

**CUB CRAFTERS
CC11-100**

CUB CRAFTERS, INC.

**CC11-100 PILOT'S OPERATING HANDBOOK
AND AIRPLANE FLIGHT MANUAL**

Serial Number: _____

Registration number: _____

This handbook includes the material required by the Federal Aviation Administration to be furnished to the pilot. It also includes additional information provided by the manufacturer and constitutes the written operating instructions. This airplane is approved as a special light-sport category aircraft (S-LSA) as defined by 14CFR§1.1 and meets the requirements of ASTM consensus standard F2245-04. This document must be carried in the airplane at all times.

**CUB CRAFTERS, INC.
1918 S 16th Avenue,
Yakima WA. 98903 USA
www.cubcrafters.com**

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WARNING

**THIS OPERATING MANUAL IS ONLY VALID FOR USE
WITH THE AIRCRAFT IDENTIFIED ON THE FACE
PAGE. ANY REVISIONS TO THIS MANUAL MUST BE
INSERTED AS APPROPRIATE**

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APPLICABILITY

This manual is specifically applicable to CC11-100 serial number _____.

This manual must be kept up to date. Otherwise, it will cease to be valid. It is important that the owner register with Cub Crafters, Inc. in order to receive revisions in a timely fashion.

The aircraft may be operated legally only when the manual is maintained in a current status by the insertion of any revisions issued by Cub Crafters, Inc.

REVISIONS

Whenever revisions are issued, they must be inserted in the appropriate place in the manual.

A black vertical line along the outside margin of the page will identify revised text and illustrations. Changes in spelling, punctuation and formatting will not be marked.

CUB CRAFTERS CC11-100

LOG OF REVISIONS

Current revisions to the CC11-100 Pilot's Operating Manual and Flight Manual, Report *SC10000AFM*.

Revision Number	Revised Sections	Description of Revision
NC	ALL	Manual created as <i>SC10000AFM</i> .
A	Section 0 Section 2	Revision to Handbook. Table 2-2 for Oil Pressure and Oil Temperature Gauge Markings.
B	Section 0 Section 2 Section 3	Revision to Handbook. Revised Table 2-2 for Oil Pressure and Oil Temperature Gauge Markings. Revised all Airspeeds to IAS. Revised Maximum Operating Altitude. Removed Single Tank Reference. Revised Stall Speed V_A to 93 IAS.
C	Section 0 Section 2 Section 4 Section 5 Section 7	Revision to Handbook Revised Oil Temperature to 240. Revised wording to "retract". Revised Figure 5-5 for Fuel Flows. Revised Figure 5-6 to state "landing". Revised Flap Operation description. Added description of Spin-On Oil Filter Option.

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List of Effective pages

Rev	Page Number	Change	Date	Prepared	Checked
NC	All	Initial Issue	08/01/06		
A	0-2 2-5	List of Effective Pages Table 2-2	10/19/07	SJT	GVJ
B	0-2 2-1, 2-2, & 2-3 2-5 2-7 2-8 3-2	List of Effective pages Revised CAS to IAS Table 2-2 Revised 2.12 Revised 2.14 Revised V _A from 101 to 93 IAS	01/28/08	SJT	SJH
C	0-2 2-4 4-26 5-11 5-14 7-5 7-9	List of Effective Pages Revised Engine Operating Limits Oil Temperature to 240°. Revised wording to state "Retract" flaps. Revised Figure 5-5 for Fuel Flow. Revised wording to state "Landing". Revised description of flap operation. Added description for Spin-On Oil Filter Option.	07/31/08	SJH	SJH

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1 GENERAL INFORMATION

1.1 INTRODUCTION

This Pilot's Operating Handbook contains information required by the FAA at the time the aircraft was certified. It also has additional data which Cub Crafters, based on its experience, has found useful.

This manual is the approved Pilot's Operating Handbook and it is part of the equipment that must be onboard the aircraft whenever it is operated.

This manual is not intended to be a flight instruction manual. It is not a substitute for adequate, competent flight training, knowledge of current Airworthiness Directives affecting the airplane or applicable aviation regulations.

The pilot-in-command is responsible for determining whether the airplane is safe for flight. He is also responsible for ensuring that all operations are conducted within the limitations defined by the appropriate FAA regulations, this manual, the aircraft's instrument markings, and appropriate placards.

While it is intended that this manual be used in flight, it must be studied regularly. The pilot must be familiar with all limitations, performance data, procedures and operational handling characteristics of the airplane prior to operating the airplane.

The information in this manual is divided into numbered sections, each of which is provided with a tab divider. The order of the sections has been designed so that the **LIMITATIONS** and **EMERGENCY SECTIONS** may be looked up quickly. The **EMERGENCY SECTIONS** has a red divider tab.

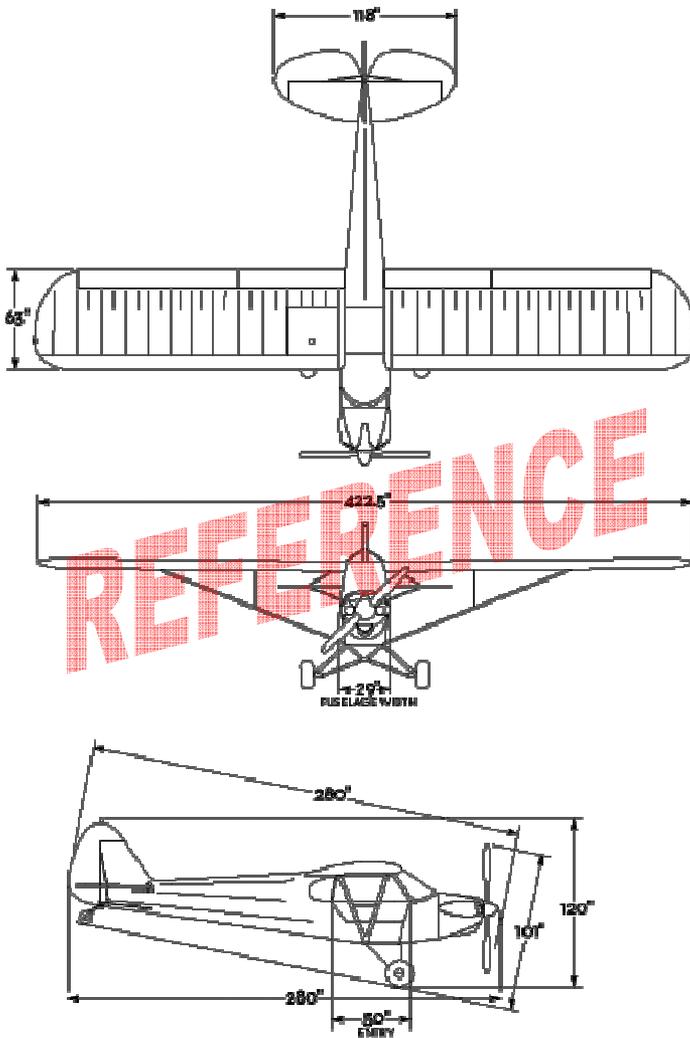


Figure 1-1 Three view drawing of the CC11-100

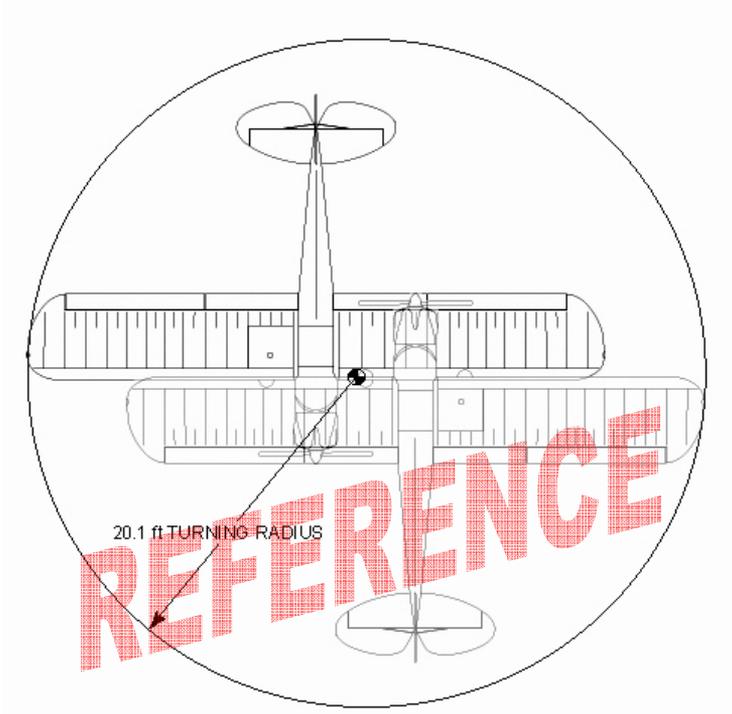


Figure 1-2 Turning radius

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REFERENCE

2 LIMITATIONS

2.1 GENERAL

This section provides the FAA-approved operating limitations, instrument markings, color-coding and basic placards for operation of the Cub Crafters CC11-100 aircraft.

Limitations associated with those optional systems and equipment which requires handbook supplements can be found in Section 9 “Supplements”.

2.2 AIRSPEED LIMITATIONS



<u>SPEED</u>	<u>IAS (mph)</u>
Never Exceed Speed (V_{NE}).....	141
<i>Do not exceed this speed in any operation.</i>	
Maximum Operating Maneuvering Speed (V_A)	
At 1320 lbs gross weight	93
At 1430 lbs gross weight (float equipped).....	97
At 1100 lbs gross weight	85

Do not make full or abrupt control movements above this speed.

CAUTION

Maximum operating speed *DECREASES* at lighter weight as the effects of aerodynamic forces become more pronounced. Linear interpolation may be used for intermediate gross weights.

<u>SPEED</u>	<u>IAS (mph)</u>
Maximum Flap Extended Speed (V_{FE})	
First notch (15°)	85
Second notch (35°)	81
Full flaps (50°).....	81
Maximum Demonstrated Crosswind Component	11 kts

Do not exceed the flap speed corresponding to a given setting

REFERENCE

WARNINGS, CAUTIONS AND NOTES

WARNINGS, CAUTIONS and **NOTES** are used to emphasize critical and important information, and are used as defined below:

WARNING

AN OPERATING PROCEDURE, PRACTICE, OR A CONDITION WHICH, IF NOT CORRECTLY FOLLOWED OR REMEDIED, COULD RESULT IN SERIOUS PERSONAL INJURY OR LOSS OF LIFE.

CAUTION

An operating procedure, practice, or a condition which, if not strictly observed or corrected, could result in destruction of, or damage to equipment.

NOTE

An operating procedure, practice, or condition which is important to emphasize.

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2.3 AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their significance are shown in Table 2-1.

MARKING	SPEED RANGE OR VALUE (IAS)	SIGNIFICANCE
Red radial line	141 mph	Never exceed speed V_{NE}
Yellow arc	101-141 mph	Operations must be conducted with caution and in smooth air
Green arc	40-101 mph	Normal operating range
White arc	32-81 mph	Operating range with 35° to 50° flaps extended

Table 2-1 Airspeed indicator markings

2.4 POWERPLANT LIMITATIONS

Engine manufacturer Teledyne Continental
Engine model number O-200A

Engine operating limits
Takeoff Power 100 bhp
Maximum engine speed 2750 rpm
Oil Pressure, Minimum 30 psi
Oil Pressure, Maximum 60 psi
Oil Temperature, Maximum 240 °F
Fuel limitations (grade)..... 100 or 100LL

NOTE

Teledyne Continental Motors does not recommend the use of automotive fuels in the engine. The engine has not been tested with the additives often found in auto fuel, and unleaded fuel will result in accelerated wear of the valves and cylinders.

2.5 POWERPLANT INSTRUMENT MARKINGS

TACHOMETER	Red radial line	2750 rpm
	Green arc (normal operating range)	900-2750 rpm
OIL PRESSURE	Yellow arc (caution, low)	10-30 psi
	Green arc (normal)	30-60 psi
	Yellow arc (caution, high)	60-100 psi
	Red radial line (maximum, cold only)	100 psi
OIL TEMPERATURE	Yellow arc (caution, low)	75-150 °F
	Green arc (normal)	150-210 °F
	Yellow arc (caution, high)	210-240 psi
	Red radial line (maximum)	240 °F

Table 2-2 Powerplant Instrument Markings

2.6 WEIGHT LIMITS (ON WHEELS)

Maximum Weight..... 1320 lbs

2.7 CENTER OF GRAVITY

Forward CG Limits

At 1320 lbs.....73.0 inches aft of datum
At 1100 lbs or less.....70.5 inches aft of datum
(Straight line variation between points given)

Aft CG Limit (at all weights)78.5 inches aft of datum

The datum is 60 inches forward of wing leading edge.

2.8 MANEUVERS

CAUTION
All aerobatic maneuvers, including spins, are prohibited.

2.9 MANEUVER LOAD FACTORS

Maximum positive load factor, flaps up..... 4.0 g

Maximum positive load factor, flaps down..... 2.0 g

Maximum negative load factor -2.0 g

No inverted maneuvers are approved.

2.10 MINIMUM FLIGHT CREW

The minimum required flight crew is one pilot in the front seat. This does not preclude a qualified flight instructor giving dual instruction from the back seat.

2.11 KINDS OF OPERATION

Day V.F.R.

Flight into known icing is prohibited.

2.12 MAXIMUM OPERATING ALTITUDE

The maximum operating altitude is 17,999 feet. Use supplemental oxygen as required by your Civil Aviation Authority.

2.13 MAXIMUM PASSENGER SEATING CONFIGURATION

The CC11-100 is approved to carry one passenger, seated behind the pilot.

2.14 ALLOWABLE FUEL LOADING

24.0 US gallons usable (dual tank)

2.15 BAGGAGE AND CARGO LOADING

Forward cargo compartment
(behind passenger) 100 lbs
Extended cargo compartment
(behind forward cargo compartment)20 lbs

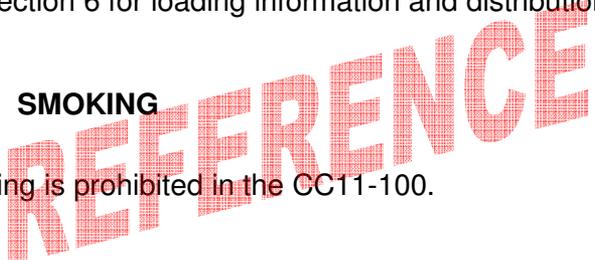
See section 6 for loading information and distribution.

2.16 SMOKING

Smoking is prohibited in the CC11-100.

2.17 TYPES OF SURFACES

The CC11-100 may be operated from paved and unpaved runways.



2.18 VORTEX GENERATORS

The CC11-100 is allowed to fly with the following number of vortex generators missing:

- Not more than three vortex generators missing on an aircraft.
- Not more than two vortex generators missing on a wing.
- The missing vortex generators must not be next to each other.

REFERENCE

2.19 PLACARDS

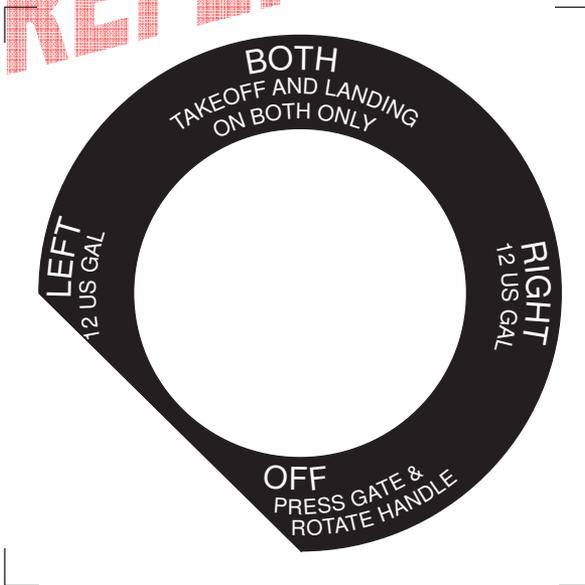
In view of the pilot:

OPERATOR MUST READ AND BE FAMILIAR WITH PILOT OPERATING HANDBOOK BEFORE FLYING AIRCRAFT. NO INTENTIONAL SPINS.

NXXXXX						
FOR	N	30	60	E	120	150
STEER						
FOR	S	210	240	W	300	330
STEER						
MONTH DAY, YEAR				AIRPATH		

Next to fuel selector:

REFERENCE



On top inboard of all lift struts:

NO STEP

Behind passenger seat:

THIS AIRCRAFT WAS MANUFACTURED IN
ACCORDANCE WITH LIGHT SPORT AIRCRAFT
AIRWORTHINESS STANDARDS AND DOES NOT
CONFORM TO STANDARD CATEGORY
AIRWORTHINESS REQUIREMENTS.

In forward cargo compartment:

**FORWARD CARGO
COMPARTMENT
MAX CAPACITY
100 LBS**

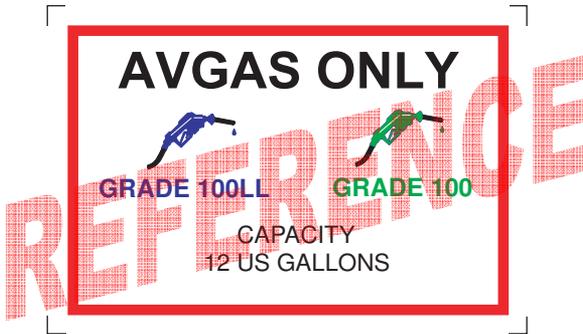
In extended cargo compartment:

**EXTENDED CARGO
COMPARTMENT
MAX CAPACITY
20 LBS**

On flap lever:



On wing next to tank filler:



Near stall warning vane:



On open door jamb:

L I G H T - S P O R T

On left-hand side of empennage:



Below each throttle control:



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3 EMERGENCY PROCEDURES

3.1 GENERAL

This section provides the recommended procedures that should be followed during an emergency or a critical situation. It is divided into two parts. The first contains emergency procedure checklists. The second part amplifies the items listed in the checklists and includes information that is not readily adaptable to a checklist format or which the pilot could not be expected to refer to in an emergency situation. This information should be reviewed regularly.

Pilots must familiarize themselves with the procedures in this section and must be prepared to take appropriate action should an emergency arise.

It is stressed that the procedures outlined in this section are recommendations only. They are not a substitute for sound judgment and common sense and may have to be adjusted, depending on the circumstances prevailing at the time of the emergency. It is important that the pilot be thoroughly familiar with the aircraft. The pilot must review and practice as many of these procedures as are safe to perform as part of his training.

Above all, in any emergency situation, **MAINTAIN CONTROL OF THE AIRCRAFT.**

3.2 AIRSPEEDS FOR EMERGENCY OPERATIONS

STALL SPEEDS (1320 lb)

Flaps up (V_{S1})..... 40 mph (IAS)

Flaps down (50°) (V_{S0})..... 32 mph (IAS)

OPERATING MANEUVERING SPEED (V_A)

At 1320 lb..... 93 mph (IAS)

BEST GLIDE (V_G)

Flaps up (1320 lb) 68 mph (IAS)

Flaps down (50°, 1320 lb) 49 mph (IAS)

Configuration:

McCauley Propeller Systems, model 1B90/CM7141,
71-inch diameter, 41-inch pitch, 6.00x6 tires.

REFERENCE

3.3 EMERGENCY CHECKLIST

3.3.1 ENGINE FIRE DURING START

Starter Crank engine
Continue to get a start that would suck the flames and
accumulated fire into the engine.

If engine starts:

Power 1700 RPM for a few minutes
Engine Shut down by pulling mixture to idle cut-off

Have a qualified technician thoroughly inspect the engine
and the airframe.

If engine fails to start:

Mixture Idle cut-off
Throttle Open
Fuel selector Off

Have a qualified technician thoroughly inspect the engine
and the airframe.

If fire persists:

Fire Extinguisher If safe to do so, remove
extinguisher and attempt
to extinguish fire

**IF FIRE PERSISTS, ABANDON AIRCRAFT AND
SUMMON HELP.**

3.3.2 ENGINE FAILURE DURING TAKEOFF

PRIOR TO LIFT-OFF

Maintain directional control

Throttle Idle
Brakes Apply as necessary
Wing flaps Retract
Mixture Idle cut-off
Magneto switches Off
Master switch Off

REFERENCE

AFTER LIFT-OFF

If sufficient runway remains for a normal landing, land straight ahead.

If insufficient runway remains:

Maintain a safe airspeed.

Use shallow turns to avoid obstructions.

Use of flaps depends on circumstances. Normally, flaps should be fully extended for touchdown.

If you have gained sufficient altitude to attempt a restart, proceed as follows:

Maintain safe airspeed

Fuel selector Both

Mixture..... Check rich

Magnetos..... Ensure both on

Starter..... Engage

If restart is unsuccessful, when landing area is assured:

Magnetos..... Off

Master switch..... Off

Fuel selector Off

ELT..... Activated

Seat belts Tight and secure

Door..... Open

Touchdown At the lowest possible airspeed

3.3.3 LOSS OF ENGINE POWER IN FLIGHT

If at low altitude:

Airspeed (best glide).....MAINTAIN 68 mph (IAS)

If altitude permits:

Airspeed (best glide)MAINTAIN 68 mph (IAS)

Fuel selector Both

Mixture Full rich

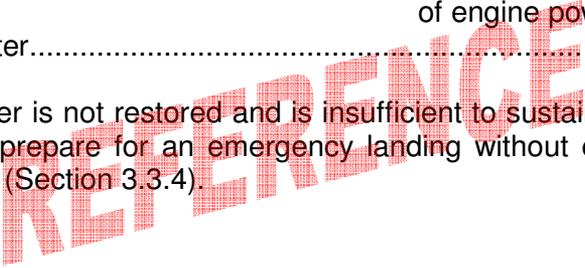
Carburetor heat On (Hot)

Magnetos..... Ensure both on

Engine instruments..... Check for indication of cause
of engine power loss

Starter..... Engage

If power is not restored and is insufficient to sustain level flight, prepare for an emergency landing without engine power (Section 3.3.4).



**3.3.4 EMERGENCY LANDING WITHOUT ENGINE
POWER**

Locate suitable field.

Airspeed 68 mph (IAS, flaps up)
Seat belts Tight and secure

When landing area is assured:

Flaps..... As required
Door.....Open
Touchdown.....At the lowest possible airspeed
ELT..... Activate

If time permits, check GPS or charts for airports in the immediate vicinity. If possible, notify your difficulty and intentions by radio and/or squawk 7700.

If practical, establish spiral pattern above the selected landing field. Fly a normal downwind approach, 1000' AGL abeam the desired landing point, noting any obstacles. Plan your initial approach for the middle of the field.

When aircraft comes to a stop:

Magnetos.....Off
Master switch.....Off
Fuel selectorOff

3.3.5 PRECAUTIONARY LANDING WITH ENGINE POWER

- Fuel selector Both
- Seat belts Fastened
- Mixture Set
- Flaps Set
 - Maximum speed first notch flaps (15°) .. 85 mph IAS
 - Maximum speed full flaps (>15°) 81 mph IAS
- Trim As required
- Speed As required
(1.3 times full flaps stall speed at gross weight is 42 mph IAS)

If time permits, check GPS or charts for airports in the immediate vicinity.

If possible and if you are in contact with Air Traffic Control or another aircraft notify your difficulty and intentions by radio and/or squawk 7700, as appropriate.

Fly normal downwind approach 1000' AGL abeam the desired landing field, noting obstacles.

3.3.6 FIRE IN FLIGHT

Source of fireLocate

ELECTRICAL FIRE

Master switch.....Off
Windows.....Open
Cabin door.....Open

If source of fire is located and it is safe and practical:

Fire extinguisherActivate
Land as soon as possible

If fire has been extinguished and electrical power is essential for the continuation of the flight to the nearest suitable airport or landing area:

All electrical switches.....Off
Avionics master switch and avionicsOff
Circuit breakersCheck for faulty circuit

If any breakers are out, note the circuits and do not reset or use the equipment powered by these circuits

Master switch.....On
Avionics master switch.....On
Avionics and electrical switches..... On, one at a time,
with a delay after each, to ensure
that problem does not recur

ENGINE FIRE

- Fuel selectorOff
- ThrottleIdle
- Mixture..... Idle cut-off
- Cabin heaterOff
- AirspeedMaintain the highest possible,
within limitations

Proceed with emergency descent (Section 3.3.9) and emergency landing without engine power (Section 3.3.4).

REFERENCE

3.3.7 LOSS OF OIL PRESSURE

Land as soon as practical and investigate cause.
Prepare for emergency landing without power (Section 3.3.4).

3.3.8 HIGH OIL TEMPERATURE

Airspeed Increase
Power Reduce as much as practical
Mixture Enrichen

Land as soon as practical and investigate cause.
Prepare for emergency landing without power (Section 3.3.4).

3.3.9 EMERGENCY DESCENT

WARNING
DO NOT EXCEED 141 mph (IAS) IN SMOOTH AIR WITH FLAPS UP.
DO NOT EXCEED 93 mph (IAS) IN ROUGH AIR WITH FLAPS UP.
DO NOT EXCEED 81 MPH (mph) WITH FLAPS DOWN.

Throttle Idle
Airspeed Do not exceed limitations

3.3.10 ALTERNATOR FAILURE

Alternator output failure may be indicated by the voltage annunciator illuminating. The alternator circuit breaker may also trip. Output failure may be the result of a mechanical failure of the alternator or by a momentary over-voltage condition.

Battery master switchOff
Circuit breakersCheck, in

If the alternator drive-belt failure is NOT obvious and NO circuit breakers are out:

Battery master switchOn

If the drive belt failure is obvious, the circuit breaker is out, or electrical power is NOT restored, determine what electrical equipment is essential to continue the flight and:

Battery master switchOn
Electrical Load Reduce

3.3.11 OVERVOLTAGE

If the bus voltage rises above 15.3 volts, the voltage annunciator will illuminate.

Battery master switchOff

Wait one minute and switch the master switch on and monitor voltage. If the annunciator illuminates again, turn the master switch off and plan to continue flight without electrical system.

3.3.12 INADVERTENT SPIN

Aileron Control Neutral
Throttle Closed
Rudder Full opposite
(Opposite to direction of spin)
Elevator Control Forward
(To break stall)
Elevator and Throttle As required
(To resume level flight smoothly)

If flaps were down, retract once a safe flying speed has been attained. Ensure that the flap speed is not exceeded (81 mph IAS).

CAUTION
This recovery procedure is applicable only when the aircraft is in a spin. Application of controls as described above during a stall or after the aircraft has stopped gyrating may cause the aircraft to enter into a spin.

3.3.13 INADVERTENT ICING ENCOUNTER

WARNING
THIS AIRCRAFT IS NOT APPROVED FOR FLIGHT INTO KNOWN ICING. FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED.

CAUTION
Ice accumulation on the wings and other airframe components will greatly increase the stall speed of the airplane and result in unpredictable flight characteristics.
Ice accumulation over engine induction air inlet can cause engine roughness and/or loss of power.
Ice formations on the propeller may cause severe propeller/engine vibrations.
Ice accumulation over the pitot tube may cause erroneous airspeed indications.
Ice build-up on the windshield will distort vision and probably obscure forward visibility.

At first indication of encountering icing conditions
Carburetor heat On (Hot)

If ice continues to cause reduced power:
Throttle Full

Climb at maximum rate to produce as much heat as possible to aid in clearing the ice.

Fly toward warmer air, clear of visible moisture and/or descend to lower altitude (**if safe to do so**).

If condition persists, proceed with emergency descent (Section 3.3.9) and prepare for an emergency landing without engine power (Section 3.3.4).

3.4 AMPLIFIED EMERGENCY PROCEDURES

3.4.1 ENGINE FIRE DURING START

Engine fires during starting may be caused by excessive use of the engine fuel primer. The first attempt to extinguish the fire should be to draw the excess fuel into the engine.

If the engine has not already started, the mixture must be moved to cut-off and the throttle opened fully before cranking the engine.

If the engine starts, and fire goes out within a few seconds, run it at 1700 rpm for a few minutes.

If the fire continues for more than a few seconds, it should be extinguished by the best available external means.

WARNING

IF A FIRE IS ON THE GROUND, UNDER THE AIRPLANE, DUE TO OVER-PRIMING, AND THE ENGINE HAS STARTED, TAXI AWAY FROM THE FIRE AS QUICKLY AS POSSIBLE. IF A FIRE IS ON THE GROUND BUT ENGINE HAS NOT STARTED, ABANDON THE AIRPLANE IMMEDIATELY.

In either case, have the aircraft inspected thoroughly by a qualified mechanic to ensure that it is airworthy prior to any further flights.

3.4.2 ENGINE FAILURE DURING TAKEOFF

If an engine failure occurs prior to lifting off, the pilot must ensure he maintains control of the aircraft and comes to a stop on the remainder of the runway. The items in the checklist are listed to provide added safety after a failure of this type.

If engine power is lost after lift-off, the first response must be to lower the nose to maintain airspeed. In most cases, the landing should be straight ahead with only small changes in direction to avoid obstacles. There is seldom enough altitude and airspeed to execute a 180° gliding turn to the runway. In a turn the glide angle is considerably steeper and the stall speed is substantially higher (in a 60° bank the stall speed is 62 mph IAS, flaps up).

If the aircraft is high enough to attempt to re-start the engine, above all, maintain a safe airspeed. Ensure that the fuel selector is in the BOTH position, the mixture RICH.

If the engine failure was caused by fuel exhaustion due to the selector being on an empty tank, power will not be restored until the air in the fuel lines is flushed out, and this may take a few seconds.

3.4.3 TOTAL LOSS OF ENGINE POWER IN FLIGHT

If the engine loses power, whether this is a total or a partial loss of power or if the engine runs roughly, the most important thing to do is to continue flying the aircraft, maintaining a safe airspeed. Trim the aircraft as required. In case of a total loss of power, the best glide speed is 68 mph (IAS) with flaps up.

The CC11-100 will glide 1.2 nautical miles for every 1000 feet of altitude loss. The rate of descent will be approximately 715 feet per minute. Most GPS receivers have a "Direct To" (commonly \rightarrow) function that shows the closest airports. Use charts to assess the topography of airports in the immediate vicinity.

If there is enough altitude, try to determine the cause of failure. In most cases the reason is fuel exhaustion due to the selector being on an empty tank. Switching to the BOTH position or to the opposite tank causes fuel to feed to the engine. However, power will not be restored until the air in the fuel lines is purged, and this may take a few seconds.

Another common cause of engine failure is carburetor ice. Unfortunately, if this is the case, an excessively rich air/fuel mixture may have cooled the engine to the point where there may not be sufficient hot air in the engine compartment to melt the accumulation of carburetor ice, even when the carburetor heat control is in the full "hot" position. At this point the engine will not develop enough power to maintain airspeed and altitude. It is of the utmost importance that the guidelines concerning the use of the carburetor heat given in paragraph 7.5.6 (Air induction system) of this manual be followed closely.

3.4.4 EMERGENCY LANDING WITHOUT ENGINE POWER

When you have located a suitable field, establish a spiral pattern around this field. Try to be at 1,000 feet above the field at the downwind position, to make a normal approach. Plan your approach for landing at the midpoint of the runway; aim for the normal touchdown area only after gliding to the runway is assured.

Excess altitude may be lost by widening your pattern, using flaps, slipping, or by using a combination of these techniques.

If possible, transmit a MAYDAY message on 121.5 MHz stating location and intentions, and squawk 7700. Activate the ELT.

Once the landing site is secure and you are committed to land, apply flaps and reduce speed to 49 mph (IAS). Close the throttle, move the mixture control to idle cut-off, shut off the magneto switches, turn the fuel selector to OFF and turn off the master switch.

WARNING

BE EXTREMELY CAUTIOUS WHEN MANEUVERING FOR LANDING AT LOW ALTITUDES. MAINTAIN A SAFE MARGIN ABOVE STALL SPEED. SEE FIGURE 5-2 FOR STALL SPEED VERSUS ANGLE OF BANK.

NOTE

With the master switch off, the instrument, landing, and navigation lights will not operate.

If the landing site is very rough, there is a possibility that the aircraft may come to rest inverted. Should this occur, once the aircraft has come to a stop, open the cabin door (if you have not already done so). If the doors are jammed, or if there is no clear path to leave the aircraft on the right side, it is relatively easy to push out the windows on the left side. Next, protect your head with one arm and release the seat harness with the other. Exit the aircraft through the doors or the windows.

Once the risk of fire has passed, ensure that the emergency locator transmitter (ELT) has been activated. If battery power is available, it may be possible to transmit to passing aircraft using the aircraft's VHF radio.

3.4.5 PRECAUTIONARY LANDING WITH ENGINE POWER

A forced landing with engine power should be treated in the same way as described in the previous section. Bear in mind that if the engine is not running correctly, it may fail at any time. It is advisable to have a contingency plan in mind.

3.4.6 FIRE IN FLIGHT

The presence of fire is noted through smoke, smell, and heat in the cabin. Electrical fires are often accompanied by an acrid smell of burning insulation.

Engine fires are very rare. The procedures outlined in the checklist are very general and pilot judgment should be the determining factor in the action to be taken. The maximum rate of descent may be obtained by diving the aircraft to 141 mph (IAS) and adjusting the throttle so as not to exceed 2750 rpm. Use extreme caution when flying at these limits, and do not perform abrupt maneuvers. (See section 3.3.9).

It may be advisable to side slip the aircraft in case of an engine fire. This will direct the flames away from the fuselage. If there is an option as to which way to side slip, it is preferable to have the right wing up, as the gascolator is on the lower, left side of the firewall.

If the fire persists, conduct an emergency descent, land immediately, and evacuate the aircraft.

3.4.7 LOSS OF OIL PRESSURE

More often than not, a loss of oil pressure will be gradual. If it is accompanied by an increase in oil temperature, it is a sign that there is a problem with the engine's oil system and the aircraft should be landed as soon as practical, as the engine may stop suddenly. At reduced power maintain altitude and proceed to the nearest suitable landing site. Be prepared for a power-off, forced landing.

Low oil pressure can be the result of a faulty gauge or sending unit or a malfunction in the oil pressure regulating system. In any case, land as soon as practical and have the problem investigated.

3.4.8 HIGH OIL TEMPERATURE

Abnormally high oil temperature indications may be caused by a variety of reasons, among them:

- Low oil level
- Obstruction in the air flow reaching the oil cooler
- Defective gauge

A rapid rise in oil temperature must be treated seriously. Monitor the oil pressure gauge. Reduce power, enrich the mixture and, if practical, maintain a high airspeed to ram cooling air through the oil cooler.

Land as soon as practical and investigate the cause, but be prepared for a power-off forced landing.

3.4.9 EMERGENCY DESCENT

An Emergency Descent should be initiated whenever a situation occurs at high altitude requiring a high rate of descent. This is done in order to minimize exposure of the crew and passengers to an uncontrolled fire or when smoke, toxic fumes, or other situation threatens control of the airplane through incapacitation or restricted visibility for the pilot (See paragraph, FIRE IN FLIGHT 3.4.6).

Retard throttle to IDLE.

Trim airplane for maximum allowed indicated airspeed appropriate to the configuration selected and the atmospheric conditions. Advise the control center if flight path is in an airway.

WARNING

IF DESCENT IS TO BE MADE USING FULL FLAPS, SLOW THE AIRPLANE TO 81 mph IAS PRIOR TO FLAP EXTENSION AND PRIOR TO STARTING THE DESCENT. EXCEEDING THE FLAP EXTENDED SPEED CAN CAUSE DAMAGE TO THE WING STRUCTURE AND POSSIBLE FAILURE OF THE FLAP ATTACHMENTS.

IF THE DESCENT IS TO BE MADE WITH THE FLAPS RETRACTED, DO NOT EXCEED 141 mph IAS (IN SMOOTH AIR) OR 93 mph IAS (IN ROUGH AIR). DO NOT MAKE FULL ABRUPT CONTROL MOVEMENTS ABOVE 93 mph IAS. EXCEEDING THE NEVER EXCEED SPEED OR THE DESIGN AND OPERATING SPEEDS CAN CAUSE SEVERE DAMAGE TO AND POSSIBLE FAILURE OF THE AIRPLANE STRUCTURE.

3.4.10 ALTERNATOR FAILURE

Alternator output failure can be caused by a mechanical failure of the alternator, a momentary over-voltage condition, or other reasons.

A zero or negative reading on the ammeter (if installed) can indicate alternator output failure and the voltage annunciator will illuminate when the voltage drops below 12.6 volts. The alternator circuit breaker may trip. A mechanical failure of the alternator may be accompanied by unusual sounds coming from the engine compartment. The first step is to reduce the electrical load to a minimum.

NOTE

Duration of the battery is dependent on the condition of the battery at the time of the failure and the electrical load being demanded.

Turn the master switch OFF for at least one second. Turn the master switch ON. Check that the ammeter shows a POSITIVE indication (if installed).

If the alternator returns on line, continue flight, monitor the ammeter (if installed) and have the system checked after landing.

If the alternator does not return on line, reduce electrical load to the minimum required for safe flight by switching off all non-essential systems. Maintain only the equipment required to provide information for safe flight.

Land AS SOON AS IS PRACTICAL and conduct appropriate repairs.

3.4.11 OVERVOLTAGE

With the engine running, the alternator is capable of raising the bus voltage to dangerously high levels. The voltage regulator limits the bus voltage to between 13.5 and 15.3 volts. If the bus voltage rises above 15.3 volts, the voltage annunciator will illuminate. If this occurs, the master switch must be turned off immediately.

Wait for at least a minute and switch master switch on and monitor the voltage (if able) to determine whether the regulator has reset itself. If the annunciator illuminates again, turn the master switch off and plan to continue flight without using the electrical system.

3.4.12 INADVERTENT SPIN

If an inadvertent spin is entered, close the throttle, neutralize the ailerons and apply full rudder opposite to the direction of the spin. Move the elevator control forward to break the stall after applying the rudder. When the rotation stops, neutralize the rudder, relax the forward pressure on the elevator control as required to smoothly regain level flight, and return to initial power setting. If the flaps were down, retract them once a safe speed has been attained. Ensure that the maximum flap speed is not exceeded.

CAUTION

This recovery procedure is applicable only when the aircraft is in a spin. Application of controls as described above during a stall or after the aircraft has stopped gyrating may cause the aircraft to enter into a spin.

3.4.13 INADVERTENT ICING ENCOUNTER

Icing conditions are very difficult to predict. Aviation weather services may predict light, moderate, or severe icing conditions at certain locations and altitudes and no icing will be encountered. At other times, icing conditions may not be forecast and any of the above levels of icing may occur.

When unexpected icing conditions are encountered, immediate action must be taken to divert from them. It may be possible to descend to a lower, warmer altitude, or it may be necessary to return to an area where no icing is present.

NOTE

Ice is especially prevalent if flying in clouds or visible moisture. This aircraft is approved for VFR flight only.

If ice build-up becomes evident on the windshield and/or the lift struts or if the engine operates rough, apply full carburetor heat.

Carburetor ice may form in temperatures from 32° to 100°F when the relative humidity is greater than 50%. Be alert for this condition if flying when the difference between the temperature and dew point is less than 20° or when there is visible moisture in the air. If carb icing is suspected of causing a loss in power, apply full carburetor heat. If the engine operation remains rough, adjust the mixture control to obtain maximum smoothness. Leave the throttle setting the same and wait for the engine to run smoothly once again after the ice is cleared. If there is no improvement, gradually apply full throttle and initiate a maximum rate climb to produce as much heat as possible under the cowling.

If the engine continues to run rough, it may indicate that ice is accumulating on the propeller.

It is also good practice to apply carburetor heat prior to and during an extended descent as a preventive measure.

CAUTION

Ice accumulation on the wings and other airframe components will greatly increase the stall speed of the airplane and result in unpredictable flight characteristics.

Ice accumulation over engine induction air inlet can cause engine roughness and/or loss of power.

Ice formations on the propeller may cause severe propeller/engine vibrations.

Ice accumulation over the pitot tube may cause erroneous airspeed indications.

Ice build-up on the windshield will distort vision and probably obscure forward visibility.

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REFERENCE

4 NORMAL PROCEDURES

4.1 INTRODUCTION

This section describes the procedures that Cub Crafters recommends for the pilot to follow during normal operations of the CC11-100. It is divided into two parts. The first has abbreviated checklists; these are in a format suitable for reference in the cockpit. The second part amplifies the information given in the checklists. It provides the pilot with detailed descriptions that will help him understand the procedures and techniques.

This manual assumes that the pilot is appropriately rated in an aircraft with a conventional, or tailwheel, landing gear configuration.

4.2 AIRSPEEDS FOR NORMAL OPERATIONS

The speeds in this section are based on a maximum weight of 1320 lbs under standard sea-level conditions.

Never exceed speed (V_{NE}) 141 mph (IAS)

Operating maneuvering speed (V_A) 93 mph (IAS)

Maximum flap speed (V_{FE})

 15° 85 mph (IAS)

 Greater than 15° 81 mph (IAS)

Best rate of climb speed (V_Y) 71 mph (IAS)

Best angle of climb speed (V_X) 50 mph (IAS)

Maximum demonstrated crosswind velocity 11 kts

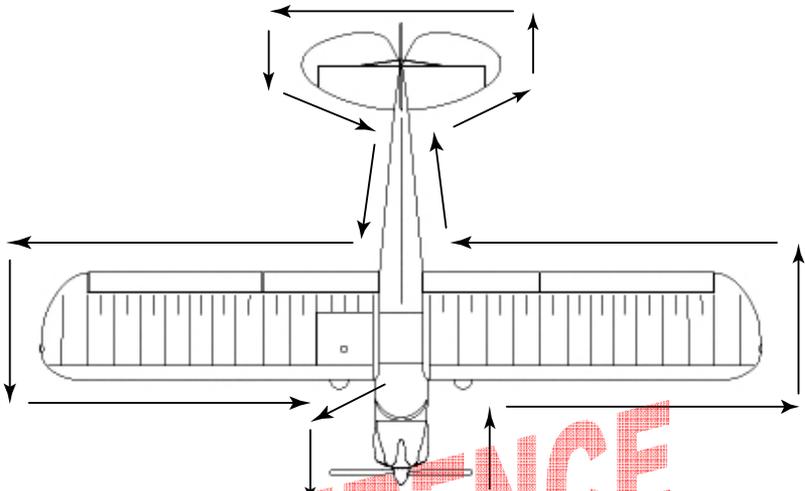


Figure 4-1 Walk around

4.3 NORMAL PROCEDURES CHECKLIST

4.3.1 PREFLIGHT

4.3.1.1 Cockpit

Flight controls Free and correct operation
Master switch..... On
Trim Check operation and set for takeoff
(marked on empennage)
Fuel selector Both
Flaps Extend and retract
Fuel gauges..... Sufficient fuel for intended flight
Mixture Idle cut-off
Carburetor heat Cold
Ignition switch..... Off
Electrical switches Off
Navigation/strobe lights (if installed) Check operation
Landing light (if installed) Check operation
Stall warning horn..... Check operation
Circuit breakers Check in
Windows..... Clear
Documentation Onboard
Master switch..... Off
Seats and harnesses Adjust

NOTE
Ensure forward bar under passenger seat does not
conflict with rudder cables.

NOTE
If passenger seat will be unoccupied, secure seat
harness to prevent it from interfering with the flight
controls or the pilot during flight.

Baggage and cargo Secure

4.3.1.2 Nose section

- Cowling..... Secure
- Oil door.....Open
- Oil quantity Check and cap secure
(5 Quarts recommended)
- Engine condition Check
- Oil door..... Close
- Propeller and spinner..... Check condition
- Air inlets..... Clear of obstructions
- Fuel strainer Drain

REFERENCE

4.3.1.3 Left fuselage, left wing and left landing gear

Chocks	Remove
Tire	Check
Brakes and lines	Check
Main landing gear leg and strut.....	Check
Fuel tank.....	Check quantity
Fuel cap/vent.....	Check vent is clear and cap secure
Pitot tube	Check condition
Stall warning vane	Check operation
Landing light (if installed)	Check condition
Aileron control cable	Check condition
Tie down.....	Remove
Vortex generators	Check
Wing tip and lights (if installed)	Check condition
Aileron hinges.....	Check
Aileron surface.....	Check condition
Flap hinges.....	Check
Flap surface.....	Check condition
Left fuselage.....	Check

REFERENCE

4.3.1.4 Empennage

- Bracing wires Check for tension
- Hinges Check
- Rudder cables Check
- Beacon and position light (if installed)..... Check
- Control surfaces Check
- Tailwheel and springs Check
- Tie down..... Remove

REFERENCE

4.3.1.5 Right fuselage, right wing and right landing gear

Right fuselage.....	Check
Fuel sump (under fuselage).....	Drain
Flap surface.....	Check condition
Flap hinges.....	Check
Aileron surface.....	Check condition
Aileron hinges.....	Check
Wing tip and lights (if installed)	Check
Vortex generators.....	Check
Tie down.....	Remove
Fuel cap/vent.....	Check vent is clear and cap secure
Fuel tank.....	Check quantity
Main landing gear leg and strut.....	Check
Brakes and lines.....	Check
Tire.....	Check
Chocks.....	Remove

REFERENCE

4.3.1.6 General

Check that all wings and other external surfaces are free from frost, ice, snow.

4.3.2 STARTUP AND TAXI

4.3.2.1 Before starting engine

Preflight inspection Complete
Seat belts Fastened
Passenger briefing Complete
Parking brakes (on master cylinders)..... Both wheels, set
Door Closed and latched
Fuel selector Both
Avionics master switch Off
Propeller area Clear

CAUTION

The parking brake on each main wheel is set by depressing the top of each rudder pedal and rotating the valve on each master cylinder so the lever is oriented horizontally while maintaining pressure on the pedal. To release the brakes, rotate both valves so the levers are oriented vertically. Do not close the valves without any pressure applied to the pedals, as this will not apply the brakes and will allow the aircraft to be moved while the brakes are rendered inoperative for ground operations.

4.3.2.2 Starting engine

Master switch.....On
Mixture Full rich
Primer..... Apply*
Throttle Open 1/2 inch
Starter Engage

After engine has started:

Oil pressure Check
Throttle Set 1000 rpm
Ignition switch Both
Lights..... As required
Avionics master switch On

*Normal procedure three times. If engine is hot, omit this step.

WARNING
ENSURE THAT THE PRIMER IS CLOSED AND LOCKED AFTER THE ENGINE HAS STARTED. APPLYING THE PRIMER WITH THE ENGINE RUNNING WILL MAKE THE ENGINE STOP.

4.3.2.3 Starting engine when flooded

Mixture Idle cut-off
Throttle Full open
Starter Engage

When engine fires:

Mixture Rich
Throttle Retard to 1200 rpm
Ignition switch Both
Oil pressure Check
Lights..... As required
Avionics master switch On

4.3.2.4 Warm up

Throttle 1000 to 1200 rpm

4.3.2.5 Taxiing

Parking brakes (on master cylinders)..... Release both

Taxi area Clear

Throttle Apply slowly

Brakes Check

Steering..... Check

REFERENCE

4.3.3 FLIGHT

4.3.3.1 Before takeoff

Brakes	Set
Throttle	1700 rpm*
Magnetos.....	Check
Drop not to exceed 150 rpm or 75 rpm differential between magnetos and no engine roughness	
Carburetor heat	Hot (note rpm drop then cold)
Engine instruments.....	Check
Ammeter (if installed).....	Check
Throttle	Check idle
Throttle	1000 rpm
Flight instruments	Check
Fuel selector.....	Both and sufficient quantity for flight
Mixture	Set*
Ignition switch.....	Both
Carburetor heat	Off
Primer.....	Closed and locked
Trim	Set
Flaps	First notch (takeoff)
Controls.....	Free and proper movement
Doors.....	Closed
Strobes (if installed).....	As required
Transponder and other avionics	On
Seat belts	Check fastened
Brakes	Release

* When operating at high altitudes and/or temperatures, it may be necessary to lean the mixture for peak rpm.

4.3.3.2 Takeoff

Accelerate to 52 mph IAS (depending on aircraft weight) allowing tail to rise; maintain directional control.

Control stick..... Gentle back pressure

Accelerate to desired climb speed

Flaps Retract

Landing lights (if applicable) Off

4.3.3.3 Climb

Best rate 71 mph IAS

Best angle 50 mph IAS

Mixture Lean to obtain maximum rpm

Carburetor heat As required

4.3.3.4 Cruise

Power Adjust

Mixture Adjust

Carburetor heat As required

4.3.3.5 Descent

Power Adjust

Mixture Adjust

Carburetor heat As required

4.3.3.6 Approach and landing

4.3.3.6.1 Normal landing

Fuel selector Both
Seat belts Fastened
Mixture Set
Flaps Set
 Maximum speed first notch flaps (15°) .. 85 mph IAS
 Maximum speed (>15°) 81 mph IAS
Trim As required
Speed As required
 (1.3 times full flaps stall speed at gross weight is 42 mph IAS)

4.3.3.6.2 Crosswind landing

Fuel selector Both
Seat belts Fastened
Mixture Set
Flaps Set below white arc
 Maximum speed, first notch (15°) 85 mph IAS
 Maximum speed (>15°) 81 mph IAS
Trim As required
Speed As required
 (A higher speed than normal is recommended)

Ailerons-rudder On short final
 Use ailerons to keep upwind wing low
 Rudder to hold runway alignment
Touchdown Do not drift sideways during touchdown
Landing roll Use ailerons to keep upwind wing
 down, rudder and brakes to
 maintain directional control

4.3.3.7 Go-around

Throttle Full power
Airspeed Above 52 mph
Flaps Retract slowly
Trim As required

4.3.3.8 Stopping engine

Parking brakes..... Set
Flaps Retract
Electrical equipment Off
Avionics master switch Off
Throttle Idle
Mixture Idle cut off
Ignition switch Off
Master switch..... Off

REFERENCE

4.4 AMPLIFIED NORMAL PROCEDURES

4.4.1 PREFLIGHT

4.4.1.1 Cockpit

Enter the cockpit and operate the flight controls to ascertain that they operate freely in the correct sense. As a rule of thumb, if the stick is moved towards a control surface, that surface must go up. Make sure that the passenger (or cargo being carried in place of the rear seat) will not limit the travel of the control stick in any direction.

Set the leading edge of the horizontal stabilizer (pitch trim) to the takeoff position using the rocker switch on the control stick. Ensure that the stabilizer moves smoothly. The trim is in the takeoff position when the leading is within the marks on the left side of the empennage.

Check the flaps by lowering them to all positions and retracting them. Check that the detent on the handle engages in all positions.

Set the fuel selector to BOTH. Ensure that there is enough fuel for the intended flight by checking the sight gauges.

The mixture should be in the idle/cut-off position and the carburetor heat in the off (cold) position.

Ensure that the ignition switch is off.

Check that all the electrical systems that will be used for the flight operate as intended. To confirm that the stall warning is functioning correctly, have someone gently

operate the vane on the leading edge of the left wing with the master switch on. The stall horn should sound.

After operating the electrical system, make sure that all circuit breakers are in.

Check that the windows are clean and clear of frost or snow.

Ensure that all the documentation required for the flight is onboard. This includes charts, airworthiness certificate, registration certificate, aircraft flight manual, weight and balance data, etc.

Adjust the position of both the front and rear seats. If no passenger is being carried, secure the aft seat belts and harnesses.

Turn the master switch off before leaving the cockpit.

4.4.1.2 Nose section

As you make your way around the forward part of the aircraft, inspect the condition of the fiberglass cowling for cracks and insure the fasteners are secure.

Open the oil door on the right-hand side of the cowling. Check the oil quantity. Maximum capacity is five U.S. quarts and the minimum is four. Ensure that the oil filler cap is secure. Inspect the engine through the door and then close and secure it.

Check the propeller for nicks and the spinner for security and cracks.

Look through the air inlets on the front of the cowl and visually inspect the condition of the engine.

Check the general condition of the exhaust system. Drain fuel from the gascolator, and inspect for water and sediment. Dispose of the fuel in an appropriate manner.

4.4.1.3 Left fuselage, left wing, and left landing gear

Check the general condition of the left side of the fuselage.

Inspect the landing gear, tires, brakes, and shock absorber for condition and remove any chocks from under the wheel. Check the fuel cap by standing on the step provided on the landing gear. Visually check the fuel level in the wing tank and insure there are no obstructions in the vent tube.

As you walk along the leading edge of the wing, look for dents, ensure that the tie downs have been removed, and gently operate the stall warning vane. Ensure that all the vortex generators are in place. If one should be missing, there will be a mark on the paint of the wing where it should be. Check the landing light lens for cracks and check the security of the wingtip light assembly (if installed). Check the general condition of the wings, lift struts, and tip. Check the flaps and ailerons for general condition. Pay particular attention to the hinges to make sure they are secure and the cotter pins are in place.

4.4.1.4 Empennage

Check the tail surfaces for general condition and the tail wire bracing for security and tension. The hinges should all be secured with cotter pins. Check the condition of the tailwheel and the springs. Check the rudder cable for condition and proper attachment. Check the condition of the lights on the rudder (if installed). Remove the tie down.

4.4.1.5 Right fuselage, right wing, and right landing gear

Repeat the procedure carried out on the left wing, fuselage side, and landing gear.

4.4.1.6 General

Before re-entering the cockpit, make sure that the entire aircraft is free of snow or frost.

REFERENCE

4.4.2 STARTUP AND TAXI

4.4.2.1 Before starting the engine

Adjust the pilot seat using the pins on the sides of the seat-base. The pins must be securely installed prior to flight. Adjust the straps to accommodate the passenger. Make certain the forward bar under the passenger seat does not conflict with the control systems. Seat belts should be fastened and the passenger briefed. Close the door. Engage the parking brakes, which are individual valves located on each brake master cylinder. Ensure that the fuel selector is in the BOTH position. Verify that the avionics master switch is off and ensure that the propeller area is clear.

4.4.2.2 Starting the engine

Turn the master switch on. Push the mixture control in to full rich. If the engine is cold, it may be desirable to prime the engine. To do this, rotate the primer control until it unlocks, pull it out, allowing the pump to fill with fuel, and push it in, normally three times (more priming may be required in colder weather). After priming, make sure that the control is locked. Open the throttle 1/2 inch. Verify that the propeller area is clear and engage the starter. Oil pressure should rise within 30 seconds; otherwise, shut the engine down. Turn on any lights that may be required. The avionics master may now be switched on and the radios tuned as necessary.

4.4.2.3 Starting engine when flooded

The throttle should be in the full open position. Turn the master switch on. The mixture control should be in the idle cut-off position. Verify that the propeller area is clear and engage the starter. As soon as the engine starts, move the mixture control to the rich position and retard

the throttle. Oil pressure should rise within 30 seconds; otherwise, shut the engine down.

4.4.2.4 Warm up

Before takeoff the engine should be warmed up for two to three minutes minimum, although longer may be required when the temperatures are below freezing. The engine is warm enough when it idles at around 600 rpm and accelerates smoothly. Ensure the oil pressure is within the green arc on the gauge.

Avoid running the engine at idle for too long, as it will tend to foul the spark plugs.

If you need to add power over loose stones or gravel, do so carefully to avoid damaging the propeller.

4.4.2.5 Taxiing

Before starting to taxi, make sure that the propeller blast will not affect the area behind the aircraft and that there are no unapproved, unqualified people close to the aircraft.

Release the parking brakes. Apply power and keep the elevator control stick back at all times. Apply both brakes and steer from side-to-side to make sure the aircraft is controllable on the ground.

4.4.3 FLIGHT

4.4.3.1 Before takeoff

When the run-up area is reached, set the parking brake. Perform the magneto check at 1700 rpm, as follows:

- Switch to the left magneto and note the rpm. Switch back to both.

- Switch to the right magneto, noting the rpm, and turn back to both.

The drop should not exceed 150 rpm on either magneto or show greater than a 75 rpm difference between magnetos. The engine should run smoothly on either magneto. If there is no drop in rpm, there may be a fault in the system and it should be checked. Do not run the engine on one magneto for longer than 10 seconds. If both magnetos are switched off while the engine is running, do not turn them back on. Cut the mixture and re-start the engine. If the magnetos are turned back on while the engine is running, damage may be done to the exhaust system and the engine should be inspected prior to flight.

Apply the carburetor heat to be sure that it is operating. You will note a drop of about 50 to 75 rpm when it is applied. This will also clear any ice that may have formed during taxiing. Bear in mind that when the carburetor heat is applied, unfiltered air is entering the engine. Therefore, its use on the ground should be kept to a minimum.

The presence of ice may be recognized by the fact that the engine may momentarily run roughly when the carburetor heat is applied. This may be followed by an increase in rpm. When the carburetor heat is removed, the rpm may increase beyond 1700 rpm.

Check all engine parameters. Apply an electrical load (for example, by switching on the landing light) and observe that there is an increase in the electrical current drawn from the alternator (if an ammeter is installed).

Retard the throttle to idle to verify that the engine runs smoothly at minimum rpm (at least 600 rpm). Advance it to 1000 rpm.

In hot and high conditions, especially above 3,000 feet, it is important to lean the mixture prior to the magneto check. To do this, apply full power. Slowly lean the mixture until you observe the peak RPM. Retard the throttle slowly and proceed with the rest of the run-up.

Prior to takeoff, verify that the flight instruments operate correctly. Ensure that the fuel selector is on BOTH, the mixture is set, and the carburetor heat in the cold position. Engine gauges should be in the normal ranges. Flaps should be selected for takeoff; first notch (15°) is recommended. The door should be closed and seat belts fastened.

REFERENCE

4.4.3.2 Takeoff

4.4.3.2.1 Normal takeoff

The normal takeoff technique uses the first notch (15°) of flaps. Align on the runway and open the throttle. Maintain directional control at all times using appropriate rudder inputs. With the elevator in neutral, allow the tail to come up. At about 52 mph IAS, apply back pressure on the stick until the aircraft leaves the runway.

4.4.3.3 Climb

The best rate of climb speed (V_Y) at gross weight is 71 mph IAS and best angle (V_X) is at 50 mph IAS, with flaps up.

Normal en-route climbs should be carried out at 80 to 90 mph. While climbing, lean the mixture to achieve maximum engine speed. Consider the use of carburetor heat if weather conditions that may produce carburetor icing prevail.

4.4.3.4 Cruise

Once cruising altitude is reached, set the power. Normal cruising is performed between 55% and 80% power. As the aircraft accelerates, rpm will increase. Do not exceed 2750 rpm. Reduce the power to the selected setting and adjust the mixture. The engine may be leaned by slowly pulling the mixture back until there is a drop in rpm or the engine runs roughly. At this point, advance the mixture slightly (about 1/8 of an inch) or until the engine runs smoothly.

<p style="text-align: center;">NOTE</p>
--

<p style="text-align: center;">With a new engine, try to use 75% power as often as</p>
--

possible until either a total of 50 hours of operations have been accumulated or the oil consumption has stabilized. This will ensure that the piston rings seat correctly.

4.4.3.5 Descent

During descent use the carburetor heat as required. Take care not to exceed the maximum speed of the engine (2750 rpm). Also, use caution to prevent shock-cooling the engine by descending at high airspeeds with too low of a throttle setting. Enrich the mixture as you descend.

4.4.3.6 Approach and landing

Flaps may be lowered to the first notch (15°) when the airspeed is below 85 mph IAS. The maximum speed for more flaps (>15°) is 81 mph IAS.

CAUTION

Plan the pattern so that steep turns are not required when turning from down-wind to base leg and from base leg to final. Steep turns increase stall speed (Fig 5-2 and 5-3, Stall Speed Versus Angle of Bank). Steep turns, low power, and slow airspeed can be dangerous, particularly if the airplane is heavily loaded and/or with gusty or turbulent wind conditions.

4.4.3.6.1 Normal landing

The normal landing in the CC11-100 is in a three-point, stalled condition. Adjust the throttle and pitch attitude to compensate for ground effect as the aircraft approaches the runway. At approximately 10 feet AGL, smoothly begin landing flare to attain a three-point attitude. Maintain this attitude and adjust the throttle to accomplish a smooth touchdown. Gradually bring the stick back, keeping it back throughout the landing roll. Maintain

directional control with rudder and differential braking, as necessary.

It is possible to settle the aircraft on the ground at higher speeds in a two-point configuration. The landing flare is kept flat, aiming to place the main landing gear wheels on the runway at a minimum sink rate. When the wheels contact the ground, the stick must be moved forward to counteract the pitching up reaction of the aircraft. After the aircraft has slowed down, the tail may be brought down with the stick. Bear in mind that the rudder will begin to lose effectiveness as airspeed is reduced. Maintain directional control. Apply brakes as necessary.

4.4.3.6.2 Crosswind landing

When established on a short final approach, use the ailerons and rudder to maintain the approach path. Lower the upwind wing using ailerons and use the rudder to hold runway alignment. At approximately 10 feet AGL, increase the pitch attitude to flare. Ensure that the aircraft is not drifting sideways when touching down. When a satisfactory touchdown has been accomplished, reduce the throttle to IDLE and adjust ailerons slightly to allow the downwind main wheel to touch down.

Maintain the stick deflected into the wind as necessary to keep the upwind wing from lifting, and use rudder and differential braking, as necessary, to maintain directional control. Once the three wheels are on the ground, move the stick all the way back and keep it there at all times during the landing roll. Apply brakes only as required to maintain directional control, slow to taxi speed or stop.

NOTE

It is recommended that a slightly higher airspeed be used on final approach during gusty or turbulent wind conditions. Add approximately one (1) mph IAS for each two (2) knots of reported gust.

4.4.3.7 Balked landing (Go-around)

In a balked landing, apply full power. Slowly retract the flaps to the first notch (15°) and establish a positive rate of climb. Maintain climb speed. Trim as required.

4.4.3.8 Stopping the engine

The parking location should be free of loose material such as gravel, debris, or unsecured tie down ropes, which could be blown up by the propeller.

When the aircraft is parked, turn off all electrical equipment, including avionics. The engine must always be stopped by pulling the mixture control to the idle cut-off position. Turn the ignition switch off. Finally, turn the master switch off.

After the airplane has been positioned, release the brakes and determine whether the airplane is likely to roll as the crew exits. If so, set the parking brakes by turning the valve on each brake master cylinder while applying force to the brake pedals. Retract the flaps to prevent damage to the flaps and their operating mechanism in the event of strong winds from the tail direction.

Install wheel chocks, if available. Tie down both the wing and the tail. Straps or ropes are preferred over chains. Tie-downs should be firmly secured but without excessive tension. Close cabin windows and doors.

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REFERENCE

5 PERFORMANCE

5.1 INTRODUCTION

The purpose of this section is to provide information that will assist the pilot with planning a flight in detail with reasonable accuracy.

All data has been corrected to I.C.A.O. standard day conditions. Where appropriate, the data has been expanded analytically for variations in weight, altitude, temperature, etc.

The data has been derived from actual flight tests, taking into account the proficiency of an average pilot. The pilot must use sound judgment when assessing the effect of conditions not found in the charts, such as soft runways and winds aloft. The parameters will be affected by the performance of the engine. Therefore, the pilot must be thoroughly familiar with its operation, including the procedures for adjusting the mixture control.

Data should not be extrapolated beyond the limits shown on the charts.

All information is presented in the units used on the aircraft's instrumentation.

- Airspeeds will be presented in statute miles per hour
- Weights in pounds
- Altitudes in feet
- Temperatures in degrees Fahrenheit
- Wind speed in nautical miles per hour

The CC11-100 may be equipped with different tires and propellers. All of the data presented in this chapter are based on an aircraft equipped with the McCauley Propeller Systems model 1B90/CM7141 propeller and 8.50x6.00-6 tires.

Different combinations of propellers and tires will affect the performance of the aircraft.

REFERENCE

5.2 PERFORMANCE CHARTS

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REFERENCE

5.2.1 AIRSPEED CALIBRATION

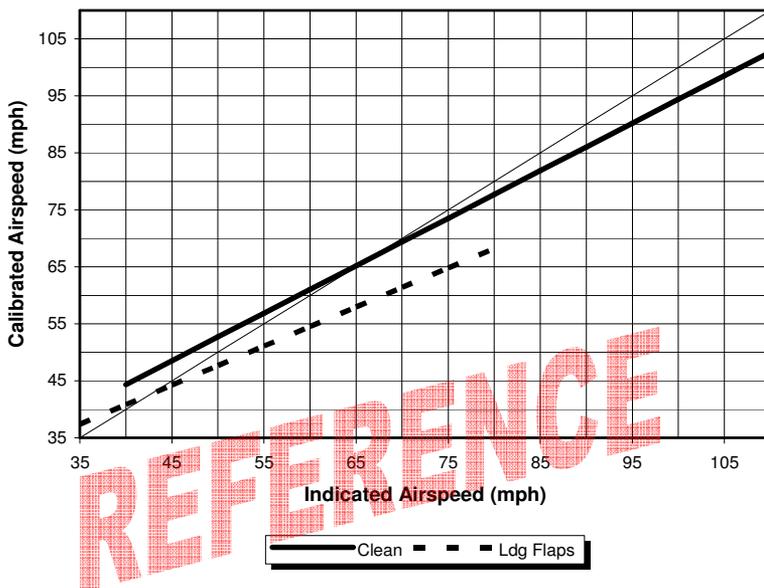


Figure 5-1 Airspeed system calibration

NOTE

Indicated airspeed assumes zero instrument error.

NOTE

Airspeed indication can vary by several miles per hour depending on whether the fresh air vents and the door and windows are open or closed. All values listed in this document are for indications with the vents, windows, and the door in the closed position.

5.2.2 STALL SPEED



Figure 5-2 Stall speed versus angle of bank

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REFERENCE

5.2.3 TAKE OFF

5.2.3.1 Normal takeoff

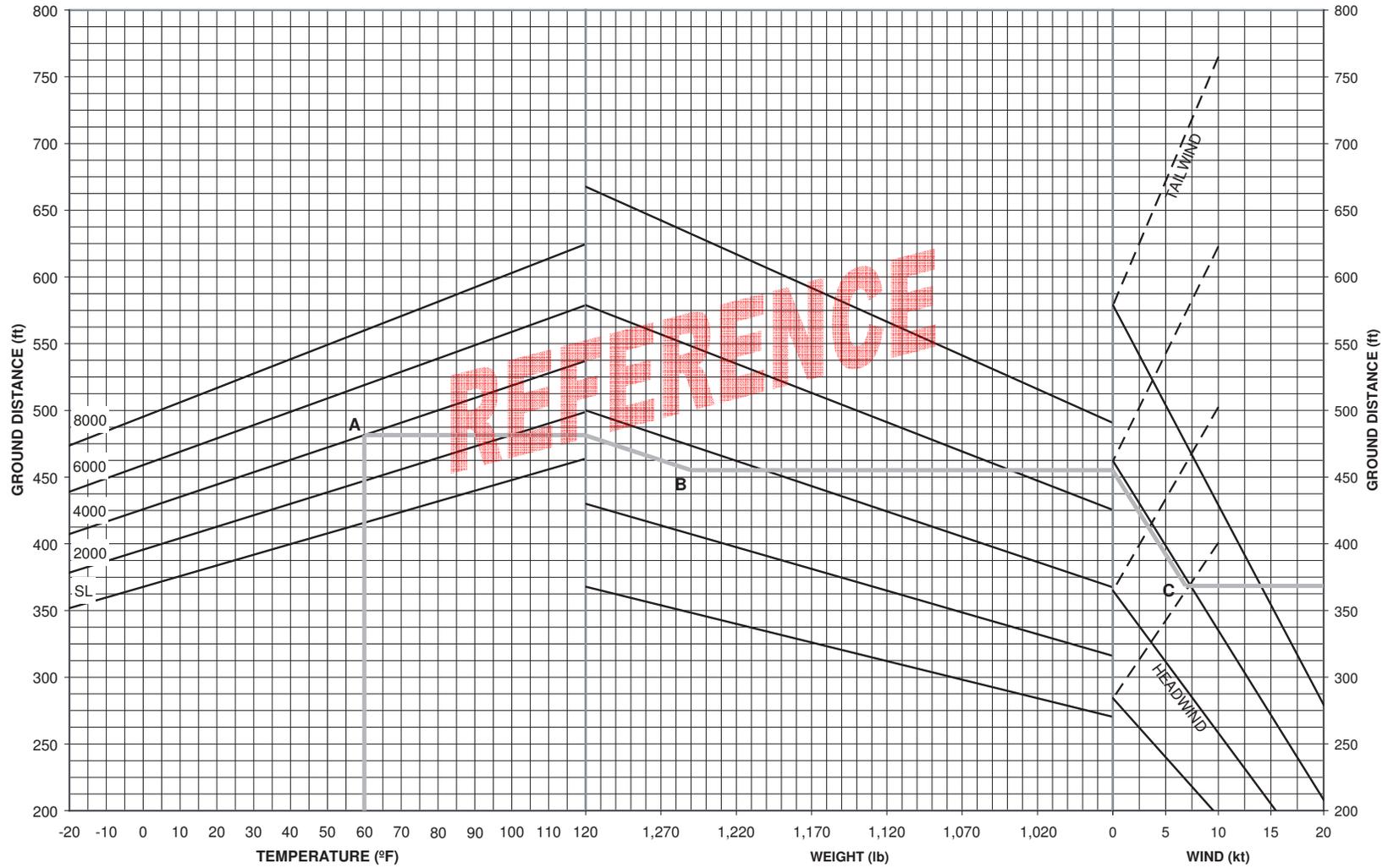


Figure 5-3 Takeoff Ground Distance at 1320 lbs

Example:
Takeoff conditions

Outside air temperature (OAT)	60° F
Pressure altitude at airport	3000 feet
Aircraft weight	1250 lbs.
Headwind	7 kts.

On the graph at the furthest left of the chart, identify point A where the OAT intersects with the pressure altitude at the airport. Note the pressure altitude lines on the chart are at even thousands of feet. If the field altitude is between two lines, place point A between the appropriate lines at approximately the correct spacing. Extend a line horizontally from point A to the reference line on the second graph (the one in the center). From there, follow parallel to the weight lines until you reach 1250 lbs. This is point B.

Extend a line horizontally from point B to the reference line on the graph on the right. From there, follow parallel to the wind lines until you reach 7 knots. This is point C.

From point C extend a line horizontally to the axis on the far right of the chart. This will give you the takeoff ground distance (approximately 370 ft) under the conditions listed above, assuming a smooth runway with no appreciable slope.

REFERENCE

5.2.4 CLIMB RATE AND GRADIENT

Pressure Altitude (ft)		Indicated Airspeed (mph)	OAT (°F)	Climb Gradient (%)	Rate of Climb (fpm)
0	59 °F Below Std Temp	70	0	5	912
2000		70	-7	5	855
4000		71	-14	4	794
6000		71	-21	4	725
8000		72	-28	3	650
0	27°F Below Std Temp	70	32	5	845
2000		71	25	4	782
4000		71	18	3	712
6000		72	11	3	635
8000		72	4	3	550
0	Std Temp	71	59	4	787
2000		71	52	4	718
4000		72	45	3	642
6000		72	38	3	557
8000		73	31	2	464

Pressure Altitude (ft)		Indicated Airspeed (mph)	OAT (°F)	Climb Gradient (%)	Rate of Climb (fpm)
0	16° Above Std Temp	71	75	4	753
2000		71	68	3	680
4000		72	61	2	599
6000		73	54	2	510
8000		74	47	2	411
0	41° Above Std Temp	71	100	4	697
2000		72	93	3	618
4000		73	86	2	531
6000		73	79	2	435
8000		74	72	1	328

Figure 5-4 Maximum rate and gradient of climb

NOTE
Mixture leaned for maximum RPM.

5.2.5 CRUISE

Pressure Altitude (ft)	RPM	% Power	True Airspeed (mph)	Fuel Flow (gph)
2000	1950	63	96	5.2
	2150	73	101	5.7
	2350	81	106	6.0
	2550	86	107	6.0
	2750	94	110	6.4
4000	1950	60	92	5.0
	2150	68	97	5.3
	2350	76	102	5.6
	2550	80	103	5.6
	2750	88	107	6.0
6000	1950	56	82	4.7
	2150	64	91	5.0
	2350	66	90	4.9
	2550	75	99	5.2
	2750	82	102	5.6
8000	1950	52		4.3
	2150	60		4.7
	2350	66	85	4.9
	2550	70	89	4.9
	2750	76	94	5.2

Figure 5-5 Cruise speed

 Indicates that altitude cannot be maintained at this power setting

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REFERENCE

5.2.6 LANDING

5.2.6.1 Landing over 50' obstacle

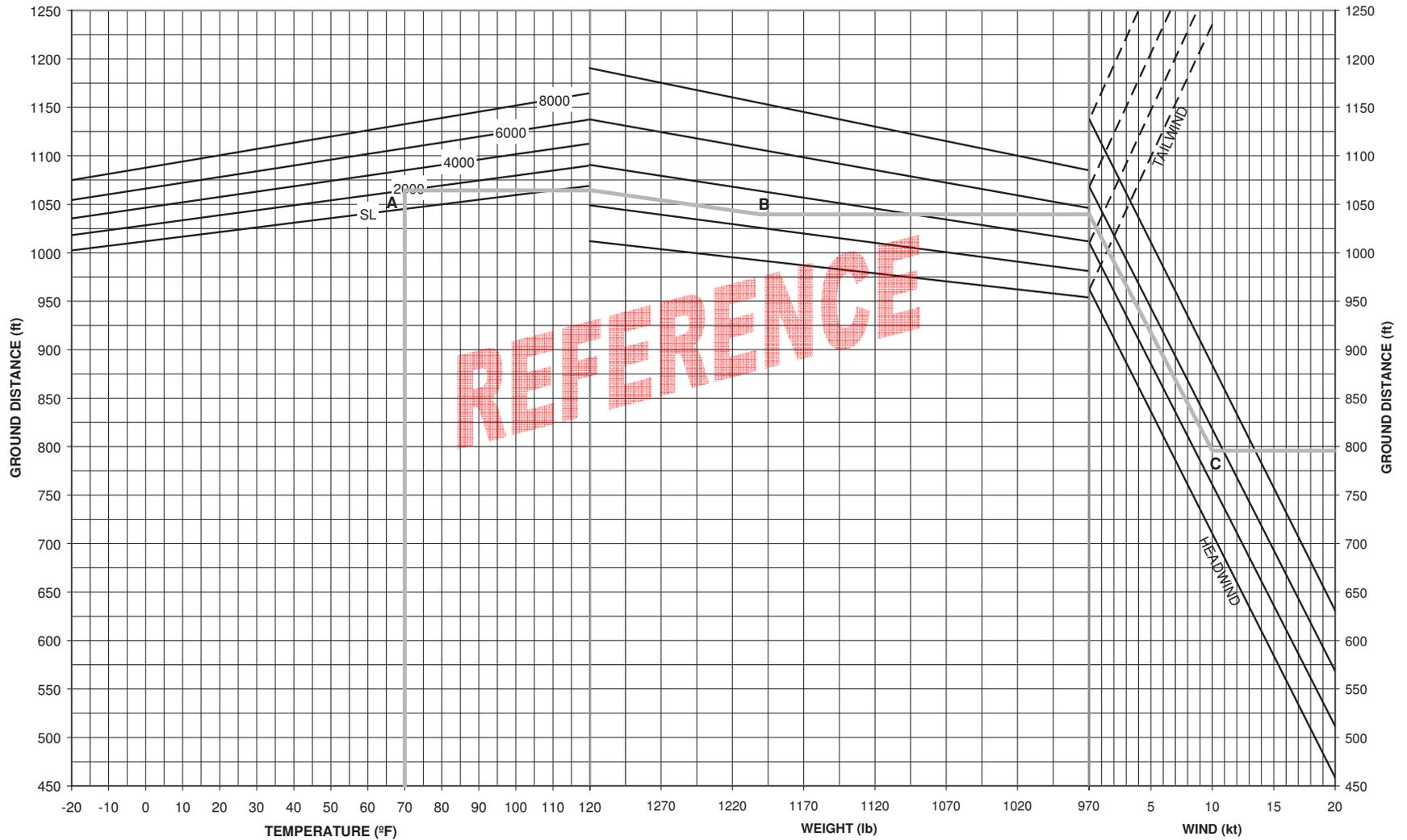


Figure 5-6 Landing Distance over 50' Obstacle

Example:
Landing conditions

Outside air temperature (OAT)	70 °F
Pressure altitude at airport	2000 feet
Aircraft weight	1200 lbs
Headwind	10 kts

On the graph at the furthest left of the chart, identify point A where the OAT intersects with the pressure altitude at the airport. Note the pressure altitude lines on the chart are at even thousands of feet. If the field altitude is between two lines, place point A between the appropriate lines at approximately the correct spacing. Extend a line horizontally from point A to the reference line on the second graph (the one in the center). From there, follow parallel to the weight lines until you reach 1200 lbs. This is point B.

Extend a line horizontally from point B to the reference line on the graph on the right. From there, follow parallel to the wind lines until you reach 10 knots. This is point C.

| From point C extend a line horizontally to the axis on the far right of the chart. This will give you the total landing distance to clear a 50' obstacle (approximately 790 ft.) under the conditions listed above, assuming a smooth runway with no appreciable slope.

5.2.7 BALKED LANDING

Pressure altitude (ft)	Airspeed (mph IAS)	Climb gradient (%)
4,000	70	2.3

Figure 5-7 Balked landing climb gradient

NOTE
First notch flaps (15°)
Mixture leaned for peak RPM

REFERENCE

5.2.8 GLIDE

Statute Miles	Nautical Miles	Altitude Loss (ft)
1.4	1.2	1000
2.8	2.5	2000
4.3	3.7	3000
5.7	4.9	4000
7.1	6.2	5000
8.5	7.4	6000
9.9	8.6	7000
11.3	9.9	8000
12.8	11.1	9000
14.2	12.3	10000
15.6	13.6	11000
17.0	14.8	12000
18.4	16.0	13000
19.8	17.2	14000

Figure 5-8 Glide performance

NOTE

At 1320 lbs, glide speed 68 mph, flaps up

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REFERENCE

6 WEIGHT AND BALANCE

6.1 INTRODUCTION

This section provides two very important pieces of information. Section 6.3 describes the methods for determining the empty weight of the aircraft and the position of the center of gravity relative to the datum. Section 6.5 supplies the information necessary to calculate the takeoff weight and the position of the center of gravity for a given flight. An example is provided in paragraph 6.6.

Weight and balance limits are placed on aircraft for two reasons:

- The structure was designed to carry a certain maximum weight.
- Weight and the position of the center of gravity affect both the performance and the stability and control characteristics, particularly in stall and spin recovery.

The aircraft will only attain the performance and exhibit the handling characteristics used for certification if it is flown with the center of gravity within the approved range. An overloaded aircraft will not take off, climb, or cruise as well as a properly loaded one. The center of gravity is a determining factor in flight characteristics. If the CG is too far forward, the aircraft will require high stick forces for control and increases the risk of nosing over on the ground. If the CG is too far aft, the aircraft may pitch up during climb. Longitudinal and directional stability will be reduced. This can lead to inadvertent stalls and even spins. Spin recovery will become more difficult, if not impossible.

The CC11-100 will perform as intended when it is properly loaded. Before it was delivered, the aircraft was weighed and the CG location was computed. You will find this information in Section 6.4.

6.2 PERTINENT INFORMATION FOR WEIGHT AND BALANCE

Position of datum..... 60 inches ahead of wing leading edge

Maximum gross weight..... 1320 lbs

Forward CG Limits

At 1320 lbs..... 73.0 inches aft of datum

At 1100 lbs or less..... 70.5 inches aft of datum

(Straight line variation between points given)

Aft CG Limit (at all weights) 78.5 inches aft of datum

Note that the aircraft can be equipped with different propellers and tires. These will affect weight and balance and performance.

Optional equipment must be included in the weight and balance data when it is installed.

6.2.1 TERMINOLOGY

Arm	The horizontal distance from the reference datum to the center of gravity (CG) of an item.
Basic Empty Weight	Standard empty weight plus optional equipment.
Center of gravity (CG)	The point at which an aircraft or an item of equipment would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight.
CG Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
CG Limits	The extreme center of gravity limits within which the aircraft must be operated at a given weight.
Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.

Moment	The product of the weight of an item multiplied by its arm.
Maximum Takeoff Weight	Maximum weight approved for the start of the takeoff run.
Standard Empty Weight	Weight of a standard airplane, including unusable fuel, full operating fluids and full oil (5 qts).
Unusable fuel	The quantity of fuel at which the first evidence of malfunctioning occurs under the most adverse fuel feed condition.
Useful load	Difference between takeoff weight and basic empty weight.

6.3 WEIGHING PROCEDURES

This procedure is to be followed for weighing the landplane. To weigh aircraft equipped with floats, consult the maintenance manual, document SC10000AMM.

6.3.1 PREPARATION

Make sure that all of the equipment listed in the Aircraft Equipment List (Section 6.4) is installed and is in the proper location.

1. Remove any items not listed on the Aircraft Equipment List (such as rags, charts, tools, etc.).
2. Clean the aircraft to remove excess dirt and grease.
3. Remove the fuel from the aircraft. This may be accomplished by opening the fuel drains until all remaining fuel is drained.
4. Check that the oil is full (4-5 quarts on the dip stick).
5. Position the pilot's seat in the mid-range position. Retract the flaps, place all controls in neutral, and close the door and windows.
6. Place the aircraft in a hangar with the doors closed where the wind will not affect the readings of the scales.

6.3.2 LEVELING

Have a set of calibrated weighing scales available. The range should be 1000 lbs for each main and 250 lbs for the tail. Zero the scales or record the tare, as appropriate.

1. Place the aircraft approximately in a flight level attitude by supporting the tail wheel on a bench.
2. Place the aircraft on the calibrated weighing scales.
3. Level the aircraft as follows:
 - Place a spirit level on the lower longeron between the landing gear tubes as shown in Figure 6-1. Lower or raise the tail until the aircraft is level. If necessary, this may be accomplished by letting air out of the tires.
 - Place the level on the upper forward cross tube located in the cabin just behind the windshield, as shown in Figure 6-2. Center the bubble to level the wings.



Figure 6-1 Leveling the aircraft



Figure 6-2 Leveling the aircraft

6.3.3 WEIGHING

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

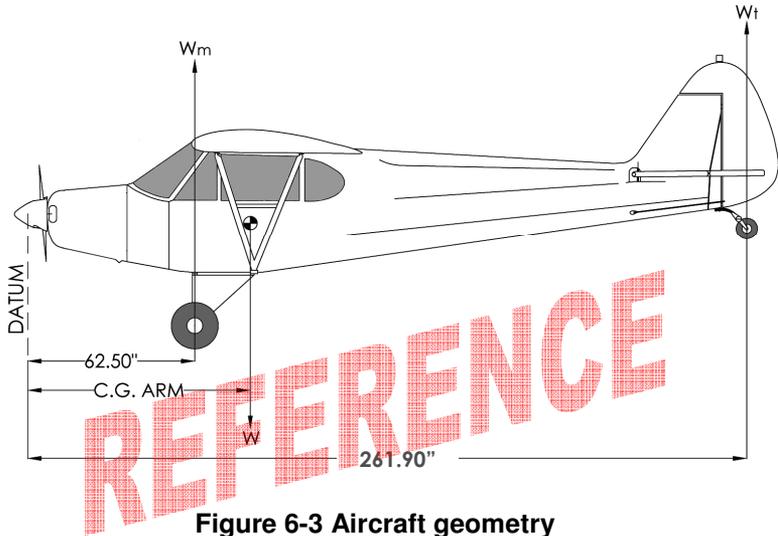


Figure 6-3 Aircraft geometry

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

Where:

- 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

6.4 WEIGHT AND BALANCE DATA AND RECORD

Table 6-1 shows the following information at the time when the aircraft was licensed at the factory:

- Basic empty Weight
- Center of Gravity
- Useful Load

MODEL CC11-100

Aircraft serial number: _____

Registration number: _____

Date: _____

Basic empty weight (lbs)	Arm (inches)	Moment (in·lbs)

Table 6-1 Basic empty weight

Useful load = Maximum takeoff weight- Basic empty weight
= 1320 – _____

= _____ lbs

This basic empty weight, CG, and useful load are for the CC11-100 as it was licensed at the factory. Please refer to the appropriate aircraft records to determine the latest information, as the aircraft may have been altered.

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REFERENCE

CC11-100		SERIAL NUMBER	REGISTRATION NUMBER			PAGE NUMBER		
Date	Item No.	Description of Article or Modification	Added (+) Removed (-)	Weight Change			Running Basic Empty Weight	
				Wt (lb.)	Arm (ins.)	Moment/100	Wt (lb.)	Moment/100
		<u>Original Equipment List</u>						
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9	The above items are included in the empty weight.						

REFERENCE

Table 6-2 Weight and Balance Record

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REFERENCE

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 6-3.
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 Figure 6-4. If it is within the weight and balance envelope, the aircraft is within the approved envelope.

**SECTION 6
WEIGHT AND BALANCE**

**CUB CRAFTERS
CC11-100**

Item	Weight (lbs)	Moment Arm (in)	Moment (in-lbs)
Aircraft Empty			
Fuel		83.90	
Pilot		71.40	
Passenger		96.08	
Forward Cargo Compartment (100 lb max)		110.40	
Extended Cargo Compartment (20 lb max)		134.40	
TOTAL			
CG Station:			

REFERENCE

Table 6-3 Weight and balance loading form

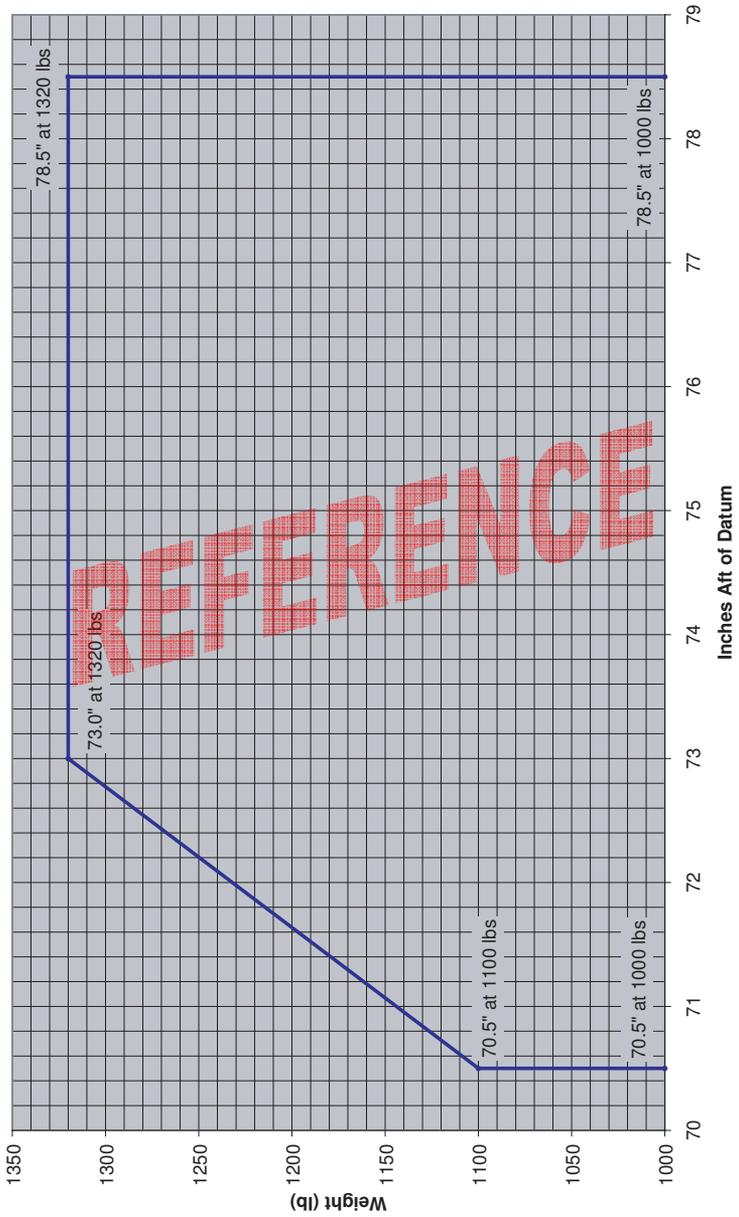


Figure 6-4 Weight and Balance Envelope

**6.6 SAMPLE WEIGHT AND BALANCE
CALCULATION**

This section will provide a sample weight and balance calculation using the methods given in paragraph 6.5.

Item	Weight (lbs)	Moment Arm (in)	Moment (in-lbs)
Aircraft Empty	883	72.28	63825.5
Fuel	120	83.90	10068.0
Pilot	170	71.40	12138.0
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	1315		99846.7
CG Station:	75.9		

Table 6-4 Sample Weight and Balance

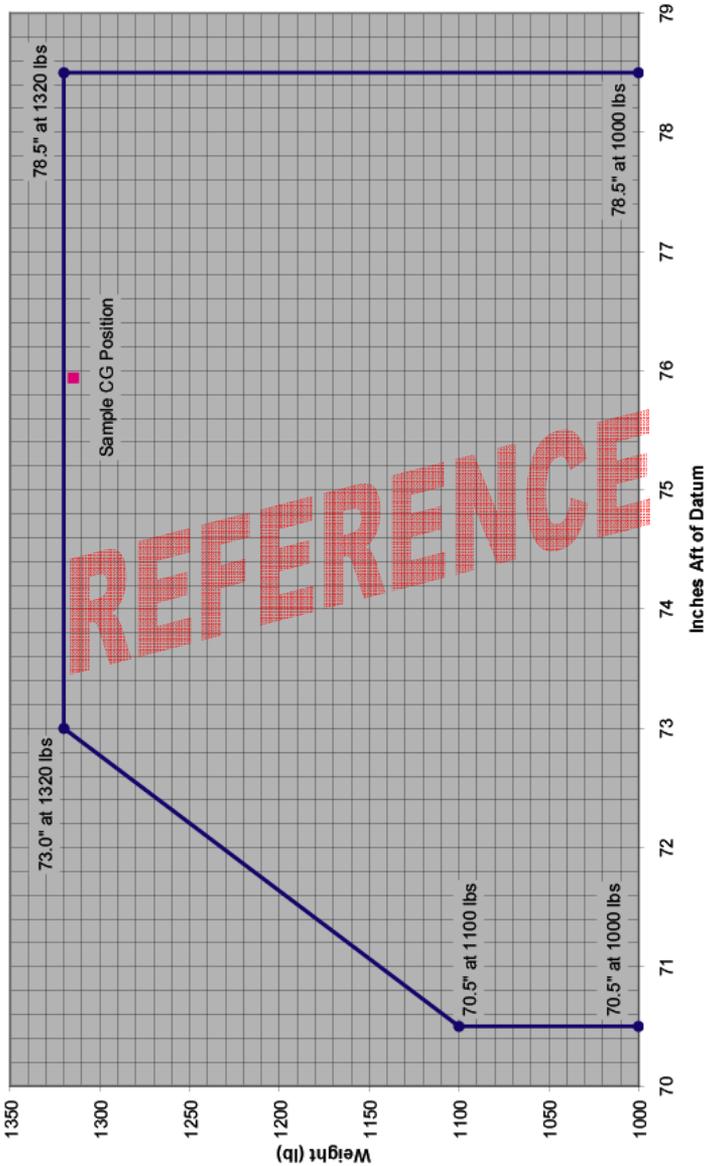


Figure 6-5 Sample CG Location

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AIRCRAFT SYSTEM AND DESCRIPTION

7.1 INTRODUCTION

This section gives a description of the CC11-100 and the operation of its systems and standard equipment. For information and operation of optional equipment, please refer to Section 9.

7.2 AIRFRAME

The structure of the fuselage consists of a truss made of high-strength steel tubing. The members are joined together using inert gas fusion welding. The steel structure is powder coated to protect it from corrosion.

The wing is made up of a framework of stamped aluminum ribs mounted onto extruded wing spars. Tubular drag and compression struts and high strength stainless steel drag wires make up the rest of the structure. The leading edges are covered with aluminum sheet. The wing tip is made from fiberglass and is fairly flexible, enabling it to withstand some abuse.

The wings attach onto the fuselage with hinge fittings and are supported by two lift struts. The rigging of the wings is accomplished by adjusting the forks that join the lift struts to the fuselage.

The fin, rudder, stabilizers, and elevators are all constructed of tubular steel with steel channel ribs. Stainless steel tie rods and fittings brace the stabilizers to the fins and fuselage. The tail brace wires should not be used for lifting or handling the aircraft on the ground.

The fuselage, wings, empennage, and landing gear are covered with a polyester fiber treated with Cub Crafters' proprietary covering process, which provides an excellent, durable finish.

7.3 LANDING GEAR

The CC11-100 has a conventional, or tailwheel, landing gear configuration. The main gear legs are made from welded steel tubing. Bungee cords on cabane struts provide shock absorption. The main wheels carry 6.00-6 tires standard.

Each main wheel is provided with a set of single disc brakes. The left and right systems are independent of each other. There are two valves that operate the parking brake located under the pilot's seat. The units form an integral part with the copilot's toe brakes. To operate the parking brake, press both brake pedals and rotate both valves 90 degrees.

The tailwheel swivels through 360 degrees and is steerable via the rudder pedals. It is mounted to the fuselage with steel spring leaves.

7.4 FLIGHT CONTROLS

The CC11-100 has conventional controls, operated with a control stick and rudder pedals and actuated with cables.

Pitch trim is accomplished via an electric servo which moves the leading edge of the horizontal stabilizer up and down, effectively changing the angle of incidence. The servo is actuated with a rocker switch located on the control stick.

Optional slotted flaps are actuated mechanically using a lever in the upper, left-hand side of the cockpit ahead of the pilot. The flaps have four positions: retracted, 15°, 35°, and 50°.

The flap lever has a spring latch system that will hold the flap in the selected position. To extend the flaps, depress the trigger on the flap handle and pull down and back on the flap handle. To retract the flaps, depress the trigger and move the handle up and forward.

The flight controls allow the aircraft to be flown solo from the front seat only or controlled from the rear seat when a pilot or properly trained student pilot is at the front seat controls. The front seat occupant must be able to properly use the controls in the front or be able to follow instructions from an instructor seated in the rear.

7.5 POWERPLANT

7.5.1 ENGINE

The CC11-100 is powered by a Teledyne-Continental O-200A engine. This is an air-cooled, four cylinder powerplant that is capable of delivering up to 100 hp at 2750 RPM.

A throttle controls power to the engine. Each crew member is provided with a throttle on the left side of the cockpit. The air-to-fuel mixture is adjusted manually with a control on the left side of the instrument panel. Pulling the mixture control all the way back operates a cut-off valve on the carburetor that stops the supply of fuel to the engine. The mixture control should always be used to stop the engine.

7.5.2 ENGINE MOUNT

The structure of the mount is made of high-strength steel and the engine is attached to the mount through rubber mounts that help reduce vibration.

7.5.3 PROPELLER

The standard aircraft comes with a Sensenich wood propeller. Optional propellers are also available.

7.5.4 ENGINE COWLING

The engine cowling is made of fiberglass. The upper cowl can be removed using Philips-head fasteners. There is an oil access door located in the upper, right-hand portion that allows easy access to the oil fill neck/dip stick,

making removal of the cowl unnecessary during preflight inspections.

7.5.5 EXHAUST SYSTEM

The exhaust system is made of stainless steel. It is covered with a shroud that is used as a heat exchanger to draw hot air for the cabin and for the induction system.

7.5.6 IGNITION SYSTEM

Two independent magnetos supply the ignition for the engine. The pilot must ensure that both magnetos are operating correctly prior to takeoff. In an emergency, the engine will continue to run if one of the magnetos fails. The engine should be started with the ignition switch in the BOTH position.

7.5.7 AIR INDUCTION SYSTEM

The induction air for the engine enters through a filter on the lower side of the cowling. Alternatively, the pilot may use the carburetor heat control which operates a butterfly valve allowing heated, unfiltered air into the carburetor. The control is located on the instrument panel.

CAUTION

Ground operations with the carburetor heat control in the hot position must be limited because of the fact that air by-passes the filter.

Should the air filter become obstructed, the carburetor air control provides an alternate means of supplying the engine with air for the induction system.

It is important that the pilot become knowledgeable about carburetor icing and the use of the carburetor heat. Cub

Crafters recommends the following publication, available from the FAA website:

Advisory Circular 20.113 - Pilot Precautions and Procedures to be taken in Preventing Aircraft Reciprocating Engine Induction System and Fuel System Icing Problems.

WARNING
AS CARBURETOR ICE ACCUMMULATES, IT PRODUCES AN EXCESSIVELY RICH AIR/FUEL MIXTURE. THE ENGINE MAY START TO LOSE POWER OR STOP COMPLETELY. AT THIS POINT THERE MAY NOT BE SUFFICIENT HOT AIR IN THE ENGINE COMPARTMENT TO MELT THE ACCUMULATION OF CARBURETOR ICE, EVEN WHEN THE CARBURETOR HEAT CONTROL IS IN THE FULL "HOT" POSITION.

In general, follow these practices:

When icing conditions exist, apply carburetor heat often in all flight regimes. The main symptom of icing in the induction system will be loss of power.

Never use partial carburetor heat unless the aircraft is equipped with a carburetor temperature gauge, ice light or similar instrumentation. Partial heat could make matters worse, unless you know exact carburetor temperatures. Remember, full heat or nothing.

Be especially vigilant at lower power settings. It is good practice to use carburetor heat during any descent where you have reduced power, especially for landing.

In conditions conducive to icing or if ice was noted during engine run-up, perform another carburetor heat check immediately before takeoff. DO NOT leave carburetor heat on for the actual takeoff.

7.5.8 OIL SYSTEM

The oil system is an integral part of the engine, except for the cooler that is mounted on the lower, left-hand side of the firewall. The oil filler is on the right side of the engine. An optional spin-on oil filter may be installed and is located on an adapter on the lower, left-hand side of the engine.

7.5.9 FUEL SYSTEM

Fuel is carried in two 12-gallon tanks located within the wings. The total usable fuel is 24 gallons. The tanks are made of aluminum. The tank has a sump and drain located in the bottom of the fuselage underneath the cockpit. This should be drained before each flight to test for water and sediment in the fuel system. The fuel system is gravity-fed with no separate boost pump.

The fuel flows from the tanks into a selector valve located on the lower, left side of the cockpit that has four positions:

- Both. The engine is fed by both fuel tanks
- Left. Fuel is supplied by the left tank.
- Right. Fuel is supplied by the right tank.
- Off. Fuel supply to the engine is cut off.

Fuel will flow from one tank to the other when the selector is in either the Off or the Both position. When parking the aircraft on a slope, leave the selector on either the left or right position to prevent cross-feeding and overflowing of the lower tank.

The engine may be operated on the Both, Left or Right positions. However, the Both position is required for takeoff and landing.

Fuel quantity is determined with two sight glass gauges located on either side of the cockpit at the wing root. The ventilation of the tanks is through tubes at the forward outboard edge. These tubes protrude under the wing close to the forward wing strut attachment.

Prior to refueling the aircraft, connect the fueling equipment's grounding wire to either of the wing tie downs. This will ensure that there is no electrical potential difference between the aircraft and the fueling equipment and will minimize the risk of electrical sparks when the aircraft is being refueled.

7.5.10 ELECTRICAL SYSTEM

The main sources of electrical energy are a 12 volt battery and a 30 ampere alternator. The system has an over voltage relay and a voltage regulator. The battery is located underneath the front seat.

7.5.11 LIGHTS

Optional anti-collision light assemblies may be installed on each wingtip. These consist of a navigation light and a strobe. There may also be a position light and a beacon on top of the vertical stabilizer. An optional landing light may be mounted in the leading edge of the left wing.

7.5.12 STALL WARNING

The stall warning system is activated by a vane located on the leading edge of the right wing. As the aircraft approaches the stall, a horn will sound. The system is calibrated so that the horn will come on at least 6 miles per hour above the stall speed.

7.5.13 PITOT-STATIC SYSTEM

The pitot system senses dynamic pressure through a tube that is aligned with the flow of air and is located in the leading edge of the jury strut on the left wing.

The static pressure source for each instrument is vented to the inside of the cabin. Because of this the indications for airspeed, altitude, and rate of climb will be affected by opening the windows, door, or cabin air vents.

7.6 COCKPIT

Entry to the cockpit is through a door and window arrangement on the right side of the aircraft. The window is latched to the door using rotating tangs that engage slots in the door. The door is opened using a rotating handle. The window must be raised until it engages the latch on the wing. Close the door by rotating the door handle and pulling it closed. Release the handle once the door is fully closed, allowing the latching pins to engage in the fuselage. Release the window latch on the wing and lower the window closed. Engage the tangs in the door.

A window on the left-hand side of the fuselage operates in a similar manner to that on the right.

The CC11-100 seats two in a tandem configuration. All flight controls are within reach of the forward occupant, and therefore, the aircraft must be flown from this position. The aft occupant is provided with a stick, rudder pedals, throttle and brakes for flight instruction.

The forward seat is adjustable fore aft. To move the seat, remove the quick-release pins on the sides of the seat and slide to the desired position.

7.7 INSTRUMENT PANEL

The instrument panel contains all flight, navigation, and engine instruments that are required for VFR operations. See section 9 for supplemental information regarding the equipment installed in the instrument panel.

7.8 CABIN HEAT

Hot air for heating the cabin is supplied by a heat exchanger located around the engine exhaust. Hot air enters the cabin through an opening on the engine firewall. To select the heater, the control on the upper right part of the instrument panel must be pulled aft.

7.9 BAGGAGE AND CARGO COMPARTMENT

The cargo compartment is located behind the aft occupant and is divided into two areas. The forward area has a capacity of 100 lbs and the aft area 20 lbs.

7.10 ELT OPERATION AND LOCATION

The CC11-100 is supplied with an ELT transmitter that meets TSO C91a. The ELT is mounted in a bracket directly underneath the pilot's seat and may be accessed through an opening on the forward side of the seat column.

REFERENCE

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SECTION 8

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9.1 CC11-100 STRAIGHT FLOATS

9.1.1 GENERAL

This supplement must be attached to the Pilot's Operating Handbook when floats are installed per the Equipment List supplied with the aircraft and listed in Section 6 of this manual. The information contained herein supplements or supersedes the Pilot's Operating Handbook only in the areas listed in this supplement. For limitations, procedures and performance information not contained in this supplement, consult Section 2 of this Pilot's Operating Handbook.

9.1.2 FUEL QUANTITY INDICATORS

To determine the fuel quantity when equipped with floats, use the fuel quantity indication for level flight. Fuel indications in the water will vary depending on the angle at which the aircraft is floating. Generally, using the markings for level flight will ensure that the amount of fuel available is greater than what is shown on the gauges. However, the additional weight of this fuel must be taken into account for weight and balance.

9.1.3 BILGE PUMP

There is a bilge pump stowed in a hatch. Any water that has accumulated in the floats may be emptied out by removing the rubber plugs and using the pump to draw the water out. Make sure that no one is standing in the way of the water stream.

APPROVED STRAIGHT FLOATS:

- Baumann BF1500

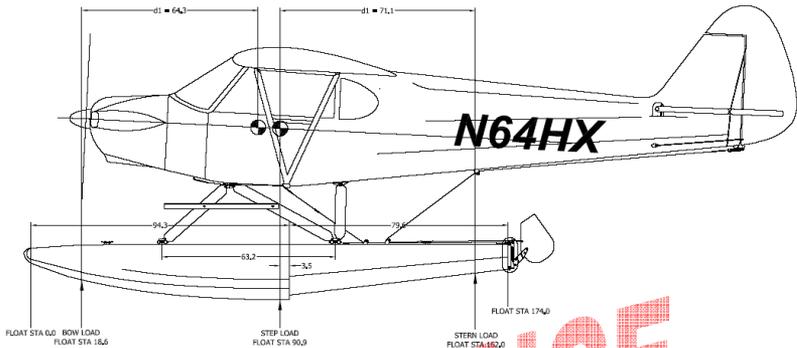


Figure 9-1-1 - View of the CC11-100 with Straight Floats

9.1.4 LIMITATIONS

9.1.4.1 GENERAL

This section provides the operating limitations, instrument markings, color-coding and basic placards for operation that are specific to the Cub Crafters CC11-100 aircraft equipped with straight floats.

Please refer to Section 2 of this manual for the complete list of operating limitations, instrument markings, color-coding and basic placards for operation that are common to the landplane and seaplane.

The ventral fin should not be used to push, pull, or tie down the aircraft.

9.1.4.2 AIRSPEED LIMITATIONS

SPEED IAS (mph)

Never exceed speed (V_{NE}).....	141 mph IAS
Operating maneuvering speed V_O (at 1430 lb)...	97 mph IAS
Maximum flap speed (V_{FE} flaps 50°).....	81 mph IAS
Best rate of climb speed (V_Y) (at 1430 lb).....	71 mph IAS
Best angle of climb speed (V_X) (at 1430 lb).....	50 mph IAS
Maximum demonstrated crosswind velocity	11 kts

9.1.4.3 CENTER OF GRAVITY

Forward	(at 1430 lb.)	73.0 in. aft of Datum
	(at 1100 lb. or less).....	70.5 in. aft of Datum
Straight line variation between points given		
Rearward (at all weights)		78.5 in. aft of Datum

The datum is 60 in. forward of wing leading edge.

9.1.4.4 PLACARDS

Locate near water rudder retraction handle stowage hook:

WATER RUDDER ALWAYS UP
EXCEPT FOR WATER TAXIING

Next to the water rudder retraction handle:

WATER RUDDER

REFERENCE

9.1.5 EMERGENCY PROCEDURES

9.1.5.1 GENERAL

This section provides the procedures Cub Crafters recommends should be followed when encountering an emergency or a critical situation as related specifically to operations when the straight floats are installed. For all other emergency procedures, refer to Section 3 of this manual.

This section is divided into two parts. The first contains emergency procedure checklists. The second part amplifies the items listed in the checklists and includes information that is not readily adaptable to a checklist format or which the pilot could not be expected to refer to in an emergency situation. This information should be reviewed regularly.

Pilots must familiarize themselves with the procedures in this section and must be prepared to take appropriate action should an emergency arise.

It is stressed that the procedures outlined in this section are recommendations only. They are not a substitute for sound judgment and common sense and may have to be adjusted depending on the circumstances prevailing at the time of the emergency. It is important that the pilot be thoroughly familiar with the aircraft. He/She must review and practice as many of these procedures as are safe to perform as part of his/her training. Above all, in any emergency situation, **MAINTAIN CONTROL OF THE AIRCRAFT.**

9.1.5.2 AIRSPEEDS FOR EMERGENCY OPERATIONS

STALL SPEEDS (1430 lb)

Flaps up (V_{S1}) 40 (mph IAS)

Flaps down (50°) (V_{S0}) 32 (mph IAS)

BEST GLIDE (V_G)

Flaps up (1430 lb)..... 68 (mph IAS)

9.1.5.3 EMERGENCY CHECKLIST

9.1.5.3.1 Emergency Landing on Water without Engine Power

- Approach V_G 68 (IAS mph, flaps up)
- Seat belts Tight and secure

When landing area assured:

- Flaps As required
- Door Open
- ELT Activate
- Touchdown Slightly tail low
- Control stick Hold full aft

When aircraft comes to a stop:

- Magnetos Off
- Master switch Off
- Fuel selector Off

If time permits, check GPS or charts for airports in the immediate vicinity. If possible, notify your difficulty and intentions by radio on 121.50 and/or squawk 7700.

9.1.5.3.2 Emergency Landing on Land without Engine Power

- Approach V_G 68 (IAS mph, flaps up)
- Seat belts..... Tight and secure

- Flaps..... As required
- Door.....Open
- ELT.....Activate
- Touchdown Level attitude
- Control wheel.....Hold full aft

When aircraft comes to a stop:

- MagnetosOff
- Master switch.....Off
- Fuel selectorOff

If time permits, check GPS or charts for suitable landing areas in the immediate vicinity. If possible, notify your difficulty and intentions by radio on 121.50 and/or squawk 7700.

9.1.5.4 AMPLIFIED EMERGENCY PROCEDURES

9.1.5.4.1 Total Loss of Engine Power in Flight

The CC11-100 equipped with straight floats will glide 1.1 nautical miles for every 1000 feet of altitude loss. The rate of descent will be approximately 890 feet per minute. Most GPS devices have a “Direct to” function that shows the closest airports. Use charts to assess the topography of airports in the immediate vicinity.

9.1.5.4.2 Emergency Landing on Land without Engine Power

When having to make an emergency landing on land on a CC11-100 equipped with straight floats, the pilot should use his/her best judgment to find the most suitable surface for landing.

9.1.6 NORMAL PROCEDURES

9.1.6.1 INTRODUCTION

This section describes the procedures Cub Crafters recommends for the pilot to follow during normal operations of the CC11-100 on straight floats. It is divided into two parts. The first has abbreviated checklists; these are in a format suitable for reference in the cockpit. The second part amplifies the information given in the checklists. It provides the pilot with detailed descriptions that will help him/her understand the procedures and techniques. This section contains complete checklists so that the pilot can carry out these activities out without having to turn back and forth in this manual.

9.1.6.2 AIRSPEEDS FOR NORMAL OPERATIONS

The speeds in this section are based on a maximum weight of 1430 lb, under standard conditions, at sea level.

9.1.6.3 MAXIMUM WAVE HEIGHT

Maximum demonstrated wave height 1 ft

9.1.6.4 NORMAL PROCEDURES CHECKLIST

For ease of operation, this supplement will provide the complete checklist.

9.1.6.4.1 Cockpit Preflight

- Flight controls.....Free and correct operation
- Trim Check operation and set for takeoff
- Fuel selector Both
- Flaps..... Proper operation
- Fuel gauges Sufficient fuel for intended flight
(use level flight indications for float operation)
- Mixture Idle cut-off
- Carburetor heat..... Cold
- Magnetos Off
- Electrical switches..... Off
- Water rudders Check operation and set
(Up for land- ensure handle is stowed)
(Down for water)
- Master switch..... On
- Navigation/strobe lights Check operation
- Landing lights..... Check operation
- Stall warning horn Check operation
- Master switch..... Off
- Circuit breakers..... Check in
- Windows Clear
- Documentation..... Onboard

If passenger seat unoccupied

- Passenger seat harness..... Secure

9.1.6.4.2 Preflight Right Fuselage, Wing, and Float

- Right fuselage Check
- Fuel sump Drain
- Flap surface Check condition
- Flap hinges Check
- Aileron surface Check condition
- Aileron hinges Check
- Wing tip and light Check
- Stall warning vane Check condition
- Vortex generators Check
- Fuel vent Check
- Fuel tank Check supply and cap for security
- Water rudders and cables Check, extend- retract
- Float Check for damage and water accumulation (use bilge pump as necessary)

NOTE

Remove rubber plugs which serve as stoppers on the standpipe in each float compartment and pump out any accumulation of water. Reinstall rubber plugs with enough pressure for a snug fit.

- Bilge rubber Secure
- Oar Check stowed and secure
- Float hatches Cargo secure and hatches latched

9.1.6.4.3 Preflight Nose Section

- Oil door Open
- Oil quantity Check and cap secure
(5 Quarts recommended)
- Engine condition Check
- Oil door Close
- Propeller and spinner Check
- Air inlets Check
- Fuel strainer Drain

9.1.6.4.4 Preflight Left Fuselage, Wing, and Float

- Float hatches ... Cargo secure and hatches latched
- Float.Check for damage and water accumulation
(use bilge pump as necessary)

NOTE

Remove rubber plugs which serve as stoppers on the standpipe in each float compartment and pump out any accumulation of water. Reinstall rubber plugs with enough pressure for a snug fit.

- Bilge rubber plugs Secure
- Fuel tank Check supply and cap for security
- Fuel vent Check
- Landing light..... Check condition
- Pitot tube..... Check condition
- Wing tip and light Check condition
- Vortex generators..... Check
- Aileron hinges Check
- Aileron surface Check condition
- Flap hinges Check
- Flap surface Check condition
- Water rudders and cables Check
- Left fuselage Check

9.1.6.4.5 Empennage

- Bracing wiresCheck for tension
- Hinges..... Check
- Surfaces..... Check
- Ventral fin..... Check

9.1.6.4.6 Preflight General

Check that all wings and other external surfaces are free from frost, ice or snow.

9.1.6.4.7 Startup and Taxi

- Preflight inspection..... Complete
- Pilot seat..... Adjusted
- Seat belts..... Fastened
- Passenger briefing..... Complete
- Door..... Closed
- Fuel selector..... Both
- Avionics master switch..... Off
- Water rudders Down for water
- Propeller area Clear

9.1.6.4.8 Starting Engine

- Battery master switch..... On
- Strobes On
- Magneto switches Both on
- Mixture Full rich
- Primer Apply*
- Throttle..... Open 1/2 inch
- Starter..... Engage

After engine has started:

- Oil pressure..... Check
- Throttle..... Set 1000 RPM
- Lights As required

- Avionics master switch On
*Normal procedure 3 times. If engine is hot, omit this step.

9.1.6.4.9 Starting Engine When Flooded

- Magneto switches Both on
- Mixture Idle cut-off
- Throttle Full open
- Starter Engage

When engine fires:

- Mixture Rich
- Throttle Retard to 1200 RPM
- Oil pressure Check
- Lights As required
- Avionics master switch On

9.1.6.4.10 Warm up

- Throttle 1000 to 1200 RPM

9.1.6.4.11 Taxiing

- Taxi area Clear
- Throttle Apply slowly

9.1.6.4.12 Before Takeoff on Water

- Flight instruments Check
- Magnetos Both
- Carburetor heat Off (cold)
- Trim Set
- Flaps First notch (15°)
- Controls Free and proper movement
- Doors Closed
- Strokes and lights As required
- Seat belts Check fastened

- Throttle..... 1700 RPM*
- Mixture Set*
- Magnetos Check both

NOTE:
Drop not to exceed 150 RPM or 75 RPM differential
between magnetos and no engine roughness.

- Carburetor heat.... Hot, note RPM drop and remove
- Primer Locked
- Engine instruments Check
* Lean at high altitudes for peak RPM.

9.1.6.4.13 Takeoff on Water

- Water rudders Check up
- Control stick Full aft
- Throttle Full
- Control stick Move forward
-

When the nose stops rising to attain the planing attitude (on the step).

- Accelerate to 52 mph (depending on aircraft weight)
- Control stick Gentle back pressure
- Flaps Retract slowly after liftoff

9.1.6.4.14 Climb

- Best rate 71 mph IAS
- Best angle 50 mph IAS
- Mixture Rich

Above 3000' LEAN to obtain maximum RPM:

- Carburetor heat As required

9.1.6.4.15 Cruise

- Power..... Adjust
- Mixture Adjust
- Carburetor heat..... Cold, use as required

9.1.6.4.16 Descent

- Power..... Adjust
- Mixture Full rich below 3000'
- Carburetor Heat As required

9.1.6.4.17 Approach

- Fuel selector Both
- Seat belts Fastened
- Mixture Set
- Flaps Set
 - Maximum speed first notch flaps (15°)...85 mph IAS
 - Maximum speed full flaps (50°).....81 mph IAS
- Trim As required
- Speed As required
(1.3 full flaps stall speed at gross weight is 42 mph IAS)

9.1.6.4.18 Landing on Water

- Water rudders Check up
- Control stick Hold full aft as aircraft
decelerates to taxi speed

9.1.6.4.19 Cross Wind Landing

- Fuel selector Both
- Seat belts Fastened
- Mixture Set
- Flaps Set below white arc
Maximum speed first notch flaps (15°)...85 mph IAS
Maximum speed full flaps (50°) 81 mph IAS
- Trim As required
- Speed As required
(A higher speed than normal is recommended)
- Water rudders Check up
- Ailerons-rudder On short final
Use ailerons to keep upwind wing low
Rudder to hold landing area alignment
- Touchdown Do not touch down in a slip
- Landing roll Use ailerons to keep upwind
wing down, rudder to keep directional
control as appropriate, water rudders down.

9.1.6.4.20 Go-around

- Throttle Full power
- Airspeed Above 52 mph
- Flaps Retract slowly
- Trim As required

9.1.6.4.21 Stopping Engine

- Flaps Retract
- Electrical equipment Off
- Avionics master switch Off
- Throttle Idle
- Mixture Idle cut off
- Magnetos Off
- Master switch Off

9.1.7 WEIGHT AND BALANCE

9.1.7.1 INTRODUCTION

This section provides the position of the center of gravity relative to the datum. It also describes how to calculate the empty weight of the aircraft based on data for the landplane. Should it be necessary to weigh the aircraft on amphibious floats, please consult the CC11-100 maintenance manual, document SC10000 AMM.

9.1.7.2 PERTINENT INFORMATION FOR WEIGHT AND BALANCE FOR THE CC11-100 EQUIPPED WITH STRAIGHT FLOATS

Position of datum..... 60 inches ahead
of wing leading edge

Maximum gross weight..... 1430 lb.

Center of gravity limits at 1430 lb.

Forward..... 73.0 in. aft of datum

Aft..... 78.5 in. aft of datum

Center of gravity limits at 1100 lb. or less

Forward..... 70.5 in. aft of datum

Aft..... 78.5 in. aft of datum

9.1.7.3 DETERMINATION OF EMPTY WEIGHT

The empty weight and the position of the center of gravity are recorded in Section 6 of this manual.

The weight and moments of the straight floats are given in Table 9-1-1.

Item	Weight lb.	Arm in.
Straight floats with attachment gear, oar, and bilge pumps Left float S/N: _____ Right float S/N: _____	195 (approx)	81.5
Rudder Bar & Springs	1.0	253
Ventral Fin	5.0	246

Table 9-1-1 - Weight of Straight Floats

9.1.7.4 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

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

1. Insert the respective loads in Table 9-1-2.
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 Figure 9-1-2. If it is within the weight and balance envelope, the aircraft is within the approved envelope.

	Weight (lb.)	Arm (in.)	Moment (lb-in/1000)
Basic empty weight			
Float hatches (standard)		64.00	
Float hatches (optional)		43.75	
Pilot		71.40	
Passenger		96.08	
Fuel		83.90	
Forward cargo compartment (100 lb max)		110.40	
Extended cargo compartment (20 lb max)		134.40	
Takeoff weight			

**Table 9-1-2 - Weight and Balance Loading Form with
Straight Floats**

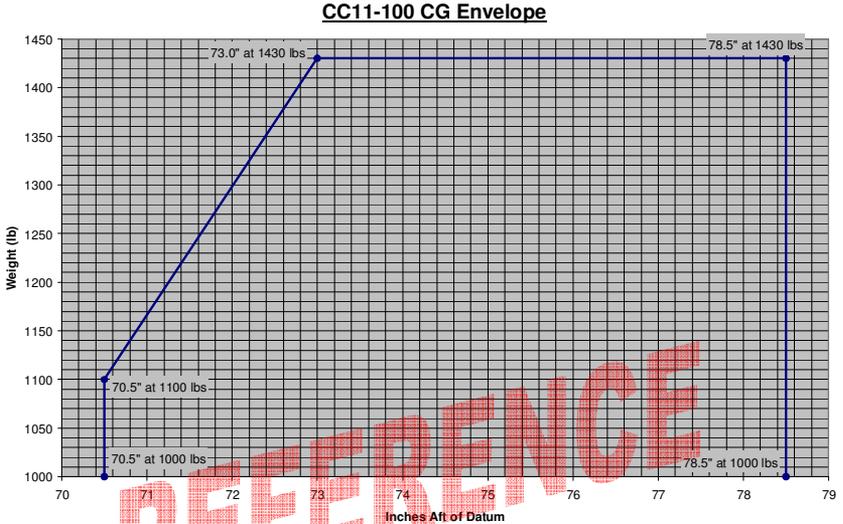


Figure 9-1-2 - Weight and Balance Envelope with Straight Floats