

Amateur-Built Fabrication and Assembly Checklist (2011)

Fixed Wing

Name(s)	Quiksilver Aeronautics, LLC
Address:	42214 Sarah Way, Temecula, CA 92590
Aircraft Model:	MXL II Sport
Date:	9/11/2012 - 9/12/2012
Remarks:	NKET Members: Tyler Feeley (Lead) and Tony Peplowski
This evaluation pertains to and is defined by: Quiksilver document list for the model MXL II Sport, Packing Lists: 98025, Rev "C", Engine Kit 99325, Rev "F", Airframe Kit	

NOTE: This checklist is only applicable to fixed wing aircraft. Evaluation of other types of aircraft (i.e., rotorcraft, balloons, lighter than air) will not be accomplished with this form.

NOTE: This checklist is invalid for and will not be used to evaluate an altered or modified type certificated aircraft with the intent to issue an Experimental Amateur-built Airworthiness Certificate. Such action violates FAA policy and DOES NOT meet the intent of § 21.191(g).

Instructions For Using The Amateur-Built Fabrication and Assembly Checklist (2011):

A point (each task equals 1 point) can be divided over multiple categories (Manufacturer, Commercial Assistance, Amateur Builder Assembly and Amateur Builder Fabrication) into 1/10 fractions. A Manufacturer may be a kit manufacturer, a component manufacturer or a part(s) manufacturer. Commercial assistance (for hire or compensation) may include assistance provided by kit manufacturers, commercial assistance centers, individuals (e.g. A&P mechanics or avionics technicians).

For example, 0.5 (half point) can be assigned to the Manufacturer, 0.3 (3/10 - 3 tenths) as Commercial Assistance, 0.2 to the Amateur Builder as Fabrication, for a total of 1 point.

Enter "N/A" in any box where a listed task is not applicable to the particular aircraft being evaluated. Use the "Add item" boxes at the end of each section to add applicable unlisted tasks and award credit.

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
Task #	Fuselage – 22 Listed Tasks				
F1	Fabricate Longitudinal Members	N/A			
F2	Fabricate Composite Cores or Shells, Skins	N/A			
F3	Fabricate Bulkheads or Cross members	N/A			
F4	1 Fabricate Flt Control Push Pull Tubes/Cables	1			
F5	1 Assemble Flt Control Push Pull Tubes/Cables	0			
F6	Assemble Fuselage Basic Structure	N/A			

FABRICATION AND ASSEMBLY TASKS			A	B	C	D
			Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
			F7	1	Fabricate Brackets and Fittings	0.9
F8	1	Assemble Brackets and Fittings	0			
F9	1	Fabricate Cables, Wire, and Lines	1			
F10	1	Assemble Cables, Wire, and Lines	0			
F11	1	Fabricate Fuselage Fuel System Components	0.8			
F12	1	Assemble Fuselage Fuel System Components	0			
F13		Fabricate Fuselage Covering or Skin	N/A			
F14		Assemble Fuselage Covering or Skin	N/A			
F15		Fabricate Windshield	N/A			
F16		Assemble Windshield to Fuselage	N/A			
F17		Fabricate Windows	N/A			
F18		Assemble Windows to Fuselage	N/A			
F19		Fabricate Doors/Canopy	N/A			
F20		Assemble Doors/Canopy to Fuselage	N/A			
F21	1	Fabricate Mast and Strut Assembly	1			
F22	1	Assemble Mast and Strut Assembly	0			
F23	1	Add Fab item: Primary Tube Structure	0.9			
F24	1	Add Assy item: Primary Tube Structure	0			
F25		Add Fab item:				
F26		Add Assy item:				
Total # of Fuselage Tasks		<u>Fuselage Subtotal</u>	Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
12		<u>Fuselage Total Points</u> ►	5.6			

Fuselage Comments:
Task F1, F2, F3, and F6 captured in Tasks F23 and F24

FABRICATION AND ASSEMBLY TASKS			A	B	C	D
			Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
			Task #			
Wings – 47 Listed Tasks						
W1	1	Fabricate Right Wing Spars	1			
W2	1	Fabricate Right Wing Ribs	0.9			
W3	1	Assemble Wing Spars and Ribs to Form Right Wing Primary Structure	0			
W4	1	Fabricate Left Wing Spars	1			
W5	1	Fabricate Left Wing Ribs	0.9			
W6	1	Assemble Wing Spars and Ribs to Form Left Wing Primary Structure	0			
W7		Fabricate Composite Cores	N/A			
W8		Assemble Composite Cores to Wing	N/A			
W9		Fabricate Wing Leading and Trailing Edges	N/A			
W10		Assemble Wing Leading & Trailing Edges to Wing	N/A			
W11	1	Fabricate Drag/Anti-drag Truss Members	1			
W12	1	Assemble Drag/Anti-drag Truss Members to Wing	0			
W13	1	Fabricate Wing Brackets and Fittings	0.9			
W14	1	Assemble Wing Brackets and Fittings to Wing	0			
W15	1	Fabricate Wing Tips	1			
W16	1	Assemble Wing Tips to Wings	0			
W17	1	Fabricate Special Tools or Fixtures	0			
W18	1	Fabricate Aileron Spars	0.7			
W19	1	Fabricate Aileron Ribs or Cores	1			
W20	1	Assemble Aileron Spars, Ribs and/or Cores to Form Aileron Primary Structure	0			
W21	1	Fabricate Aileron Brackets and Fittings	0.8			
W22	1	Assemble Aileron Brackets & Fittings to Aileron	0			
W23	1	Fabricate Aileron Covering or Skin (Includes Leading and Trailing Edges)	1			
W24	1	Assemble Aileron Covering or Skin to Aileron	0			
W25	1	Assemble Aileron to Wing	0			
W26		Fabricate Flap Spars	N/A			
W27		Fabricate Flap Ribs or Cores	N/A			
W28		Assemble Flap Spars, Ribs or Cores to Form Flap Primary Structure	N/A			
W29		Fabricate Flap Bracket and Fittings	N/A			
W30		Assemble Flap Brackets & Fittings to Flap	N/A			

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder
		Component	Assistance	Assembly	Fabrication
W31	Fabricate Flap Covering or Skin (Includes Leading and Trailing Edges)	N/A			
W32	Assemble Flap Covering or Skin to flap	N/A			
W33	Assemble Flaps to Wing	N/A			
W34	Fabricate Wing External Lighting Components	N/A			
W35	Assemble Wing Ext Lighting Components to Wing	N/A			
W36	1 Assemble Basic Wing Structure	0			
W37	Fabricate Wing Fuel System components	N/A			
W38	Assemble Wing Fuel System Components to Wing	N/A			
W39	1 Fabricate Cables Wires and Lines	1			
W40	1 Assemble Cables Wires and Lines to Wing	0			
W41	1 Fabricate Wing Covering or Skin	0.8			
W42	1 Assemble Wing Covering or Skin to Wing	0			
W43	1 Fabricate Wing Struts/Wires	1			
W44	1 Assemble Wing Struts/Wires	0			
W45	Fabricate Fuel Tanks	N/A			
W46	Assemble Fuel Tanks to Wing	N/A			
W47	1 Assemble Wings to Next Higher Structure	0			
W48	Add Fab item:				
W49	Add Assy item:				
W50	Add Fab item:				
W51	Add Assy item:				
Total # of Wing Tasks	<u>Wings Subtotal</u>	Mfr Kit/Part/Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
29	<u>Wings Total Points ►</u>	13			

Wing Comments: W17 = Wing Symetry Fixture
Lighting optional - To be determined at time of airworthiness.

FABRICATION AND ASSEMBLY TASKS			A	B	C	D
			Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
Task #	Empennage – 42 Listed Tasks					
E1	1	Fabricate Horizontal Stabilizer Spars	0.8			
E2		Fabricate Horizontal Stabilizer Ribs or Cores	N/A			
E3	1	Assemble Horizontal Stabilizer Ribs or Cores to Form Primary Horz-Stab Structure	0			
E4	1	Fabricate Horizontal Stabilizer Brackets & Fittings	1			
E5	1	Assemble Horizontal Stabilizer Brackets and Fittings to Stabilizer	0			
E6		Fabricate Horizontal Stabilizer Lead/Trailing Edges	N/A			
E7		Assemble Horizontal Stabilizer Lead/Trailing Edges to Stabilizer	N/A			
E8		Fabricate Horizontal Stabilizer Cables, Wires and Lines	N/A			
E9		Assemble Horizontal Stabilizer Cables, Wires and Lines to stabilizer	N/A			
E10	1	Fabricate Horizontal Stabilizer Empennage Covering or Skin	1			
E11	1	Assemble Horizontal Stabilizer Empennage Covering or Skin to Stabilizer	0			
E12	1	Assemble Horizontal Stabilizer Structure to Fuselage	0			
E13	1	Fabricate Elevator Spars	1			
E14		Fabricate Elevator Ribs Cores	N/A			
E15	1	Assemble Elevator Spars, Ribs or Cores to Form Primary Elevator Structure	0			
E16	1	Fabricate Elevator Brackets and Fittings	0.8			
E17	1	Assemble Elevator Brackets and fittings to Elevator	0			
E18	1	Fabricate Elevator Covering or Skins (Includes Leading and Trailing Edges)	0.8			
E19	1	Assemble Elevator Covering or Skins to Elevator	0			
E20		Fabricate Elevator trim Tab	N/A			
E21		Assemble Elevator Trim Tab to Elevator	N/A			
E22	1	Assemble Elevator to Horizontal Stabilizer	0			
E23		Fabricate Vertical Stabilizer Spars	N/A			
E24		Fabricate Vertical Stabilizer Ribs Cores	N/A			
E25		Assemble Spars, Ribs and/or Cores to Form Primary Vertical Stabilizer Structure	N/A			
E26		Fabricate Vertical Stabilizer Brackets and Fittings	N/A			
E27		Assemble Brackets and Fittings to Vertical Stabilizer	N/A			
E28		Fabricate Vertical Stabilizer Cables, Wires and Lines	N/A			
E29		Assemble Cables, Wires, Lines to Vertical Stabilizer	N/A			
E30		Fabricate Vertical Stabilizer Covering or Skin (Includes Leading and Trailing Edges)	N/A			

FABRICATION AND ASSEMBLY TASKS		A	B	C	D		
		Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder		
		Component	Assistance	Assembly	Fabrication		
E31	1	Assemble Vertical Stabilizer Covering or Skin to Vertical Stabilizer	N/A				
E32	1	Assemble Vertical Stabilizer to Next Higher Structure	N/A				
E33	1	Fabricate Rudder Spar	0.8				
E34	1	Fabricate Rudder Ribs or Cores	0.9				
E35	1	Assemble Rudder Spars, Ribs and/or Cores to Form Primary Rudder Structure	0				
E36	1	Fabricate Rudder Brackets and Fittings	1				
E37	1	Assemble Rudder Brackets and Fittings to Rudder	0				
E38	1	Fabricate Rudder Covering or Skin (Includes Leading and Trailing Edges)	0.9				
E39	1	Assemble Rudder Covering or Skin to Rudder	0				
E40	1	Fabricate Rudder Trim Tab	0.9				
E41	1	Assemble Rudder Trim Tab to Rudder	0				
E42	1	Assemble Rudder to Vertical Stabilizer	0				
E43	1	Add Fab item: Elevator Compression strut	0.9				
E44		Add Assy item:					
E45		Add Fab item:					
E46		Add Assy item:					
Total # of Empennage Tasks		<u>Empennage Subtotal</u>	Mfr Kit/Part/Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication	
25		<u>Empennage Total Points ►</u>	10.8				

Empennage Comments:
Task E43 captures extra Strut in Elevator Structure

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
Task #	Landing Gear – 14 Listed Tasks				
LG1	Fabricate Landing Gear Struts or Major Components	N/A			
LG2	Assemble Landing Gear Struts or Major Components to Form Primary Landing Gear Structure	N/A			
LG3	Assemble Landing Gear System Components Next Level Structure	N/A			
LG4	1 Fabricate Brake System Components	0.9			
LG5	1 Assemble Brake System Components to Wheels/Gear	0			
LG6	1 Assemble Wheels and Tires to Landing Gear	0			
LG7	1 Fabricate Landing Gear Bracket and Fittings	0.9			
LG8	1 Assemble Landing Gear Bracket and Fittings to Landing Gear	0			
LG9	Fabricate Landing Gear Actuation System Components	N/A			
LG10	Assemble Landing Gear Actuation System Components to Next Higher Structure	N/A			
LG11	1 Fabricate Landing Gear System Cables, Wires and Lines	0.9			
LG12	1 Assemble Landing Gear Cables, Wires and Lines to Next Level Structure	0			
LG13	Fabricate Landing Gear Fairings/Gear Doors	N/A			
LG14	Assemble Landing Gear Fairings/Gear Doors to Next Level Structure	N/A			
LG15	Add Fab item:				
LG16	Add Assy item:				
Total # of Land Gear Tasks	<u>Landing Gear Subtotal</u>	Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
7	<u>Landing Gear Total Points ►</u>	2.7			

Landing Gear Comments:

Landing gear is part of the primary tube structure accounted for in F23 and F24. Wheel pants may be optionally procured by the builder.

FABRICATION AND ASSEMBLY TASKS			A	B	C	D
			Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder
			Component	Assistance	Assembly	Fabrication
Task #	Propulsion – 26 Listed Tasks					
P1	1	Fabricate Engine Mounts	0.9			
P2	1	Assemble Engine Mounts to Next Level Structure	0			
P3		Fabricate Engine Cooling System/Baffles	N/A			
P4		Assemble Engine Cooling System Baffles to Engine	N/A			
P5		Fabricate Engine Compartment Overheat/Fire Detection System	N/A			
P6		Assemble Engine Compartment Overheat/Fire Detection System to Engine Compartment	N/A			
P7	1	Fabricate Induction System	1			
P8	1	Assemble Induction System to Engine	0			
P9	1	Fabricate Exhaust System	1			
P10	1	Assemble Exhaust System to Engine	0			
P11	1	Fabricate Engine Control Installation Brackets	0.9			
P12	1	Assemble Engine Controls to Next Level Structure	0			
P13		Fabricate Brackets and Fittings	N/A			
P14		Assemble Brackets and Fittings to Next Level Structure	N/A			
P15	1	Fabricate Cables, Wires and Lines	1			
P16	1	Assemble Cables, Wires and Lines to next Level Structure	0			
P17	1	Assemble Engine (Likely N/A)	1			
P18	1	Assemble Engine to Engine Mount	0			
P19	1	Fabricate Engine Propeller (Likely N/A)	1			
P20		Fabricate Propeller Spinner Components	N/A			
P21	1	Assemble Propeller and Spinner to Engine	0			
P22		Fabricate Engine Cowling	N/A			
P23		Assemble Engine Cowling to Airframe	N/A			
P24	1	Assemble Engine Fuel System Components to Next Level Structure	0			
P25		Fabricate Firewall	N/A			
P26		Assemble Firewall To Next Level Structure	N/A			
P27		Add Fab item:				
P28		Add Assy item:				
P29		Add Fab item:				
P30		Add Assy item:				
Total # of Propulsion Tasks	<u>Propulsion Subtotal</u>		Mfr Kit/Part/Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
15	<u>Propulsion Total Points ►</u>		6.8			

Propulsion Comments:

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
Task #	Cockpit Interior – 23 Listed Tasks				
C1	Fabricate Instrument Panel	N/A			
C2	Fabricate Instrument Sub Panels, Brackets and Fittings	N/A			
C3	Assemble Instrument Panel, Sub Panels and Brackets and Fittings to Next Higher Structure	N/A			
C4	Assemble Avionics to Instrument Panel	N/A			
C5	1 Fabricate Seats	0.9			
C6	1 Fabricate Seat Brackets and Fittings	1			
C7	1 Assemble Seats and Brackets and Fittings to Cockpit	0			
C8	1 Fabricate Seat Belts and Shoulder Harness Fittings and Brackets	1			
C9	1 Assemble Seat Belts and Shoulder Harness Gittings and Brackets to Structure	0			
C10	1 Fabricate Electrical Wiring, Controls and Switches	1			
C11	1 Assemble Electrical Systems Controls and Switches to Next Level Structure	0			
C12	1 Fabricate Control Yokes/Sticks	0.9			
C13	1 Assemble Control Yokes/Sticks to Flight Control System	0			
C14	1 Fabricate All Flight Control Push Pull Tubes and/or Cables	1			
C15	1 Assemble Flight Control Push Pull Tubes and/or Cables to Next Higher Structure	0			
C16	1 Fabricate Rudder Pedals	0.8			
C17	1 Assemble Rudder Pedals to Next Higher Structure	0			
C18	1 Fabricate Roll-Pitch and Yaw Trim Systems	0			
C19	1 Assemble Roll-Pitch and Yaw Trim Systems to Next Higher	0			
C20	Fabricate Flap/Spoiler Controls	N/A			
C21	Assemble Flap/Spoiler Controls to Next Higher Structure	N/A			
C22	Fabricate Closeout Panels/Floor Panels	N/A			
C23	Assemble Closeout Panels/Floor Panels	N/A			
C24	Add Fab item:				
C25	Add Assy item:				
Total # of Cockpit Tasks	<u>Cockpit Interior Subtotal</u>	Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
15	<u>Cockpit Interior Total Points ▶</u>	6.6			

Cockpit Comments: Instrument panel and instruments are not included in the basic kit.

Total # of Aircraft Tasks	◀ SUM #1
103	

▶ TOTAL TASKS AND LINE ITEMS



FABRICATION AND ASSEMBLY SUMMARY	A	B	C	D
	Mfr Kit/Part/Component	Commercial Assistance	Am Builder Assembly	Am Builder Fabrication
1. Total Number of Aircraft Tasks (Note 1)	(SUM#1)		103	
2. Total Points for Each Category. (Note 2)	45.5			
3. Total Points for Complete Aircraft Construction (SUM # 2 should equal SUM # 1 above). (Note3)	(SUM #2) ▶			
4. Percentage of Each Category as Part of Total Aircraft Construction. (Note 4)	44.17%			
5. Total Percentages for Complete Aircraft Construction (Add all percentages in row 4) Total should equal 100% (± . 5%). (Note 5)				
6. Total Builder Points – Add points in row 2, column C and D only, together. (Note 6)				
7. Total Builder Percentage – Add percentages in row 4, columns C and D only, together. (Note 7)				

NOTES: Instructions For Completing Fabrication and Assembly Checklist Summary

- 1. TOTAL NUMBER OF AIRCRAFT TASKS** (Sum #1): To find the total points awarded for all tasks, add together the six individual “Total # of Tasks” blocks located at the bottom left of each aircraft tasks section.
- 2. TOTAL POINTS FOR EACH CATEGORY:** [Columns A, B, C and D]. Each columns’ total points are tallied by adding the sum of the points awarded in each respective column for each of the tasks in the section (Fuselage, Wings, Empennage, Landing Gear, Propulsion and Cockpit). Include points assigned to ‘Additional Items’ at the end of each section. Boxes with a N/A (not applicable) or an asterisk, have zero points.
- 3. TOTAL POINTS FOR COMPLETE AIRCRAFT CONSTRUCTION:** (SUM#2) In row 3 of the Summary section, add together the numbers in each block on row2, tallied from each of the four column category totals, (Columns A+B+C+D). Compare SUM #1 to SUM #2. SUM #1 should be equal to SUM #2, (Verify the two sums are equal within a deviation of ± 0.5). Total points will vary from aircraft to aircraft depending on number of add items and N/As (Not Applicable) applied. (e.g., 133 listed task points, plus 5 Add items, minus 22 N/As = 116 tasks)

4: PERCENTAGE OF EACH CATEGORY AS PART OF TOTAL AIRCRAFT CONSTRUCTION: To compute category percentages, divide the number in each individual block found on row 2 by Sum #2 on row 3. For example if the total points of Mfr Kit/Part/Component category (Column A) = 40 and Sum #2 = 120, then divide 40 by 120 to reach 33.3%. Do this for each individual block on row 4 for each column. Percentages may be rounded to the nearest tenth, (22.86% is rounded to 22.9%).

5: TOTAL PERCENTAGES FOR COMPLETE AIRCRAFT CONSTRUCTION: Add up the percentages of each of the four categories (Columns A+B+C+D) found on row 4. Total must be equal to 100% with a (\pm) deviation limited to $\frac{1}{2}$ % (0.5%). Example; a derived percentage between 99.5% and 100.5% is acceptable. If this computation falls outside the accepted deviation then an error has occurred in row 2, 3 or 4.

6: TOTAL BUILDER POINTS: Add together the two point tallies from row 2, Columns C and D blocks only. Total will vary from aircraft to aircraft depending on number of N/As applied.

7. TOTAL BUILDER PERCENTAGE: Add together the two percentage tallies from row 4 Columns C and D blocks only. Total must exceed 50% to be eligible for amateur built status and to meet major portion requirement under 14 CFR, Part 21.191(g) Operating amateur-built aircraft.

EXPLANATIONS AND EXAMPLES

► All Points are added at the end of the form in the Summary section under their respective categories. The point total is comprised of all the credits awarded for primary delineated tasks plus any credits given for 'Additional

► "Additional Items" may be assigned points the same as primary listed tasks if work or parts not reflected in the main entries need to be credited.

► The applicants completion of tasks can be documented in a number of ways and may include

- (1) Builder's logs.
- (2) Photographs/video/DVD.
- (3) Drawings.
- (4) Engineering data when necessary.
- (5) Relevant documentation (e.g., plans) and references (e.g., handbooks) used.
- (6) Documentation concerning any commercial assist
- (7) Documentation concerning any non-commercial assistance used.
- (8) Part inventories and histories.
- (9) Receipts, Catalogs.
- (10) Log book entries

In addition to using this checklist, the builder should document the entire fabrication and assembly process. To issue an airworthiness certificate the FAA must make a major portion determination (the major portion of an aircraft was fabricated and assembled by an amateur builder (s)). Making this finding requires sufficient, credible and adequate documentation.