

OWNER'S HANDBOOK

OF

OPERATION

FOR

SILVAIR



MODEL 8F

LARSEN LUSCOMBE CORP

Dear Friend:

You are now the owner of one of the best lightplanes made by American industry. Behind the plane you have is nearly 15 years of experience in the engineering and production of several thousand all-metal lightplanes. Luscombe pioneered the all-metal lightplane field and has been the leader ever since. We believe that the years of experience behind your *SILVAIRE* are responsible for its high degree of strength, economy, durability, performance and safety.

At this time we should like to make a few suggestions which we believe will enable you to obtain the greatest satisfaction from your new *SILVAIRE*.

First, fly safely. The *SILVAIRE* is well-built and can take it, but it is only as safe as the pilot who flies it.

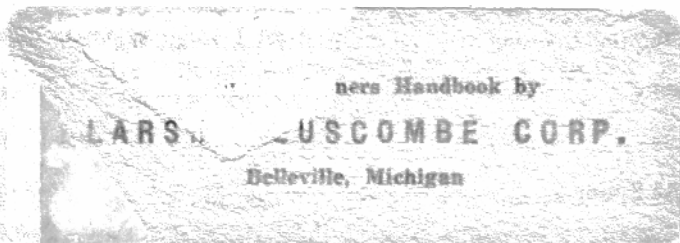
Second, take care of your *SILVAIRE*. With just reasonable and ordinary care it will give you many years of satisfactory service and enjoyable pleasures, and its all-metal construction gives it a resale or trade-in value which will remain high.

Third, remember that our Service Department stands ready to answer your requests for information and furnish you advice on parts, construction, maintenance and operation. Also there is a widely spread network of Luscombe *SILVAIRE* distributors and dealers whose maintenance and overhaul facilities are for your convenience and use.

Fourth, we want you to know we will appreciate any comments you send us about the *SILVAIRE*. We are trying continually to improve our product, and many features of our planes are the result of suggestions made by customers.

In closing I would like to state that the goal of all our efforts is to build for our customers a safe plane with high performance, good workmanship, and pleasing appearance at a low price that the average person can afford.

I hope that the following information enclosed in this book will give you valuable hints on your *SILVAIRE* and if you are in the vicinity of our plant, please visit us and let us show you how *SILVAIRES* are being built.



SILVAIRE MODEL 8-F

Specifications and Performance

Engine Rating	90 horsepower @ 2475 rpm.
Gross Weight	1400 pounds
Empty Weight	850 pounds
Wing Span	35 feet
Wing Chord	50 inches
Overall Length	20 feet
Overall Height	6 feet 3 inches
Propeller Diameter	71 inches
Baggage Capacity	75 pounds
Power Loading	16.5 pounds per h.p.
Wing Loading	10 pounds per sq. ft.
Maximum Speed	128 mph.
Cruising Speed	120 mph.
Stalling Speed	48 mph. (T.I.A.S.)
Take-off Run	550 feet (minimum)
Landing Roll	450 feet (minimum)
Rate of Climb	900 feet per min. (sea level)
Speed for Best Rate Climb	72 mph.
Cruising Range	Over 500 miles
Service Ceiling	17,000 feet
Fuel Consumption-Cruising	5 gallons per hour
Fuel Capacity	25 gallons
Oil Capacity	4.5 or 5 quarts
Fuel Octane Rating	80 (minimum)
Tire Pressure	18 pounds

DESCRIPTION

The *SILVAIRE* is a completely all-metal two-place high wing monoplane powered with a Continental C90 four-cylinder horizontally-opposed air-cooled 90 horsepower engine. The wings of the *SILVAIRE* are all-metal, with stressed skin, and a single strut. The engine is carburetor-equipped with dual ignition, self-starter, primer, and generator for 12-volt operation. A metal 2-blade fixed pitch propeller is supplied as standard equipment. The electrical system, with a 12-volt storage battery, is fully protected by thermal-type circuit-breakers and switches. The system supplies current for engine starting, radio operation, panel, position, and landing lights. The storage battery is located just aft of the baggage compartment on the right side of the fuselage.

Positive action mechanical brakes control each wheel separately. Brakes are operated by depressing either or both of the heel pedals beneath the rudder pedals. The parking brake control, operated by hand, is located under the left side of the instrument panel. The wide tread *SILVAIRE* landing gear equipped with a hydraulic oleo and a coil steel spring provides for easy ground maneuvering. A steerable full-swivel tail wheel provides for additional ease while maneuvering on the ground. Dual stick-type controls are provided and the control stick on the right side is removable for passenger comfort.

Adequate ventilation has been arranged by providing cabin fresh air (see figure 1 for location of control), and left and right hand door windows which may be opened. Cabin heat is also provided (see figure 1 for location of control). The throttle control, trim tab adjustment crank, fuel shut-off valve and electrical panel are centrally located so as to be easily accessible from either seat. The airplane is supplied with individual seat belts (each of which is approved for two persons), and a shock mounted instrument panel for engine and flight instruments. Engine and flight instruments include (see figure 1) oil pressure and temperature gauges, tachometer, ammeter, air speed indicator, altimeter, and compass.

OPERATING PROCEDURES

STARTING: (See figure 1 for location of controls)

1. Set fuel valve indicator to either RIGHT TANK or LEFT TANK.
2. CIRCUIT BREAKERS ON.
3. Close THROTTLE.
4. Set brakes.
5. Make certain that the Propeller is CLEAR of any person or obstruction.
6. Prime engine if it is cold. Two or three strokes of the PRIMER is usually sufficient.

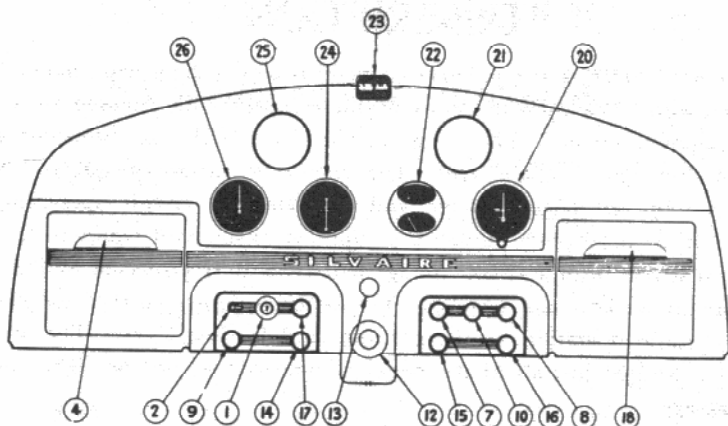


FIGURE 1

- | | |
|----------------------------|-------------------------------------|
| 1. Magneto Switch | 16. Fresh Air Control |
| 2. Master Switch | 17. Mixture Control |
| 3. Ash Tray | 18. Glove Compartment |
| 4. Glove Compartment | 19. Ammeter |
| 5. Parking Brake | 20. Altimeter |
| 6. Panel Light Control | 21. Space for additional instrument |
| 7. Position Light Switch | 22. Oil Temp. and Pressure Gauges |
| 8. Landing Light Switch | 23. Compass |
| 9. Carburetor Heat Control | 24. Tachometer |
| 10. Cigarette Lighter | 25. Space for additional instrument |
| 12. Throttle | 26. Air Speed Indicator |
| 13. Primer | 27. Left Side Rudder Pedals |
| 14. Starter | 28. Left and Right Brake Pedals |
| 15. Cabin Heat Control | 29. Right Side Rudder Pedals |

7. Mixture control FULL RICH.
8. Turn MASTER SWITCH ON.
9. Turn magneto switch to BOTH.
10. Pull STARTER control.

CARBURETOR AIR HEATER:

1. Heat is off when the knob is in, and on when knob is out (*see figure 1*).
2. Use carburetor heat full on during landing approach, during any closed throttle maneuvers, and when carburetor icing conditions exist. A slight drop in rpms and engine roughness generally denotes icing conditions.

FUEL SYSTEM:

1. The fuel selector valve must be on either RIGHT TANK or LEFT TANK during all flight. (*see figure 1 for location of fuel valve*).
2. Capacity of fuel tanks is marked on the selector valve placard and on the C.A.A. Operations Record form.
3. Direct reading fuel quantity gauges are located above the cabin doors.

MIXTURE CONTROL:

1. The carburetor mixture is full RICH when the knob is IN and full LEAN when the knob is OUT. (*see figure 1 for location of mixture control*).
2. Lean the mixture for better engine performance at altitudes of 5,000 feet or over. Otherwise leave in full RICH position.
3. Pull the knob back to the point where the engine and rpms smooth out.

CABIN HEAT:

1. Pull the knob out for HEAT ON; push in for HEAT OFF.

CABIN COOL AIR:

1. Pull the knob out for COOL AIR ON; push in for COOL AIR OFF.

PANEL AND POSITION LIGHTS:

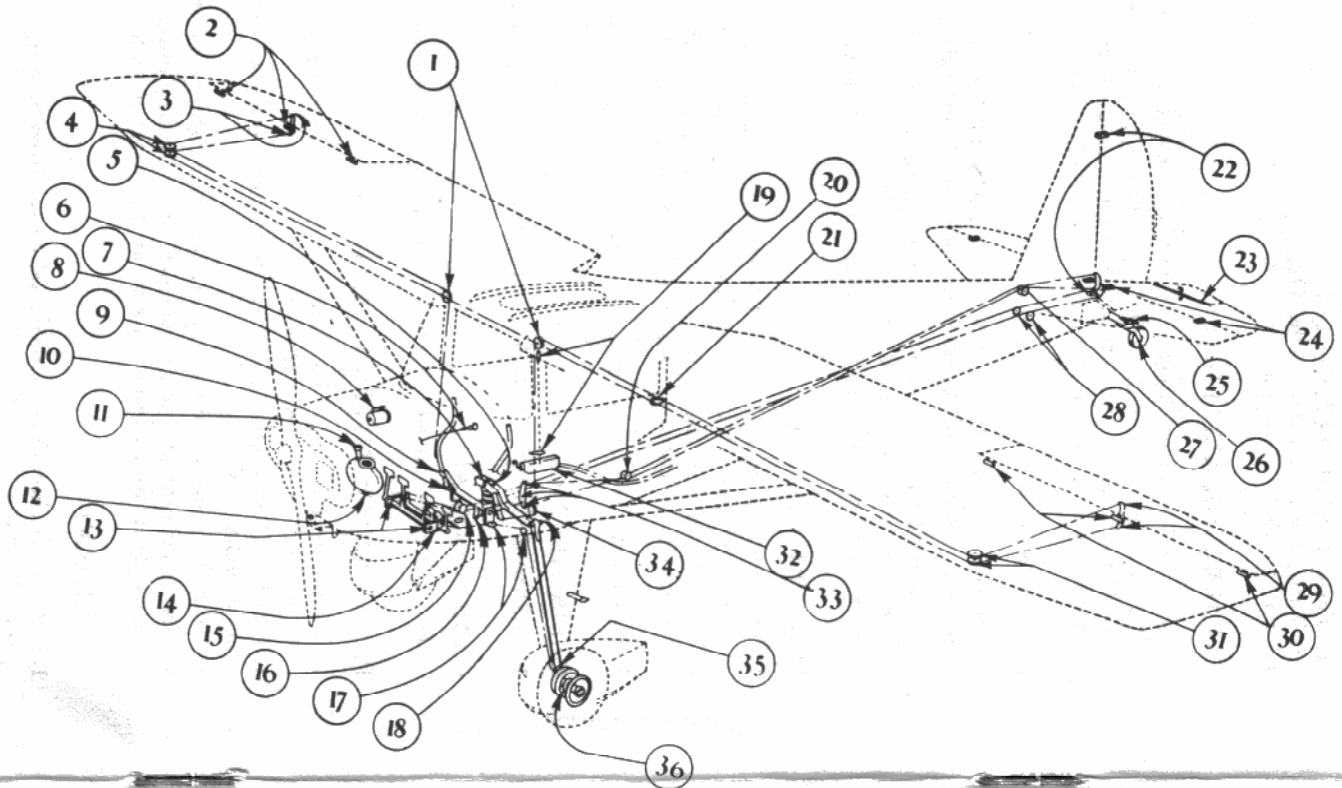
1. Circuit breakers must be ON. (Circuit breakers are located inside the right hand glove compartment).
2. Pull POSITION LIGHTS knob out to turn both the position lights and panel lights ON.
3. Turn the knob to the right to increase the brightness of the panel lights.
4. The adjustment of 3 above will not affect the brightness of the position lights. They are on bright as soon as the switch is pulled out.

OIL CHECK:

1. Oil level is checked by noting level on the bayonet gauge attached to the oil filler cap.

LUBRICATION CHART

SILVAIRE MODEL 8-F



	Lubricant	Hrs.		Lubricant	Hrs.
1. Upper Aileron Cable Pulleys.....	AN-O-6	100	18. Landing Gear Hinge Pin, (1 Left, 1 Right)	AN-G-3	25
2. Aileron Hinge Bearings.....	AN-O-6	25	19. Door Hinges, (2 Left, 2 Right).....	AN-O-6	25
3. Cable Clevis Pins.....	AN-O-6	25	20. Elevator Cable Pulleys.....	AN-O-6	100
4. Aileron Cable Pulleys.....	AN-O-6	100	21. Door Catch, (1 Left, 1 Right).....	AN-O-6	25
5. Oleo Cylinder (See Note Below).....		100	22. Rudder Hinge Bearings.....	AN-O-6	25
6. Instrument Panel Controls.....	AN-O-6	25	23. Trim Tab Hinge.....	AN-O-6	25
7. Landing Gear Center Bolt.....	AN-O-6	25	24. Elevator Hinge Bearings, (2 Left, 2 Right)	AN-O-6	25
8. Starter Shift Arm (Model 8E only).....	AN-O-6	25	25. Tail Wheel Swivel.....	AN-G-3	25
9. Control Stick Bearings, (Left and Right).....	AN-O-6	25	26. Tail Wheel Bearing.....	AN-G-5	100
10. Control Stick Support Bearings, (Left and Right).....	AN-O-6	25	27. Elevator Cable Pulleys.....	AN-O-6	100
11. Engine Oil Filler. (Check before each Flight) (Drain & Refill every 25 hours). (See chart for Grade).	AN-O-8		28. Rudder Cable Pulleys.....	AN-O-6	100
12. Engine Oil Drain.....		25	29. Cable Clevis Pins.....	AN-O-6	25
13. Rudder Pedal Bearings, (2 Left, 2 Right).....	AN-O-6	25	30. Aileron Hinge Bearings.....	AN-O-6	25
14. Brake Pedals.....	AN-O-6	25	31. Aileron Cable Pulleys.....	AN-O-6	100
15. Rudder Cable Pulleys.....	AN-O-6	100	32. Tab Pulley and Mechanism.....	AN-O-6	100
16. Elevator Push-Pull Tube.....	AN-O-6	25	33. Elevator Bell Crank.....	AN-O-6	25
17. Brake Cable Pulleys (6).....	AN-O-6	100	34. Lower Aileron Cable Pulleys (1 Left, 1 Right).....	AN-O-6	100
			35. Brake Actuating Arms (1 Left, 1 Right).....	AN-O-6	25
			36. Landing Gear Wheel Bearings, (Remove, Clean, Repack).....	AN-G-5	100

ENGINE OIL CHART

Outside Air Temperature	Above 100 F.	100 to 70 F.	70 to 32 F.	Below 32 F.
Grade of Oil.....	S.A.E. 50	S.A.E. 40	S.A.E. 30	S.A.E. 20

OLEO CYLINDER — To fill, remove plug in top of cylinder. With all wheels on ground fill unit to level marked on gauge with "Mobilube 90" or equivalent.

STARTER, GENERATOR, MAGNETOS — These have oil sealed bearings and are factory serviced.

FIXTURES, LINKAGE, "Etc." — Should be kept clean and oiled moderately with AN-O-6.

2. Access to the oil filler cap is provided by opening right side of the engine cowl.
3. Capacity 5 qts. Minimum operating level 2.5 qts.
4. Use SAE 40-50 for summer operation; SAE 20-30 for winter operation.

OPERATING RECOMMENDATIONS

TACHOMETER:

1. Maximum RPM — 2475 (Radial red line on instrument).
2. Cruising RPM — 2300.
3. Idle RPM — 550.

OIL PRESSURE:

1. Maximum Oil Pressure — 48 lbs. per sq. inch.
2. Normal Operating Pressure — 30 to 35 lbs. per sq. inch.
3. Minimum Operating Pressure — 25 lbs. per sq. inch.

OIL TEMPERATURE:

1. Maximum Oil Temperature — 225° F.
2. Normal Operating Temperature — 120° F. to 200° F.
3. Caution Operating Temperature — 40° F. to 120° F.

AIR SPEED:

1. Never exceed speed — 145 mph (T.I.A.S.) (red line).
2. Normal Operating Speeds — 48 to 120 mph (T.I.A.S.).
3. Stalling Speed — 48 mph (T.I.A.S.).

PERFORMANCE INFORMATION:

NOTE: True Indicated Airspeeds—Gross weight—sea level conditions are given.

1. Stalling Speed — 48 mph.
2. Take-Off Distance — 550 feet on a hard turf surface.
3. Landing Ground Roll — 450 feet hard turf surface.
4. Rate of Climb — 900 feet per minute at 72 miles per hour.
5. Due to reduced air density at higher altitudes wing lift and engine power are reduced with resulting performance reduction. Take-off and landing distances are increased and rate of climb reduced. For each 1,000 feet of increased altitude above sea level add 3% of Take-Off and Landing run.

Examples:

1. At 10,000 feet altitude add 3 x 10 or 30% to the sea level performance. Take-Off run, $30\% \times 575 = 172.5$, 575 plus 172.5 = 747.5. Landing distance, $30\% \times 450 = 135$, 450 plus 135 = 585 feet.
2. At 5,000 feet altitude add 15% to the sea level performance. Take-

Off run — $15\% \times 575 = 86.2$, 575 plus 86.2 = 661.2. Landing distance — $15\% \times 450 = 67.5$, 450 plus 67.5 = 517.5.

The above figures are arbitrary for normal conditions.

SERVICE HINTS

ENGINE COWL:

By a simple arrangement of cowl fasteners, access may be easily made to the engine for routine servicing. To open the cowl, turn each fastener on the cowl a quarter turn counter-clockwise with a coin, key, knife, or screw driver.

To remove the cowl assembly for engine overhaul it is necessary to remove the propeller bolts, lift the propeller off, and then remove the screws around the back part of the cowl at the firewall bulkhead. To completely remove the cowl only about 20 minutes are required.

BATTERY:

The 12-volt battery is mounted in a metal box on a platform just back of the baggage compartment on the right side. For access to the battery, a removable partition is supplied at the back of the baggage compartment. The battery may be removed for servicing by cutting the safety wire from the two retainer nuts on the battery box cover, removing the wire and nuts, and lifting off the cover. When replacing battery box cover be sure to replace nuts and safety them in place.

Check water level of battery every two weeks.

INSPECTION COVERS:

Inspection covers on wings and fuselage are held in place by the clamping action of a metal strip and two screws. To remove an inspection cover first loosen the two screws and then slide the cover in either direction parallel to the line of the screws. The opposite end will drop free and the cover can then be slid off. To replace the cover reverse the procedure.

WINDSHIELD AND WINDOWS:

Use good quality soap, clean water, and clean soft cloths to clean these areas. Patented cleaners should be used cautiously, because of their possible solvent action on the plastic material* used in the construction of these parts.

SEAT CUSHIONS:

Spots or stains on the upholstery should be removed as soon as convenient — before they have a chance to soak in and dry.

There are two basic types of cleaners generally available:

1. Volatile cleaners — colorless liquids generally having carbon tetrachloride or naphtha as a base.

(*methyl methacrylate. Also known by the trade names of Plexiglas and Lucite)

2. Alkaline cleaners — which have a soap base.

In most cases volatile cleaners are recommended, especially if the upholstery is a flat fabric such as broadcloth or Bedford Cord. In using volatile cleaners, here are a few special directions that are well worth following:

1. Don't use too much fluid.
2. Carefully brush off all loose particles of dirt.
3. Wet a small, clean cloth with the cleaning solution, wring out thoroughly.
4. Tap the spot lightly with the cloth, but don't rub it. This will pick up particles which are too embedded to be removed by brushing. Repeat several times, using a clean part of the cloth each time.
5. Moisten another piece of clean cloth with cleaner and allow to evaporate until barely damp. Now rub the spot lightly, working from the outside in toward the center. (This, as you probably know, keeps the spot from spreading and is less likely to leave a ring.) If necessary, repeat several times.
6. Brush again to remove any further particles which may have become loosened.

CARE OF ALUMINUM

The manufacturers of modern metal airplanes use a high tensile strength, aluminum alloy.

These alloys are protected from corrosion by a coating of pure aluminum. They are known as "Alclad" and "Pureclad".

The natural oxidation of pure aluminum produces a film which is dull and lifeless in appearance. The original brilliance may be restored by the use of various polishes.

It is important to remember that the polishes and waxes used should be non-corrosive, non-toxic, and only mildly abrasive.

"Klad Polish", manufactured by the R. M. Hollingshead Corporation, has been especially formulated, to clean and polish this metal. "Klad Polish", with a minimum of effort, cleans and polishes in a single operation. It will restore the original brilliant lustre and enhance the beauty of your plane.

It is recommended that a coating of "Klad Wax" be applied, to preserve the polished finish and to help retard further oxidation. Frequent polishing operations may be reduced by periodic applications of "Klad Wax".

