Trim hands off level flight at 75% power, mixture 50F ROP, record airspeed (V75%)
Yes / No	Pull to reduce to V75%-10%= ____Kts, continued pull required: Yes=Positive LS
Yes / No	Pull to reduce to V75%-20%= ____Kts, continued pull required: Yes=Positive LS
	Increase and stabilize airspeed to V75%-10%
# Cycles:	Release stick (stick free) and let the aircraft “hunt” its trim speed and count the number of cycles to return to level flight V75%±2 Kts (Phugoid)
Pos / Neut / Neg	Make sure maximum and minimum speed reached during cycle does not exceed 20% of trim speed. Positive stability if max/min airspeed during cycle converges to trim airspeed, neutral if constant, and negative if divergent
	Return to trim hands off level flight at V75
Yes / No	Push to increase to V75%+10%= ____Kts, continued push required: Yes=Positive LS
Yes / No	Push to increase to V75%+20%= ____Kts, continued push required: Yes=Positive LS
	Reduce and stabilize airspeed to V75%+10%
# Cycles:	Release stick (stick free) and let the aircraft “hunt” its trim speed and count the number of cycles to return to level flight V75%±2 Kts (Phugoid)

FLIGHT TEST PROGRAM

RV-9 N178TL

Pos / Neut / Neg	Make sure maximum and minimum speed reached during cycle does not exceed 20% of trim speed. Positive stability if max/min airspeed during cycle converges to trim airspeed, neutral if constant, and negative if divergent
------------------------	--

Check	Action
	<i>LONGITUDINAL STABILITY – 75% Cruise Short-Period Response “Doublet”</i>
	Trim hands off level flight at V75%
	Input doublet pitch command up/down starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Hold stick at trim position and count number of cycles for aircraft to stabilize (stick fixed)
	Trim hands off level flight at V75%
	Input doublet pitch command up/down starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Release stick at trim position and count number of cycles for aircraft to stabilize (stick free)
	<i>LATERAL-DIRECTIONAL STABILITY – 75% Cruise Dynamic - Dutch Roll</i>
	Trim hands off level flight at V75%
	Input doublet rudder command starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Hold rudder and stick and count number of cycles for aircraft to stabilize (controls fixed) <i>Note: less than 6 oscillations & >2 osc/sec is considered damped, more than 6 read reference books</i>
	Input doublet rudder command starting at 1 sec cycle and adjust to match aircraft frequency

FLIGHT TEST PROGRAM

RV-9 N178TL

# Cycles:	Release rudder and stick and count number of cycles for aircraft to stabilize (controls free) <i>Note: less than 6 oscillations is considered damped, more than 6 read reference books</i>
Cycle/sec	Count the number of oscillations per second. <i>Note: 2 or more oscillations per second is considered damped</i>

Check	Action
	<i>LATERAL-DIRECTIONAL STABILITY – 75% Cruise Dynamic - Spiral</i>
	Trim hands off level flight at V75%
	Command stabilized RH turn with 20deg bank
Conv/ Neut/ Div	Release stick 20 sec, if aircraft banks towards 0deg → Convergent, banks towards 40deg → Divergent.
Time:	Measure time to reach 0 or 40 deg bank <i>Note: for divergence in less than 20 sec read reference books</i>
	Command stabilized LH turn with 20deg bank
Conv/ Neut/ Div	Release stick 20 sec, if aircraft banks towards 0deg → Convergent, banks towards 40deg → Divergent.
Time:	Measure time to reach 0 or 40 deg bank <i>Note: for divergence in less than 20 sec read reference books</i>
	<i>LONGITUDINAL STABILITY – 75% Cruise Stick Force for 60deg turn</i>
	Trim hands off level flight at V75%
Yes / No	Command 60 degree turn LH at V75% check that firm input required to hold turn.
Yes / No	Command 60 degree turn RH at V75% check that firm input required to hold turn.

FLIGHT TEST PROGRAM
RV-9 N178TL

Check	Action
	<i>LONGITUDINAL STABILITY – Vne Short-Period Response “Doublet”</i>
	Trim hands off at Vne
	Input doublet pitch command up/down starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Hold stick at trim position and count number of cycles for aircraft to stabilize (stick fixed)
	Trim hands off level flight at Vne
	Input doublet pitch command up/down starting at 1 sec cycle and adjust to match aircraft frequency
# Cycles:	Release stick at trim position and count number of cycles for aircraft to stabilize (stick free)
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 12a – EXPLORE WEIGHT & BALANCE LIMITS	
Pilot:	Date: Time:
Objectives: Determine affect of change to aft balance and progressively increasing weights to establish maximum weight	
<ul style="list-style-type: none"> • Pilot (me) plus 80 lb. passenger & max. fuel 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure ballast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	Record climb performance: FPM = _____
	<i>CRUISE</i>
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	<i>SLOW FLIGHT & STALLS</i>
	360 turns, slow flight & power off stall w/ no flaps, 1/2 flaps, full flaps, recover
	Execute power-on stalls @ 2200 RPM

NOTES

Sand bags work well as ballast. Make sure they are securely belted in.

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>STABILITY & CONTROL CHECKS</i>
	Longitudinal Stability: Record Airspeed @ 2200 RPM (A)
	Pull to reduce to A-10%=B, require continued pull for B? Yes=Positive LS
	Do push test
	Lateral/Directional Control Stability: Sideslip
	Release Aileron (keep rudder), Do wings level?
	Static Directional Stability: Yaw w/ level wings, release rudder. Return to no yaw?
	Spiral Stability: Bank 15 deg., release. Return to level?
	<i>ACCELERATED STALLS</i>
	15 Degree bank, slow until stalls: Repeat w/ 30, 45, 60
	<i>DESCENT RATE</i>
	Descend @ 78 kt, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

The objective is to incrementally test the affect of increased weight and aft weight on the aircraft handling. DO NOT EXCEED GROSS WEIGHT. STAY WITHING THE FORE/AFT CG LIMITS.

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 12b – EXPLORE WEIGHT & BALANCE LIMITS	
Pilot:	Date: Time:
Objectives: Determine affect of change to aft balance and progressively increasing weights to establish maximum weight	
<ul style="list-style-type: none"> • Pilot (me) plus 160 lb. passenger & max. fuel 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	Record climb performance: FPM = _____
	<i>CRUISE</i>
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	<i>SLOW FLIGHT & STALLS</i>
	360 turns, slow flight & power off stall w/ no flaps, 1/2 flaps, full flaps, recover
	Execute power-on stalls @ 2200 RPM

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>STABILITY & CONTROL CHECKS</i>
	Longitudinal Stability: Record Airspeed @ 2200 RPM (A)
	Pull to reduce to A-10%=B, require continued pull for B? Yes=Positive LS
	Do push test
	Lateral/Directional Control Stability: Sideslip
	Release Aileron (keep rudder), Do wings level?
	Static Directional Stability: Yaw w/ level wings, release rudder. Return to no yaw?
	Spiral Stability: Bank 15 deg., release. Return to level?
	<i>ACCELERATED STALLS</i>
	15 Degree bank, slow until stalls: Repeat w/ 30, 45, 60
	<i>DESCENT RATE</i>
	Descend @ 78 kt, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 12c – EXPLORE WEIGHT & BALANCE LIMITS	
Pilot:	Date: Time:
Objectives: Determine affect of change to aft balance and progressively increasing weights to establish maximum weight	
<ul style="list-style-type: none"> • Pilot (me) plus 200 lb. passenger & max. fuel 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	Record climb performance: FPM = _____
	<i>CRUISE</i>
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	<i>SLOW FLIGHT & STALLS</i>
	360 turns, slow flight & power off stall w/ no flaps, 1/2 flaps, full flaps, recover
	Execute power-on stalls @ 2200 RPM

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>STABILITY & CONTROL CHECKS</i>
	Longitudinal Stability: Record Airspeed @ 2200 RPM (A)
	Pull to reduce to A-10%=B, require continued pull for B? Yes=Positive LS
	Do push test
	Lateral/Directional Control Stability: Sideslip
	Release Aileron (keep rudder), Do wings level?
	Static Directional Stability: Yaw w/ level wings, release rudder. Return to no yaw?
	Spiral Stability: Bank 15 deg., release. Return to level?
	<i>ACCELERATED STALLS</i>
	15 Degree bank, slow until stalls: Repeat w/ 30, 45, 60
	<i>DESCENT RATE</i>
	Descend @ 78 kt, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 12d – EXPLORE WEIGHT & BALANCE LIMITS	
Pilot:	Date: Time:
Objectives: Determine affect of change to aft balance and progressively increasing weights to establish maximum weight <ul style="list-style-type: none"> • Pilot (me) plus 200 lb. passenger, max. fuel & 20 lbs. cargo 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	Record climb performance: FPM = ____
	<i>CRUISE</i>
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	<i>SLOW FLIGHT & STALLS</i>
	360 turns, slow flight & power off stall w/ no flaps, 1/2 flaps, full flaps, recover
	Execute power-on stalls @ 2200 RPM

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>STABILITY & CONTROL CHECKS</i>
	Longitudinal Stability: Record Airspeed @ 2200 RPM (A)
	Pull to reduce to A-10%=B, require continued pull for B? Yes=Positive LS
	Do push test
	Lateral/Directional Control Stability: Sideslip
	Release Aileron (keep rudder), Do wings level?
	Static Directional Stability: Yaw w/ level wings, release rudder. Return to no yaw?
	Spiral Stability: Bank 15 deg., release. Return to level?
	<i>ACCELERATED STALLS</i>
	15 Degree bank, slow until stalls: Repeat w/ 30, 45, 60
	<i>DESCENT RATE</i>
	Descend @ 78 kt, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 80 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 12e – EXPLORE WEIGHT & BALANCE LIMITS	
Pilot:	Date: Time:
Objectives: Determine affect of change to aft balance and progressively increasing weights to establish maximum weight <ul style="list-style-type: none"> • Pilot (me) plus 200 lb. passenger, max. fuel & 40 lbs. cargo 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	Record climb performance: FPM = _____
	<i>CRUISE</i>
	Limit prop RPM to 2300
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	<i>SLOW FLIGHT & STALLS</i>
	360 turns, slow flight & power off stall w/ no flaps, 1/2 flaps, full flaps, recover
	Execute power-on stalls @ 2200 RPM

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>STABILITY & CONTROL CHECKS</i>
	Longitudinal Stability: Record Airspeed @ 2200 RPM (A)
	Pull to reduce to A-10%=B, require continued pull for B? Yes=Positive LS
	Do push test
	Lateral/Directional Control Stability: Sideslip
	Release Aileron (keep rudder), Do wings level?
	Static Directional Stability: Yaw w/ level wings, release rudder. Return to no yaw?
	Spiral Stability: Bank 15 deg., release. Return to level?
	<i>ACCELERATED STALLS</i>
	15 Degree bank, slow until stalls: Repeat w/ 30, 45, 60
	<i>DESCENT RATE</i>
	Descend @ 78 kt, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 80 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 13a – FUEL CONSUMPTION	
Pilot:	Date:
Time:	
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 3500 feet • Determine fuel burn at various power settings at 3500 feet 	
Check	Action
	<i>PRE-FLIGHT</i>
	Create GPS racetrack w/ 10 mile legs
	Fill both tanks to full
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt USING RIGHT TANK
	Climb to 3500' MSL and level off
	<i>CRUISE</i>
	Trim for cruise 2300 RPM, Record IAS ____
	Start Timer for 30 minutes, Fly racetrack
	Record MAP, OAT, and everything else

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 80 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Measure fuel in each tank & fill
	Record fuel burned & compute consumption rate
	Left tank fuel added (burned) x 2 = GPH @ 2400 RPM (XX% power) @ 3500 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 3500 feet.
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 13b – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 8000 feet • Determine fuel burn at various power settings at 8000 feet 	
Check	Action
	<i>PRE-FLIGHT</i>
	Create GPS racetrack w/ 10 mile legs
	Fill both tanks to full
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 87 kt USING RIGHT TANK
	Climb to 8000' MSL and level off
	<i>CRUISE</i>
	Trim for cruise 2300 RPM, Record IAS ____
	Start Timer for 30 minutes, Fly racetrack
	Record MAP, OAT, and everything else

NOTES

**FLIGHT TEST PROGRAM
RV-9 N178TL**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Measure fuel in each tank & fill
	Record fuel burned & compute consumption rate
	Left tank fuel added (burned) x 2 = GPH @ 2400 RPM (XX% power) @ 8000 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 8000 feet.
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 13c – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 10,000 feet • Determine fuel burn at various power settings at 10,000 feet 	
Check	Action
	<i>PRE-FLIGHT</i>
	Create GPS racetrack w/ 10 mile legs
	Fill both tanks to full
	<i>DEPARTURE</i>
	Start data recorder
	Climb out at 100 MPH USING RIGHT TANK
	Climb to 10,000' MSL and level off
	<i>CRUISE</i>
	Trim for cruise 2300 RPM, Record IAS ____
	Start Timer for 30 minutes, Fly racetrack
	Record MAP, OAT, and everything else

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Measure fuel in each tank & fill
	Record fuel burned & compute consumption rate
	Left tank fuel added (burned) x 2 = GPH @ 2400 RPM (XX% power) @ 10,000 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 10,000 feet.
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 14 – MAGNETIC COMPASS CALIBRATION	
Pilot:	Date: Time:
Objectives:	
<ul style="list-style-type: none"> • Adjust compass & calibrate compass card 	
Check	Action
	<i>PRE-FLIGHT</i>
	Loosen compass adjustment cover
	Make or buy a brass screwdriver
	Pick a very calm morning
	<i>DEPARTURE</i>
	Start data recorder
	Do not use flaps
	Climb out at 87 kt
	Climb to 3000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to 2400
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Check	Action
	<i>CRUISE</i>
	Fly North along a N/S Road
	Check GPS compass heading
	Adjust compass to read 360 degrees
	Fly South, adjust compass
	Fly East, adjust compass
	Fly West, adjust compass
	Fly NW, record error _____
	Fly NE, record error _____
	Fly SE, record error _____
	Fly SW, record error _____
	Fly North, record error _____
	Fly South, record error _____
	Fly East, record error _____
	Fly West, record error _____
	<i>LANDING</i>
	Use checklists
	Fly pattern at 70 kt
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Record errors on compass card
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

FLIGHT TEST PROGRAM RV-9 N178TL

Flight #: 15 – NIGHT OPERATION		
Pilot:	Date:	Time:
Objectives:		
<ul style="list-style-type: none"> • Ensure lighting, etc. is safe for night flights 		
Check	Action	
	<i>PRE-FLIGHT</i>	
	All test flight hours must have been accomplished before night operations can be executed with N178TL	
	Sit in aircraft in the dark	
	Ensure flashlight is handy & has fresh batteries	
	Set interior light brightness	
	<ul style="list-style-type: none"> • Are all instruments illuminated? 	
	<ul style="list-style-type: none"> • Turn on all electricity. Does it exceed 80% (28 amps) of alternator capacity? 	
	<ul style="list-style-type: none"> • Taxi aircraft at least 1/2 hour at night before flying at night (watch CHT & Oil Temps) 	
	<i>FLIGHT #1</i>	
	Start data recorder	
	Start test at dusk w/ a little light remaining	
	Perform at least 3 takeoffs & landings	
	<i>END TEST #1</i>	
	<i>Post flight Questions:</i>	
	<ul style="list-style-type: none"> • Are taxi & landing lights effective? 	
	<ul style="list-style-type: none"> • Is the strobe reflecting off anything? 	
	<ul style="list-style-type: none"> • Are interior lights effective? 	
	<ul style="list-style-type: none"> • Do lights reflect off canopy? 	
	<ul style="list-style-type: none"> • Do any lights cause radio interference? 	

FLIGHT TEST PROGRAM
RV-9 N178TL

	<i>FLIGHT TEST #2</i>
	Fly to TBD Airport & Return
	<i>POST FLIGHT</i>
	Download data recorder
	Prepare corrective action list
	Record fuel and oil consumption

NOTES