



FLIGHT TEST PROGRAM N686MS

Flight #: 1 – FIRST TEST FLIGHT	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Validate Engine Reliability • Explore Flight Control Characteristics • Practice Slow Flight • Explore Fuel System Reliability • Check Communication System 	
Check	Action
	<i>DEPARTURE</i>
	Do not use flaps
	Do not change throttle settings, mixture, or fuel tanks
	Remain above the airport
	Climb out at 110 MPH
	Climb to 4000' 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
	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
N686MS**

Check	Action
	<i>SLOW FLIGHT</i>
	Climb to 6000 feet
	Slowly decrease speed to 80 MPH – maintain altitude
	Check engine gauges especially CHT and Oil Temp
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	Increase speed to 100 MPH
	Apply half flaps
	Slowly decrease speed to 80 MPH – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	<i>Tank Selection</i>
	Check engine instruments
	Speed back up to cruise speed (2300 RPM)
	Airport in sight
	Switch Tanks (fuel pump on)
	Check engine gauges especially CHT and Oil Temp

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	<i>Communications Check</i>
	Switch to 119.3 Atl. Center
	Request transponder verification
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	USE A MAXIMUM OF 20 DEGREES FLAPS
	Check engine gauges especially CHT and Oil Temp
	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

NOTES



FLIGHT TEST PROGRAM N686MS

Flight #: 2 – CONFIRM FIRST FLIGHT RESULTS	
Pilot:	Date:
Time:	
Objectives: <ul style="list-style-type: none"> • Validate Engine Reliability • Explore Flight Control Characteristics • Practice Slow Flight • Explore Fuel System Reliability • Check Communication System 	
Check	Action
<i>DEPARTURE</i>	
	Do not use flaps
	Do not change throttle settings, mixture, or fuel tanks
	Remain above the airport
	Climb out at 110 MPH
	Climb to 4000' 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
	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
N686MS**

Check	Action
	<i>SLOW FLIGHT</i>
	Climb to 6000 feet
	Slowly decrease speed to 80 MPH – maintain altitude
	Check engine gauges especially CHT and Oil Temp
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	Increase speed to 100 MPH
	Apply half flaps
	Slowly decrease speed to 80 MPH – maintain altitude
	360 degree clearing turns at 20 degrees bank
	Keep ball centered using rudder
	<i>Tank Selection</i>
	Check engine instruments
	Speed back up to cruise speed (2300 RPM)
	Switch Tanks (fuel pump on)
	Check engine gauges especially CHT and Oil Temp

NOTES



**FLIGHT TEST PROGRAM
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Check	Action
	<i>Communications Check</i>
	Switch to 119.3 Atl. Center
	Request transponder verification
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	USE A MAXIMUM OF 20 DEGREES FLAPS
	Check engine gauges especially CHT and Oil Temp
	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

NOTES



**FLIGHT TEST PROGRAM
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Flight #: 3 – VALIDATE ENGINE RELIABILITY	
Pilot:	Date: Time:
Objectives:	
<ul style="list-style-type: none"> • Validate that actions affecting engine operation function properly 	
Check	Action
	<i>DEPARTURE</i>
	Do not use flaps
	Do not change throttle settings, mixture, or fuel tanks
	Remain above the airport
	Climb out at 110 MPH
	Climb to 4000' 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
	Apply carb heat and note changes
	Lean engine and note changes
	Switch fuel tanks and note changes (Boost Pump On)

NOTES



**FLIGHT TEST PROGRAM
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Check	Action
	Open/close oil cooler door and note changes
	Record engine pressures and temperatures
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Pull cowlings and inspect engine carefully
	Inspect airframe carefully

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Do not use flaps
	Climb out at 110 MPH
	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
	Perform 2 clearing turns
	Slow to 65 MPH
	Feel untrimmed, then trim and maintain altitude
	360 turn left, then 360 right, shallow bank
	Check CHTs & Oil Temp
	Slow to 60 MPH

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	Trim & Maintain Altitude
	360 turn left, 360 turn right, shallow bank
	Check CHTs and Oil Temp
	Slow to 55 MPH
	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
	40 degrees flaps, maintain airspeed, 360 left, 360 right
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 2000' 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
	125 MPH climb for two minutes – full power
	Record engine temperatures and pressures – and OAT
	Stabilize temperatures
	110 MPH climb for two minutes – full power
	Record engine temperatures and pressures – and OAT
	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
N686MS**

Check	Action
	Moderate power descent to 2000 ` – do not exceed 180 MPH
	100 MPH climb for two minutes – full power
	Record engine temperatures and pressures – and OAT
	Stabilize temperatures
	90 MPH 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

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 2000' 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
N686MS**

Check	Action
	1700 RPM, constant altitude - 5500 MSL
	<ul style="list-style-type: none"> • Record OAT • Record MAP • Fly ground track 360 • Record IAS from airspeed indicator • Record ground speed from GPS • Fly ground track 180 • Record IAS from airspeed indicator • Record ground speed from GPS • Fly ground track 90 • Record IAS from airspeed indicator • Record ground speed from GPS • Record ground track from GPS

NOTES

Altitude: 5500 MSL
Throttle: 1700 RPM

	360	180	90
OAT			
MAP			
IAS			
Ground Speed			



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	Set power 2000 RPM, constant altitude - 5500 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 180
	<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 90
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS

NOTES

Altitude: 5500 MSL
Throttle: 2000 RPM

	360	180	90
MAP			
IAS			
Ground Speed			



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	Set power 2400 RPM, constant altitude - 5500 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 180
	<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 90
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS

NOTES

Altitude: 5500 MSL
Throttle: 2400 RPM

	360	120	240
Manifold Pressure			
IAS			
Ground Speed			



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	Set power 2600 RPM, constant altitude - 5500 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 180
	<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 90
	<ul style="list-style-type: none"> • Record IAS from airspeed indicator
	<ul style="list-style-type: none"> • Record ground speed from GPS

NOTES

Altitude: 5500 MSL
Throttle: 2600 RPM

	360	120	240
Manifold Pressure			
IAS			
Ground Speed			



**FLIGHT TEST PROGRAM
N686MS**

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

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
N686MS**

Flight #: 7 – STALLS	
Pilot:	Date: Time:
Objectives:	
<ul style="list-style-type: none"> • Determine actual stall speeds in landing and takeoff configuration 	
Check	Action
	<i>PRE-FLIGHT</i>
	Fill fuel tanks to full
	<i>DEPARTURE</i>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

Check	Action
	<i>POWER OFF STALLS</i>
	No flaps
	Slowly decelerate while maintaining altitude
	Keep ball centered with rudder
	Note stall speed
	Recover altitude and speed
	Slow down to 100 MPH
	Apply half flaps
	Slowly decelerate while maintaining altitude
	Keep ball centered with rudder
	Note stall speed
	Retract flaps
	Recover altitude and speed

NOTES

SPEED IAS

(MPH)

POWER-OFF STALL, NO FLAP:

--

POWER-OFF STALL, 1/2 FLAPS:

--



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	Slow down to 100 MPH
	Apply full flaps
	Slowly decelerate while maintaining altitude
	Keep ball centered with rudder
	Note stall 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
	Recover altitude and speed

NOTES

SPEED IAS

(MPH)

POWER-OFF STALL, FULL FLAPS:

POWER-ON STALL, 2200 RPM, NO FLAP:



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	Full power
	Slowly pull back elevator
	Keep ball centered with rudder
	Note stall speed
	Recover altitude and speed
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption
	Update POH with actual stall speeds

NOTES

SPEED IAS

(MPH)

POWER-ON STALL, FULL POWER:



FLIGHT TEST PROGRAM N686MS

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>PRE-FLIGHT</i>
	Bring small stopwatch/timer
	<i>DEPARTURE</i>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 1500' 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, 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
N686MS**

Check	Action
	<i>CLIMB TEST #1</i>
	Establish 140 MPH climb - Trim hands off
	Begin 1 minute timer as we pass thru 2000 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Trim Level, Cool Engine
	<i>GLIDE TEST #1</i>
	Descend at 140 MPH - 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 130 MPH climb - Trim hands off
	Begin 1 minute timer as we pass thru 2000 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Trim Level, Cool Engine
	Descend at 130 MPH, 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
140						
130						



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	<i>CLIMB TEST#3</i>
	Establish 120 MPH climb - Trim hands off
	Begin 1 minute timer as we pass thru 2000 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 1500 MSL
	Trim Level, Cool Engine
	Descend at 120 MPH, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns
	<i>CLIMB TEST#4</i>
	Establish 110 MPH climb - Trim hands off
	Begin 1 minute timer as we pass thru 2000 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 1500 MSL
	Trim Level, Cool Engine
	Descend at 110 MPH, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns

NOTES

IAS	Climbed to:	FPM
120		
110		



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	<i>CLIMB TEST#5</i>
	Establish 100 MPH climb - Trim hands off
	Begin 1 minute timer as we pass thru 2000 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 1500 MSL
	Trim Level, Cool Engine
	Descend at 100 MPH, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns
	<i>CLIMB TEST#6</i>
	Establish 90 MPH climb - Trim hands off
	Begin 1 minute timer as we pass thru 2000 MSL
	At end of 1 minute, record altitude
	Ending Altitude= FPM=
	Descend to 1500 MSL
	Trim Level, Cool Engine
	Descend at 90 MPH, Trim hands off, Record Rate
	Perform & record altitude lost in 90, 180 & 360 turns

NOTES

IAS	Climbed to:	FPM
100		
90		



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Grin"
	<i>POST FLIGHT</i>
	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 80 mph and 70 mph, 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, 90 is probably as slow as you need to go for these tests.



**FLIGHT TEST PROGRAM
N686MS**

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>
	Do not use flaps
	Climb out at 110 MPH
	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

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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: N686MS has POSITIVE static stability
	If no to either B or C airspeed, N686MS has NEUTRAL static stability
	If N686MS requires a push force for B or C airspeeds, then N686MS 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 N686MS briefly oscillates about the trim attitude before settling at trim attitude then N686MS has POSITIVE DYNAMIC LONGITUDINAL STABILITY (SHORT PERIOD)

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	<i>TEST FOR POSITIVE DYNAMIC LONGITUDINAL STABILITY (LONG PERIOD)</i>
	Trim for cruise @ 2300 RPM, Record Airspeed ___ = A
	Pull stick for A - 5 MPH and release stick
	Expect N686MS 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 N686MS 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 N686MS with rudder while keeping acft level with aileron ----- release rudder
	N686MS should return to no yaw condition

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 10 – ACCELERATED STALLS	
Pilot:	Date: Time:
Objectives:	
<ul style="list-style-type: none"> • Further explore stall characteristics of the aircraft 	
Check	Action
	<i>PRE-FLIGHT</i>
	Consider wearing a parachute & practice egress
	<i>DEPARTURE</i>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 10,000' 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
N686MS**

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 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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 Aerobatic limits
	Consider wearing parachute and practice egress
	<i>DEPARTURE</i>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 10,000' 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 N686MS

Check	Action
	Establish 30 degree bank & pull on stick to achieve 2 G Release pressure & fly straight & level
	Establish 30 degree bank & pull on stick to achieve 3 G Release pressure & fly straight & level
	Establish 30 degree bank & pull on stick to achieve 4 G Release pressure & fly straight & level
	Establish 30 degree bank & pull on stick to achieve 5 G Release pressure & fly straight & level
	Establish 30 degree bank & pull on stick to achieve 6 G Release pressure & fly straight & level
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

*Note: A 4 g turn is a bit painful. Anything over that is **quite** painful. There is a good chance you will black out if you are not used to pulling G's. Use your own judgment to determine if anything over 4.5 g's is really appropriate for you and/or your airplane.*



**FLIGHT TEST PROGRAM
N686MS**

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>
	Note: 10% flaps can help lift tail as aft weight is added.
	Climb out at 110 MPH
	Climb to 6000' 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

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



**FLIGHT TEST PROGRAM
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES

These weight & balance tests were specifically designed for RV-4 N686MS. Other aircraft will require uniquely different weight & balance configurations. 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
N686MS**

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>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 12f – 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 & 80 lbs. cargo 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 12g – 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 140 lb. passenger, max. fuel & 100 lbs. cargo 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance
	<i>DEPARTURE</i>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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 140 lb. passenger, max. cargo, low fuel, FULL AFT C.G. 	
Check	Action
	<i>PRE-FLIGHT</i>
	Carefully weigh and secure balast
	Compute & record new weight & balance ENSURE ENOUGH FUEL ONBOARD TO RETURN WITH AT LEAST 12 GALLONS!!!
	<i>DEPARTURE</i>
	Climb out at 110 MPH
	Climb to 6000' 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
N686MS**

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 @ 90 MPH, record rate. Record loss of elevation w/ 90, 180, 360 degree turns
	<i>LANDING</i>
	Use checklists
	Fly pattern at 85 MPH
	Taxi back and "Smile"
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Climb out at 110 MPH 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
N686MS**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 85 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.
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600 and 2700 RPM

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 13b – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 5500 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>
	Climb out at 110 MPH USING RIGHT TANK
	Climb to 5500' 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
N686MS**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 85 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) @ 5500 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 5500 feet.
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600 and 2700 RPM

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 13c – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 7500 feet • Determine fuel burn at various power settings at 7500 feet 	
Check	Action
	<i>PRE-FLIGHT</i>
	Create GPS racetrack w/ 10 mile legs
	Fill both tanks to full
	<i>DEPARTURE</i>
	Climb out at 110 MPH USING RIGHT TANK
	Climb to 7500' 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
N686MS**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 85 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) @ 7500 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 7500 feet.
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600 and 2700 RPM

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 13d – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 9500 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>
	Climb out at 110 MPH USING RIGHT TANK
	Climb to 9500' 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
N686MS**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 85 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) @ 9500 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 9500 feet.
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600 and 2700 RPM

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 13a – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 11,500 feet • Determine fuel burn at various power settings at 11,500 feet 	
Check	Action
	<i>PRE-FLIGHT</i>
	Create GPS racetrack w/ 10 mile legs
	Fill both tanks to full
	<i>DEPARTURE</i>
	Climb out at 110 MPH USING RIGHT TANK
	Climb to 11,500' 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
N686MS**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 85 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) @ 11,500 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 11,500 feet.
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600 and 2700 RPM

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Flight #: 13a – FUEL CONSUMPTION	
Pilot:	Date: Time:
Objectives: <ul style="list-style-type: none"> • Determine fuel burn during takeoff/climb/descent to/from 13,500 feet • Determine fuel burn at various power settings at 13,500 feet 	
Check	Action
	<i>PRE-FLIGHT</i>
	Create GPS racetrack w/ 10 mile legs
	Fill both tanks to full
	USE OXYGEN
	<i>DEPARTURE</i>
	Climb out at 110 MPH USING RIGHT TANK
	Climb to 13,500' 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
N686MS**

Check	Action
	<i>LANDING</i>
	At end of 30 minutes, switch tanks & descend to land
	Use checklists
	Fly pattern at 85 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) @ 13,500 feet.
	Right tank fuel added (burned) = fuel required to climb/descend to 13,500 feet.
	Prepare corrective action list
	Record fuel and oil consumption
	<ul style="list-style-type: none"> • Repeat at this altitude using 2500, 2600 and 2700 RPM

NOTES



**FLIGHT TEST PROGRAM
N686MS**

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>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 2000' 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
N686MS**

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 85 MPH
	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
N686MS**

Flight #: 15 – AEROBATIC TESTING	
Pilot:	Date: Time:
Objectives:	
<ul style="list-style-type: none"> • Ensure aircraft performs all aerobatic maneuvers as predicted. 	
Check	Action
	<i>PRE-FLIGHT</i>
	Consider wearing parachute
	Practice Egress
	<i>DEPARTURE</i>
	Do not use flaps
	Climb out at 110 MPH
	Climb to 8000' MSL and level off
	<i>CRUISE</i>
	Limit prop RPM to
	Check engine gauges especially CHT and Oil Temp
	Trim hands off level flight
	Perform two clearing turns

NOTES



**FLIGHT TEST PROGRAM
N686MS**

Check	Action
	<i>AEROBATICS</i>
	Aileron Roll
	Loop
	Hammerhead
	Spin
	<i>POST FLIGHT</i>
	Prepare corrective action list
	Record fuel and oil consumption

NOTES



FLIGHT TEST PROGRAM N686MS

Flight #: 16 – 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 N686MS
	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 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? • Is the strobe reflecting off anything? • Are interior lights effective? • Do lights reflect off canopy? • Do any lights cause radio interference?



**FLIGHT TEST PROGRAM
N686MS**

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

NOTES