

Amateur-Built Fabrication and Assembly Checklist (2011) Gyroplane

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Aircraft Model:	<u>Auto Gyro, Cavalon</u>
Date:	<u>July 2, 2013</u>
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NOTE: This checklist is only applicable to Gyroplane aircraft. Evaluation of other types of aircraft (i.e., Fixed Wing, Weight Shift Control, 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/	Commercial	Am-Builder	Am-Builder
		Component	Assistance	Assembly	Fabrication
Task Airframe and Enclosure – 15 Listed Tasks					
A1	1 Fabricate Basic Airframe Structural Components (Usually Metal Frame)	1			
A2	1 Assemble Basic Airframe Structure	0.8			
A3	1 Fabricate All Airframe/Enclosure Brackets and Fittings	0.9			

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
A4	1 Assemble Brackets and Fittings to Airframe/Enclosure	0			
A5	1 Fabricate Enclosure (Composite or Metal Seating Area)	1			
A6	1 Assemble Enclosure	0			
A7	Fabricate Enclosure Covering or Skin	N/A			
A8	Assemble Enclosure Covering/Skin to Enclosure	N/A			
A9	Assemble Enclosure to Next Level Structure	N/A			
A10	1 Fabricate Windshield or Windscreen	0.5			
A11	1 Assemble Windshield or Windscreen to Enclosure	0			
A12	1 Fabricate Doors/Canopy and Window Components	1			
A13	1 Assemble Doors/Canopy and Window Components to Next Level Structure	0			
A14	1 Fabricate Fuel Tank	1			
A15	Assemble Fuel Tank to Next Level Structure	N/A			
A16	1 Add Fab item: Fuel Lines, Main Crossover	0			
A17	1 Add Assy item: Fuel Lines, Main Crossover	0			
A18	Add Fab item:				
A19	Add Assy item:				
Total # of Airframe Tasks	<u>Airframe/Enclosure Subtotal</u>	Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
13	<u>Airframe/Enclosure Total Points</u> ►	6.2			
<u>Airframe Comments:</u>					
A9: Covered by A2 A5: Integral tank, covered by A5					

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder
		Component	Assistance	Assembly	Fabrication
Task Rotor – 9 Listed Tasks					
R1	1 Assemble Rotor Blades to Hub Bar	0			
R2	1 Assemble Components to Form Rotor Head	1			
R3	1 Assemble Rotor Head/Teeter Hinge to Next Level Structure	0			
R4	1 Assemble Rotor Bearing Block/Spindle to Next Level Structure	1			
R5	1 Assemble Pitch/Roll Hinge Components to Next Level Structure	0.1			
R6	1 Fabricate Pre-rotator Components	1			
R7	1 Assemble Prerotator System to Next Level Structure	0			
R8	Fabricate Jump Takeoff Components	N/A			
R9	Assemble Jump Takeoff Components to Next Level Structure	N/A			
R10	Add Fab item:				
R11	Add Assy item:				
Total # of Rotor Tasks	<u>Rotor Subtotal</u>	Mfr Kit/Part/Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
7	<u>Rotor Total Points ▶</u>	3.1			
Rotor Comments:					

FABRICATION AND ASSEMBLY TASKS		A	B	C	D	
		Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication	
		Task Tail Group – 17 Listed Tasks				
T1	1	Fabricate Horizontal Stabilizer Structural Components (Spars, Ribs, Framing or Composite Materials)	1			
T2		Assemble Structural Components to Form Horizontal Stabilizer Basic Structure	N/A			
T3		Fabricate Horizontal Stabilizer Covering or Skin	N/A			
T4		Assemble Covering or Skin to Horizontal Stabilizer	N/A			
T5	1	Assemble Horizontal Stabilizer to Next Level Structure	0			
T6		Fabricate Vertical Stabilizer Structural Components (Spars, Ribs, Framing, Composite Materials, etc.)	N/A			
T7		Assemble Structural Components to Form Basic Vertical Stabilizer Structure	N/A			
T8		Fabricate Vertical Stabilizer Covering or Skin	N/A			
T9		Assemble Covering or Skin to Vertical Stabilizer	N/A			
T10		Assemble Vertical Stabilizer to Next Level Structure	N/A			
T11	1	Fabricate Rudder Structural Components (Spars, Ribs, Framing, Composite Materials, etc., includes bellcrank)	1			
T12		Assemble Structural Components to Form Basic Rudder Structure	N/A			
T13		Fabricate Rudder Covering or Skins	N/A			
T14		Assemble Covering or Skins to Rudder	N/A			
T15	1	Assemble Rudder to Vertical Stabilizer	0			
T16	1	Fabricate All Tail Group Trim Tab Components	1			
T17	1	Assemble All Trim Tab Components to Next Level Structure	0			
T18		Add Fab item:				
T19		Add Assy item:				
T20		Add Fab item:				
T21		Add Assy item:				
Total # of Tail Group Tasks		Tail Group Subtotal	Mfr Kit/Part/ Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
6		Tail Group Total Points ►	3			
<u>Tail Group Comments:</u> T2, T3 & T4 captured in T1. T6, T7, T8, T9 & T10 (assy & fab) captured in T1 & T5 T12, T13 & T14 captured in T11 - One piece tail section						

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder
		Component	Assistance	Assembly	Fabrication
Task Landing Gear – 9 Listed Tasks					
L1	Fabricate Landing Gear Brackets and Fittings	N/A			
L2	Assemble Landing Gear Brackets and Fittings to Landing Gear System	N/A			
L3	1 Fabricate Struts or Leg Components	0.8			
L4	1 Fabricate Landing Gear System Cables/Lines	1			
L5	1 Assemble Landing Gear System Cables/Lines to Next Level Structure	0			
L6	1 Assemble Wheels, Tires and Brakes to Landing Gear	0			
L7	Fabricate Fairings/Wheel Pants	N/A			
L8	Assemble Fairings/Wheel Pants to Wheels	N/A			
L9	1 Assemble Landing Gear to Next Level Structure	0			
L10	Add Fab item:				
L11	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
5	<u>Landing Gear Total Points ►</u>	1.8			
<u>Landing Gear Comments:</u> L1 & L2, no brackets, one piece unit L3 includes fork; L7 & L8 optional equipment					

FABRICATION AND ASSEMBLY TASKS		A	B	C	D		
		Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder		
		Component	Assistance	Assembly	Fabrication		
Task Propulsion – 22 Listed Tasks							
P1	1 Fabricate Engine Mounts	1					
P2	1 Assemble Engine Mounts to Next Level Structure	0					
P3	1 Fabricate Engine Cooling System/Baffles	0.7					
P4	1 Assemble Engine Cooling System Baffles to Engine	0					
P5	1 Fabricate Induction System	1					
P6	1 Assemble Induction System to Engine	0					
P7	1 Fabricate Exhaust System	1					
P8	1 Assemble Exhaust System to Propulsion System	0					
P9	1 Fabricate Engine Controls	0.8					
P10	1 Assemble Engine Controls to Next Level Structure	0					
P11	Fabricate All Engine Compartment Brackets and Fittings	N/A					
P12	Assemble Brackets and Fittings to Next Level Structure	N/A					
P13	1 Fabricate Cables, Wires and Lines	0.3					
P14	1 Assemble Cables, Wires and Lines to Next Level Structure	0					
P15	1 Fabricate Firewall (includes blanket or overlay)	0					
P16	1 Assemble Firewall to Airframe	0					
P17	Assemble Engine (Likely N/A)	N/A					
P18	1 Assemble Engine to Engine Mount	0					
P19	Fabricate Spinner Components	N/A					
P20	Assemble Propeller and Spinner to Engine	N/A					
P21	1 Fabricate Engine Cowling	0.7					
P22	1 Assemble Engine Cowling to Airframe	0					
P23	Add Fab item:						
P24	Add Assy item:						
P25	Add Fab item:						
P26	Add Assy item:						
Total # of Propulsion Tasks		<u>Propulsion Subtotal</u>		Mfr Kit/Part/Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
17		Propulsion Total Points ►		5.5			
Propulsion Comments: P11 & P12 - preexisting; P19 & P20 - spinners optional							

FABRICATION AND ASSEMBLY TASKS		A	B	C	D
		Mfr Kit/Part/	Commercial	Am-Builder	Am-Builder
		Component	Assistance	Assembly	Fabrication
Task Cockpit/Flight Controls 24 Listed Tasks					
C1	1 Fabricate Instrument Panel	1			
C2	1 Fabricate Instrument Sub Panels, Brackets and Fittings	0.8			
C3	1 Assemble Instrument Panels, Brackets and Fittings to Next Level Structure	0			
C4	1 Fabricate Seats	1			
C5	1 Assemble Seats Next Level Structure	0			
C6	1 Fabricate All Seat Belts/Harnesses Brackets and Fittings	1			
C7	1 Assemble Seat Belts/Harnesses, Brackets and Fittings to Next Level Structure	0			
C8	1 Fabricate Electrical System Wiring, Controls and Switches	0.8			
C9	1 Assemble Electrical System Wiring, Controls and Switches to Next Level Structure	0			
C10	Fabricate Floor Panels	N/A			
C11	Assemble Floor Panels to Next Level Structure	N/A			
C12	1 Fabricate Rudder Pedal Components	0.8			
C13	1 Assemble Rudder Pedal Components Together to Form Rudder Pedal Assembly	0			
C14	1 Assemble Rudder Pedal Assy to Next Level Structure	0			
C15	1 Fabricate All Flight Control Tubes/Cables	0.3			
C16	1 Assemble All Flight Control Tubes/Cables to Next Level Structure	0			
C17	1 Fabricate Pitch/Roll Control Stick Components	1			
C18	1 Assemble Pitch/Roll Control Stick Components to Next Level Structure	0			
C19	1 Fabricate Rotor Trim Control Components	1			
C20	1 Assemble Rotor Trim Control System to Next Level Structure	0			
C21	Fabricate Rotor Brake Components	N/A			
C22	Assemble Rotor Brake System to Next Level Structure	N/A			
C23	1 Fabricate Cables, Wires and Lines	0.3			
C24	1 Assemble Cables, Wires and Lines to Next Level Structure	0			
C25	Add Fab item:				
C26	Add Assy item:				
C27	Add Fab item:				
C28	Add Assy item:				
Total # of Cockpit Tasks	Cockpit/Flight Controls Subtotal	Mfr Kit/Part/Component	Commercial Assistance	Am-Builder Assembly	Am-Builder Fabrication
20	Cockpit/Flight Controls Total Points ►	8			
<u>Cockpit Comments:</u> C10 captured in A5; C19 & C20 captured in C17 & C18 & R5; C21 & C22 captured in R2					

Total # of Aircraft Tasks	◀ SUM #1
68	

▶ 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)		68	
2. Total Points for Each Category.	(Note 2)	27.6			
3. Total Points for Complete Aircraft Construction (SUM # 2 should equal SUM # 1 above).	(Note 3)	(SUM #2) ▶		27.6	
4. Percentage of Each Category as Part of Total Aircraft Construction.	(Note 4)	40.59%			
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.					
7. Total Builder Percentage – Add percentages in row 4, columns C and D only, together.					

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 Items.'

▶ "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 assistance used.
- (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.