LUSCOMBE
SILVAIRE

SLSA -8

CONTINENTAL 0-200D 100 H.P.

PILOT OPERATING HANDBOOK

REGISTRATION: N_99LS

SERIAL NUMBER: SLS-00

Date of issue: March 2012

Revision 0

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Model: Luscombe Silvaire SLSA- 8

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THERE ARE INHERENT RISKS IN THE PARTICIPATION IN RECREATIONAL AVIATION AIRCRAFT. OPERATORS AND PASSENGERS OF RECREATIONAL AIRCRAFT, BY PARTICIPATION, ACCEPT THE RISK INHERENT IN SUCH PARTICIPATION OF WHICH THE ORDINARY PRUDENT PERSON IS OR SHOULD BE AWARE. PILOTS AND PASSENGERS HAVE A DUTY TO EXERCISE GOOD JUDGEMENT AND ACT IN A RESPONSIBLE MANNER WHILE USING THE AIRCRAFT AND TO OBEY ALL ORAL OR WRITTEN WARNINGS, OR BOTH, PRIOR TO OR DURING USE OF THE AIRCRAFT, OR BOTH.

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

Date of issue: March 2012

This airplane is to be operated in compliance with the information and limitations contained herein.

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REVISIONS

PILOT OPERATING HANDBOOK
UPDATE LOG

REV. NO.	DATE ISSUED	DATE INCORPORATED	INSERTED BY
0	**October 2012**	**October 2012**	**LUSCOMBE SILVAIRE AIRCRAFT COMPANY**

Note: page 0-2 must be replaced for each new update.

TABLE OF CONTENTS

SECTION 1

GENERAL

WARNING
THE OWNER AND OPERATOR MUST UNDERSTAND THAT DUE TO THE INHERENT RISK INVOLVED
IN FLYING AN AIRCRAFT, NO WARRANTY IS MADE OR IMPLIED, OF ANY KIND, AGAINST ACCIDENTS, BODILY INJURY OR DEATH OTHER THAN THOSE, WHICH CANNOT BY LAW BE EXCLUDED.

THE SAFE OPERATION OF THIS AIRCRAFT RESTS WITH YOU, THE PILOT. WE BELIEVE THAT IN ORDER TO FLY SAFELY YOU MUST MATURELY PRACTICE AIRMANSHIP. OPERATIONS OUTSIDE THE RECOMMENDED FLIGHT ENVELOPE SUCH AS AEROBATIC MANOEUVRES OR ERRATIC PILOT TECHNIQUE MAY ULTIMATELY PRODUCE EQUIPMENT FAILURE. YOU ARE REFERRED TO THE OPERATING LIMITATIONS IN THIS MANUAL.

LIKE ANY AIRCRAFT, SAFETY DEPENDS ON A COMBINATION OF CAREFUL MAINTENANCE
AND YOUR ABILITY TO FLY INTELLIGENTLY AND CONSERVATIVELY. WE HOPE THAT YOUR AIRCRAFT WILL PROVIDE YOU WITH MANY HOURS OF SAFE AND ENJOYABLE FLYING.

SECTION 1

GENERAL

INTRODUCTION

This Pilot Operating Handbook (POH) is designed for maximum utilization as an operating guide for the pilot. It includes the material required by the regulations to be furnished to the pilot. It also contains supplemental data supplied by the airplane manufacturer.

This Pilot Operating Handbook is not designed as a substitute for adequate and competent flight instruction, knowledge of current airworthiness directives, applicable air regulations or advisory circulars. It is not intended to be a guide for basic flight instruction or a training manual and should not be used for operational purposes unless kept in a current status.

Assurance that the airplane is in an airworthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the airplane is safe for flight. The pilot is also responsible for remaining within the operating limitations as outlined by instrument markings, placards, and this Pilot Operating Handbook.

Although the arrangement of this Pilot Operating Handbook is intended to maximize its in-flight capabilities, it should not be used solely as an occasional operating reference. The pilot should study the entire Pilot Operating Handbook to become familiar with the limitations, performance, normal and emergency procedures and operational handling characteristics of the airplane before flight.

The Pilot Operating Handbook has been divided into numbered (Arabic) sections. The limitations and emergency procedures have been placed ahead of the normal procedures, performance and other sections to provide easier access to information that may be required in flight. The "Emergency Procedures" Section is readily accessible for quick instant reference. Provisions for expansion and/or updates to this Pilot Operating Handbook (POH) are included.

Before flying the aircraft, read and familiarize yourself with this POH, the Engine Operators Manual and the Maintenance Manual.

CERTIFICATION BASIS

FAA Special Light Sport Aircraft (SLSA) category

WARNINGS, CAUTIONS AND NOTES

The following definitions apply to warnings, cautions and notes used in the Pilot Operating Handbook.

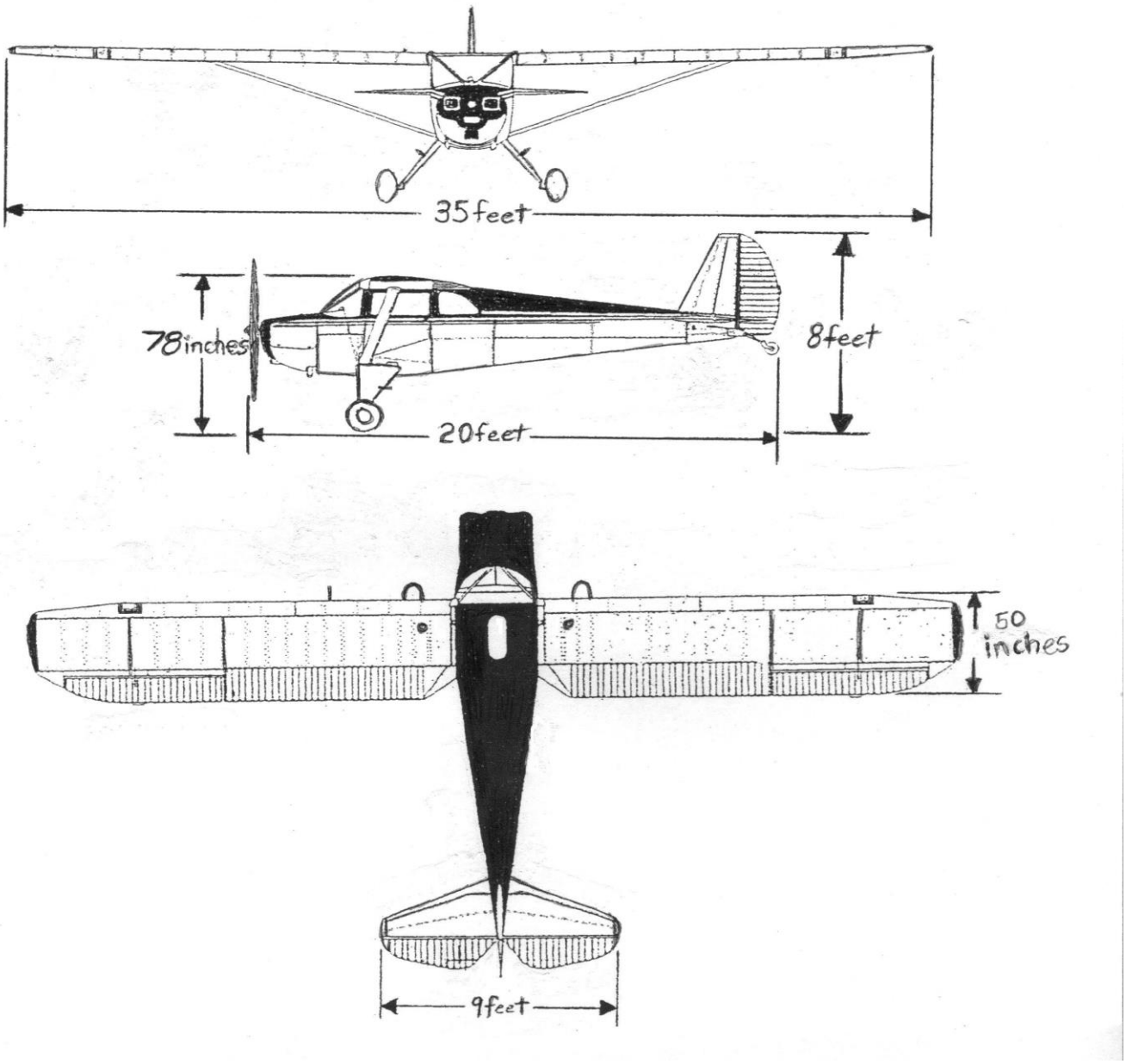
WARNING: means that the non-observation of the corresponding procedure leads to an immediate degradation of flight safety which could result in loss of life or destruction of equipment.

CAUTION: means that the non-observation of the corresponding procedure leads to a degradation of flight safety resulting in damage to the equipment.

NOTE: draws the attention to any item that is important or unusual.

SECTION 2

AIRPLANE AND SYSTEMS DESCRIPTION



SPECIFICATIONS
LUSCOMBE 8-SLSA

WING SPAN	35 FT.
WING AREA	140 SQ. FT.
LENGTH	20 FT.
ENGINE	100BHP
PROPELLER (Fixed Pitch)	74 IN.
WING ASPECT RATIO	9.2:1
GROSS WEIGHT	1320 lbs

ENGINE - 4 Cylinders Horizontally Opposed - Air Cooled

Engine Manufacturer	Teledyne Continental
Engine Model Number	0-200-D
Rated Horsepower	100
RPM Rating, standard atmosphere Max. continuous	2750
Recommended cruising RPM	2500
Compression Ratio	8.5:1

FUEL - Standard

Fuel Capacity,	left + right tanks	30 U.S. gal.
Usable Fuel (U.S. gal) (total)	left + right tanks	30 U.S. gal
Minimum fuel grade. See engine manual		100LL Blue(min.)

OIL

Oil sump. capacity	5 Quarts
Oil grade - Below 40° F	SAE 30
- Above 40° F.	SAE 50

Note: See engine Operators Manual on above for more details and recommended multi-viscosity oils

PROPELLER – Ground Adjustable Pitch

Propeller Manufacturer	Sensenich Propeller Manufacturing Co.
Model	2EL/C 72AE/0
Number of Blades	2
Propeller Diameter (inches)	72

OPERATING WEIGHTS

Maximum Takeoff Weight (lbs)	1320 lbs
Maximum Landing Weight (lbs)	1320 lbs
Maximum Weight in Baggage Compartment. See weight and balance	75 lbs

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

The following definitions are of symbols, abbreviations and terminology used throughout the handbook and those which may be of added operational significance to the pilot.

- General Airspeed Terminology and Symbols

BHP	Brake horsepower (= rated horsepower of the engine)
CAS	Calibrated Airspeed means the indicated speed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
GPH	Fuel consumption in Gallons (U.S.) per Hour.
KCAS	Calibrated Airspeed expressed in "Knots".
C.G.	Centre of Gravity.
IAS	Indicated Airspeed is the speed of an aircraft as shown on the airspeed indicator.
KIAS	Indicated Airspeed expressed in "Knots".
L	Left
R	Right
RPM	Revolutions per minute.
S.L.	Sea Level
TAS	True Airspeed is the airspeed of an airplane relative to undisturbed air which is the CAS corrected for altitude and temperature.
V	Speed.
V_A	Maneuvering Speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V_{FE}	Maximum Flap Extended Speed is the highest speed permissible with wing flaps partially or fully extended.

General Airspeed Terminology and Symbols (continued)

V_{NE}	Never Exceed Speed is the speed limit that may not be exceeded at any time.
V_C	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and only with caution.
V_S	Stalling Speed or the minimum steady flight speed at which the airplane is controllable (flaps up).
V_{SO}	Stalling Speed at which the airplane is controllable in the landing configuration.
V_X	Best Angle-of-Climb Speed is the air speed which delivers the greatest gain of altitude in the shortest horizontal distance.
V_Y	Best Rate-of-Climb Speed is the air speed which delivers the greatest gain in altitude in the shortest time.

- Meteorological Terminology

ISA	International Standard Atmosphere in which: The air is a dry perfect gas; The temperature at sea level is 15^{o} Celsius (59^{o} Fahrenheit); The pressure at sea level is 29.92 inches hg. (1013 mb); The temperature gradient from sea level up, is: - 1.98^{o} C per 1000 ft or - 6.5^{o} C per 1000 meter, or -3.57^{o} F per 1000 ft.
OAT	Outside Air Temperature is the free air static temperature, obtained either from inflight temperature indications or ground meteorological sources, adjusted for instrument error.
Indicated Pressure Altitude	The number actually read from an altimeter when the barometric subscale has been set to 29.92 inches of mercury (1013 millibars).
Pressure Altitude	Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter. It is the indicated pressure altitude corrected for position and instrument error. In this Pilot Operating Handbook, altimeter instrument errors are assumed to be zero.
Station Pressure	Actual atmospheric pressure at field elevation.
Wind	The wind velocities recorded as variables on the charts of this Pilot Operating Handbook are to be understood as the headwind or tailwind components of the reported winds.

- Units

Speed: Kts (Knots) = 1.15 mph (miles per hour)

Pressure: PSI = Pounds per Square Inch
in Hg = inches of Mercury
mb = millibar

Distances: in. = inches = 25.4 millimeters
ft = foot (feet) = .305 meters

Weights: Kg = kilogram = 2.2 lbs = 2.2 pounds

- Power Terminology

Takeoff Power	Maximum power permissible for takeoff.
Maximum Continuous Power	Maximum power permissible continuously during flight.
Maximum Climb Power	Maximum power permissible during climb.
Maximum Cruise Power	Maximum power permissible during cruise.

- Engine Instruments

CHT Gauge	Cylinder Head Temp.

- Airplane Performance and Flight Planning Terminology

Climb Gradient	The demonstrated ratio of the change in height during a portion of a climb, to the horizontal distance traversed in the same time interval.
Demonstrated Crosswind Velocity	The demonstrated crosswind velocity is the velocity of the 90 deg. crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated.

- Weight and Balance Terminology

Reference Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes: the inboard wing leading edge.
Station	A location along the airplane fuselage centerline given in terms of distance from the Reference Datum.
Position or Arm	The horizontal distance from the Reference datum to the center of gravity (C.G.) of an item parallel to fuselage centerline.
Moment	The product of the weight of an item multiplied by its arm. (Moment divided by a constant is used to simplify balance calculations by reducing the number of digits.)
Center of Gravity (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
C.G. Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C.G. Limits	The extreme center of gravity locations within which the airplane must be operated at a given weight.
Usable Fuel	Fuel available for flight planning.
Unusable Fuel	Fuel remaining after a runout test has been completed in accordance with the design standards.
Standard Empty Weight	Weight of a standard airplane including unusable fuel, full operating fluids and full oil.
Empty Weight	Standard empty weight plus optional equipment.
Payload	Weight of occupants, fuel and baggage.
Useful Load	Difference between takeoff weight, and empty weight.
Maximum Takeoff Weight	Maximum approved weight.

SECTION 3

OPERATING LIMITATIONS

SECTION 3

OPERATING LIMITATIONS

GENERAL

This section includes operating limitations and instrument markings necessary for safe operation of the airplane, its engine, standard systems and standard equipment.

AIRSPEED LIMITATIONS

SPEED	CAS (mph/KTs)	IAS (mph/KTs)	REMARKS
V_S Maximum Stall Speed at Maximum takeoff weight – FLAPS UP	48/42		
V_{SO} Maximum Stall Speed at Maximum takeoff weight – FLAPS DOWN	45/39		
V_{FE} Maximum Flap Extended Speed	90/78		Do not exceed this speed with flaps extended.
V_A Design Maneuvering Speed	115/100		Do not make full or abrupt control movements above this speed.
V_{NE} Never Exceed Speed	145/126		Do not exceed this speed in any operation.
V_C Design Cruising Speed	120/105		Do not exceed this speed except in smooth air and then only with caution.

CROSSWIND AND WIND LIMITATION: 20 Kts

SEVICE CEILING: 17,000 feet

LOAD FACTORS (LIMIT):

Flap up: Positive + 4.5 g
Negative - 2.2 g
(Ultimate is 1.5 times limit)

Flap extended: Positive + 4.5 g
Negative - 2.2 g

PROHIBITED MANEUVERS:

Intentional spins are not recommended.
Aerobatics are not recommended.

WARNING
Exceeding the maximum load factors will lead to an overstressing of the airplane.

TYPES OF OPERATIONS

The airplane is approved for the following operations when equipped in accordance with the prevailing regulations.

Day V.F.R.
Flight in known or forecast icing conditions is prohibited.

SECTION 4

WEIGHT AND BALANCE INFORMATION

SECTION 4

WEIGHT AND BALANCE

4.1 GENERAL

In order to achieve the performance and flying characteristics which are designed into the airplane, it must be flown with the weight and center of gravity (C.G.) position within the approved operating range (envelope). Although the airplane offers flexibility of loading, the pilot must ensure that the airplane is loaded within the envelope before attempting to take off.

Mis-loading carries consequences for any aircraft. An overloaded airplane will not take off, climb or cruise properly. The heavier the airplane is loaded, the less climb performance it will have.

Center of gravity is a determining factor in flight characteristics. If the C.G. is too far forward in any airplane, it will be difficult to rotate for takeoff or landing. If the C.G. is aft of the approved limit, the airplane may rotate prematurely on takeoff or tend to pitch up or down; the aircraft will be unstable in pitch. This can lead to inadvertent stalls and even spins; stall and spin recovery may be impossible in an improperly loaded airplane.

A properly loaded airplane, however, will perform as intended. Before the airplane is delivered, it is weighed, and the corresponding empty weight and C.G. location is computed (the empty weight consists of the standard empty weight of the airplane plus the optional equipment). Using the empty weight and C.G. location, pilots can easily determine the weight and C.G. position for the loaded airplane by computing the total weight and moment and then determining whether they are within the approved envelope.

The empty weight and C.G. location are recorded in the Weight and Balance Record Form. The current values should always be used. Whenever new equipment is added, equipment is removed, or any modification work is done, a new empty weight and C.G. position should be determined and recorded. The owner must make sure that this is done.

To determine a new empty-weight C of G, the appropriate calculations must be performed. The airplane must be weighed and a new C of G position must be calculated.

To determine the C of G for the loaded airplane, loaded weight and balance calculations must be performed before flight.

4.2 INSTALLED EQUIPMENT LIST

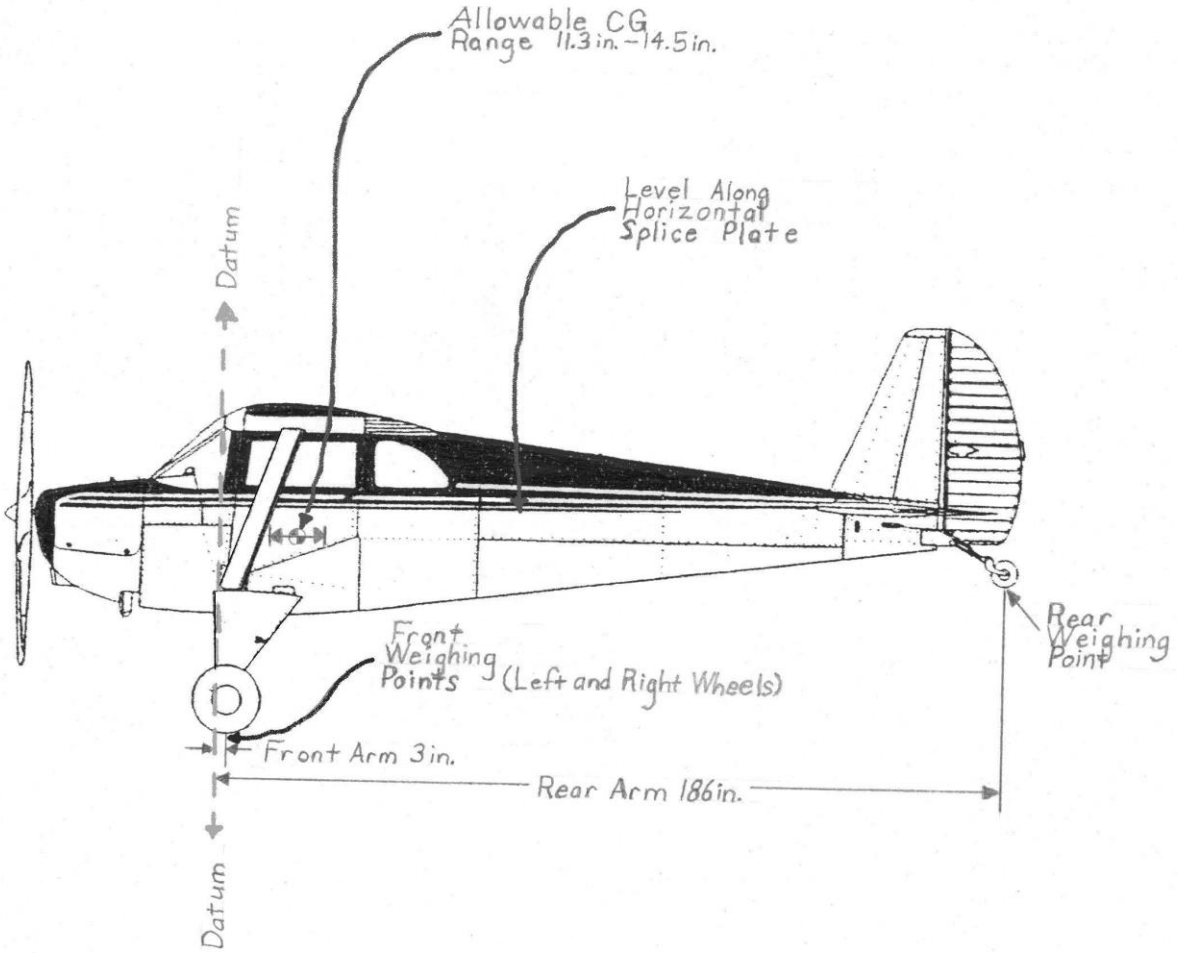
Maintain an up to date list of installed equipment. Equipment listed in the following pages were installed prior to empty Weight and Balance measurement; thus weight & position are included. If removed, equipment must be weighed and position recorded to recalculate new Weight and Balance.

Aircraft Model: LUSCOMBE 8-SLSA
Serial # .
Registration # .

Description	Weight lbs	C.G. Position inches	Date	Entered by

Note: New manufactured aircraft come with a detailed list of installed equipment. Please refer to the following pages for installed equipment detail list.

WEIGHT & BALANCE DIAGRAM



WEIGHT AND BALANCE RECORD

Maintain an up to date weight and balance record using the present form.

WEIGHT AND BALANCE RECORD

Aircraft Model: LUSCOMBE 8-SLSA
Serial # _____ .
Registration # _____ .

Empty Weight lbs	C.G. Position inches	Date	Entered by

The form is to be used to present the current status of the airplane empty weight and a complete history of previous modifications. Any change to the permanently installed equipment or modification that affects weight or moment must be entered in the Weight and Balance Record.

See optional equipment list page or any other item.

4.3 AIRPLANE WEIGHING PROCEDURE

The removal or addition of equipment or airplane modifications may affect basic empty weight and center of gravity. The following is a weighing procedure to determine this empty weight and center of gravity location:

Preparation

(1) Be certain that all items checked in the airplane equipment list are installed in the proper location in the airplane.

(2) Remove dirt, grease, moisture, foreign items such as rags and tools from the airplane before weighing.

(3) Defuel airplane: Open the fuel drain until all fuel is drained.

CAUTION

Whenever the fuel system is completely drained and fuel is replenished, it will be necessary to run the engine for a minimum of three minutes above idle (on each tank) to insure no air remains in the fuel supply lines.

(4) Fill with oil to full capacity.

(5) Flaps fully up and all control surfaces in the neutral position. Doors and access panels closed.

(6) Place the airplane on weighing scales inside a closed building to prevent errors in scale readings due to wind, and block the main gear.

Leveling

The horizontal reference is the upper main fuselage splice plate. (see diagram in Sec. 4.2)

Level airplane, by raising or lowering the tail wheel to center the bubble on a level placed on the splice plate edge.

After Weighing the Airplane

Use table of weight & balance report and fill in table weight & balance record.

Weight and Balance Calculations for Flight

Before each flight, the weight and balance of the loaded airplane should be calculated as follows and checked to fit inside the approved limits.

Following tables may be used:

1) Obtain the Empty weight and C.G. position
Use the latest figures from the Weight and Balance record.

2) Use the applicable values shown in following table listing the **fuel** in each wing tank.

Fuel in each wing tank

Gauge each tank	Quantity US gal	Weight lbs	Position inches	Moment lbs.inches
L:				
R:				

Note: 1 U.S. gal fuel = 6 lbs.

3**)** Use the applicable values shown in following table for the occupants.

Weight lbs	Position inches	Moment lbs. inches
100		
150		
200		
250		
300		
350		
400		

Note: Measure the Position with tape measure from the DATUM line (front of wing leading edge) and enter into tables for more accurate results. Measure to approximate center of hip of occupants.

4) Use the applicable values shown in the following table for fuselage baggage.

FUSELAGE BAGGAGE (behind seat – top) MAXIMUM 75 LBS.

Weight	Position*	Moment*
lbs	inches	lbs.inches
10	40	400
25	40	1000
50	40	2000
75	40	3000

*****measure from datum to approximate center of mass of baggage

5) Enter all the applicable values obtained from weight & balance report and above tables into the appropriate blocks below and perform the necessary calculations.

	Weight kg or lbs	Position inches	Moment lbs.inches
1) Empty			
2) Fuel	180	20	3600
3) Occupant	180	20	3600
4) Baggage Fuselage		40	
Total (add the columns)	W= 1320		M=

Loaded Aircraft weight is W = 1320 (lbs)

Loaded C.G. position is $x = M/W = \frac{21163.5}{1320} = 16.0$ (*x* in inches)

Check that both W and x fall within the limits. Limit: W = 1320 lbs.
C.G. = 13.6 - 16.8 inches

Note: You may also want to repeat the above calculation corresponding to the aircraft at the end of the trip, which means with the fuel level as expected at destination.

Note: Measure the Position with tape measure from the DATUM line (front of wing leading edge) and enter into tables for more accurate results.

WEIGHT & BALANCE CHARTS

C.G. ENVELOPE RANGE

	FORWARD	REARWARD
Empty	12.3 Inches	13.4 Inches
Loaded	13.6 Inches	16.8 Inches

ARM/POSITION (Inches)

PILOT	+ 20 Inches	XXXXX
PASSENGER	+ 20 Inches	XXXXX
FUEL	+ 20 Inches	XXXXX
BAGGAGE	+ 40 Inches	Adjust as appropriate
EQUIPMENT	XXXXX	As measured or included

SECTION 5

PERFORMANCE

SECTION 5

PERFORMANCE

GENERAL

All of the required performance information applicable to this aircraft is provided by this section.

TAKE OFF ROLL:

From **hard surface**, full power at brake release, flaps up

	Std. Temp	Temperature
S.L. = 0	600	

Above values are in feet

On grass, increase above values by 20% approximately.

TAKE OFF ROLL + CLIMB TO CLEAR 50 FT. OBSTICLE AT 60 mphCAS:

From **hard surface**, full power at brake release, flaps up

	Std. Temp	Temperature
S.L. = 0	950	

Above values are in feet

On grass, increase above values by 20% approximately.

With headwinds, above values are decreased by 25% for 10 kts headwind and 40% for 20 kts headwind.

LANDING ROLL (Minimum):

On **hard surface**, flaps up

	Std. Temp	Temperature
S.L. = 0	500	

Above values are in feet

LANDING DISTANCE:
Landing distance from 50 ft. height, flaps up, throttle idle, approach speed = 55 mphCAS

	Std. Temp	Temperature
S.L. = 0	1000 ft.	

RATE OF CLIMB:
1320 lbs, flaps up and full throttle at Vy = 72 mph CAS

	Std. Temp	Temperature
S.L. = 0	900	
3,000 feet	750	
6,000 feet	600	
9,000 feet	450	
Altitude		

CRUISE SPEEDS & RPM
Cruise speeds and RPM in standard atmosphere and 75% power (above 7,000 ft. the power is less)

	RPM	IAS - kts	CAS – mph/kts	Range - MPH
S.L. = 0	2500		120/104	500+
3,000 feet	2600		124/108	500+
6,000 feet	2700		128/112	500+
9,000 feet (less than 75%)	2750		117/102	500+
Altitude				

At 75% power, the **fuel consumption** is about 5 gal/hr.
With 2 x 15 = 30 gal. fuel tanks full, the endurance is about 5 ½ hours (unusable fuel is not less than 1 gallon for each tank).

Note: Reducing the power will reduce the speed and fuel consumption and slightly increase the range.

BEST ANGLE OF CLIMB:

Best angle of climb V_X is 65mphCAS, flaps up, full power at 1320 lbs.

CROSSWIND:

The demonstrated takeoff and landing crosswind component is 20 kts.

SERVICE CEILING:

Where rate of climb is 100 FPM in standard atmosphere: 17,000 feet.

STALL SPEEDS AT 1,320 lbs. (Max. take off weight)

Flaps up Vs = 48 mphCAS

Flaps down Vso = 45 mphCAS

SECTION 6

EMERGENCY PROCEDURES

SECTION 6

EMERGENCY PROCEDURES

GENERAL

The recommended procedures for coping with various types of emergencies and critical situations are provided by this section.

The first portion of this section consists of an abbreviated emergency check list which supplies an action sequence for critical situations with little emphasis on the operation of the systems.

The remainder of the section is devoted to amplified emergency procedures containing additional information to provide the pilot with a more complete understanding of the procedures.

These procedures are suggested as the best course of action for coping with the particular condition described, but are not a substitute for sound judgment and common sense. Pilots should familiarize themselves with the procedures given in this section and be prepared to take appropriate action should an emergency arise. See Engine Operators Manual for more information.

EMERGENCY PROCEDURES CHECK LIST

ENGINE FIRE DURING START

Starter . . . . . continue cranking

If engine starts
Power . . . . . .1700 RPM momentarily
Engine . . . SHUTDOWN and inspect for damage

If engine fails to start
Ignition . . . . . OFF
Master Switch . . . . . OFF
Mixture . . . . . .IDLE CUT OFF
Fuel . . . . . OFF
Abandon aircraft and fight fire

ENGINE FAILURE DURING TAKEOFF

Throttle . . . . . IDLE
Brakes . . . . . APPLY JUDICIOUSLY
Wing Flaps . . . . . . UP
Mixture . . . . . IDLE CUT-OFF
Ignition Switch . . . . . .OFF
Master Switch . . . . . OFF

ENGINE FAILURE AFTER TAKEOFF

Airspeed . . . . . 60 mphIAS
Mixture . . . . . IDLE CUT-OFF
Fuel Selector . . . . . OFF
Ignition Switch . . . . . OFF
Wing Flaps. . . . . AS REQUIRED
Master Switch . . . . . OFF

ENGINE FAILURE IN FLIGHT
(Restart Procedure)

Airspeed 75mphIAS
Fuel Selector . . . . . ON
Mixture . . . . . RICH
Mag. Switch . . . . . BOTH
Carburetor Heat . . . . . ON
Gauges . . . . . Check for source of power loss
See engine manual

POWER OFF LANDING

Touchdowns should normally be made at lowest possible airspeed with full flaps.

When committed to landing:
Ignition . . . . . **OFF**
Master Switch . . . . . **OFF**
Fuel selector . . . . . **OFF**
Mixture . . . . . **IDLE CUT OFF**
Seat belt and harness . . . . . **Secure**

PRECAUTIONARY LANDING WITH ENGINE POWER

Seats, Seat Belts, Shoulder Harnesses ..**SECURE**
Airspeed . . . . **60 mph**IAS **(flaps UP)**
55 mphIAS **(flaps down)**
Mixture . . . . **RICH**
Fuel Selector. . . . .**ON**
Ignition Switch . . . .**ON**
Wing Flaps . . . . **as required**
Master Switch . . . .**ON**
Touchdown . . . . ……. .**3 point**
Brakes . . . . **as required**

FIRE IN FLIGHT

Electrical fire (smoke in cabin):
Master switch and Alt. Field. . . . .**OFF**
Vents . . . . **OPEN**
Cabin heat . . . . **OFF**
Fire Extinguisher . . . . .If and as required
Land as soon as practical.

Engine fire:
Cabin Heat . . . . **OFF**
Fuel selector . . . .**OFF**
Throttle . . . . **CLOSED**
Mixture . . . . **IDLE CUT-OFF**
Proceed with **POWER OFF LANDING** procedure

LOSS OF OIL PRESSURE

Reduce power.
Prepare for power off landing, and land as soon as practical.

HIGH OIL TEMPERATURE

Land at nearest airport and investigate the problem. Prepare for power off landing.

ALTERNATOR FAILURE

Verify failure
Reduce electrical load as much as possible.
Circuit breakers . . . . .check
Alt. switch. . . . . .**OFF** (for 1 second), then **ON**
If no input Alt field. . . . . **OFF**
Reduce electrical load and land as soon as practical.

SPIN RECOVERY

Rudder . . . . Full opposite to spin direction.
Ailerons . . . . .Neutral
Pitch . . . . Neutral to slightly forward.
When rotation stops, centralize rudder and ease control back to gently recover from dive.

Be careful not to exceed the speed and g load limits. If flaps were extended, retract them during recovery. Observe flap limit speed, if flaps are down.

ENGINE ROUGHNESS

Carburetor heat . . . . **ON**
Mixture . . . . adjust for max. smoothness
Fuel selector . . . . **check open**
Engine gauges . . . . **check**
Magneto switch . . . . **"BOTH"**

If operation is satisfactory on only one magneto, continue on that magneto at reduced power and full **"RICH"** mixture to nearest airport.
Prepare for power off landing.
Also seen Engine Operating Manual

ICING

Inadvertent Icing Encounter

Ensure Pitot heat (IFR option) is **ON**

Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.

Pull cabin heat control full out to obtain maximum air temperature.

Open the throttle to increase engine speed and minimize ice build-up on propeller blades.

Apply carburetor heat as required. Lean the mixture for maximum RPM, if carburetor heat is used continuously.

Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.

With ice accumulation on the wing leading edges, be prepared for significantly higher stall speed.

Leave wing flaps retracted. With a severe ice build-up on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

Ammeter Shows Excessive Rate of Charge (Full scale deflection)

Alternator . . . . . **OFF**
Alternator Circuit Breaker . . . . . **OFF**
Nonessential Electrical Equipment . . . . . **OFF**
Flight . . . . . **Terminate** as soon as possible

OR (option)

Master Switch . . . . . **OFF**
Nonessential Electrical Equipment . . . . . **OFF**
Avionics master switch . . . . . **ON**

Ammeter Indicates Discharge

NOTE

Radios . . . . . **OFF**
Alternator Circuit Breaker . . . . . **CHECK ON**
Master Switch . . . . . **OFF**
Master Switch . . . . . **ON**
Radios . . . . . **ON**

If Ammeter Continues Indicating Discharge

Alternator . . . . . **OFF**
Nonessential Radio and Elect. Equipment **OFF**
Flight . . . . . **Terminate** as soon as possible

LIGHTNING STRIKE

In case of a lightning strike, land at the nearest airport and inspect for damage.

AMPLIFIED EMERGENCY PROCEDURES (GENERAL)

The following paragraphs are presented to supply additional information for the purpose of providing the pilot with a more complete understanding of the recommended course of action and probable cause of an emergency situation.

ENGINE FIRE DURING START

Engine fires during start are usually the result of over priming. The first attempt to extinguish the fire is to try to start the engine and draw the excess fuel back into the induction system and blow the fire out.

If fire continues more than a few seconds, the engine should be shut down and the fire extinguished by the best available means.

ENGINE POWER LOSS DURING TAKEOFF

The proper action to be taken if loss of power occurs during takeoff will depend on the circumstances of the particular situation.

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

Any turn will increase the risk of stall or stall/spin, fatal at low altitude. Land as straight ahead as practical and maintain a safe airspeed and make only very shallow turns if necessary to avoid obstructions. Use of flaps depends on the circumstances. Normally, flaps should be fully extended for touchdown.

If sufficient altitude has been gained to attempt a restart, maintain a safe airspeed and check the fuel selector and that the mixture is **"RICH."** The carburetor heat should be **"ON".**

If power is not regained, proceed with the Power Off Landing procedure (refer to the emergency check list).

ENGINE POWER LOSS IN FLIGHT

Complete engine power loss is usually caused by fuel flow interruption and power will be restored shortly after fuel flow is restored. If power loss occurs at a low altitude, the first step is to prepare for an emergency landing.

Check the fuel tank gauges and turn the fuel selector to the fullest tank. Move the mixture control to **"RICH"** and the carburetor heat to **"ON."** Check the gauges for an indication of the cause of the power loss.

When power is restored move the carburetor heat to **"OFF"**.

If the preceding steps do not restore power, prepare for an emergency landing.

If time permits, turn the ignition switch to **"L"** then to **"R"** then back to **"BOTH."** Move the throttle and mixture control levers to different settings. This may restore power if the problem is too rich or too lean a mixture or if there is a partial fuel system restriction. Water in the fuel could take some time to be used up, and allowing the engine to windmill may restore power.

(If engine failure was caused by fuel exhaustion power will not be restored after switching fuel tanks until the empty fuel lines are filled. This may require up to six seconds).

If power is not regained, proceed with the Power Off Landing procedure (refer to the emergency check list).

POWER OFF LANDING

If loss of power occurs at altitude, trim the aircraft for best gliding angle and look for a suitable field. If measures taken to restore power are not effective, and if time permits, check your charts for airports in the immediate vicinity; it may be possible to land at one if you have sufficient altitude. If possible, notify Air Traffic Control or other facility by radio of your difficulty, position, and intentions.

When committed to a landing, flaps may be used as desired. Turn the fuel selector valve to **"OFF"** and pull the mixture out. Shut **"OFF"** the master and ignition switches. The seat belts and shoulder harness should be tightened. Touchdown should be normally made at the lowest possible airspeed.

FIRE IN FLIGHT

The presence of fire is noted through smoke, smell and heat in the cabin. It is essential that the source of the fire be promptly identified through instrument readings, character of the smoke, or other indications since the action to be taken differs somewhat in each case.

Check for the source of the fire first.

If an electrical fire is indicated (smoke in the cabin), the master switch should be turned **"OFF."** The cabin vents should be opened and the cabin heat turned **"OFF."** If installed, use fire extinguisher as required. A landing should be made as soon as possible.

If an engine fire is present, switch the fuel selector to **"OFF"** and close the throttle. The mixture should be pulled out. In all cases, the cabin heat should be pushed **"OFF."** Turn master switch **"OFF."** Proceed with power off landing procedure.

LOSS OF OIL PRESSURE

Loss of oil pressure may be either partial or complete. A partial loss of oil pressure usually indicates a malfunction in the oil pressure regulating system, and a landing should be made as soon as possible to investigate the cause and prevent engine damage.

A complete loss of oil pressure indication may signify oil exhaustion or may be the result of a faulty gauge. In either case, proceed toward the nearest airport at reduced power setting, and be prepared for a forced landing. If the problem is not a pressure gauge malfunction, the engine may stop suddenly. Maintain altitude until such time as a dead stick landing can be accomplished. Don't change power settings unnecessarily, as this may hasten complete power loss.

Depending on the circumstances, it may be advisable to make an off airport landing while power is still available, particularly if other indications of actual oil pressure loss, such as sudden increases in temperatures, oil or smoke, are apparent, and an airport is not close.

If engine stoppage occurs, proceed with Power Off Landing.

HIGH OIL TEMPERATURE

An abnormally high oil temperature indication may be caused by a low oil level, damaged or improper baffle seals, a defective gauge, or other causes. Land as soon as practical at an appropriate airport and have the cause investigated.

A steady, rapid rise in oil temperature is a sign of trouble. Land at the nearest airport and let a mechanic investigate the problem. Watch the oil pressure gauge for an accompanying loss of pressure.

ALTERNATOR FAILURE

Loss of alternator output is detected through negative reading on the ammeter. Before executing the following procedure, ensure that the reading is negative and not merely low, by actuating an electrically powered device, such as navigation lights and heated pitot. If no increase in the ammeter reading is noted, alternator failure can be assumed.

The electrical load should be reduced as much as possible. Check the alternator circuit breakers for a popped circuit.

The next step is to attempt to reset the overvoltage relay. This is accomplished by moving the "ALT" switch to **"OFF"** for one second and then to **"ON."** If the trouble was caused by a momentary overvoltage condition (16.5 volts and up) this procedure should return the ammeter to a normal reading.

If the ammeter continues to indicate "0" output, or if the alternator will not remain reset, turn the "ALT" switch **"OFF,"** maintain minimum electrical load and land as soon as practical. All electrical load is being supplied by the battery only.

SPINS

Intentional spins are not recommended without prior instruction and training. To recover from an unintentional spin: Rudder against the spin and elevator neutral or slightly forward. Rotation stops quickly. Pull the nose gently up. Be careful not to exceed the speed and g load limits. If flaps were extended, retract them during recovery.

STALLS

When approaching, with **wing level stall** and throttle idle, keep the wings level with smooth rudder action until the airplane mushes down (no abrupt break down). The recovery is quick when pushing the nose down, with less than 15 deg. roll and/or 5 deg. Yaw. **Turning stalls** and **accelerated stalls**, power off, have similar characteristics.

For both 1-turn spins and stalls, when executed correctly, the full recovery will require an altitude loss of less than 150 feet.

CARBURETOR ICING
ENGINE ROUGHNESS

Note: See Engine Operators Manual

Engine roughness is usually due to carburetor icing which is indicated by a drop in RPM, and may be accompanied by a loss of airspeed or altitude. If too much ice is allowed to accumulate, restoration of full power may not be possible; therefore, prompt action is required.

Pull carburetor heat on (See Note). RPM will decrease slightly and roughness will increase. Wait for a decrease in engine roughness and increase in RPM, indicating ice removal. If no change in approximately one minute, push the carburetor heat to **"OFF."**

If the engine is still rough, adjust the mixture for maximum smoothness. The engine will run rough if too rich or too lean. The fuel selector should be switched to the other tank to see if fuel contamination is the problem. Check the gauges for abnormal readings. If any gauge readings are abnormal, proceed accordingly. Move the magneto switch to **"L"** then to **"R,"** then back to **"BOTH."** If operation is satisfactory on only one magneto, proceed on that magneto at reduced power, with mixture pushed full **"RICH,"** to a landing at the first available airport.

If roughness persists, prepare for a precautionary landing at pilot's discretion.

NOTE

Partial carburetor heat may be worse than no heat at all, since it may melt part of the ice, which will refreeze in the intake system. When using carburetor heat, therefore, always pull full heat, and when ice is removed, push the control to the full cold position.

SECTION 7

NORMAL PROCEDURES

SECTION 7

NORMAL PROCEDURES

GENERAL

This section describes the recommended procedures to conduct normal operations for the LUSCOMBE SILVAIRE SLSA-8. All of the required procedures and those necessary for the safe operation of the airplane as determined by the operating and design features of the airplane are presented.

Normal procedures associated with those optional systems and equipment which require Pilot Operating Handbook supplements are provided in the Options Section.

These procedures are provided to present a source of reference and review and to supply information on procedures which are not identical for all aircraft. Pilots should familiarize themselves with the procedures given in this section in order to become proficient in the normal operations of the airplane.

Note: Also see and study the engine Operators Manual.

AIRSPEEDS FOR SAFE OPERATIONS

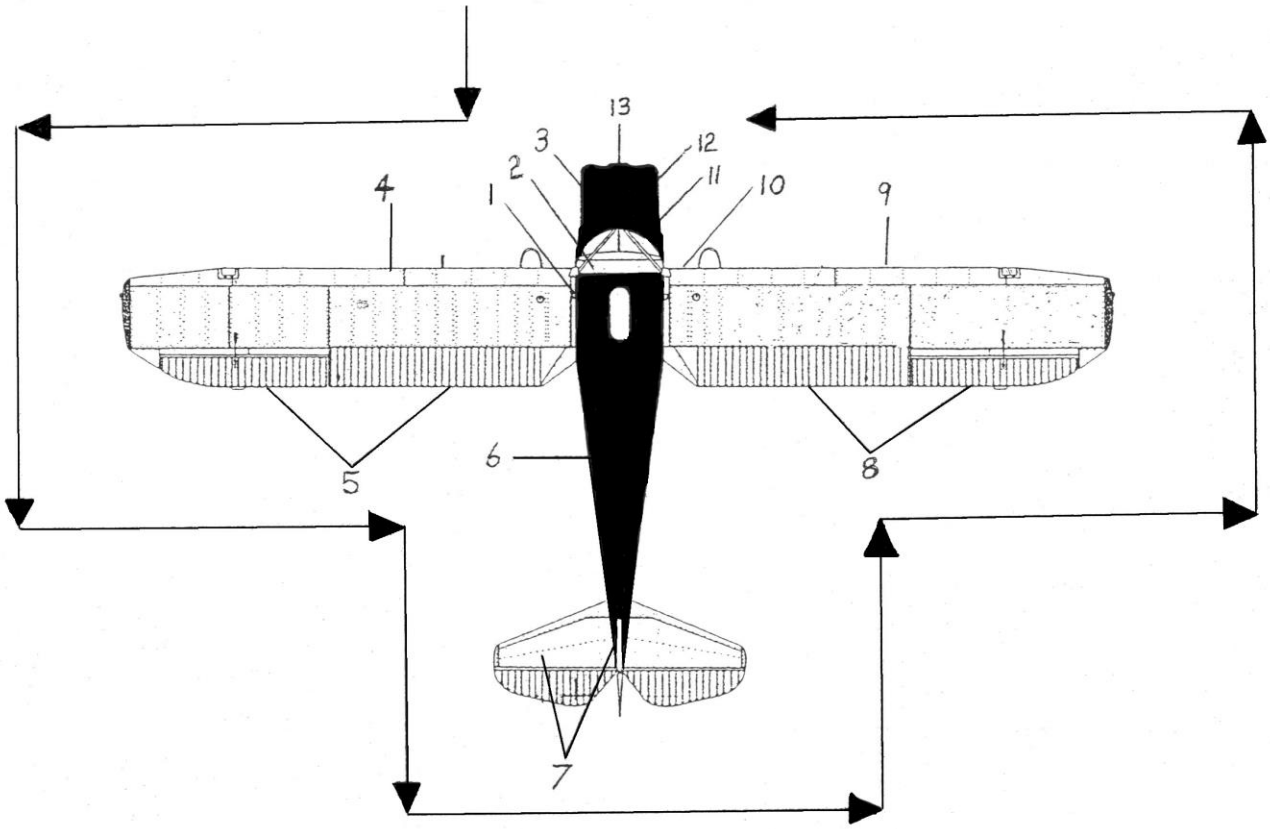
The following airspeeds are those which are significant to the safe operation of the LUSCOMBE 8-SLSA. These figures are for standard airplanes flown at gross weight under standard conditions at sea level.

Performance for a specific airplane may vary from published figures depending upon the condition of the engine, airplane and equipment, atmospheric conditions and piloting technique.

(a) Best Rate of Climb Speed (Vy)	72 mphIAS	Flaps UP
(b) Best Angle of Climb Speed (Vx)	65 mphIAS	Flaps UP
(c) Turbulent Air Operating Speed: Do not exceed (Vc)	115 mphIAS	Flaps UP
(d) Landing Final Approach Speed (Flaps down)	60 mphIAS	Flaps DOWN
(e) Max flaps down	90 mphIAS	
(f) Never Exceed Speed	145 mphIAS	

(also see Page 3.1)

WALK-AROUND



NORMAL PROCEDURES CHECK LIST

PREFLIGHT CHECK

1 Unlock and open cockpit

2 Check cockpit:

Ignition 1 + 2	OFF
Master Switch	ON
Throttle	pull out "idle"
Fuel Gauges	ON fullest tank
Fuel Selector	Check Quantity
Flaps (optional)	up
Master Switch	OFF

3 - Check windshield for general condition.
- Drain fuel sample from the left fuel tank through gascolator (front lower firewall).
- Open left cowl door and inspect engine, ignition wires , etc.
- Inspect left main landing gear and tire for general condition (wear, cuts, abrasions, leaking brakes, tire inflation).

4 - Visually confirm fuel level in left tank; secure gas cap.
- Remove left wing tie down.
- Check left wing surfaces and wing tip for damage.
- Check condition and security of lights (if installed).

5 - Check left aileron for safety.
- Check left flap for safety (if installed)
- Check left aileron for freedom of movement and security.
- Lower flaps and check safety, left and right wing (if installed)
- Bring flaps up to check travel, left and right wing (if installed)

6 - Check rear fuselage for damage - access/inspection panels secured.
- Check antennas.
- Check Pitot static.

7 - Check elevator and rudder condition and freedom of movement (do not force!).
- Check cables and hinges.
- Check cotter pins at cable ends
- Check trim tab for security.
- Check tail spring and tail wheel
- Remove tail tie down.

8 - Check right aileron for safety.
- Check right flap for safety (if installed)
- Check right aileron for freedom of movement and security.

9 - Check right wing surface and tip for damage.
- Remove right wing tie down.
- Check condition and security of lights (if installed option).
- Visually confirm fuel level in right tank; secure gas cap.

10 - Inspect right landing gear and tire for general condition (wear, cuts, abrasions, leaking brakes, tire inflation).
- Drain fuel sample from the right fuel tank, through the gascolator again.
- Check windshield for general condition.

11 - Check engine cowling for damage, evidence of leaks, and security of fasteners.
- Open right cowl door and check engine oil dipstick. Make sure that oil cap is closed tight.
- Through cowl door, check ignition wires, electrical wires, etc.

12 - Check engine heat muffs and exhaust for cracks, nicks, and security.
- Close cowling and check security of fastener of cowling door.

13 - Check engine air intake for foreign objects (eg; excessive dirt).
- Check propeller nose cone for damage
- Check propeller for damage.

Physically check fuel level in tank(s) before each take off

BEFORE STARTING THE ENGINE

Operate the controls and check for proper operation. Make sure the windshield is clean for best visibility. Check brakes, and fasten and check seat belt + harness.
Warning: Cockpit doors must be closed securely when engine is on.

Perform Preflight check list on previous pages.

CAUTION . . . This section pertains to operation under average climatic conditions. The pilot should thoroughly familiarize himself with Section V, Abnormal Operating Conditions in the Engine Operators Manual. Whenever such abnormal conditions are encountered or anticipated the procedures and techniques for normal operation should be tailored accordingly. For example, if the aircraft is to be temporarily operated in extreme cold or hot weather, consideration should be given to an early oil change and / or a routine inspection servicing.

GENERAL - See check list in Engine Operators Manual Section II

The life of your engine is determined by the care it receives. Follow the instructions contained in this manual carefully.

The engine receives a run-in operation before leaving the factory. Therefore, no break-in schedule need be followed.

The minimum grade aviation fuel for this engine 80/87. In case the required is not available, or the grade required is not available, use a higher rating. Never use a lower rated fuel.

WARNING. . .The use of a lower octane rated fuel can cause pre-ignition and/or detonation which can damage an engine the first time high power is applied. This would most likely occur on takeoff. If the aircraft is inadvertently serviced with the wrong grade of fuel, then the fuel must be completely drained and the tank properly serviced.

PRESTARTING.

Before each flight the engine and propeller should be examined for damage, oil leaks, security and proper servicing.

1. Position the ignition switch to the “OFF” position.

2. Operate all controls and check for binding and full range of travel.

3. Assure that fuel tanks contain proper type and quantity of fuel.

Drain a quantity of fuel from gascolator into a clean container. If water or foreign matter is noted, continue draining until only clean fuel appears.

4. Check oil level in sump.

5. Check cowling for security.

STARTING

1. Fuel Selector – On fullest tank.

2. Battery Switch – On.

3. Ignition Switch – On.

4. Mixture – Full Rich.

5. Throttle – Full Open.

6. Prime – Operate 3 to 5 strokes.

NOTE . . . The amount of prime required depends on engine temperature. Familiarity and practice will enable the operator to estimate accurately the amount of prime to use. If the engine is hot, do not prime before starting. After priming, turn primer handle completely "OFF" to avoid possibility of engine drawing fuel through the primer.

7. Throttle – Open approximately 1/2 inch.

8. Starter – Engage until engine starts, then release.

Caution . . . Do not engage the starter when the engine is running as this will damage the starter. If difficulty in starting is experienced, do not crank for longer than thirty seconds at a time as the starter motor may overheat. If the engine does not start after thirty seconds of cranking, allow a 3 to 5 minute cooling period before continued attempts. If flooding is suspected proceed as follows:

1. ***Throttle – Open***

2. ***Mixture – Idle Cutoff.***

3. ***Starter – Engage until engine starts, then release.***

4. ***Set throttle Retard to 1200 RPM for warm-up.***

5. ***Mixture – Full Rich***

9. Oil Pressure – Check.. If no oil pressure is noted within 30 seconds (60 seconds in cold weather), shut down the engine and investigate.

GROUND RUNNING; WARM-UP.

Teledyne Continental aircraft engines are air-cooled and therefore dependent on the forward speed of the aircraft for cooling. To prevent overheating, it is important that the following rules be observed.

1. Head the aircraft into the wind.

2. Avoid prolonged idling at low RPM. Fouled spark plugs can result from this practice.

3. Leave mixture in "Full Rich". (See "**Engine Operators Manual** Ground Operation at High Altitude Airports", Section V, for exceptions.)

4. Warm-up 900-1200 RPM.

PRE-TAKEOFF CHECK

1. Maintain engine speed at approximately 900 to 1000 RPM for at least one minute in warm weather, and as required during cold weather to prevent cavitation in the oil pump and to assure adequate lubrication.

2. Advanced throttle slowly until tachometer indicates an engine speed of approximately 1200 RPM. Allow additional warm-up time at this speed depending on ambient temperature. This time may be used for taxiing to takeoff position. The minimum allowable oil temperature for run-up is 75°F.

CAUTION . . . Do not operate the engine at run-up speed unless oil temperature is 75°F. Minimum.

3. Perform all run-up operation with mixture control in "FULL RICH" position except at High Altitude Airports (see above).

4. Restrict ground operations to the time necessary for warm-up and testing.

NOTE . . Carburetor ice can form on the ground with the engine idling. Therefore, just before take-off and during the magneto check, position the carburetor heat to ON(OUT). Leave it in that position until the throttle is advanced for the take-off run, them position the carburetor heat to OFF(IN). This gives maximum power for take-off. Monitor engine for any indication of ice (roughness or loss of RPM) during climb and add full carburetor heat at the first sign of icing.

5. Increase engine speed to 1700 RPM only long enough to perform the following checks:

a. Check Magnetos: Move the ignition switch to "R" position and note engine RPM, then move switch back to "BOTH" position to clear the other set of spark plugs. Then move the switch to "L" position and note RPM. The difference between the two magnetos operated individually should not differ more than 75 RPM' Observe engine for excessive roughness during this check. Maximum allowable drop when operating on one magneto is 150 RPM.

If no drop in RPM is observed when operating on either magneto alone, the switch circuit should be inspected.

> **WARNING . . . Absence of RPM drop when checking magnetos may indicate a malfunction in the ignition circuit. With a circuit malfunction, should the propeller be moved by hand (as during preflight) the engine may start and cause injury to personnel. This type of malfunction should be corrected prior to continued operation of the engine.**

CAUTION . . . Do not underestimate the importance of a pre-takeoff magneto check. When operating on single ignition, some RPM drop should be noted. Normal indications are 25-75 RPM drop and slight engine roughness as each magneto is switched off. Absence of a magneto drop may be indicative of an open switch circuit or improperly timed magneto. An excessive RPM drop usually indicates a faulty magneto or fouled spark plugs.

Minor spark plug fouling can usually be cleared as follows:

1. Magnetos – Both On.
2. Throttle – 2200 RPM.
3. Mixture – Move toward idle cutoff until RPM peaks and hold for ten seconds. Return mixture to full rich.
4. Magnetos – Recheck.

If the engine is not operating within specified limits, it should be inspected and repaired prior to continued operational service.

Avoid prolonged single magneto operation to preclude fouling of the spark plugs.

CAUTION . . . Do not operate the engine at a speed in excess of 1700 RPM longer than necessary to test operation and observe engine instruments. Proper engine cooling depends upon forward speed of the aircraft. Discontinue testing if temperature or pressure limits are approached.

6. Instrument Indications.

a. Oil Pressure: The oil pressure relief valve will maintain pressure within the specified limits if the oil temperature is within the specified limits and if the engine is not excessively worn or dirty. Fluctuating or low pressure may be due to dirt in the oil pressure relief valve or congealed oil in the system.

b. Cylinder Head Temperature: Any temperature in excess of the specified limit may cause cylinder or piston damage. Cooling of cylinders depends on cylinder baffles being properly positioned on the cylinder heads and barrels, and other joints in the pressure compartment being tight so as to force air between the cylinder fins. Proper cooling also depends on operation practices. Fuel and air mixture ratio

will affect cylinder temperature. Excessively lean mixture causes overheating even when the cooling system is in good condition. High power and low air speed, may cause overheating by reducing the cooling air flow. The engine depends on ram air flow developed by the forward motion of the aircraft for adequate cooling.

c. Battery Charging: The ammeter should indicate a positive charging rate until the power used for starting has been replaced by the battery charging circuit, unless the electrical load on the alternator is heavy enough to require its full output. The ammeter reading should return to the positive side as soon as the load is reduced. A low charging rate is normal after the initial recharging of the battery. A zero reading or negative reading with no battery load may indicate a malfunction in the alternator or regulator system.

TAXIING

Taxiing is easy with the use of the steerable tail wheel. Avoid steering the aircraft with the brakes. When winds exceed 15 to 20 mph, taxi very slowly and carefully. Position control surfaces to prevent inadvertent lift-off.

Check: flight instruments and radio aids: functioning correctly.

- Check flaps up.
- Set trim to neutral / take off position.
- Check fuel selector valve.

- Check oil pressure and oil temperature.
- Check fuel quantity.
- Check Volts and Amp meter.

- Check all lights (if installed), select as required.
- Check and set radios and Navigation aids (if installed).
- Check mixture pushed "**RICH"**.

- Set throttle for 1700 RPM. Switch magnetos from **"BOTH"** to **left,** then from **"BOTH"** to **right**, and back to **"BOTH"** (on either one magneto, the RPM drop is approximately 100).
- Pull carburetor heat to check operation. (RPM will decrease by approximately 100 at 1700 RPM). Push carburetor heat in after check.

- Set Altimeter.

- Fasten seat belts, tighten (but not uncomfortably).
- Check that doors are shut securely (both sides).
- Check freedom and deflection of controls.

NORMAL TAKEOFF.

a. Release brakes

b. Position mixture to "FULL RICH".

c. Slowly advance throttle to Full Throttle.

d. Rotate approximately at Vy

CAUTION . . . Avoid rapid throttle operation.

WARNING
Do not take off if:
The engine is running unsteadily
The engine instruments values are beyond operational limits
The crosswind velocity exceeds permitted limits or your capacity to control the airplane.

CLIMB.

Climb must be done at "FULL RICH" mixture setting,

BEST ANGLE OF CLIMB (Vx):

Approx. 65 mphIAS. This will provide the greatest altitude gain in the shortest distance. (steepest angle of climb for short fields with obstruction)

BEST RATE OF CLIMB (Vy):

72 mphIAS. This will provide the greatest altitude gain in the shortest time.

1. Throttle - Max. power (Max. cont. power 2750 rpm)
2. Trim - trim the airplane
3. Instruments – check oil temperature and pressure are within limits

CAUTION
If the oil temperature and or oil pressure exceed their limits, reduce the climb angle to increase airspeed in order to stay within the limits.

CRUISE.

1. After a desired altitude has been reached, adjust the throttle so as not to exceed the RPM for the cruise power selected.

2. Any irregularities in RPM, oil temperature and oil pressure may be indicative of engine trouble. Land as soon as practical and investigate.

3. At altitudes of more than 5,000 feet above sea level adjust mixture control for best rich power by moving toward "lean" position until maximum RPM is obtained with fixed throttle.

CAUTION . . . Do not lean the fuel-air mixture, unless such adjustment results in a higher RPM. Excessively lean mixtures cause over-heating and may result in damage to the engine.

Elevator Trim - - ADJUST to throttle setting and speed.

CRUISE RPM

Set cruise. Maximum 2550 RPM at sea level to 3000 feet.

NOTE: Lower RPM means slower cruise speed, quieter flying, better fuel economy, lower engine temperatures, and increased endurance.

See Page 5.3 for cruise at altitude.

APPROACH – BEFORE LANDING

PRE LANDING CHECK

Mixture . . . . . RICH
Carburetor heat . . . . . ON
Flaps . . . . . As Required
Speeds . . . . . As Required
Harness . . . . . Tight
Lights (option) . . . . . .As Required

DESCENDING AND LANDING.

1. The mixture control must be "FULL RICH" position during descent.

2. If a long glide is made, apply power at short intervals to clear the cylinders and retain engine temperatures in the event that instant power is required.

3. Carburetor heat is available only at engine outputs well above idle. Apply carburetor heat before closing the throttle and place carburetor heat "OFF" before opening the throttle so full power will be available if necessary.

CROSS WIND LANDING:

Approach with one wing low, or use crabbing technique, or a combination of both. Straighten the aircraft out just before touchdown. Maintain wing low altitude on the windward wing if necessary.

NOTE: Sideslips using large rudder inputs MAY be accompanied by a significant nose-down pitching tendency. A strong aft, longitudinal control force may be required to hold the nose up.

NOTE: Very large rudder pedal input may result in a significant amount of roll. These maneuvers serve no useful purpose and should be avoided.

NOTE: When extending the flaps, the sink rate increases substantially: this may lead to hard landings if not taken into account.

APPROACH AND LANDING:

1. Approach Airspeed – 65 **(flaps UP)**.
2. Trim -- ADJUST.
3. Landing speed of 55 to 60 IAS.
4. Touchdown – 3 Point
5. Landing Roll – Hold stick back
6. Braking-- MINIMUM REQUIRED.

APPROACH AND LANDING:

1. Approach Airspeed – 60 IAS **(flaps DOWN)**.
2. Trim -- ADJUST.
3. Landing speed of 50 to 55 IAS.
4. Touchdown – 3 Point
5. Landing Roll – Hold stick back.
6. Braking-- MINIMUM REQUIRED.

Note 1: Increase power and speed if the rate of sink is too high (see note of landing distance).

Note 2: In gusty weather, increase the approach speed to 70 or 75 IAS with flaps down.

AFTER LANDING CHECK

Flaps . . . . . .UP
Lights . . . . . .As Required
Radios and Nav aids . . . . . .As Required

SHUT DOWN (Engine)

Magnetos . . . . . Check
Radios and Nav aids . . . . . OFF
External lights . . . . . .OFF
Mixture . . . . . PULL/OUT
MAGs. (when propeller stops) . . . . . .OFF
MASTER . . . . . OFF
All switches . . . . . .OFF

Remove ignition key when aircraft is unattended.

NOTE: 1. Normally the engine will have cooled sufficiently during the glide and taxiing period to permit placing the ignition switch in the off position without additional idling. If taxi time has been excessive, operate the engine at 800-1000 RPM for two or three minutes before stopping.

NOTE:2. If the engine is equipped with a Stromberg NA-53A1 carburetor, stop from idling speed by turning the ignition switch to "OFF". As the engine stops open the throttle rapidly, and leave it open to prevent after-firing. If the carburetor is a Marvel-Schebler MA-3PA model, stop by moving the mixture control to the full "lean" position, where it acts as an idle cut-off. Do not open throttle, because it actuates the accelerator pump and rapid opening will flood the engine.

TIE DOWN

When the aircraft is not in use, it should be anchored to the tie down rings located under each wing lift strut and at the rear fuselage. Tie control stick in the full back position.

SHORT FIELD TAKEOFF

Same procedure as normal take off, but maintain tail low 3 point altitude unless on grass. If on grass, lift tail slightly to clear tail wheel.

SHORT FIELD LANDING

Same procedure as normal 3 point landing.

BALKED LANDINGS:

1. Push throttle full open
2. Retract flaps.
3. Carb. heat close

Within less than 4 seconds, the airplane climbs again as per Rate of Climb chart.

CROSS WIND LANDING:

Approach with one wing low, or use crabbing technique, or a combination of both. Level and straighten the aircraft just before touchdown, holding windward wing slightly low.

NOTE: When extending the flaps, the sink rate increases substantially: This may lead to hard landings if not taken into account.

CAUTION

Rapid engine cooling should be avoided during operation. This happens above all during aircraft descent, low engine rpm or at engine shutdown immediately after landing. Under normal conditions the engine temperatures stabilize during descent to values suitable to stop engine by switching the ignition off. If necessary, cool the engine at 1700 rpm to stabilize the temperatures prior to engine shut down.

EXTREME HOT WEATHER OPERATION

The standard airflow provides proper engine cooling up to a Sea Level temperature of 100°F (38°C). If operation above this temperature is required, care must be taken not to overheat the engine. This is achieved by:

- minimizing ground warm up
- checking the oil temperature after the full throttle initial climb out: if the oil temperature is increasing beyond 200°, power must be reduced and/or a faster climb speed selected It is necessary to initiate the corrective action before the oil reaches the Red line (225°F) as there is a time lag between engine operation and associated oil temperatures.

CAUTION: When climbing at reduced power or faster speed, the rate of climb is reduced. See Engine Operators Manual for more information on hot weather operation.

SECTION 8

AIRCRAFT GROUND HANDLING AND SERVICING

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AIRCRAFT GROUND HANDLING AND SERVICING

GENERAL

This section provides general guidelines relating to the handling, servicing and maintenance of the LUSCOMBE 8-SLSA.

Section F2295 of the ASTM LSA lists the Owner/Operator Responsibilities for Continued Operational Safety Monitoring of a Light Sport Airplane. Complete and submit Form #1 in the Maintenance Manual for maintenance, service and safety difficulties.

Review the aircraft records for outstanding "SAFETY ALERTS", "SERVICE BULETINS" and "NOTIFICATIONS". You must contact the manufacturer for the latest list of above documents.

For engine and propeller Service Bulletins, Airworthiness Directives, and Service Letters, contact the original manufacturers.

"SAFETY ALERTS" **are for notifications that require immediate action.**

"SERVICE BULETINS" **are for notifications that do not require immediate action but do recommend future actions.**

"NOTIFICATIONS" **are for notifications that do not necessarily recommend future action but are primarily for promulgation of continued airworthiness information.**

A Maintenance Manual, Parts Manual, and revisions to both, are available from THE LUSCOMBE SLIVAIRE AIRCRAFT COMPANY. Any correspondence regarding the airplane should include the airplane model and serial number to ensure proper response.

Before performing any type of maintenance on the aircraft, read the manufacturer's warranty forms to make sure you remain in compliance (to not inadvertently void the warranties).

When maintaining the aircraft yourself, make sure that you are authorized to do the work. See the aircraft Maintenance Manual and LSA rules for details.

LUSCOMBE SILVAIRE AIRCRAFT COMPANY address:

Flabob Airport
4130 Mennes Avenue #39
Riverside, CA 92509

SERVICING FUEL - See Maintenance Manual.

(a) Servicing Fuel System

At every 50 hour inspection, the fuel screen in the gascolator and at the carburetor inlet must be cleaned. See Maintenance Manual.

(b) Fuel Requirements

See Engine Manual

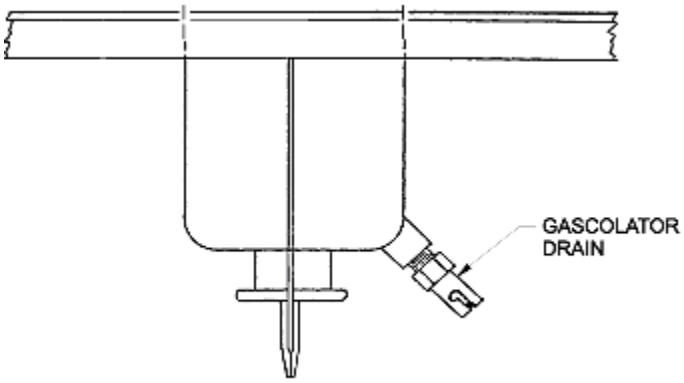
(c) Draining Fuel Strainer, Gascolator and Lines

The fuel system gascolator and strainer should be drained daily prior to the first flight and after refueling to avoid the accumulation of contaminants such as water or sediment. The gascolator is equipped with an individual quick drain located under the fuselage. The gascolator should be drained with the fuel selector valve on each individual tank. Each time fuel is drained, sufficient fuel should be allowed to flow to ensure removal of contaminants. This fuel should be collected in a suitable container, examined for contaminants, and then discarded.

CAUTION

After draining any amount of fuel, care should be taken to ensure that no fire hazard exists before starting the engine.

After draining, the quick drain should be checked to make sure it has closed completely and is not leaking.



FUEL DRAINS

(d) Draining Fuel System

The bulk of the fuel may be drained from the system by opening the valve at the gascolator quick drain with the fuel selector set to each individual tank. Push the drain valve stem to open the drain and twist to lock open.

OIL REQUIREMENTS

See Engine Operators Manual.

Oil Sump Capacity: 6 U.S. Quarts (plus 1 if filter is provided)

Oil Change Interval: 50 hours

It is recommended that the oil be changed as per instructions in the Engine Manual. Should fuel other than the specified octane rating for the power plant be added to tanks, do not fly the aircraft and immediately contact your mechanic.

The filler cap/dipstick is accessible through the right door in the engine cowling. Refer to the Maintenance Manual for the correct procedure for changing the oil and oil filter etc.

OIL TYPE:

Normal service: SAE 50 (above 40 deg. F)
SAE 30 (below 40 deg. F)
See Engine Operators Manual section VII for Approved multi-viscosity oil products.

GROUND HANDLING: the airplane may be moved on the ground by:

WARNING: Ignition "OFF"

(a) Pushing on the wing lift struts.

WARNING: DO NOT push or lift through the elevator or propeller area.

(b) Towing by the use of a tail wheel steering bar (option) or by power equipment that will not damage or excessively strain the tail wheel assembly.

(c) Taxiing

Before attempting to taxi the airplane, ground personnel should be instructed and approved by a qualified person authorized by the owner. Engine starting and shut-down procedures as well as taxi techniques should be covered. When it is ascertained that the propeller back blast and taxi areas are clear, power should be applied moderately to start the taxi roll, and the following checks should be performed:

- Taxi a few feet forward and apply the brakes to determine their effectiveness.
- While taxiing, make slight turns to ascertain the effectiveness of the steering.
- Observe wing clearance when taxiing near buildings or other stationary objects. If possible, station an observer outside the airplane.
- When taxiing over uneven ground, avoid holes and ruts.
- Do not operate the engine at high RPM when running up or taxiing over ground containing loose stones, gravel, or any loose material that may cause damage to the propeller blades.

(d) Parking

When parking the airplane, be sure that it is sufficiently protected from adverse weather conditions and that it presents no danger to other aircraft. When parking the airplane for any length of time or overnight, it is suggested that it be moored securely (tied down).
When parking the airplane, face it into the wind if possible and use chocks to properly block the wheels.

(e) Tie Down

The airplane should be tied down for immovability, security and protection. The following procedures should be used for the proper mooring of the airplane:

- Face the airplane into prevailing winds if possible.
- Retract the flaps.
- Block the wheels.
- Secure tie-down ropes to the wing lift strut tie-down rings and to the tail wheel or tailspring. When using rope of non-synthetic material, leave sufficient slack to avoid damage to the airplane should the ropes shrink.

CAUTION

Use bowline knots, square knots or locked slip knots. Do not use plain slip knots.

NOTE

Additional preparations for high winds include using tie-down ropes from the landing gear wheel area and securing the rudder.

Install a pitot cover if available. Be sure to remove the pitot cover before flight.

CLEANING

(a) Cleaning Engine Compartment

Place a large pan under the engine to catch waste.

With the engine cowling removed, spray or brush the engine with solvent or a mixture of solvent and degreaser. It may be necessary to also brush areas that were sprayed.

CAUTION

Do not spray solvent into the alternator, starter, electrics, or air intakes.

For best results, allow the solvent to remain on the engine from five to ten minutes; Then rinse the engine clean with additional solvent and allow to dry. Make sure you follow the solvent manufacturer's instructions. Also check with the engine manufacturer as to make sure that the solvent is compatible with the engine.

CAUTION

Do not operate the engine until solvent has evaporated or otherwise been removed.

Lubricate the controls, bearing surfaces, etc. See Maintenance Manual.

(b) Cleaning Exterior Surfaces

The airplane should be washed with a mild soap (dishwashing) and water. Harsh abrasives, alkaline soaps or detergents could scratch paint or plastic surfaces or could cause corrosion of metal. Cover areas where cleaning solution could cause damage. To wash the airplane, use the following procedure:

- Flush away loose dirt with water.
- Apply cleaning solution with a soft cloth, a sponge or a soft bristle brush.
- To remove exhaust stains, allow the solution to remain on the surface longer.
- To remove stubborn oil or grease, use a cloth dampened with naphtha.
- Rinse all surfaces thoroughly.
- Use only non-abrasive polish on unpainted aluminum surfaces; contact the Luscombe Silvaire Aircraft Company for recommended polishes.
- Any good automotive wax may be used to preserve painted surfaces. Soft cleaning cloths or a chamois should be used to prevent scratches when cleaning or polishing. A heavier coating of wax on leading surfaces will reduce abrasion problems in these areas.

(c) Cleaning the windshield

Clean only with special windshield cleaners to make sure that the windshield is not damaged, to avoid scratches and/or discoloring, using a woolen cleaning cloth.

CAUTION

Do not use gasoline, alcohol, benzene, carbon tetrachloride, thinner, acetone, or window cleaning sprays, on the windshield.

CAUTION

To avoid scratches, never remove dust with a dry cloth.

(d) Cleaning Headliner, Side Panels and Seats

Clean headliner, side panels, and seats with a soft cloth or bristle brush, and vacuum where necessary. Soiled upholstery, may be cleaned with a good upholstery cleaner suitable for the material.

AIRPLANE INSPECTION PERIODS

See Maintenance Manual for inspection frequency, details of inspections and who is authorized to perform the inspections.

ANNUAL INSPECTION:

An annual inspection is required once a year to keep the Airworthiness Certificate in effect. See the Maintenance Manual.

100-HOUR INSPECTION: PER LSA RULES

One hundred hour inspections are required by law if the aircraft is used for commercial purposes (rental, training, etc.). Aircraft warranty will be void if inspections are not in accordance with Table #1 of the Maintenance Manual. Inspections must be carried out by an authorized person as listed in the Maintenance Manual. The 100 hour inspection is a complete check of the aircraft and its systems, and should be accomplished by an Authorized person as outlined in the Maintenance Manual. The inspection is listed, in detail, in the inspection report of the appropriate Maintenance Manual.

50-HOUR INSPECTION:

It involves routine and detailed inspections at 50 hour intervals. The purpose of the program is to allow maximum utilization of the aircraft, to reduce maintenance inspection cost and to maintain a maximum standard or continuous airworthiness. See Maintenance Manual for details.

OPTIONAL MONITORING:

A spectrographic analysis of the oil is available from several sources. This system, if used intelligently, provides a good check of the internal condition of the engine. For this system to be accurate, oil samples must be sent in at regular intervals, and induction air filters must be cleaned or changed regularly. Check with your A&P.

PREVENTATIVE MAINTENANCE

As per FAA regulations, the FAA authorizes aircraft owners who holder at least a Sport Pilot certificate to perform maintenance as outlined in 14 CFR Part 43. This maintenance may be performed only on an aircraft which the pilot owns or operates and which is not used in commercial service.

Although some maintenance listed in the Maintenance Manual is allowed to be done by the pilot, each individual should make a self-analysis as to whether he or she has the ability to perform the work.

If the above work is accomplished, an entry must be made in the appropriate logbook. The entry should contain:

(a) The date the work was accomplished.
(b) Description of the work.
(c) Number of hours on the aircraft.
(d) The certificate number of pilot performing the work.
(e) Signature of the individual doing the work.

Before performing maintenance on the engine, see Engine Operators Manual.

AIRPLANE ALTERATIONS

See the Maintenance Manual for details.

The owner or pilot is required to ascertain that the following Aircraft Papers are in order and in the aircraft.

AIRPLANE DOCUMENTS

(a) To be displayed in the aircraft at all times:
    (1) Aircraft Certificate of Airworthiness
    (2) Aircraft Certificate of Registration

(b) To be carried in the aircraft at all times:
    (1) Aircraft Journey Log.
    (2) Pilot Operating Handbook.
    (3) Weight and Balance and equipment list

Although the aircraft and engine logbooks are not required to be in the aircraft, they should be made available upon request. Logbooks should be complete and up to date. Good records will reduce maintenance costs by giving the mechanic information about what has or has not been accomplished.

ENGINE AIR FILTER

The air filter must be inspected at least once every fifty hours. Under extremely adverse operating conditions, it may be necessary to inspect the filter more frequently. The filter is disposable and inexpensive and a spare should be kept on hand for rapid replacement.

(a) Removal of Engine Air Filter – Turn 4 snap-hold down screws counter-clockwise and remove.

(b) Installation of Engine Air Filter – Install filter in place and turn 4 snap-screws clockwise until secure.

BRAKE SERVICE

The brake system is filled with hydraulic fluid MIL-8130-6. The fluid level should be checked periodically or at every 50 hour inspection and replenished when necessary.

No adjustment of the brake clearances is necessary. If after extended service, brake blocks become excessively worn, they should be replaced with new segments.

BATTERY SERVICE

The battery is a gel cell type of battery and does not require filling.

If the battery is not up to charge, recharge starting with a 6 amp rate and finishing with a 2 amp rate. Quick charges are not recommended.

TIRE INFLATION

For maximum service from the tires, keep them inflated to the proper pressure = 25 PSI. All wheels and tires are balanced before original installation, and the relationship of tire, tube and wheel should be maintained upon reinstallation. Unbalanced wheels can cause extreme vibration in the landing gear; therefore, when installing new components, it may be necessary to rebalance the wheels with the tires mounted. When checking tire pressure, examine the tires for wear, cuts, bruises, and slippage.

LANDING GEAR SERVICE

The main landing gear carries 6.00 x 6 wheels. The tires are .four-ply rating, type III tires with tubes.

In jacking the aircraft for landing gear or other service, use a padded sawhorse under the rear fuselage and lift (hang) the front of the plane by the engine (using ring on crankcase).

PROPELLER SERVICE

The spinner and backing plate should be frequently cleaned and inspected for cracks. Before each flight the propeller should be inspected for nicks, scratches, paint chips etc. Read the propeller manufacturers maintenance procedures.

NEW ENGINE BREAK-IN AND OPERATION

The engine underwent a run-in at the factory and is ready for a full range of use. See Engine Manual for details.

CONTROL SURFACE DEFLECTIONS

See LUSCOMBE 8-SLSA Maintenance Manual.

SECTION 9

PLACARDS AND MARKINGS

AIRSPEED INDICATOR MARKINGS

MARKING	INDICATED AIRSPEED MPH	SIGNIFICANCE
White Arc	45 - 90 Vso - V_{FE}	*Full Flap Operating Range.* Lower limit is maximum weight stalling speed in landing configuration. Upper limit is maximum speed permissible with flaps extended.
Green Arc	48 - 115 Vs - V_A	*Normal Operating Range.* Lower limit is maximum weight stalling speed with flaps up. Upper limit is maximum structural cruising speed.
Yellow Arc	115 - 145 V_A - V_{NE}	*Calm Weather Range*. Operations must be conducted with caution and only in smooth air.

INSTRUMENT MARKINGS

INSTRUMENT	Red Line **MINIMUM LIMIT**	Green Arc **NORMAL OPERATING**	Yellow Line **CAUTION LIMIT**	Red Line **MAXIMUM LIMIT**
TACHOMETER RPM	450	450-2750		2750
CYLINDER HEAD TEMP. (CHT)	240° F	240° F-420° F	420° F-480° F	480° F
OIL TEMPERATURE ^{O}F	75° F	75-220° F	200° F	240° F
OIL PRESSURE PSI	10psig (idle)	30-60psig	10-30psig & 60-100psig	100psi (cold)
VOLTMETER VOLTS		10 - 14		

LIMITATION PLACARDS

The following placards are installed:

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

Above placard must be posted in the aircraft passenger area so that it is visible to both the pilot and passenger upon entry or when seated in the aircraft

Other placards on instrument panel:

> N

> THROTTLE PULL CLOSE

> MIXTURE PULL LEAN

> CARB. HEAT PULL ON

Other placards in cabin area:

> TRIM
> NOSE UP
>
> TRIM
> NOSE DOWN

> FLAP 0
>
> 15
>
> 30

- Baggage area:

Install at rear of rear baggage area

75 LBS. MAX.

- Rear left side fuselage:

MODEL:	Silvaire LSA-8
MFG:	Luscombe Silvaire Aircraft Company
SERIAL #	SLS-004
MFG. DATE:	

WING TANKS Placards

- Beside the wing tank fillers:

AVIATION FUEL 100LL min 15 US Gallons