

CAA APPROVED AIRPLANE FLIGHT MANUAL

LUSCOMBE AIRPLANE CORPORATION

DALLAS, TEXAS

MODEL T-8F CROP SPRAYER (RESTRICTED)

MODEL T-8F (STANDARD)

CAA TYPE CERTIFICATE NO. 694

AIRPLANE SERIAL NO. _____

REGISTRATION NO. _____



APPROVED: _____

C. W. Rosenberg
Superintendent,
Aircraft Branch

DATE: _____

2-18-1949

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RECORD OF REVISIONS

REVISION NO.

DATE

PAGE NO.

CAA APPROVED

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Date: 2 - 18 - 1949

AIRPLANE FLIGHT MANUAL

MODEL T-8F CROP SPRAYER (RESTRICTED)
 MODEL T-8F (STANDARD)

OPERATION LIMITATIONS:

The following limitations must be observed in the operation of this airplane.

POWER PLANT

Engine: Continental Motors Corporation Model C-90 8F

Engine Limits: For all operations 2475 RPM, 90 HP

Fuel: 80 minimum octane aviation gasoline

Propeller: McCauley LB90-CM-7347, ATC 842-FC3 or other metal propeller having the following limits: Static RPM at maximum permissible throttle setting 2300 \pm 50 RPM
 Diameter - Maximum 73 inches - Minimum 71 inches

Power Plant Instruments:

- (a) OIL TEMPERATURE GAUGE:
 Unsafe if indicator exceeds "RED" line (225° F.)
- (b) TACHOMETER:
 "RED" line at rated engine speed (2475)
Do not exceed
- (c) OIL PRESSURE GAUGE:
 Normal operating range, 30 - 35 PSI

AIRPLANE LIMITATIONS:

With spray equipment installed, this airplane must be operated as a RESTRICTED airplane: no acrobatic maneuvers including spins are approved. Further, for this configuration, the rear seat and safety belt, rear control stick and rear rudder pedals must be removed.

This aircraft may be converted from RESTRICTED to STANDARD airworthiness classification and vice versa without inspection by the CAA; provided, the conversion is made, inspected and found airworthy by a certificated Aircraft Mechanic in accordance with instructions given in Section I of this manual, and provided a Log Book entry is made by the certified Aircraft Mechanic to that effect.

Prior to operation in the RESTRICTED classification, the aircraft must display RESTRICTED airworthiness classification marks.

CAA APPROVED:

Date: 2 - 18 - 1949

AIRPLANE LIMITATIONS (continued)

AIR SPEED LIMITATIONS

Never exceed speed (with spray equipment) 110 MPH TIAS

Never exceed speed (without spray equipment) 145 MPH TIAS

Level flight or climb (with spray equipment) 110 MPH TIAS

Level flight or climb (without spray equipment) 115 MPH TIAS

Flaps extended maximum speed 90 MPH TIAS

MAXIMUM WEIGHT

With spray equipment - Take Off 1470 lbs. - Landing 1400 lbs.

Without spray equipment - Take Off 1400 lbs. - Landing 1400 lbs.

CENTER OF GRAVITY RANGE

Forward limit 12.1 inches (aft of wing L.E.)

Rearward limit (with spray equipment) 16.5 inches (aft of wing L.E.)

(without spray equipment) 18.1 inches (aft of wing L.E.)

Datum - Leading Edge of Wing

CAA APPROVED:
Date: 2 - 18 - 1949

INSTRUCTIONS FOR CONVERTING AIRPLANE FROM RESTRICTED TO STANDARD CLASSIFICATION

Conversion of this airplane may be accomplished without inspection of the Civil Aeronautics Administration, provided it is inspected and found airworthy by a Certificated Aircraft Mechanic and a Log Book entry is made by him to that effect.

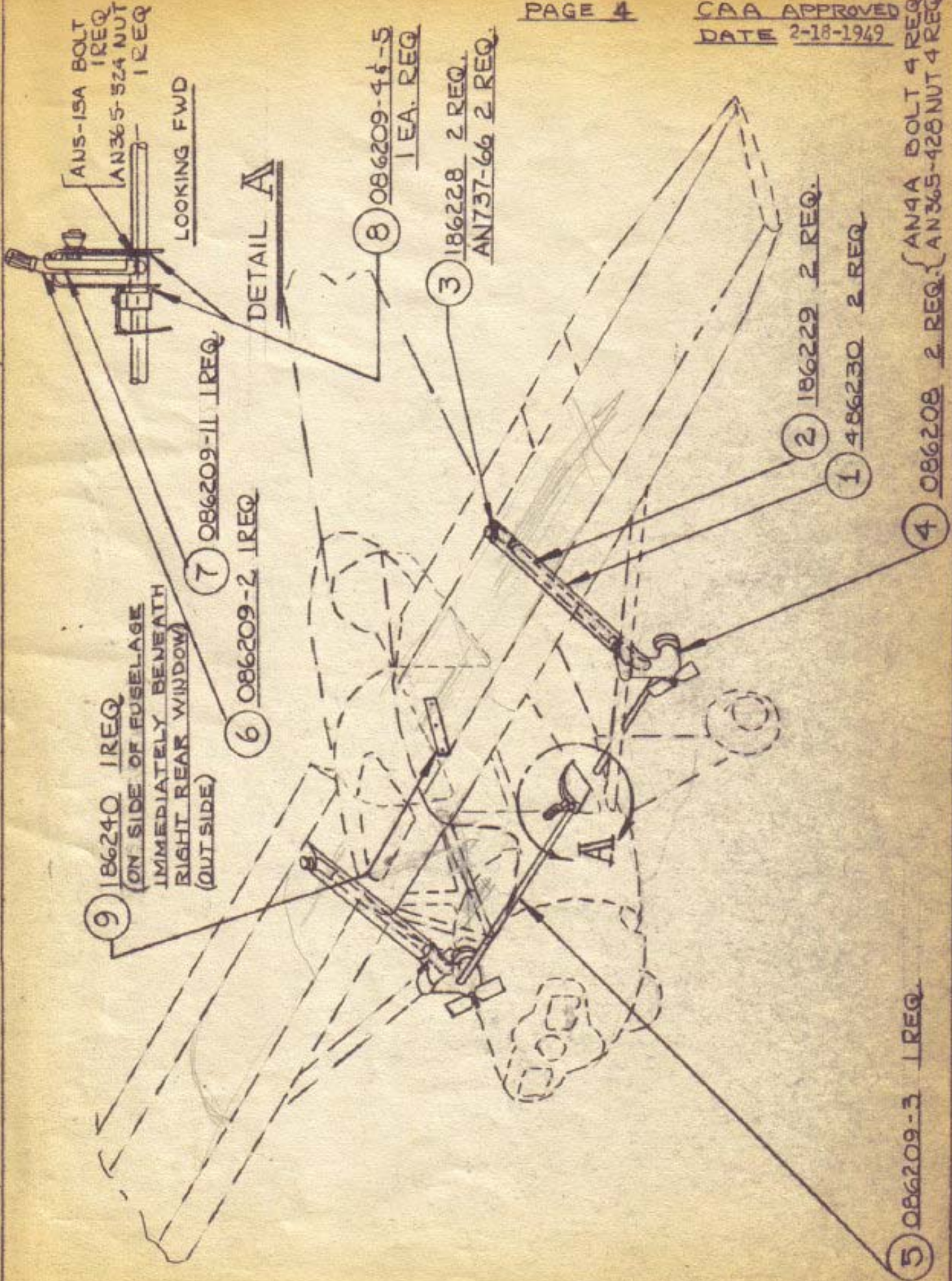
Prior to operation in the RESTRICTED classification, the aircraft must display the RESTRICTED PLACARD on the outside of the airplane aft of door at the location specified for that purpose.

EQUIPMENT TO BE REMOVED:

- | | |
|-----------------------------|----------------------------|
| 1. Spray Line Fairing | 486230 (2 req'd) |
| 2. Spray Line Tubing | 186229 (2 req'd) |
| 3. Spray Line Elbow | 186228 (2 req'd) |
| 4. Spray Unit Assembly | 086208 (1 R & 1 L req'd) |
| 5. Control Tube Assembly | 086209-3 (1 req'd) |
| 6. Control Actuating Handle | 086209-2 (1 req'd) |
| 7. Control Stop Assembly | 086209-11 (1 req'd) |
| 8. Spacers | 086209-4, -5 (1 ea. req'd) |
| 9. "RESTRICTED" Placard | 186240 (1 req'd) |

Items of equipment to be removed must be disassembled in the order specified above. The diagramatic sketches on the following page (4) will serve both as a guide and as means for positively identifying parts.

The airplane will be correctly marked for the STANDARD classification when the "RESTRICTED" placard is removed.



CAA APPROVED

Date: 2 - 18 - 1949INSTRUCTIONS FOR CONVERTING AIRPLANE FROM RESTRICTED TO STANDARD CLASSIFICATIONEQUIPMENT TO BE REPLACED:

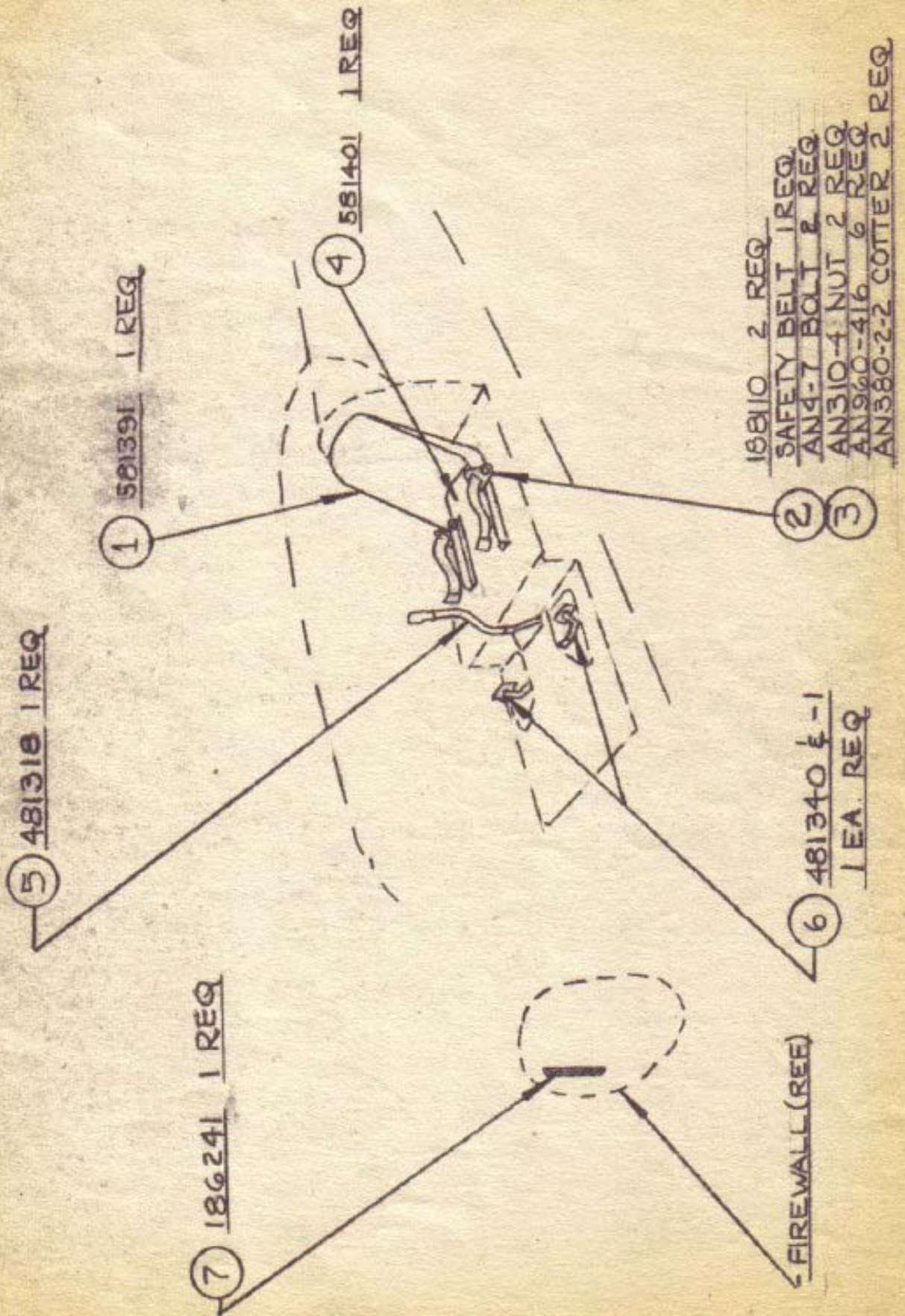
- | | |
|--|--------------------------|
| 1. Rear Seat Assembly | 581391 (1 req'd) |
| 2. Rear Safety Belt Assembly | 188110 (1 req'd) |
| 3. AN4-7 Bolt, AN310-4 Nut, AN960-416 Washer
and AN380-2-2 Cotter | (2 ea. req'd) |
| 4. Rear Seat Cushion | 581401 (1 req'd) |
| 5. Rear Control Stick | 481318 (1 req'd) |
| 6. Rear Rudder Pedals and Pins | 481340 (1 R & 1 L req'd) |
| 7. Ballast Weight (see page 8) (if nec.) | 186241 (1 req'd) |

Items to be replaced for conversion have been furnished with the airplane and should now be installed. The sketch on page 6 of this manual will aid in identifying and locating pertinent parts. Bolts, nuts, washers, and cotters for retaining the seat back and safety belt are specified in the list above (item 3) and should be safetied with the specified cotters.

The change in weight and balance need not be computed since the calculations appear in the appropriate table on page 8, the weight and balance statement. It may be necessary, however, to add ballast weight (at the firewall) in order to comply with center of gravity location requirements. The amount of ballast required, if any, will appear in the pertinent table on page 8.

The airplane will be correctly marked for the STANDARD classification when the "RESTRICTED" placard is removed from the side of the fuselage.

Log Book entry must be made stating that conversion was made in accordance with the instructions of this manual.



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RE-CONVERSION TO RESTRICTED CLASSIFICATION

In converting back to RESTRICTED classification all the items specified in the foregoing sketches should be installed or removed in the reverse order listed. Care should be taken that the spray unit mounting bracket is adjusted span wise along the strut to permit $3/32$ " clearance in the Universal Joint between the unit and the control torque tube. This clearance insures positive setting of the plug valve at all times and precludes possible leakage that may be caused by vibration.

All bolts and nuts shall be safetied.

To recalibrate the throttling valve, it is only necessary to index the "0" setting of the control quadrant with the point where actual flow is first permitted through the valve. Both valves should be checked for identical settings and the Universal Joint bolts tightened to lock in place.

Log Book entry must be made stating that conversion was made in accordance with the instructions of this manual.

AIRPLANE FLIGHT MANUAL

MODEL T-3F CROP SPRAYER (RESTRICTED)

MODEL T-3F OBSERVER (STANDARD)

SECTION II

The following pages comprising Section II of this manual are not necessarily C.A.A. approved but are offered as additional information and recommendations by the manufacturer relative to satisfactory operation of this airplane.

LUSCOMBE AIRPLANE CORPORATION

P. O. BOX 2128

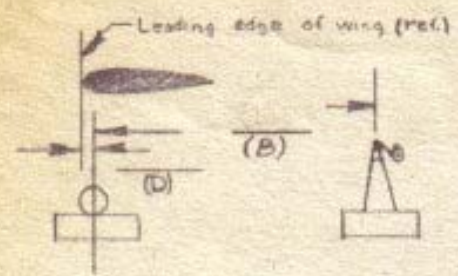
DALLAS 1, TEXAS

MODEL T-8E

SERIAL _____

AIRPLANE WEIGHT AND BALANCE STATEMENT

REG. NO. _____



ACTUAL EMPTY WEIGHT & C. G.

	SCALE	TARE	NET
FRONT SCALES	L		
	R		
BOTH			
REAR SCALE			(A)
WEIGHT EMPTY			(C)

NOTES: Level aircraft for weighing by reference to horizontal splice plate on side of fuselage.

"Arm" means horizontal distance of item from leading edge of wing.

Moment = Weight x Arm

Tail support is under head of bolt attaching tail wheel assembly to spring.

For information on weight and balance computations see C.A.A. Manual 18, Appendix II

Empty C. G. is

$$\left\{ \frac{(A) \times (B)}{(C)} \right\} + (D) = \text{in. Aft of L.E.W.}$$

(WITHOUT SPRAY EQUIPMENT)

CALCULATION OF EXTREME C. G. CONDITIONS

Item	Forward C. G.			Rearward C. G.		
	Wt.	Arm	Mom.	Wt.	Arm	Mom.
Empty						
Oil	9.5		-225	9.5		-225
Fuel	22.5	20	450		20	
Pilot	170.0	15	2550	170.0	15	2550
Passenger				170.0	47	8000
Ballast		-20			-20	
TOTAL						
C. G. (in.)						
Approved C. G. Limits		12.1"		1400#	18.1"	

EMPTY WEIGHT EQUIPMENT

✓	Items	Type	Wt.	Arm
	Prop.	McCaulley	21	-44.8
	Safety Belt	(2) Air Assoc.	2	15.847
	Tachometer		1	-3.0
	Oil Temp. & Pressure		1	-3.0
	Altimeter		1	-3.0
	Airspeed		1	-3.0
	Compass		1/2	-3.0
	Dual Mag.		16	-22.0
	Fuel tanks	LAC, Metal (2)	20	20.0
	700x6 tire		19	1.0
	600x6 wheel		14	1.0
	Tail wheel		10	178.5
	Brakes			3.0
	Rear Brake			-3.0
	Primer			-3.0
	Spray tanks	LAC, Metal (2)	30	20.0
	Spray Units	Roto-Spray Mfg. Co.	16	8.5
	Chest Strap	Air Assoc.	1	30.0
	REAR SEAT		11	50.0
	REAR STICK		1	30.0
	STALL IND.	S. F. I.	2	-1.0

(WITH SPRAY EQUIPMENT INSTALLED)

CALCULATION OF EXTREME C. G. CONDITIONS

Item	Forward C. G.			Rearward C. G.		
	Wt.	Arm	Mom.	Wt.	Arm	Mom.
Empty						
Oil	9.5		-225	9.5		-225
Fuel	22.5	20	450		20	
Pilot	170	15	2550	170	15	2550
SPRAY SOL.		20		360	20	7200
TOTAL						
C. G. (in.)						
Approved C. G. Limits		12.1"		1470#	16.5"	

REMARKS: Engine Model—
Serial No.—
Propeller Model—
Serial No.—

DATE _____

Civil Aeronautics Administration

Luscombe Airplane Corporation

OPERATION OF THE AIRPLANE

TAKE OFF: Flaps may be used for take-off either 15° or 30° deflected. To obtain the shortest possible take-off distance it is recommended that the airplane be permitted to accelerate to 40 mph before extending the flaps.

LANDING: Landings may be accomplished with or without flaps extended. Extension of the flaps permits a steeper and slower approach speed with a resultant shorter landing roll. When used as a sprayer, it is necessary that at least one-third of the spray solution be expended before landing the airplane in order to bring the landing weight within C.A.A. specifications.

TIRES: Oversize tires (7.00 x 6.00) have been installed on this airplane to increase floatation for operation on soft or loose ground. For this reason, the inflation pressure should be maintained at 15 pounds per square inch. Over inflation will increase the landing shock and tend to overload the landing gear structure.

OPERATION OF THE AIRPLANE

LOADING

It is the responsibility of the pilot to load this airplane in accordance with the weight and balance limitations as specified on Page 8 of this manual. For spray solution loading, the weight of water is approximately 8 lbs. per gallon and the weight of diesel oil approximately 7 lbs. per gallon. Fuel should be restricted according to the weight of spray solution used. The quantity of fuel appearing in the table on Page 8 is based on 45 gallons of water base solution (8 lbs. per gallon) or 51 gallons of oil base solution (7 lbs. per gallon).

SWATH WIDTH

As would be expected the widths of the spray swath varies with the altitude at which the airplane (rotor unit) is flown above the foliage being sprayed. Tables have been computed on Page 12 which show the area covered with various swath widths - 35 feet, 45 feet, and 60 feet. These widths are based on absolute uniform coverage; that is, actual distance between flight rows. Actually there is some feathering at the swath edges which overlap 3 to 5 feet on each side. As specified in these tables, the 35, 45, and 60 foot swath widths are obtained at altitudes of 5, 8 and 12 feet respectively above the foliage with the flaps extended (down). If the particular application does not warrant undercoating of the plants or it is desired to operate at a high rate of speed, it is recommended that the flaps be retracted (up). In such cases the flight altitude should be increased approximately 3 feet to obtain any one of the above mentioned swath widths.

SPRAY CONTROL QUADRANT CALIBRATION

The following tables are used to determine the proper swath, flow setting, and spraying speed for a given coverage (gallons per acre). In order to use these tables: (1) Choose desired spray coverage in gallons per acre in top headings of table, (2) Choose desired swath width and spray speed in side headings. (3) The intersection of the above two lines is the flow setting in gallons per minute.

EXAMPLE:

Assume you want to spray a 45 foot swath at 70 m.p.h. and want to put down 4 gallons per acre.

- (1) Locate 4 gallons per acre in the top line.
- (2) Locate 70 m.p.h. in the 45 foot swath group.
- (3) The figure where the two lines cross is 25.5 gallons per minute.

In order to obtain the above flow in gallons per minute, the quadrant stop should be set at the mark corresponding to the desired gallons per minute. In the above example the stop pointer should be set approximately one half mark past 25.

The quadrant is calibrated directly in gallons per minute for diesel oil or water base fluids.

ACTUAL FLOW IN GALLONS PER MINUTE

		GALLONS PER ACRE											
		$\frac{1}{2}$	1	2	3	4	5	6	7	8	9	10	
35 FOOT SWATH	VELOCITY M.P.H.	50	1.80	3.50	7.10	10.6	14.2	17.7	21.2	24.8	28.3	31.8	35.4
		60	2.10	4.20	8.50	12.7	17.0	21.2	25.4	29.7	34.0		
		70	2.50	5.00	9.90	14.9	19.8	24.8	29.8	34.7			
		80	2.80	5.70	11.3	17.0	22.6	28.3	32.9				
		90	3.20	6.40	12.7	19.1	25.5	31.8					

		GALLONS PER ACRE											
		$\frac{1}{2}$	1	2	3	4	5	6	7	8	9	10	
45 FOOT SWATH	VELOCITY M.P.H.	50	2.30	4.60	9.10	13.6	18.2	22.7	27.3	31.8	36.4	40.9	45.5
		60	2.70	5.50	10.9	16.4	21.8	27.3	32.8				
		70	3.20	6.40	12.7	19.1	25.5	31.8					
		80	3.60	7.30	14.5	21.8	29.1	36.4					
		90	4.10	8.20	16.4	24.5	32.7						

		GALLONS PER ACRE											
		$\frac{1}{2}$	1	2	3	4	5	6	7	8	9	10	
60 FOOT SWATH	VELOCITY M.P.H.	50	3.00	6.10	12.1	18.2	24.2	30.3	36.4	42.4	48.5	54.5	60.6
		60	3.60	7.30	14.5	21.8	29.1	36.4					
		70	4.30	8.50	17.0	25.4	33.9						
		80	4.90	9.70	19.4	29.1	38.8						
		90	5.50	10.9	21.8	32.7							