REV	CHANGE	DATE	NAME
1.0	INITAIL REVISION	01/07/2011	MST
1.01	MODIFIED WEIGHT AND BALANCE DOCUMENT	02/17/2011	MST

TABLE OF CONTENTS

THE END OF THE BEGINNING

At this point your Carbon Cub Kit assembly/fabrication should be complete. The remaining topics below are necessary to make your plane legal and safe. Please undertake these steps (the dreaded paperwork and final finalization) with care and diligence. The importance of assuring airworthiness cannot be overstated. CubCrafters has included sample documents in this manual, and a cd that has most of these documents in pdf format that allows you to fill them out and then print them.

NUT AND BOLTING THE PROJECT

Nut and bolting a project is something sophisticated racecar teams do. Someone that didn't build the car touches every nut, bolt, fastener, control, harness, or "thing" on the aircraft to assure that it is tight, functional, properly secured, etc. There is certainly no need to break any of the TorqueSeal placed. Visual checking that the TorqueSeal is in place is enough. For fasteners without TorqueSeal, a light touch with a wrench or appropriate driver will verify that the fastener is tight. Re-torqueing is only appropriate if some significant looseness is discovered.

It is vital that a pilot competent to fly a Carbon Cub perform the portion of the Nut and Bolting that deals with control surfaces. You do not want to learn on takeoff roll that the elevator is functioning correctly but opposite of what is necessary. This kind of thing happens and YOU MUST CHECK IT. The entire process will probably take hours but it is worth it.

One way of approaching the task is to obtain a copy of an Annual Inspection Checklist. These are available on the Internet. There will be some items that do not pertain to your aircraft but many items will be consistent. The checklist will stimulate your inspection.

DOCUMENTATION AND AIRWORTHINESS CERTIFICATION

Amateur built aircraft must be inspected and certified by the FAA prior to flight. The FAA has a package available which prescribes the steps a homebuilder must take before his/her airplane is allowed to fly. Contact your nearest FAA Manufacturing Inspection District Office (MIDO) or Flight Standards District Office (FSDO) to obtain this package. The package also includes information on obtaining the Repairman's Certificate and a very useful Flight Testing Handbook.

It is highly recommended that you use the cd supplied by CubCrafters or go to the Internet and obtain a copy of Advisory Circular 20-27G. This is the FAA guideline for certification of amateur built aircraft. Fortunately, there is another resource that will be helpful. The EAA has gathered the requisite forms, placards, and guidance for this process. For a very small fee, you can obtain a copy of the package and you will be well guided in the process. The package includes:

- Step-by-Step Certification Guide
- Program Letter to Accompany Application for Airworthiness Certificate
- Eligibility Statement for Amateur Built Aircraft
- Application for Airworthiness Certificate
- Affidavit of Ownership
- Aircraft Registration Form (AC Form 8050-1)
- "Experimental" placard
- Cockpit Placards
- Weight and Balance Calculation sheet
- Aircraft Bill of Sale paperwork
- Aircraft data plate

There is a decision that will need to be undertaken. When you certify your Carbon Cub EX you will need to choose between 1865 lbs. and 1320 lbs. gross weight, if you decide to set the gross weight at 1320lbs. your Carbon Cub EX will qualify as a light sport aircraft. As the rules for this are evolving, please check the most current criteria prior to the time of STARTING the construction. The emphasis is placed on "starting" because of potential documentation gaps that could occur if you wait to start documentation when you are well along in the project.

CARBON CUB KIT

BILL OF SALE

KIT MANUFACTURER & MODEL CUB CRAFTERS, INC. CCK-1865	
KIT SERIAL NO. CCK-1865-000X	
DOES THIS XTH DAY OF XXXXXXXX, 2009 HEREBY SELL, GRANT, TRANSFER AND DELIVER ALL RIGHTS, TITLE, AND INTERESTS IN AND TO SUCH AIRCRAFT KIT UNTO:	
PURCHASER	NAME AND ADDRESS XXXXXXXXXX XXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXXXXX
IN TESTIMONY WHEREOF I HAVE SET MY HAND AND SEAL THIS 4TH DAY OF JUNE, 2009	

	NAME AND ADDRESS OF SELLER	SIGNATURE	TITLE
SELLER	CUB CRAFTERS, INC. 1918 S. 16TH AVE. YAKIMA, WA. 98903		KIT MANAGER
		MITCHELL S. TRAVIS	

Paperwork Reduction Act Statement: The information collected on this form is necessary to ensure applicant eligibility. The information is used to determine that the applicant meets the necessary qualifications as owner of an amateur built aircraft. We estimate that it will take approximately 30 minutes to complete the form. The information collection is required to obtain a benefit. The information collected becomes part of the aircraft registration system. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. **OMB 2120-0042**.

Comments covering the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at 800 Independence Avenue SW, Washington, DC 20591. ATTN: Information Collection Clearance Officer, ABA-20.

AFFIDAVIT OF OWNERSHIP FOR EXPERIMENTAL AIRCRAFT INCLUDING AMATEUR-BUILT AIRCRAFT AND OTHER NON-TYPE CERTIFICATED AIRCRAFT

(does not include light-sport)

U. S. Identification _____

Name of Amateur built builder OR
Name of Non TC'd manufacturer _____

Model _____ Serial Number _____

Class (airplane, rotorcraft, glider, weight shift control, powered-parachute, etc.) _____

Type of Engine Installed (reciprocating, turbopropeller,2 or 4 cycle, etc.) _____

Number of Engines Installed _____

Manufacturer, Model and Serial Number of each Engine Installed _____

_____

Built for Land or Sea Operation _____ Number of Seats _____

MUST CHECK ONE

☐ More than 50% of the above-described aircraft was built from miscellaneous parts and I am the owner. (This option is for amateur-built aircraft.)

☑ More than 50% of the above-described aircraft was built from a kit (prefabricated parts) and I am the owner. The bill of sale from the kit manufacturer is attached. (This option is for amateur-built aircraft.)

☐ I certify that the above-described aircraft is a newly manufactured non-type certificated aircraft and is not currently registered in another country. (This option is for manufacturers only.)

☐ I certify that the above-described aircraft is a previously manufactured (used) non-type certificated aircraft and is not currently registered in another country.
(This option is for owners of previously manufactured aircraft only.)
- ☐ Evidence of ownership from the aircraft manufacturer through any intervening owners is attached (chain of ownership).
- ☐ Unable to obtain complete chain of ownership. Statement as to ownership history and whereabouts of aircraft is attached.

Name of Owner: _____

Signature of Owner: _____ Title of Signer (If Appropriate): _____

Address _____

_____

City: _____ State: _____ Zip: _____

Telephone: _____

Notary Public:

State of: _____ County of: _____

Subscribed and sworn to before me this _____ day of _____ , _____

My Commission Expires: _____

_____
(Signature of Notary Public)

AC FORM 8050-88 (01/07)

GPO U.S. GOVERNMENT PRINTING OFFICE: 2008-752-289

FORM APPROVED
OMB No. 2120-0042

UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION-MIKE MONRONEY AERONAUTICAL CENTER
AIRCRAFT REGISTRATION APPLICATION

CERT. ISSUE DATE

UNITED STATES REGISTRATION NUMBER N

AIRCRAFT MANUFACTURER & MODEL

AIRCRAFT SERIAL No.

FOR FAA USE ONLY

TYPE OF REGISTRATION (Check one box)

☐ 1. Individual ☐ 2. Partnership ☐ 3. Corporation ☐ 4. Co-owner ☐ 5. Gov't. ☐ 8. Non-Citizen Corporation

NAME OF APPLICANT (Person(s) shown on evidence of ownership. If individual, give last name, first name, and middle initial.)

TELEPHONE NUMBER: ( )

ADDRESS (Permanent mailing address for first applicant listed.) (If P.O. BOX is used, physical address must also be shown.)

Number and street:

Rural Route: P.O. Box:

CITY	STATE	ZIP CODE

☐ **CHECK HERE IF YOU ARE ONLY REPORTING A CHANGE OF ADDRESS**

ATTENTION! Read the following statement before signing this application. This portion MUST be completed.

A false or dishonest answer to any question in this application may be grounds for punishment by fine and / or imprisonment (U.S. Code, Title 18, Sec. 1001).

CERTIFICATION

I/WE CERTIFY:

(1) That the above aircraft is owned by the undersigned applicant, who is a citizen (including corporations) of the United States.

(For voting trust, give name of trustee:], or:

CHECK ONE AS APPROPRIATE:

a. ☐ A resident alien, with alien registration (Form 1-151 or Form 1-551) No.

b. ☐ A non-citizen corporation organized and doing business under the laws of (state) and said aircraft is based and primarily used in the United States. Records or flight hours are available for inspection at

(2) That the aircraft is not registered under the laws of any foreign country; and

(3) That legal evidence of ownership is attached or has been filed with the Federal Aviation Administration.

NOTE: If executed for co-ownership all applicants must sign. Use reverse side if necessary.

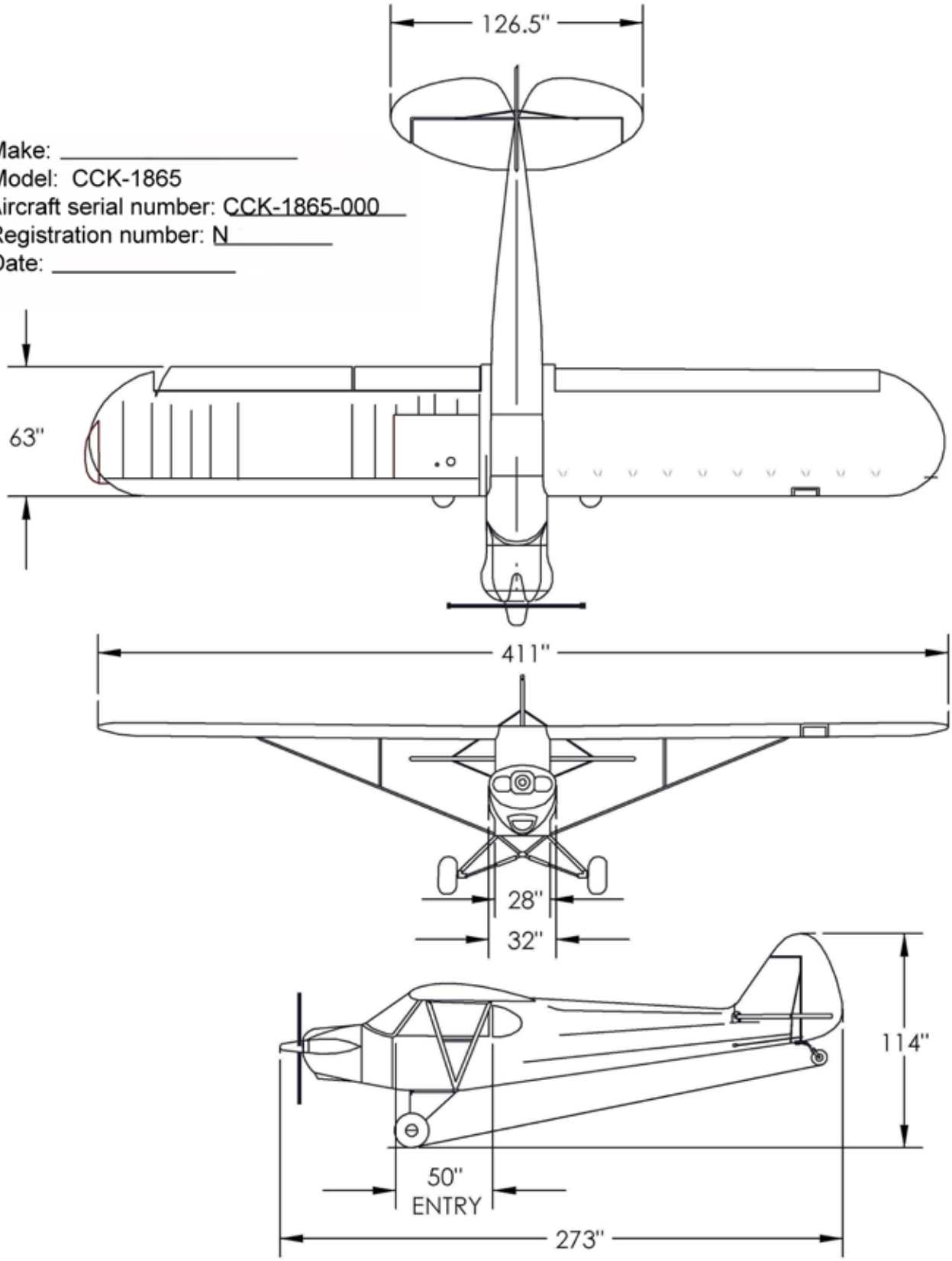
TYPE OR PRINT NAME BELOW SIGNATURE

EACH PART OF THIS APPLICATION MUST BE SIGNED IN INK.	SIGNATURE	TITLE	DATE
	SIGNATURE	TITLE	DATE
	SIGNATURE	TITLE	DATE

NOTE Pending receipt of the Certificate of Aircraft Registration, the aircraft may be operated for a period not in excess of 90 days, during which time the PINK copy of this application must be carried in the aircraft.

AC Form 8050-1 (5/03) (0052-00-628-9007)

Make: _____
Model: CCK-1865
Aircraft serial number: CCK-1865-000
Registration number: N_____
Date: _____



Form Approved
OMB NO. 2120-0018
Exp. 12/31/2010

US Department of Transportation Federal Aviation Administration

ELIGIBILITY STATEMENT AMATEUR-BUILT AIRCRAFT

Instructions: Print or type all information except signature. Submit original to an authorized FAA representative. Applicant completes Section I thru III. Notary Public Completes Section IV.

I. REGISTERED OWNER INFORMATION

Name(s) _____

Address(es) _____
No. & Street **City** **State** **Zip**

Telephone No.(s) (____) _____ (____) _____
Residence **Business**

II. AIRCRAFT INFORMATION

Model _____ Engine(s) Make _____

Assigned Serial No. _____ Engine(s) Serial No. _____

Registration No. _____ Prop./Rotor(s) Make _____

Aircraft Fabricated: Plan ☐ Kit ☐ Prop./Rotor(s) Serial No.(s) _____

III. MAJOR PORTION ELIGIBILITY STATEMENT OF APPLICANT

I certify that the major portion of this aircraft (identified in Section II above) was fabricated and assembled by

_____
Names of all builders (Please Print)

solely for my (our) education or recreation, in accordance with 14 CFR part 21, Certification Procedures for Products and Parts, § 21.191(g), Operating amateur-built aircraft. I have records to support this statement and will make them available to the FAA upon request.

During the fabrication and assembly of this project, I/ we used the following commercial assistance (mark N/A if no commercial assistance was used):

Name of company or individual(s)	City & State	Phone

-NOTICE-

Whoever in any matter within the jurisdiction of the executive, legislative, or judicial branch of the Government of the United States, knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or who makes any materially false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing the same to contain any materially false, fictitious or fraudulent statement or entry, shall be fined under this title, imprisoned not more than 5 years or, if the offense involves international or domestic terrorism, imprisoned not more than 8 years, or both.
(U.S. Code, Title 18, Sec. 1001)

APPLICANT'S DECLARATION

I hereby certify that all statements and answers provided by me in this statement form are complete and true to the best of my knowledge, and I agree that they are to be considered part of the basis for issuance of any FAA certificate to me. I have also read and understand the Privacy Act statement that accompanies this form.

Signature of Applicant (*In Ink)*	Date

IV. NOTARIZATION STATEMENT

FAA Form 8130-12 (08-2009) Supersedes Previous Edition NSN:0052-00-889-9002

TYPE OR PRINT ALL ENTRIES IN INK

Form Approved
OMB. No. 2120-0022 2/28/2011

U.S. Department of Transportation
Federal Aviation Administration

AIRMAN CERTIFICATE AND/OR RATING APPLICATION

☐ REPAIRMAN
☐ MECHANIC
☐ AIRFRAME
☐ POWERPLANT

(Specify Rating)

☐ PARACHUTE RIGGER
☐ SENIOR ☐ MASTER
☐ SEAT ☐ CHEST
☐ BACK ☐ LAP

APPLICATION FOR: ☐ ORIGINAL ISSUANCE ☐ ADDED RATING

I. APPLICANT INFORMATION

A. NAME *(First, Middle, Last)*

B. SOCIAL SECURITY NO. | C. DOB *(Mo., Day., Yr.)* | D. HEIGHT IN. | E. WEIGHT

F. HAIR | G. EYES | H. SEX | I. NATIONALITY *(Citizenship)*

J. PLACE OF BIRTH

K. PERMANENT MAILING ADDRESS
NUMBER AND STREET, P.O. BOX, ETC.
CITY
STATE ZIP CODE

L. HAVE YOU EVER HAD AN AIRMAN CERTIFICATE SUSPENDED OR REVOKED?
☐ NO
☐ YES (If "Yes," explain on an attached sheet keying to appropriate item number).

M. DO YOU NOW OR HAVE YOU EVER HELD AN FAA AIRMAN CERTIFICATE? ☐ NO ☐ YES
SPECIFY TYPE:

N. HAVE YOU EVER BEEN CONVICTED FOR VIOLATION OF ANY FEDERAL OR STATE STATUTES PERTAINING TO NARCOTIC DRUGS, MARIJUANA, AND DEPRESSANT OR STIMULANT DRUGS OR SUBSTANCES? ☐ NO ☐ YES
DATE OF FINAL CONVICTION

II. CERTIFICATE OR RATING APPLIED FOR ON BASIS OF -

☐ **A.** CIVIL EXPERIENCE
☐ **B.** MILITARY EXPERIENCE
☐ **C.** LETTER OF RECOMMENDATION FOR REPAIRMAN *(Attach copy)*

☐ **D.** GRADUATE OF APPROVED COURSE
(1) NAME AND LOCATION OF SCHOOL
(2) SCHOOL NO. | (3) CURRICULUM FROM WHICH GRADUATED | (4) DATE

☐ **E.** STUDENT HAS MADE SATISFACTORY PROGRESS AND IS RECOMMENDED TO TAKE THE ORAL/ PRACTICAL TEST (FAR 65.80)
(1) SCHOOL NAME | NO. | (2) SCHOOL OFFICIAL'S SIGNATURE

☐ **F.** SPECIAL AUTHORIZATION TO TAKE MECHANIC'S ORAL/PRACTICAL TEST (FAR 65.80)
(1) DATE AUTH. | (2) DATE AUTH. EXPIRES | (3) FAA INSPECTOR SIGNATURE | (4) FAA DIST OFC.

III. RECORD OF EXPERIENCE

A. MILITARY COMPETANCE OBTAINED IN →
(1) SERVICE | (2) RANK OR PAY LEVEL | (3) MILITARY SPECIALITY CODE

B. APPLICANT'S OTHER THAN FAA CERTIFICATED SCHOOL GRADUATES. LIST EXPERIENCE RELATING TO CERTIFICATE AND RATING APPLIED FOR.
(Continue on separate sheet, if more space is needed).

DATES: MONTH AND YEAR FROM	TO	EMPLOYER AND LOCATION	TYPE WORK PERFORMED

C. PARACHUTE RIGGER APPLICANTS: INDICATE BY TYPE HOW MANY PARACHUTES PACKED

SEAT	CHEST	BACK	LAP

FOR MASTER RATING ONLY

PACKED AS A -
☐ SENIOR RIGGER ☐ MILITARY RIGGER

IV. APPLICANT'S CERTIFICATION

I CERTIFY THAT THE STATEMENTS BY ME ON THIS APPLICATION ARE TRUE
A. SIGNATURE | B. DATE

V.

I FIND THIS APPLICANT MEETS THE EXPERIENCE REQUIREMENTS OF FAR 65 AND IS ELIGIBLE TO TAKE THE REQUIRED TESTS.

DATE | INSPECTOR'S SIGNATURE | FAA DISTRICT OFFICE

FOR FAA USE ONLY

Emp.	.reg.	D.O.	.seal	.con	iss.	Act	.lev	.TR	.s.h.	.Src	#rte	Rating (1)	Rating (2)	Rating (3)	Rating (4)

LIMITATIONS

FAA Form 8610-2 (2-85) SUPERSEDES PREVIOUS EDITION
Electronic Version (Adobe)

Results of Oral and Practical Tests

MECHANIC

I. GENERAL - Airframe and powerplant

ORAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
QUES. NO.											
PRACTICAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
PROJ. NO.											

II. AIRFRAME STRUCTURES

ORAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
QUES. NO.											
PRACTICAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
PROJ. NO.											

III. AIRFRAME SYSTEMS AND COMPONENTS

ORAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
QUES. NO.											
PRACTICAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
PROJ. NO.											

IV. POWERPLANT THEORY AND MAINTENANCE

ORAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
QUES. NO.											
PRACTICAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
PROJ. NO.											

V. POWERPLANT SYSTEMS AND COMPONENTS

ORAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
QUES. NO.											
PRACTICAL TEST	PASS ☐	EXPIRATION DATE:						FAIL ☐			
PROJ. NO.											

PARACHUTE RIGGER

TYPE			
	SEAT	PASS ☐	FAIL ☐
	BACK	PASS ☐	FAIL ☐
	CHEST	PASS ☐	FAIL ☐
	LAP	PASS ☐	FAIL ☐
		PASS ☐	FAIL ☐

REMARKS

DESIGNATED EXAMINER'S REPORT

I have personally tested this applicant in accordance with pertinent procedures and standards, and

I HAVE INDICATED THE RESULT AS:
☐ APPROVED *(Temporary Certificate Issued)* ☐ APPROVED *(Temporary Certificate **NOT** Issued)*
☐ DISAPPROVED ☐ FAR 65.80 - ORAL/PRACTICAL PASSED

ATTACH-MENTS:
☐ REPORT OF WRITTEN TEST ☐ SUPERSEDED CERTIFICATE ☐ LETTER
☐ FAA FORM 8610-2 ☐ TEMPORARY CERTIFICATE ☐ SEAL SYMBOL CARD

DATE TEST COMPLETED	EXAMINER'S SIGNATURE	DESIGNATION NO.

APPLICANT'S CERTIFICATION

THIS BLOCK MUST BE COMPLETED BY THE APPLICANT AT THE TIME OF ISSUANCE OF TEMPORARY CERTIFICATE (FAA FORM 8060-4)

A. HAVE YOU EVER HAD AN AIRMAN CERTIFICATE SUSPENDED OR REVOKED? . . . . . ☐ NO ☐ Yes If "Yes," explain on an attached sheet.

B. HAVE YOU EVER BEEN CONVICTED FOR VIOLATION OF ANY FEDERAL OR STATES STATUTES PERTAINING TO NARCOTIC DRUGS, MARIJUANA, DEPRESSANT OR STIMULANT DRUGS OR SUBSTANCES? . . . . . ☐ NO ☐ YES → DATE OF FINAL CONVICTION

I CERTIFY THAT THE STATEMENTS BY ME ARE TRUE.

A. SIGNATURE B. DATE

FAA INSPECTOR'S REPORT

I HAVE -
☐ EXAMINED THIS APPLICANT'S PAPERS.
☐ PERSONALLY TESTED THIS APPLICANT IN ACCORDANCE WITH PERTINENT PROCEDURES AND STANDARDS.

WITH THE INDICATED RESULT -
☐ APPROVED
☐ DISAPPROVED

PARACHUTE SEAL SYMBOL ASSIGNED _____
☐ ANSWER SHEET GRADED (Military Competency)

DATE	INSPECTOR'S SIGNATURE	FAA DISTRICT OFFICE

Electronic Version (Adobe)

WEIGHT AND BALANCE

As you read in the previous section, one of the requirements for aircraft certification is the weight and balance. This is simply the weighing of the aircraft followed by a calculation that establishes where the empty weight center of balance of the aircraft is.

The aircraft must be brought to a level attitude fore and aft and left to right. To begin, the fuselage will be leveled in the fore and aft direction. Place a level on the bottom doorframe. Level the fuselage by appropriately raising or lowering the tail. You can use a sawhorse and blocking to achieve level or you can use a modified scissors table (or another scheme of your choice). Make sure the wheel brakes are locked or the tires chocked before raising the tail.
Next we check and adjust the aircraft level from right to left. Place a level on the square crossbar above and forward of the pilot's seat. Read the angle. If the fuselage is not level, place a jack under the "low" side main gear. Slowly raise jack until aircraft is level. This is easiest with two people – one to read the level and one to adjust the jack.. Record the N-number and date of your weighing.

Care must be exercised to assure that no accidents occur during the raising of the tail or in placing the scales or any other part of the aircraft not being steadfastly on the ground. Be sure the aircraft is secured to not roll away or get weird in any way!!

You may be wondering: "What scales?". Most likely you will rent or borrow a good set of racecar weighing scales. Scale brands like "Longacres" work very well. Each scale should be capable of safely and reliably dealing with weights of up to 800 pounds. Accuracy should be to the nearest 1 pound. Do a few "test weighs" of something moderately heavy (like you). Do you see the same weight on each scale? If you squirm while weighing it will definitely show in the reported values. You may need to weigh a toolbox or something else that will sit still.

You will see people express the weights as 401.37 but this is complete fantasy. Most scales that you could obtain are incapable of this precision and even the slightest breeze in your hangar will move the scale more that the 0.37. Please notice that I said "in your hangar". The weighing needs to be done indoors with no breezes blowing on the aircraft during the weighing.
Once you are happy with the weighing, record the quantity of oil and the weights for each tire on the form. We'll do the math to calculate the CG in the following paragraphs.
The Carbon Cub Kit has a forward CG limit of 70.5 inches aft of the datum and an aft CG limit that is 79 inches aft of the datum. The Carbon Cub Kit has a maximum gross weight of 1865 pounds.
Now to the math but first a couple of terms need to be explained. The "datum" is just a convenient place to reference all of our numbers. Notice in the Weight and Balance sample form on the following pages that the position of the main landing gear and the tail wheel have their positions called out relative to the datum (62.5 inches and 261.9 inches respectively). Next, add the weight on the left main gear and the right main gear together. This is Wm in the CG formula. Wt is the weight that was measured on the tailwheel. Add Wm and Wt together and write the number on a piece of paper. This is the value W. Now, take your calculator and multiply Wm times 62.5 and write the result on your paper. Now, multiply Wt times 261.9 and write it down also. Add the last two numbers together. Divide the sum of the last two numbers by W. The result is your empty weight CG position.

If you are unsure about the calculation, here is an example:

Let's say the main gear weighed 450 pounds on each tire. This means that Wm is 900 pounds. The tailwheel weighed in at 50 pounds. This means Wt is 50. W is 900 + 50 which is equal to 950 pounds. Wm times 62.5 is 56,250. Wt times 265.25 is 13,095.0 Added together these two are 69,345.0. Dividing this by W (950) equals 72.9950. However, round the result to the nearest tenth of an inch and call it 73.0. Any of the digits in the result beyond the tenths are not relevant because no part of this operation was any closer than 1 pound. If you subtract your value of W from 1865, the result is your useful load capacity. This is where you, the fuel, your luggage, passengers, etc. come into play.

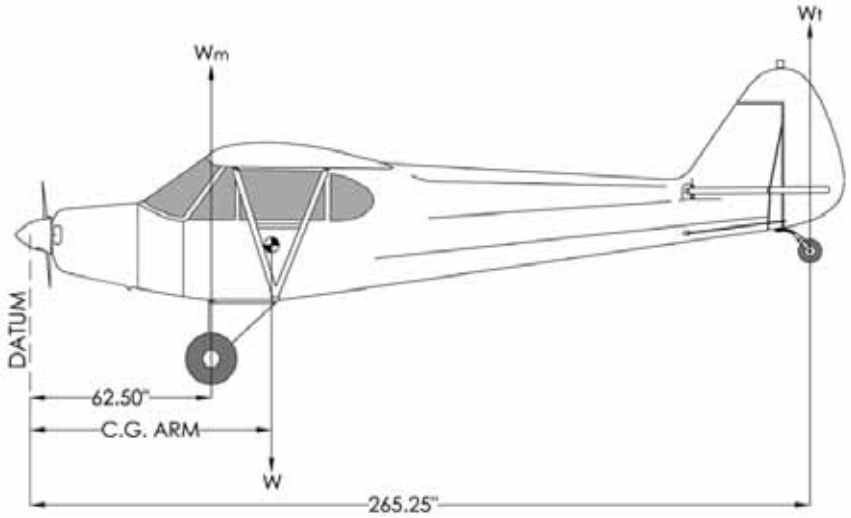
Figure F2 provides some forms that allow you to calculate loaded weight CG. You will need the value of W, the empty weight CG arm (this is the 73.0 in the example) and the multiplicand of these two numbers (the 69345.0 in the example) in order to make the calculations work.

What you are doing is starting with the empty weight and empty CG. You then add each element of payload and with its position. Each payload item results in a moment (weight times arm). All of the weights and all of the moments are added up. The sum of the moments is divided by the sum of the weights resulting in your loaded CG. The loaded CG needs to be a number of less than 81. The total weight needs to be less than 1865.

WEIGHT AND BALANCE FORM

NXXXXX	WEIGHT AND BALANCE	CCK-1865-XXXX
Make: XXXXXX	Model: CCK-1865	Date: XX/XX/XXX

1. Once the aircraft has been leveled, record the weight on the main wheels and the tailwheel.



Aircraft Geometry

$$CG\ Arm = \frac{(W_m \times 62.50) + (W_t \times 261.90)}{W}$$

CG Arm	=	Distance from the datum to the center of gravity (in inches)
W	=	Total weight of the aircraft
W_m	=	Sum of the weight on both main wheels
W_t	=	Weight on the tailwheel

Aircraft was weighed with no useable fuel, all equipment installed, and 6 quarts of oil installed.

Weight as follows:

Left Main	Tailwheel	Right Main
_____lbs.	____lbs.	_____lbs.

WEIGHT AND BALANCE FORM cont'd

NXXXXX	WEIGHT AND BALANCE	CCK-1865-XXXX
Make: XXXXXX	Model: CCK-1865	Date: XX/XX/XXX

PERTINENT INFORMATION FOR WEIGHT AND BALANCE

Position of datum 60 inches ahead of wing leading edge

Maximum gross weight ..... 1865 lbs

Center of gravity limits at 1865 lb.
Forward ..... 74.0 in. aft of datum
Aft ..... 79.0 in. aft of datum

Center of gravity limits at 1600 lb. or less
Forward ..... 70.5 in. aft of datum
Aft ..... 79.0 in. aft of datum

Make:_____

Model: CCK-1865

Aircraft serial number: CCK-1865-000__

Registration number: N_____

Date: _____

Basic empty weight (lbs)	Arm (inches)	Moment (in·lbs)
_____lbs.	_____	_____lbs.

Basic Empty Weight

Useful load = Maximum takeoff weight- Basic empty weight

= 1865 – _____lbs

Useful Load

= _____ lbs

WEIGHT AND BALANCE FORM cont'd

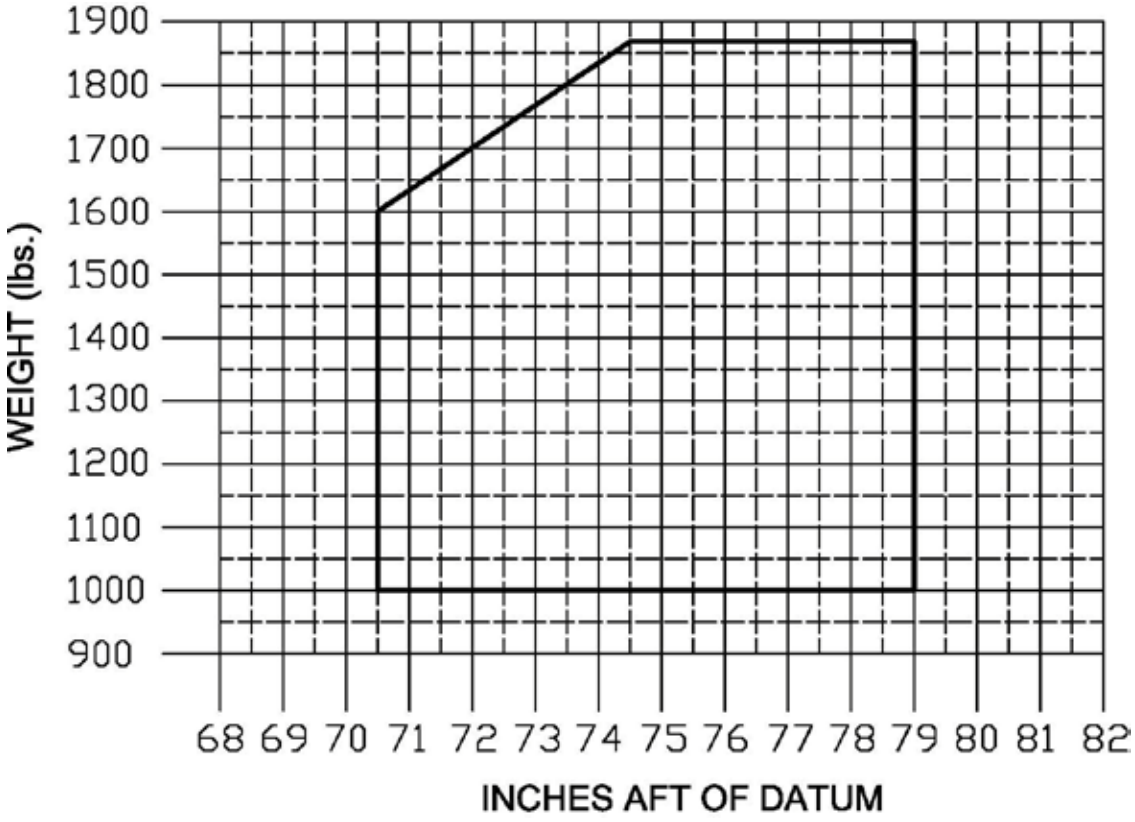
NXXXXX	WEIGHT AND BALANCE	CCK-1865-XXXX
Make: XXXXXX	Model: CCK-1865	Date: XX/XX/XXX

SAMPLE WEIGHT AND BALANCE CALCULATION

6.5 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

In order to calculate the weight and balance of the aircraft:

1. Insert the respective loads in table below
2. Multiply each load by its respective arm and note the moment.
3. Add the loads to calculate the takeoff weight
4. Add the moments to compute the total moment.
5. Divide the moment by the takeoff weight. This is the final position of the center of gravity.
6. Plot the point on the table below. If it is within the weight and balance envelope, the aircraft is within the approved envelope.



WEIGHT AND BALANCE FORM cont'd

NXXXXX | WEIGHT AND BALANCE | CCK-1865-XXXX
Make: XXXXXX | Model: CCK-1865 | Date: XX/XX/XXX

Item	Weight (lbs)	Moment Arm (in)	Moment (in·lbs)
Aircraft Empty	0	0.00	0.0
Fuel	120	83.90	10068.0
Pilot	205	71.40	14637.0
Passenger	130	96.08	12490.4
Forward Cargo Compartment (100 lb max)	12	110.40	1324.8
Extended Cargo Compartment (20 lb max)	0	134.40	0.0
TOTAL			
CG Station:			

Item	Weight (lbs)	Moment Arm (in)	Moment (in·lbs)
Aircraft Empty	0	0.00	0.0
Fuel	60	83.90	5034.0
Pilot	205	71.40	14637.0
Passenger	280	96.08	26902.4
Forward Cargo Compartment (100 lb max)	100	110.40	11040.0
Extended Cargo Compartment (20 lb max)	20	134.40	2688.0
TOTAL	0		0.0
CG Station:	0.0		

Item	Weight (lbs)	Moment Arm (in)	Moment (in·lbs)
Aircraft Empty	0	0.00	0.0
Fuel	120	83.90	10068.0
Pilot	205	71.40	14637.0
Passenger	0	96.08	0.0
Forward Cargo Compartment (100 lb max)	12	110.40	1324.8
Extended Cargo Compartment (20 lb max)	0	134.40	0.0
TOTAL			
CG Station:			

FLIGHT TESTING

There actually are some subjects that are dealt with very well in government publications. Advisory Circular 90-89A *Amateur-built Aircraft and Ultralight Flight Testing Handbook* addresses the subject of flight testing very well. The main topics of preparation, taxi tests, first flight, the first 10 hours, and "expanding the envelope" are subdivided into sections that are complete enough to allow you to proceed in a meaningful manner while exercising due care and caution. There is even a sense of humor in the document. You might even like some of the cartoons.

AC90-89A can be downloaded easily from the Internet or can be obtained from a MIDO or FSDO.
There is one aspect of the flying of your new airplane that some pilots seem to prefer to toss into the denial department. That is the subject of the pilots qualification to fly the new plane. Some builders spend months or years building and no time flying or they spend no time flying airplanes similar to the Carbon Cub. Be certain that you are qualified to fly your Carbon Cub. Machismo, time or cost has no part in this decision. You simply must be qualified before you undertake flight.

If you would like to read the opinions of Falco Aircraft and Avemco Insurance Company, download a copy of *How to Kill Yourself in a Homebuilt Airplane* and read it. They tell it like it really is, without any sugar coating or "denial".

You will be qualified and you will have a great Carbon Cub experience. Make it happen.