GWINN I, 2 PCLB, TC 682

Engine	Pobjoy Niagra II
Placard limits	Maximum, except take-off — in. Hg., 3200 rpm (80 hp)
	Take-off (one minute) — in. Hg., 3200 rpm (80 hp)
Propeller	Maximum permissible diameter 84 in.
Placard speeds	Level flight or climb 120 mph Ind.
	Glide or dive 144 mph Ind.
	Flaps extended 90 mph Ind.
Fuel capacity	25 gals. (-5)
Oil capacity	9 qts. (-31)
No. pass.	1 (+10)
Baggage	96 lbs. (+30)
Standard weight	1532 lbs.
C.G. limits	(-2.6) and (0)
Spec. basis	Type Certificate No. 682
Serial Nos.	501 and up eligible (See NOTE A)

EQUIPMENT: (Datum is leading edge of lower wing.)

Class I:

101. Propeller - wooden	23 lbs.	(-61)
102. Generator and control box (Rotax M2AC)	11 lbs.	(-44)
103. Starter (Rotax M3A0)	10 lbs.	(-33)
104. Battery (Reading 6-ARL-11)	31 lbs.	(-31)
105. Heater	7 lbs.	(-33)
106. Landing lights	2 lbs.	(-28)
107. Horns (Klaxon 33-8)	9 lbs.	(-33)
108. Radio (RCA AVR-7)	26 lbs.	(+45)
109. Landing gear:		
(a) Rear wheels (Shinn 60-2B) with 6.00-6 tires	28 lbs.	(-85)
(b) Nose wheel (Shinn 6C3) with 6.00-6 tire	11 lbs.	(-46)
110. Carpets	7 lbs.	
111. Operation and service manual		

Class II:

200. Miscellaneous items as noted in approved weight and balance report.

Class III:

None.

NOTE 1. Serial Nos. 502 and up eligible provided that a C.A.A. inspector determines, prior to certification, that each airplane is satisfactory with respect to the following:

(a) Workmanship, materials, and conformity
  1. Before any covering, metal priming, or final finish is applied. (Woodwork may be varnished.)
  2. After completion
(b) General flight characteristics.
(c) The following structural parts require special inspection or demonstration of strength:
  1. Part R1S001 Interplane Strut Assembling
     Inspection of the lower rear spar attachment lug of the interplane struts for cracks is required.
  2. Part B1E 126 Oleo Strut Attachment Fitting Fuselage
     Part E1E 185 Front Land Gear and Engine Mount Attachment Fittings.
     Part E1L 024 Rear Land Gear Lower Fitting
     The quality of these castings is to be substantiated by proof tests similar to those described in Gwinn Report No. 21 entitled, "Landing Acceleration Tests - Model 1"
  3. Part B1C026 Cockpit Control Unit Interconnecting Link
     Part D1C031 " " " Rear Link
     The quality of these castings is to be substantiated in accordance with test #1 in Gwinn Report No. 29 entitled "Control System Proof and Operating Tests."

GWINN I, 2 PCLB (Continued)

  4. Part D1C043 Flap and Brake Operating Pedal
     The quality of this casting is to be substantiated in accordance with test #3 in Gwinn Report No. 29.
  5. Check wing and stabilizer fabric surfaces for tautness. Also check the adherence of the fabric to the rib capstrips as the lacquer band between the fabric and capstrips constitutes the sole method of attachment.

NOTE 2. Eligible for export as follows, subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (May 27, 1938)
(a) Canada
(b) All other countries except Great Britain and Australia.

HAMILTON H-45, 6 PCLM, ATC 85

Engine	P&W Wasp C1 420 hp
Fuel	140 gals.
Oil	10 gals.
No. pass.	6
Standard weight	5750 lbs.
Spec. basis	Approved Type Certificate No. 85
Serial Nos.	All to 66 eligible

Class III equipment: Washington Aircraft Skis Model 5600

HAMILTON H-47, 6 PCLM or 7 PCSM, ATC 94

Engine	P&W Hornet A-3 525 hp
Fuel	140 gals.
Oil	8½ gals.
No. pass.	6
Baggage	—
Standard weight	Landplane 5750 lbs. Seaplane 6375 lbs.
Spec. basis	Approved Type Certificate No. 94
Serial Nos.	61 to 68. Approval expired 7-1-32.

Class I equipment: (Seaplane) Hamilton G-1 floats.

HAMILTON H-47, 7 PCLM, 2-329

Engine	P&W Hornet 525 hp
Fuel	140 gals.
Oil	10 gals.
No. pass.	6
Baggage	348 lbs. (Fwd. cockpit 170 lbs.; rear cockpit 178 lbs.)
Standard weight	6418 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	45, 48, 50, 52, 54, 56, 62, 63, and 69 eligible

Class I equipment: Battery; Landing and Navigation lights; Radio; 2 flares; Cabin heater.

HAMMOND 100 (FORMERLY PARKS P-1H), 3 POLB, 2-428

Engine	Kinner K-5 100 hp
Fuel	30 gal. (One in fuselage)
Oil	3½ gals.
No. pass.	2
Baggage	42 lbs.
Standard weight	2030 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	201 to 210 eligible

Class I equipment: Battery 9 lbs.; Low pressure tires and brakes; adj. metal prop.

Class III equipment: Wood prop. (Inspector obtain weight)

HAYDEN, CLARK, AND O'DAY W-6 TIME BUILDER, 1 POLM, 2-373

Engine	Salmson 9AD 40 hp
Prop.	Wood
Fuel	10 gals.
Oil	1½ gals.
No. pass.	None
Standard weight	925 lbs.
Spec. basis	Aero Bulletin 7A, Section 3
Serial Nos.	1 only eligible.

HARLOW PC-5A, 2 PCLM, TC 736

Engine	Warner Super Scarab 165-D
Placard limits	Maximum, except take-off, 2100 rpm (165 hp) Take-off (one minute), 2250 rpm (175 hp)
Propeller	Maximum permissible diameter 84 in. (for clearance)
Placard speeds	Level flight or climb 170 mph True Ind. Glide or dive 230 mph True Ind. Flaps extended 105 mph True Ind.
Fuel capacity	34 gals. (One tank center section of wing)(+50)
Oil capacity	4 gals. (-4)
No. pass.	1 (+47) or (+85.5)
Baggage	None
Standard weight	2600 lbs.
C.G. limits	(+44.7)(15% MAC) and (+49.8)(22.3% MAC).
MAC	67.8 In. L.E. MAC (+34.6).
Leveling means	Raise tail until bulkhead aft of rear seat is vertical.
Specification basis	Type Certificate No. 735
Serial Nos.	502 and up eligible (See NOTE A)

Equipment: (Datum is firewall)(* Means net increase)

Class I.

101.	Propeller - Ham.Std. hub 2B20, blades 6135A-18T-6 or 6135A-18T-5. Dia. 7'0" max., 6'10½" min.	101 lbs.	(-32)
102.	Collector ring (Harlow 1961)	12 lbs.	(-13)
103.	Generator (Eclipse Type 309) and control box	22 lbs.	(-8)
104.	Battery (Reading R-33L)	27 lbs.	(-3)
105.	21 in. streamline wheels (Air Assoc. 220-C) with brakes and 6 ply tires	58 lbs.	(+29)
106.	8 in. streamline steerable tail wheel and tire	3 lbs.	(+216)
107.	Two main landing gear shock struts A.P.P.I. 50925	46 lbs.	(+34)
108.	Tail wheel shock strut (Harlow 660)	11 lbs.	(+212)
109.	Carburetor air heater	3 lbs.	(-13)

Class II.

200.	Miscellaneous items as noted in approved weight and balance report.		
201.	Landing lights (S & M 2001)	2 lbs.	(+38)
202.	Starter (Eclipse Type 397 Model 20)	19 lbs.	(-7)
203.	Battery box (Dwg. No. 1210)	2 lbs.	(-3)
204.	Radio receiver and transmitter	39 lbs.	(+74)

Class III.

None.

NOTE A. Prior to original certification, each aircraft must satisfactorily pass:

(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.

(b) A final inspection of the completed aircraft.

(c) A check of flight characteristics.

NOTE 1. Eligible for export as follows, subject to inspection for equipment specified in Chapter XII of Inspection Handbook:

(a) Canada - Landplane
Skiplane - not eligible.

(b) All other countries except Great Britain, Australia and New Zealand.

NOTE 2. The following placards must be conspicuously posted in full view of the pilot:

(a) "Intentional spins prohibited with flaps and/or gear extended."

(b) "To be flown solo from the front cockpit only."

HARLOW PJC-1(See NOTE 3) & PJC-2(Army UC-80),2-4 PCLM,TC 659

Engine — Warner Super Scarab Series 50 or 50A
Engine limits — For all operations, 2050 rpm(145 hp).
Propeller limits (See NOTE 4) — Static rpm at maximum permissible throttle setting - Max. 1780; Min. 1740. Dia.-Max. 84 in.; Min. 84 in.
Airspeed limits — Level flight or climb 159 mph True Ind.; Glide or dive 190 mph True Ind.; Flaps extended 105 mph True Ind.
Fuel capacity — 34 gals. (One tank CS of wing)(+50)
Oil capacity — 4 gals. (-6.5)
No. pass. — 1 (+46) and 2 (+86) (when item 208 is installed)
Baggage — 80 lbs. (Aft of pilot's seat) (+77) (See items 208 & 301)
Standard weight — 2600 lbs. (See NOTE 4)
C.G. range — (+45.2)(15.6% MAC) to (+52.7)(26.6% MAC)
MAC — 67.8 in. L.E. MAC (+34.6)
Leveling means — Raise tail until front wing shear beam is vertical
Cert. basis — Type Certificate No. 659
Serial Nos. — 1 and up eligible per NOTE A and all AAF Nos.
Equipment: (Datum is firewall)(*Means net increase)

Class I.

101. Propeller - fixed pitch metal (Curtiss 55518-1 or -4)	47 lbs.	(-31.5)
102. Collector ring - Solar 12-413	14 lbs.	(-16)
103. Generator (Eclipse Type 309) and control box	24 lbs.	(-10)
104. Battery (Reading R-33L)	27 lbs.	(-3)
105. 21 in. streamline wheels (Air Assoc. 220-C) with brakes and 6 ply tires	58 lbs.	(+29)
106. 8 in. streamline steerable tail wheel and tire	3 lbs.	(+216)
107. Two main landing gear shock struts A.P.P.I. 50925	46 lbs.	(+34)
108. Tail wheel shock strut (Dwg. No.660)	11 lbs.	(+212)
109. Carburetor air heater	5 lbs.	(-15)

Class II.

200. Miscellaneous items as noted in approved weight and balance report.		
201. Cabin heater (Dwg. No. 1064)	4 lbs.	(-6)
202. Landing lights (S & M 2001)	1 lb. ea.	(+38)
203. Starter (Eclipse Y-150)	16 lbs.	(-4)
204. Battery box (Dwg. No. 1210)	4 lbs.	(-3)
205. Generator - Electrical Development Type B-15 - 15 Amp. 12 V.	11 lbs.	(-10)
206. Starter (Electrical Development Type 109N3 12V)	23 lbs.	(-6.5)
207. Battery pan (Dwg. No. 1091)		
208. Rear seat (Dwg No. 1386)(replaces baggage compartment)	19 lbs.	(+88)

Class III.

301. Baggage compartment (130 lbs. capacity replacing std. compt.)(Dwg. No. 1096)		(+71)

NOTE A. Prior to original certification, each aircraft manufactured for civil use, must satisfactorily pass:
(a) An inspection for workmanship, materials and conformity before final assembly.
(b) A final inspection of the completed aircraft.
(c) A check of flight characteristics.

NOTE 1. Eligible for export as follows, subject to inspection for equipment specified in Chapter XII of Inspection Handbook:
(a) Canada - Landplane
Skiplane - not eligible
(b) All other countries except Great Britain, Australia and New Zealand.

NOTE 2. The following placard must be conspicuously posted in full view of the pilot:"Intentional spins prohibited with flaps and/or gear extended."

NOTE 3. Approval of model PJC-1 expired July 26, 1940. No aircraft of this model in existence.

NOTE 4. Also eligible at a standard weight of 2486 lbs., with the following propeller limits:
Static rpm at maximum permissible throttle setting - Max. 1780; Min. 1690

HARTMANN OW5M (Formerly WELCh), 2 PCLM, TC 637
(Manufacturer Hartmann Aircraft Corp., Jordan, N.Y.)

Engine — Continental A-40-4 (See NOTE 1).
Fuel — 73 min. oct. aviation gasoline.
Engine limits — For all operations, 2575 rpm (40 hp)
Airspeed limits — Level flight or climb 75 mph True Ind.; Glide or dive 90 mph True Ind.
Propeller limits — Max. permissible dia. 77 in.
C.G. range — (+17.3) to (+19.5)
Datum — Leading edge of wing
Standard weight — 950 lbs.

HARTMANN OW5M, (Formerly Welch), CONTINUED

No. seats — 2
Baggage — 9 lbs. (behind seat)
Fuel capacity — 9 gals. (Two 4½ gal. tanks in wing L.E.)
Oil capacity — 1 gal. (Engine sump)
Serial Nos. eligible — 115 and up (See NOTE A)
Required equipment — Items 101, 102, 103
Certification basis — Type Certificate No. 637(Aero. Bulletin 7A requirements)
Production basis — None (See NOTE A)
Eligible for export to all countries except Great Britain, Canada, Australia and New Zealand
Equipment: (Items included under "Required equipment" may not be removed unless replaced by approved equivalent items. The effect upon balance of all equipment changes must be computed and the aircraft operation record revised accordingly. Values in inches shown in parenthesis after each item represent horizontal arms to the C.G. of the item measured minus (-) ahead and plus (+) to the rear of the datum. A plus (+) or minus (-) sign preceding the weight of an optional item indicates the net weight change between that item and the equivalent required item.)
Propellers and Propeller Accessories
103. Propeller-wood (fixed or adj. pitch)
Landing Gear and Floats

101. 16x7-3 wheels (Goodyear 3NBA)	12 lbs.
102. 6x2.00 tail wheel	
303. Hartmann Model "C" (formerly Welch) cushion wheel	-1 lb.

Miscellaneous (Not listed above)

200. Miscellaneous items as noted in approved weight and balance report.	
301. Parachutes (1 or 2)	20 lbs. ea.
302. Streamlined lift struts	-12 lbs. (approx.)
303. Skis	Use actual weight change.

(a) Heath 725

NOTE A. Prior to original certification, each aircraft must satisfactorily pass:
(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.
(b) A final inspection of the completed aircraft.
(c) Check of the flight characteristics.

NOTE 1. No aircraft of this model shall be eligible for original certification with single ignition engines after August 1, 1941. In addition, no aircraft of these models shall be eligible for recertification with single ignition engines unless such aircraft were either previously certificated with single ignition engines or were originally certificated prior to August 1, 1941.

HERSE SERIES III RWD13, 3 PCLM, 2-561

Engine — D. H. Gypsy Major Series 1
Engine limits — For all operations, 2100 rpm (120 hp)
Propeller limits — Static rpm at max. permissible throttle setting - Max. 2050; Min. 1950. Diameter - Max. 97 in.; Min. 77 in.
Airspeed limits — Level flight or climb 117 mph True Ind.; Glide or dive 140 mph True Ind.
Fuel capacity — 38 gals. (Two tanks, one 19 gal. tank in each wing) (+26)
Oil capacity — 3 gals. (-13)
No. pass. — 1 front (+128), 1 rear (+163). Pilot at (+128)
Baggage — None
Standard weight — 1962 lbs.
C.G. range — (+23)(36.5% MAC) to (+27.4)(43.55% MAC)
MAC — 63 in.
Leveling means — Use motor bearer tubes (motor mount) between engine supports.
Cert. basis — CAR 04.031
Serial Nos. — 158 and 159 only eligible
EQUIPMENT: (Datum is the wing leading edge at the first rib outboard of the gull section.)

Class I.

101. Starter - direct electric		(-12)
102. Battery and container	35 lbs.	(+77)
103. 7.25-7-3/4 wheels (Dunlop) and tires		(+8)
104. Tail wheel	2.5 lbs.	(+220)
105. Propeller - wood (fixed pitch)		(-54)

Class II & III. None

NOTE 1. The following placard must be displayed on instrument panel; "INTENTIONAL ACROBATICS PROHIBITED."

HOWARD DGA-8, 5 PCL-SM, TC 612

Engine	Wright R760E-2
Placard limits	Maximum, except take-off -- in. Hg., 2200 rpm (320 hp) Take-off (one minute) -- in. Hg., 2400 rpm (350 hp)
Placard speeds	(Landplane) Level flight or climb 202 mph True Ind. Glide or dive 288 mph True Ind. Flaps extended 108 mph True Ind. (Seaplane) Level flight or climb 190 mph True Ind. Glide or dive 270 mph True Ind. Flaps extended 108 mph True Ind.
Fuel capacity	97 gals. (Two tanks in fuselage: Main 60 gals. (+28) and rear 37 gals. (+61)) (See NOTE 1)
Oil capacity	8 gals. (-30)
No. pass.	4 (Front +13.8), rear (+56.3))
Baggage	120 lbs. (Compt. aft of rear seats)(+84)
Weights	Empty Use actual (Seaplane approx. 336 lbs. increase over landplane) Standard (Landplane) 3800 lbs. (Seaplane) 3899 lbs.
C.G. limits	(Landplane) (+6.3) and (+19.0) (Seaplane) (+7.6) and (+14.5)
Spec. basis	Type Certificate No. 612 (Aero. Bulletin 7A requirements)
Serial Nos.	71 and up eligible per NOTE A

EQUIPMENT: (Datum is wing leading edge)(* Means net increase)(See NOTE 3)

Class I:

(a) Landplane

101. Engine ring cowl	35 lbs.	(-50)
102. Starter (Eclipse E-80)	25 lbs.	(-35)
103. Generator (Eclipse G)	17 lbs.	(-34)
104. Wheel streamlines	18 lbs.	(+4)
105. Battery (Exide 6TS-13-1) (In engine compt.)	38 lbs.	(-29)
106. 10.5 in. streamline tail wheel (Goodrich)	7 lbs.	(+194)
107. 7.50-10 wheels (Goodyear 10HBM) with 7.50-10 6-ply tires (Wheels must be placarded for these tires)	70 lbs.	(0)
108. Propeller - controllable metal (Ham. Std. hub 2B20, blades 6135A-12 or 6109A-12) (Low pitch setting - landplane 14°)	107 lbs.	(-68)

(b) Seaplane: Items 101, 102, 103, 105, 108, 207 PLUS

151. Edo 39-4000 floats with water rudders	545 lbs.	(-21)
152. Seaplane fin under fuselage	12 lbs.	(+171)
153. Large fin and rudder	6 lbs.*	(+165)

Class II:

200. Miscellaneous items as noted in approved weight and balance report.		
201. Landing lights		
(a) One or two (Grimes retractable ST-250)	3.5 lbs.ea.	(+19)
(b) One or two (Grimes retractable ST-1000)	3.0 lbs.ea.	(+19)
202. Radio, variable (location and actual weight of installation including controls, etc., or name of manufacturer and model if already installed and included in the actual empty weight, should be noted on Inspector's report).		
203. Flares (a) Three 1½ minute	21 lbs.	(+80)
(b) Four 1½ minute	24 lbs.	(+80)
204. Heater	4 lbs.	(-28)
205. Miscellaneous extra instruments	5 lbs.	(-15)
206. Seaplane fittings	7 lbs.	(+20)
207. 7.50-10 wheels (Hayes 750A or Goodyear 10MBM)	No change in weight	
208. Fuel tanks		
(a) Front fuselage tank--43 gals.	19 lbs.	(-10)
(b) Main fuselage tank--97.5 gals. (replacing standard 60 gal. tank)	3 lbs.*	(+23)
(c) Front fuselage tank--30 gals.	17 lbs.	(-10)

HOWARD DGA-8 (Continued)

209. 11 gal. oil tank (May be placarded for less capacity when used with various fuel capacities)	2 lbs.*	(-30)
210. Constant speed propeller control	5 lbs.	(-34)
211. Pressure fire extinguisher		(-27) or(+14)
(a) (Pyrene 52)	10 lbs.	
(b) (Lux)	19 lbs.	
(c) (2 Pyrene C62)	12 lbs.	
212. Generator (a) (Eclipse Type D)	23 lbs.	(-34)
(b) (Eclipse E-6)(with control box)	35 lbs.	(-29)
213. Cambridge exhaust analyzer	11 lbs.	(-22)
214. Built-in parachutes (rear)	20 lbs. ea.	(+57)
215. Vacuum pump (Romec B2A)	4 lbs.	(-34)
216. Battery (Reading 6AR9)	43 lbs.	(-28)

Class III:

301. Tail wheels		
(a) 10.5 in. streamline steerable (per Dwg. D-13-02, change C)	No change in weight	
(b) 10 in. smooth countour	No change in weight	
302. Built-in parachutes (front)	20 lbs. ea.	(+15)

NOTE A. Each aircraft manufactured after Nov. 12, 1940, must, prior to original certification, satisfactorily pass:

(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.

(b) A final inspection of the completed aircraft.

(c) A check of the flight characteristics.

NOTE 1. Fuel tanks and fuel selector valves must be placarded as shown in pertinent weight and balance report.

NOTE 2. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (Aug. 7, 1941)

(a) Canada - Landplane
Skiplane - not eligible
Seaplane - maximum standard weight 3899 lbs.

(b) All other countries except Great Britain, Australia and New Zealand.

NOTE 3. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in Class I or Class II equipment.

HOWARD DGA-9, DGA-12, 5 PCLM, TC 645

I - SPECIFICATIONS PERTINENT TO ALL MODELS:

Propeller	Maximum permissible diameter 110 in.
No. pass.	4 (Front +14, rear +56)
Baggage	120 lbs. (Compt. aft or rear seats)(+84)
C.G. limits	(+6.3) and (+19.0) (Propeller hub and bottom longeron at tail post same height above ground for leveling)
Spec. basis	Type Certificate No. 645 (Aero. Bulletin 7A requirements)

EQUIPMENT: (Datum is wing leading edge)(* Means net increase)(See NOTE 4)

		DGA-9	DGA-12
Class I:			
101.	Propeller - fixed metal (Curtiss 55501)	56 lbs. (-77)	(-66)
102.	Battery (Exide 6TS-13-1)	38 lbs. (-29)	(-29)
103.	Starter (Eclipse E-80)	26 lbs. (-48)	(-37)
104.	Generator (Eclipse 3171)	17 lbs. (-48)	(-37)
105.	Fuel pump		
	(a) Romec D2-2-RD1562	5 lbs. (-47.5)	--
	(b) Pesco R-300 B-L-H	5 lbs. --	(-38)
106.	Engine ring cowl	35 lbs. (-63)	(-50)
107.	7.50-10 wheels (Goodyear 10HBM) with 7.50-10 6-ply tires (Wheels must be placarded for these tires)	70 lbs. (0)	(0)
108.	10. in. smooth contour tail wheel (Goodyear) with tire	5 lbs. (+194)	(+194)
109.	Engine shielding		
Class II:			
200.	Miscellaneous items as noted in approved weight andbalance report.		
201.	Dual ignition engines		
	(a) L-5M or L-5MB	15 lbs.*(-60)	--
	(b) L-6M or L-6MB	15 lbs.* --	(-48)
202.	Parachute flares		
	(a) Three 1½ minute	17 lbs. (+80)	(+80)
	(b) Four 1½ minute	21 lbs. (+80)	(+80)
203.	Heater and ventilator (Carburetor and cabin)	7 lbs. (-30)	(-28)
204.	Fuel tanks		
	(a) Front fuselage tank - 30 gals.	17 lbs. (-10)	(-10)
	(b) Rear fuselage tank- 37 gals.	21 lbs. (+61)	--
205.	Radio, variable (location and actual weight of installation including controls, etc., or name of manufacturer and model if already installed and included in the actual empty weight, should be noted on Inspector's report).		
206.	(a) Controllable metal propeller (Ham. Std. hub 2B20, blades 6135A)	52 lbs.*(-77)	(-66)
	(b) Constant speed control (low pitch setting 12°)	5 lbs.*(-46)	(-35)
207.	Pressure fire extinguishers		(-27)or(+14)
	(a) (Pyrene 52)	10 lbs.	
	(b) (Lux 5C)	19 lbs.	
	(c) (2 Pyrene C62)	12 lbs.	
208.	Generator (Eclipse D-15-25)	6 lbs.*(-48)	(-37)
209.	Vacuum pump (Romec B-2A)	4 lbs. (-34)	(-38)
210.	Battery (Reading 6AR9)	5 lbs.*(-29)	(-29)
211.	Exhaust gas analyzer (Cambridge)	11 lbs.*(-22)	(-22)
212.	Built-in parachutes (rear)	20 lbs. ea. (+57)	(+57)
Class III:			
301.	Wheels	(0)	(0)
	(a) 7.50-10 (Hayes 750A)	8 lbs.*	
	(b) 7.50-10 (Goodyear 10MBM)	4 lbs.*	
	(c) 6.50-10 (Hayes 651A)	4 lbs.*	
	(d) 6.50-10 (Hayes 651M)	Net decrease 2 lbs.	
302.	10.5 in. streamline tail wheel with tire	2 lbs.* (+194)	(+194)
303.	Wheel streamlines	18 lbs. (+4)	(+4)
304.	Landing lights(Grimes ST-250)	7 lbs. (+22)	(+22)
305.	Special cabin door (left)	5 lbs. (+36)	(+36)
306.	Built-in parachutes (front)	20 lbs. ea. (+15)	(+15)

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HOWARD DGA-9, DGA-12 (Continued)

NOTE A. Each aircraft manufactured after Nov. 12, 1940, must, prior to original certification, satisfactorily pass:
(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.
(b) A final inspection of the completed aircraft.
(c) A check of the flight characteristics.

NOTE 1. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (August 7, 1941)
(a) Canada - Landplane
Skiplane - not eligible
(b) All other countries except Australia, Great Britain and New Zealand.

NOTE 2. Standard weight (DGA-9) may be increased to 3800 lbs. when item 206 (a) is installed and airplane is placarded as follows: "Flaps must be fully extended for take-off when standard weight exceeds 3600 lbs."

NOTE 3. Fuel tanks and selector valves must be placarded as shown in pertinent weight and balance reports.

NOTE 4. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in Class I or Class II equipment.

II - MODEL DGA-9 DESIGNATION 5 PCLM:
(Same as DGA-8 except engine installation, equipment, and placard speeds)

Engine	Jacobs L-5 (See item 201a)
Placard limits	Maximum, except take-off -- in. Hg., 2000 rpm (285 hp) Take-off (one minute) -- in. Hg., 2000 rpm (285 hp)
Placard speeds	Level flight or climb 191 mph True Ind. Glide or dive 288 mph True Ind. Flaps extended 108 mph True Ind.
Fuel capacity	60 gals. (One tank in fuselage)(+28)
Oil capacity	8 gals. (-30)
Standard weight	3600 lbs. (See NOTE 2)
Serial Nos.	200 and up eligible per NOTE A

III - MODEL DGA-12 DESIGNATION 5 PCLM:
(Same as DGA-8 except engine installation, equipment, placard speeds and minor structural changes)

Engine	Jacobs L-6 (See item 201b)
Placard limits	Maximum, except take-off (Sea level) 24.5 in.Hg.,2100 rpm(300hp) (3700 ft.) 23.5 in.Hg.,2100 rpm(300hp) Take-off (one minute) 26 in. Hg., 2200 rpm (330 hp)
Placard speeds	Level flight or climb 191 mph True Ind. Glide or dive 284 mph True Ind. Flaps extended (45°) 108 mph True Ind.
Fuel capacity	97 gals. (Two tanks in fuselage: Rear 37 gals. (+61), main 60 gals. (+28)) (See NOTE 3)
Oil capacity	8 gals. (-30)
Standard weight	3800 lbs.
Serial Nos.	400 and up eligible per NOTE A

HOWARD DGA-11, 5 PCLM, TC 672

Engine	P&W Wasp Jr. SB with one 4½ N and one 9 N damper
Fuel	80 min octane (CFR) (87 min. for take-off)
Placard limits	Maximum, except take-off (Sea level) 34.5 in.Hg.,2200 rpm(400 hp) (Straight line manifold pressure variation with altitude to 5000 ft.) 33.5 in.Hg., 2200 rpm (400 hp)
	Take-off (one minute) 36.5 in.Hg.,2300 rpm(450 hp)
Propeller	Maximum permissible diamter 103 in.
Placard speeds	Level flight or climb 200 mph True Ind.
	Glide or dive 270 mph True Ind.
	Flaps extended 108 mph True Ind.
Fuel capacity	97 gals. (Two tanks: One main tank 60 gals. (+28), one auxiliary tank 37 gals. (+61))
Oil capacity	8 gals. (-30)
No. pass.	4 (Front +14, rear +56)
Baggage	120 lbs. (Compt. aft of rear seats)(+84)
Standard weight	4100 lbs.
C.G. limits	(+10.2) and (+20.6)
Spec. basis	Type Certificate No. 672 (Aero. Bulletin 7A requirements)
Serial Nos.	71 and up eligible per NOTE A. (See also NOTE 2)

EQUIPMENT: (Datum is wing leading edge)(*Means net increase)(See NOTE 3)

Class I:

101.	Engine ring cowl (See NOTE 2)	35 lbs. (-39.5)
102.	10.5 in. streamline steerable tail wheel (Goodrich)	7 lbs. (+194)
103.	7.50-10 wheels (Goodyear 10HBM) with 8.50-10 6-ply tires (Wheels must be placarded for these tires)	76 lbs. (+38)
104.	Propeller - Ham.Std. Hub 2D30, blades 6095A-15, 6095A-16, 6167A-15, or 6167A-16. For interchangeable blade models see Propeller Specification No. 206 (NOTE 6). Dia. 8'3-1/8" max., 8'7/8" min.	154 lbs. (-62)
105.	Oil cooler (G & O Model B-2617-1)	15 lbs. (-28)

Class II:

200.	Miscellaneous items as noted in approved weight and balance report.	
201.	Starter (Eclipse F-141-M-2394)	25 lbs. (-29)
202.	Generators (a) (Eclipse G)	17 lbs. (-34.5)
	(b) (Eclipse D)	23 lbs. (-34.5)
203.	Wheel streamlines	24 lbs. (+5)
204.	Batteries	
	(a)(Exide 6TS-13-1)(Aft of baggage compt.)	38 lbs. (+104)
	(b) (Reading 6AR9)	43 lbs. (+104)
205.	One or two landing lights (Grimes)	4 lbs. ea. (+19)
206.	Heater (Cabin and carburetor)	7 lbs. (-39)
207.	Flares (Four 1½ minute)	21 lbs. (+80)
208.	Front fuselage fuel tank - 30 gals.	17 lbs. (-10)
209.	Constant speed propeller control	5 lbs.(-32)
210.	Pressure fire extinguisher	12 lbs. (-27)or(+14)
211.	Radio, variable(location and actual weight of installation including controls, etc., or name of manufacturer and model if already installed and included in the actual weight empty, should be noted on inspector's report)	
212.	Cambridge exhaust analyzer	11 lbs. (-22)
213.	Built-in parachutes (rear)	20 lbs. ea.(+57)
214.	Vacuum pump (Romec P2A)	4 lbs. (-36)
215.	Miscellaneous extra instruments	5 lbs.(-10)

Class III:

301.	Built-in parachutes (front)	20 lbs.ea. (+15)
302.	10.5 in. streamline steerable tail wheel (per Dwg. D-13-02, change C)	No change in weight

CAA - 21446

HOWARD DGA-11 (Continued)

NOTE A. Each aircraft manufactured after Nov. 12, 1940 must, prior to original certification, satisfactorily pass:

(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.

(b) A final inspection of the completed aircraft.

(c) A check of the flight characteristics.

NOTE 1. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook:

(a) Canada - Landplane
Skiplane - not eligible

(b) All other countries except Great Britain, Australia and New Zealand.

NOTE 2. Serial Nos. 302 and up incorporate modified engine cowl, electrical equipment, instrument panel, and minor structural changes.

NOTE 3. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in Class I or Class II equipment.

NOTE 4. Fuel tanks and fuel selector valves must be placarded as shown in pertinent weight and balance report.

CHAPTER XVIII

INLAND B-400, 2 POLM, ATC 343

Engine	Warner Scarab Jr. 90 hp
Fuel	24 gals.
Oil	2 gals.
No. pass.	1
Baggage	25 lbs. (Pay load includes 2 parachutes 20 lbs. each)
Standard weight	1466 lbs.
Spec. basis	Approved Type Certificate No. 343
Serial Nos.	B-401 to B-409 eligible

Class III equipment: Starter (electric) 45 lbs.

INLAND S-300, 2 POLM, ATC 259

Engine	Rearwin LeBlond 5D 65 hp
Propeller	Wood
Fuel	24 gals.
Oil	2 gals.
No. pass.	1
Baggage	25 lbs.
Standard weight	1292 lbs.
Spec. basis	Approved Type Certificate No. 259
Serial Nos.	S-300 to S-316 and W-516-S eligible

INLAND S-300-E, 2 POLM, ATC 342

Engine	Rearwin LeBlond 70 5DE or 5E 70 hp
Propeller	Wood
Fuel	24 gals.
Oil	2 gals.
No. pass.	1
Baggage	5 lbs.
Standard weight	1290 lbs.
Spec. basis	Approved Type Certificate No. 342
Serial Nos.	S-302 to S-315 eligible.

INLAND W-600, 2 PCLM, ATC 316

Engine	Warner Scarab 125 hp
Fuel	31 gals. (See NOTE 1)
Oil	3 gals.
No. pass.	1
Baggage	25 lbs.
Standard weight	1490 lbs.
Spec. basis	Approved Type Certificate No. 316
Serial Nos.	W-305 to W-518 eligible

NOTE 1. Also eligible with revised engine mount and chassis with brake installation provided fuselage fuel tank (capacity 7 gals.) is removed in order to retain approved weights.

INTERNATIONAL F-17, 3 POLB, ATC 35

Engine	Curtiss OX5 90 hp or OXX6 102 hp
Fuel	40 gals.
Oil	3½ gals.
No. pass.	2
Baggage	--
Standard weight	2100 lbs.
Spec. basis	Approved Type Certificate No. 35
Serial Nos.	1 to 39 eligible

INTERNATIONAL-HEATH CMA-40, 1 POLM, ATC 496

Engine	Continental A-40 37 hp
Propeller	Wood
Fuel	7½ gals.
Oil	3/4 gal.
No. pass.	None
Baggage	None
Standard weight	675 lbs.
Spec. basis	Approved Type Certificate No. 486
Serial Nos.	C-50 and up mfrd. prior to 12-1-35 eligible. Approval expired as of that date due to sale to E.H. Anthony (Heath Aviation Company), Benton Harbor, Michigan.

Class III equipment: 7.00-4 wheels (Heath or Shimm), no change in weights.

INTERNATIONAL-HEATH LMA-40, 1 POLM, ATC 487

Engine	Continental A-40 37 hp
Propeller	Wood
Fuel	9 gals.
Oil	1 gal.
No. pass.	None
Baggage	4 lbs.
Standard weight	700 lbs.
Spec. basis	Approved Type Certificate No. 487
Serial Nos.	160 and up mfrd. prior to 12-1-35 eligible. Approval expired as of that date due to sale to E. H. Anthony (Heath Aviation Company), Benton, Harbor, Michigan

Class III equipment: (* Means net increase) 7.00-4 wheels and tires 2 lbs.*; Brakes 4 lbs.*

NOTE 1. Eligible with or without aileron gap fairing strip.

INTERNATIONAL-HEATH LMB-4, 1 POLM, ATC 456

Engine	Heath B-4 25 hp
Fuel	9 gals. (Two tanks - one 4½ gal. tank in each wing)(See NOTE 2)
Oil	1½ gals.
No. pass.	None
Baggage	16 lbs.
Standard weight	700 lbs.
Spec. basis	Approved Type Certificate No. 456
Serial Nos.	150, 154, 156 and up mfrd. prior to 12-1-35 eligible. Approval expired as of that date due to sale to E. H. Anthony (Heath Aviation Company), Benton Harbor, Mich. (See NOTES 1 and 2)

EQUIPMENT: (* Meant net increase)

Class I: Wood propeller.

Class III: Wheel brakes 4 lbs.; Hand starter 4 lbs.; Propeller - fixed metal 2 lbs.*; 7.00-4 wheels and tires (Shimm) 2 lbs.*

NOTE 1. (a) Serial Nos. 160 and up have revised aileron but do not have aileron gap fairing strip. (These aircraft also have raised wing. Vertical distance from lower front cabane strut bolt to bottom of front spar is 24 inches.)

(b) Serial Nos. 150, 154, 156, 157, 158 and 159 have aileron gap fairing strip installed and the following:

Fuel	6 gals.
Baggage	None
Standard weight	675 lbs.

Equipment: Brakes 4 lbs.; Hand starter 3½ lbs.; fixed metal propeller and 7½ lbs. other equipment not affecting flight characteristics.

INTERSTATE S-1 CADET, 2 PCLM, 2-568

Engine	Continental A-80-8
Placard limits	Maximum, except take-off -- in. Hg., 1900 rpm (80 hp) Take-off (one minute) -- in. Hg., 1900 rpm (80 hp)
Propeller	Static rpm at maximum permissible throttle setting - not more than 1700 rpm not less than 1700 rpm Diameter - not more than 84 in. not less than 74 in.
Placard speeds	Level flight or climb 100 mph True Ind. Glide or dive 186 mph True Ind.
Fuel capacity	12 gals. (One tank in fuselage)(-19)
Oil capacity	1 gal. (-44)
No. pass.	1 (+36) (Pilot (+7.7) or (+88)) (See NOTE 2)
Baggage	None
Standard weight	1150 lbs.
C.G. limits	(+14.2)(22.3% MAC) and (+16.8) (26.1% MAC) Leveling means: Raise tail until fuselage tube at door sill is level. L.E. of MAC (+0.66). MAC is 60.8 in.
Spec. basis	CAR 04.021
Serial Nos.	1 only eligible

EQUIPMENT: (Datum is wing leading edge at side of fuselage)(+ Means nst increase)

Class I:

101. Propeller - wood (fixed or adj. pitch) and hub	17 lbs.	(-65)
102. 6.00-6 wheels (Shimm SCSWFB) with brakes and 2 ply tires	34 lbs.	(-1.6)
103. Steerable tail wheel and tire (Interstate Dwg. 5002)	3 lbs.	(+178)
104. Carburetor air heater (Interstate Dwg. 6010)	1 lb.	(-44)

Class II:

200. Miscellaneous items as listed under this number on approved equipment list in Aircraft Operation Record.		

Class III:

301. Cabin heater	1 lb.	(-42)

NOTE 1. Eligible for export as follows, subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (10-31-40)
(a) Canada - Landplane
Skiplane - not eligible
(b) All other countries except Great Britain and Australia.

NOTE 2. Placard front cockpit, "Solo flying from rear seat only."

SUPERSEDES A-1098

KELLETT KD-1, KD-1A, KD-1B, TC 712

I - SPECIFICATIONS PERTINENT TO ALL MODELS:

Spec. basis — Type Certificate No. 712 (Aero. Bulletin 7A requirements)

EQUIPMENT: (Datum is center line of Station 1L (lower engine mount attachment to fuselage)) (* Means net increase)

Class I:

101.	Propeller - fixed metal	54 lbs. (-50)
	(a) Curtiss-Reed 55501 (For KD-1 and KD-1B)	
	(b) Curtiss-Reed 55501-5 (for KD-1A)	
102.	7.00-5 wheels (Hayes) with brakes and tires	33 lbs. (-20)
103.	10.5 in. streamline tail wheel (Bendix B) and tire	6 lbs. (+172)
104.	Starter	
	(a) (Heywood) (For KD-1)	32 lbs. (-18)
	(b) (Eclipse E-80) (For KD-1A and KD-1B)	18 lbs. (-19)
105.	Battery - 12 volt (Reading) and box	31 lbs.(-5)
106.	Generator	
	(a) 15 amp. (Eclipse LV-180) (for KD-1 and KD-1B)	15 lbs. (-21)
	(b) 15 amp. (Leece-Neville D-3) (for KD-1A)	16 lbs. (-21)

Class II:

200.	Misc. items as noted in approved weight and balance report	

Class III:

301.	Flexible pylon installation	10 lbs.
302.	Radio (Model KD-1A only)	40 lbs. (+2)

NOTE A. Each aircraft manufactured after Jan. 14, 1941 must, prior to original certification, satisfactorily pass:

(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied.

(b) A final inspection of the completed aircraft.

(c) A check of flight characteristics.

NOTE 1. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (April 4, 1941)

(a) Canada - Landplane
Skiplane - not eligible.

(b) All other countries except Australia, Great Britain and New Zealand.

NOTE 2. Prior to original certification, the firewall of Model KD-1A aircraft must be brought up to current requirements. Facing forward side of existing firewall with 1/8 in. asbestos firmly secured and finished with oil and moisture-proof paint will be considered the equivalent of current requirements.

NOTE 3. Placard front cockpit on Model KD-1A, "Solo flying from rear seat only."

II - MODEL KD-1 DESIGNATION 2 POLAg:

Engine	Jacobs L-4MA
Placard limits	Maximum, except take-off -- in. Hg., 2000 rpm (225 hp) Take-off (one minute) -- in. Hg., 2200 rpm (245 hp)
Propeller	Maximum permissible diameter 106 in.
Placard speed	Never exceed 126 mph True Ind.
Fuel capacity	48 gals. (Two fuselage tanks at 24 gals. each)(+24)
Oil capacity	4 gals. (-8)
No. passengers	1 (+31), pilot at (+66)
Baggage	30 lbs. (+86)
Standard weight	2250 lbs.
C.G. limits	(+9.2) and (+13.8)
Serial Nos.	101 and up eligible per NOTE A

III - MODEL KD-1A DESIGNATION 2 POLAg:
(Same as U. S. Army Air Corps Model G-1B)

Engine	Jacobs L-4-MA7
Placard limits	Maximum, except take-off -- in. Hg., 2000 rpm (225 hp) Take-off (one minute) -- in. Hg., 2200 rpm (245 hp)
Propeller	Maximum permissible diameter 106 in.
Placard speed	Never exceed 126 mph True Ind.
Fuel capacity	30 gals. (Two fuselage tanks at 15 gals. each)(+17)
Oil capacity	4 gals. (-8)
No. passengers	1 (+31) or (+66) (See NOTE 3)
Baggage	30 lbs. (+86)
Standard weight	2400 lbs.
C.G. limits	(+9.2) and (+14.4)
Serial Nos.	101 to 106, inclusive, and 108 eligible per NOTES A and 2

IV - MODEL KD-1B DESIGNATION 1 PCLAg:
(Same as KD-1 except desig., std. weight and minor structural changes)

Engine	Jacobs L-4MA
Placard limits	Maximum, except take-off -- in. Hg., 2000 rpm (225 hp) Take-off (one minute) -- in. Hg., 2200 rpm (245 hp)
Propeller	Maximum permissible diameter 106 in.
Placard speed	Never exceed 126 mph True Ind.
Fuel capacity	30 gals. (Two fuselage tanks at 15 gals. each)(+17)
Oil capacity	4 gals. (-8)
No. passengers	None
Baggage	300 lbs. (Front pit)(+18) 20 lbs. (Aft of pilot)(+93)
Standard weight	2400 lbs.
C.G. limits	(+9.8) and (+14.4)
Serial Nos.	101 and up eligible per NOTE A

KELLETT K-2-A, 2 PO-CLAg, 2-431

Engine	Continental R-670 210 hp
Fuel capacity	35 gals. (One in fuselage 28 gals. and one in fuselage 7 gals.)
Oil capacity	5 gals.
No. pass.	1
Baggage	25 lbs. (Pay load includes 32 lbs. for parachutes - 40 lbs. less 8 lbs. for sea cushion removed.)
Standard weight	2265 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	1 to 12 eligible

EQUIPMENT: (* Meansnet increase)

Class I: Battery (hot shot); Starter (Heywood) 29 lbs.; Low pressure tires; Propeller - fixed metal.

Class III: Nose skid 10 lbs., Cockpit enclosure 19 lbs.; Propeller - adj. metal 16 lbs.*

KELLETT K-3, 2 PO-CLAg, ATC 471

Engine	Kinner C-5 210 hp
Fuel capacity	35 gals.
Oil capacity	5 gals.
No. pass.	1
Baggage	25 lbs. (Pay load includes 2 parachutes 20 lbs. each)
Standard weight	2400 lbs.
Spec. basis	Approved Type Certificate No. 471
Serial Nos.	2, 12, 14 and up mfrd. prior to 9-30-39 eligible. Approval expired as of that date.

EQUIPMENT: (* Means net increase)

Class I: Battery (2 dry cell); Starter (Heywood); 7.50-10 tires; Propeller - adj. metal.

Class III: Cockpit enclosure 24 lbs.; Nose skid 10 lbs.

KEYSTONE LOENING C-2-C, 8 PCAmB, ATC 90

Engine	Wright Cyclone R-1750 525 hp
Fuel	140 gals.
Oil	10 gals.
No. pass.	6
Baggage	81 lbs.
Standard weight	6250 lbs.
Spec. basis	Approved Type Certificate No. 90
Serial Nos.	All mfrd. prior to 9-30-39 eligible. Approval expired as of that date.

KEYSTONE LOENING C-2-H, 8 PCAmB, ATC 91

Engine	P&W Hornet A 525 hp
Fuel	140 gals.
Oil	10 gals.
No. pass.	6
Baggage	81 lbs.
Standard weight	6250 lbs.
Spec. basis	Approved Type Certificate No. 91
Serial Nos.	All mfrd. prior to 9-30-39 eligible. Approval expired as of that date.

KEYSTONE K-84 COMMUTER, 4 PCAmB, ATC 219

Engine	Wright R-975 330 hp
Fuel	70 gals.
Oil	6-1/2 gals.
No. pass.	3
Baggage	89 lbs. incl. anchor 35 lbs. and rope 5 lbs.
Standard weight	4270 lbs.
Spec. basis	Approved Type Certificate No. 219
Serial Nos.	302 to 336, 339 and 340 eligible.

KEYSTONE K-84-W COMMUTER, 4 PCAmB, 2-526
(Remodeler E.H. Hunt, Houma, Louisiana)

Engine	P&W Wasp Jr. TB
Placard limits	Maximum, except take-off 27 in. Hg., 2200 rpm (330 hp) Take-off (one minute) 32 in. Hg., 1900 rpm (330 hp)
Propeller	Adj. metal
Fuel	70 gals.
Oil	6-1/2 gals.
No. pass.	3
Baggage	89 lbs. (Compt. aft of cabin. Includes anchor 35 lbs. and rope 5 lbs.)
Standard weight	4270 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	313 only eligible

Class I equipment: Landing lights 12 lbs.; Electric starter; Generator; Battery - fwd. of pilot; 8.50-10 wheels; Tail wheel.

KINNER B AND B-1, 2 PO-CLM, ATC 516

Engine	Kinner B-5 125 hp
Fuel	35 gals. (One tank in fuselage)
Oil	2-1/2 gals.
No. pass.	1
Baggage	(Model B) 80 lbs. (40 lbs. each wing compt.) (Model B-1) 108 lbs. (54 lbs. in each wing compt.) (includes 2 parachutes 20 lbs. each)
Standard weight	1875 lbs.
Spec. basis	Approved Type Certificate No. 516
Serial Nos.	46, 62 and up mfrd. prior to 2-16-39 eligible. Approval expired as of that date.

Class I equipment: Battery 10 lbs.; Starter (Heywood) 26 lbs.; 19x9-3 wheels and tires with brakes 44 lbs.; 8 in. streamline tail wheel 10 lbs.; Elevator tabs; Propeller - wood.

Class III equipment: Propeller - adj. metal 10 lbs.*; Removable coupe top 13 lbs.; Heater 3 lbs.; Radio shielding and wiring 8 lbs.; 24 gal. fuselage fuel tank replacing std. 35 gal. tank, net decrease 6 lbs.; Skis - Curtiss-Wright Robin.

NOTE 1. All aircraft eligible must be equipped with 3-lb. lead balance weight in leading edge of each aileron. (6 lbs. net increase)

KINNER B-2, 2 PO-CLM, ATC 522

Engine	Kinner B-5 125 hp
Fuel	35 gals. (One tank in fuselage)
Oil	2-1/2 gals.
No. pass.	1
Baggage	81 lbs. (38 lbs. in each wing compt. aft of cockpit) (Pay load may be increased to accommodate 2 parachutes 20 lbs. each)
Standard weight	2000 lbs.
C.G. limits	(+17.4) and (+21.4)
Spec. basis	Approved Type Certificate No. 522
Serial Nos.	148 and up mfrd. prior to 6-30-39 eligible. (See NOTES 1 and 2). Approval expired 6-30-39 due to sale to Kinner Motors, Inc.

EQUIPMENT: (Datum is wing leading edge) (* Means net increase)

Class I:

101. (a) Engine collector ring	17 lbs.
(b) Inner engine ring cowl	15 lbs.
102. Wheel streamlines	40 lbs.
103. Battery (Hot shot)	10 lbs.
104. 6.50-10 wheels and brakes (Autofan) with 4-ply tires	58 lbs.
105. 8 in. streamline tail wheel	10 lbs.
106. Starter (Heywood)	26 lbs.
107. Propeller - adj. metal	62 lbs.
108. 3 lb. lead balance weight in leading edge of each aileron	6 lbs.
109. Elevator equipped with tabs	

Class III:

301. Battery	19 lbs.
302. Radio shielding and wiring	8 lbs.
303. Radio compt. (Rear of cockpit- not to be used for baggage)	3 lbs.
304. Radio	15 lbs.
305. Coupe top	9 lbs.
306. Propeller	
(a) Adj. metal (Serials 100 thru 147)	10 lbs.*
(b) Wooden (Serials 148 and up)	Net decrease 10 lbs.

NOTE 1. Serial Nos. 100 thru 147 eligible with standard weight 1950 lbs. and baggage 58 lbs. (29 lbs. in each wing compt.) with Class I equipment as noted above except as follows: Wooden propeller 52 lbs.; Engine ring cowl 30 lbs.; Starter 30 lbs.

NOTE 2. Serial No. 144 is also eligible with Class I equipment plus coupe top 9 lbs. and standard weight of 1968 lbs. Baggage limited to 40 lbs.

KINNER B2R, 2 POLM, ATC 617

Engine	Kinner R-5 Series 2
Placard limits	Maximum, except take-off -- in. Hg., 1850 rpm (160 hp) Take-off (one minute) -- in. Hg., 1850 rpm (160 hp)
Propeller	Maximum permissible diameter 91 in.
Placard speeds	Level flight or climb 133 mph Ind. Glide or dive 170 mph Ind.
Fuel	42 gals. (One tank in fuselage)(-5)
Oil	3-1/4 gals. (-17)
No. pass.	1 (+31)
Baggage	111 lbs. (Pay load may be increased to accommodate 2 parachutes at 20 lbs. each when used) (Compt. in stub wings right and left, 50 lbs. each) (+27) (Compt. in rear of pilot's seat 11 lbs.) (+50)
Standard weight	2170 lbs.
C.G. limits	(+17) and (+21)
Spec. basis	Approved Type Certificate No. 617
Serial Nos.	226 and up mfrd. prior to 2-16-39 eligible. Approval expired as of that date.

KINNER B2R (CONTINUED)

EQUIPMENT: (Datum is leading edge of center section wing) (* Means net increase)

Class I:

101. Exhaust collector ring	16 lbs.	(-36)
102. Bullnose engine cowl	16 lbs.	(-23)
103. Starter (Eclipse air)	30 lbs.	(-28)
104. One battery (Willard MR-5-3) and dual box	19 lbs.	(-10)
105. Shock strut (Kinner BB9308)	12 lbs.	(+5)
106. Wheel streamlines	38 lbs.	(+7)
107. 6.50-10 wheels (Autofan, ATC 10) and tires	56 lbs.	(+1)
108. 8 in. streamline tail wheel	3 lbs.	(+206)
109. Shielding and bonding	8 lbs.	(+20)
110. Propeller - wood	20 lbs.	(-49.7)

Class II:

200. Misc. items as noted in approved weight and balance report.

201. Dual battery installation (Item 104 plus one battery (Willard MR-5-3))	13 lbs.*	(-10)
202. Flares and holder - three 1-1/2 Min.	20 lbs.	(+71)

Class III:

301. Extra instruments	12 lbs.	(+12)
302. Landing lights (Grimes retractable)	9 lbs.	(+21)

NOTE 1. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (January 19, 1937)

(a) Canada - Landplane
Skiplane - not eligible.

(b) All other countries except Great Britain and Australia.

KINNER ENVOY C-7, 4 PCLM, ATC 532

Engine	Kinner C-7
Placard limits	Maximum, except take-off — in. Hg., 1800 rpm (300 hp) Take-off (one minute) — in. Hg., 1800 rpm (300 hp)
Placard speeds	Level flight or climb 176 mph Ind. Glide or dive 259 mph Ind. Flaps extended 100 mph Ind.
Fuel	116 gals. (Two wing tanks 47-1/2 gals. each, one fuselage tank 21 gals.)
Oil	7-3/4 gals.
No. pass.	2 or 3 (crew 2 or 1)
Baggage	104 lbs. (Two compts.: Lower compt. aft of cabin 95 lbs., upper compt. in rear cabin 9 lbs. (Deduct 20 lbs. from allowable baggage for each parachute carried.)
Standard weight	4000 lbs.
C.G. limits	(+18.8) and (+26.6) (See NOTE 2)
Spec. basis	Approved Type Certificate No. 532
Serial Nos.	134 and up mfrd. prior to 6-30-39 eligible. Approval expired as of that date due to sale to Kinner Motors, Inc. (See NOTE 1)

EQUIPMENT: (Datum is wing leading edge) (* Means net increase)

Class I:

101. Exhaust ring	35 lbs.
102. Engine ring cowl and support	62 lbs.
103. Wheel streamlines	60 lbs.
104. Starter (Elec. impulse)	32 lbs.
105. Battery	38 lbs.
106. Generator	23 lbs.
107. Radio	35 lbs.
108. Two aileron balance weights	6 lbs.
109. Retractable step	7 lbs.
110. Rear view mirror	
111. Cabin heater	20 lbs.
112. 8.50-10 wheels and brakes with 6-ply tires	80 lbs.
113. Kinner model 2301 shock struts	16 lbs.
114. Fire ext. DeLuxe	19 lbs.

KINNER C-7 (CONTINUED)

115. Equipped with small wing flaps, elec. operated, 40-amp. fuse required, and control surface tabs	
116. 8 in. or 10.5 in. streamline tail wheel	10 lbs.
117. Radio table	8 lbs.
118. Propeller - adj. metal	87 lbs.

Class II:

200. Misc. items as noted in approved weight and balance report.

201. Propeller - controllable metal (Ham. Std. hub 50040, blades 6095-6)	156 lbs.

Class III:

301. Radio shielding	10 lbs.
302. Oil radiator	18 lbs.
303. One landing light (wing)	4 lbs.
304. Fuel tanks	
(a) Two wing tanks 45 gals. each replacing 47-1/2 gal. tanks	No change in weight
(b) One fuselage tank 12 gals. replacing 21 gal. tank	Net decrease 7 lbs.
305. 6-1/2 gal. oil tank replacing 7-3/4 gal. tank	Net decrease 2 lbs.

NOTE 1. Serial No. 108 is eligible with the following:

Fuel	89 gals. (Two wing tanks 30 gals. each, fuselage tank 29 gals.)
Oil	6 gals.
Baggage	120 lbs. (Right and left wing compts. 20 lbs. each, in cabin rear upper 10 lbs., aft of cabin lower 70 lbs.) (Deduct 20 lbs. from allowable baggage for each parachute carried)

Equipment: Engine ring cowl and support 49 lbs.; Wheel streamlines 50 lbs.; Kinner shock struts 2304 10 lbs.; Items 104, 105, 106, 107, 108, 111, 112, 114, 115 and 201.

NOTE 2. Serials 192 and up are built with wider fuselage and landing wire attachment point moved forward 6 inches, and other minor structural changes, with approximate increase in empty weight of 220 lbs. C.G. limits (+15.0) and (+21.4)

KINNER SPORTSTER K, 2 POLM, ATC 490

I - SPECIFICATIONS PERTINENT TO ALL SERIAL NOS.:

Engine	Kinner K-5 100 hp
Fuel	24 gals. (One tank in fuselage)
Oil	2-1/4 gals.
No. pass.	1
Spec. basis	Approved Type Certificate No. 490

EQUIPMENT: (* Means net increase)

Class I: Battery (Hot shot) 10 lbs.; Starter (Heywood) 26 lbs.; 19x9-3 wheels and tires with brakes 44 lbs.; Shock struts Kinner B5304 or B5304A; 8 in. streamline tail wheel; Propeller - wood.

Class III: Removable coupe top 13 lbs.; Propeller - adj. metal 10 lbs.*

NOTE 1. All aircraft must be equipped with balance weight in leading edge of aileron in accordance with manufacturer's Dwg. BB-5402. Empty weight increased 6 lbs.

II - SERIAL NUMBERS 1,4,6,8,10,20,22,24,26,28,30,40,42,44, 64,68,82 and 90:

Baggage	80 lbs. (40 lbs. in each wing compt.) (Includes 2 parachutes 20 lbs. each)
Standard weight	1700 lbs.

Note: Equipped with adjustable stabilizer and small wing fillet.

III - SERIAL NUMBERS 104 AND UP MANUFACTURED PRIOR TO FEBRUARY 16, 1939 (APPROVAL EXPIRED AS OF THAT DATE):

Baggage	162 lbs. (81 lbs. in each wing compt.) (Includes 2 parachutes 20 lbs. each)

Note: Equipped with fixed stabilizer, elevator tabs and large wing fillet.

KINNER PLAYBOY R, 2 PCLM, ATC 554

Engine	Kinner R-5 (See item 313)
Placard limits	Maximum, except take-off — in. Hg., 1975 rpm (160 hp)
	Take-off (one minute) -- in. Hg., 1975 rpm (160 hp)
Placard speeds	Level flight or climb 140 mph Ind.
	Glide or dive 240 mph Ind.
Fuel	48 gals. (Main tank in fuselage 35 gals., auxiliary tank in left stub wing 13 gals.)
Oil	3-1/2 gals. or 3-1/4 gals.
No. pass.	1
Baggage	100 lbs. (Decrease 20 lbs. for each parachute carried) Right wing stub compt. 60 lbs. Rear of cabin compt. 40 lbs.
Standard weight	2270 lbs.
C.G. limits	(+16.5) and (+23.5)
Spec. basis	Approved Type Certificate No. 554
Serial Nos.	106, 112 and up mfrd. prior to 6-30-39 eligible. Approval expired as of that date due to sale to Kinner Motors, Inc.

EQUIPMENT: (Datum is wing leading edge) (* Means net increase)

Class I:

101. Exhaust ring	25 lbs.
102. Battery and position lights	20 lbs.
103. Starter (Heywood)	30 lbs.
104. Wheel streamlines	38 lbs.
105. Elevators equipped with tabs	
106. Ailerons equipped with two 3-lb. leading edge balance weights	
107. Radio shielding	10 lbs.
108. Carburetor heater	3 lbs.
109. 6.50-10 wheels (Autofan) and 6.50-10 4-ply tires	66 lbs.
110. 8 in. streamline tail wheel	5 lbs.
111. Two shock struts (Kinner BB9308)	17 lbs.
112. Propeller - adj. metal	62 lbs.

Class II:

200. Misc. items as noted in approved weight and balance report.	
201. Battery and lights (replacing battery and lights 20 lbs.)	38 lbs.
202. 44 gal. or 44-1/2 gal. fuselage tank (replacing 35 gal. fuselage tank and 13 gal. wing tank)	

KINNER PLAYBOY R (CONTINUED)

Class III:

301. Radio	17 lbs.
302. "B" eliminator (dynamotor)	13 lbs.
303. Radio mast	3 lbs.
304. Landing lights	10 lbs.
305. Flares and holders	18 lbs.
306. Generator	19 lbs.
307. Lord rubber engine mount bushings	2 lbs.
308. Extra instruments (vacuum pump, artificial horizon, directional gyro, etc.)	37 lbs.
309. Thermos bottle and 1 qt. water	6 lbs.
310. Cabin heater	13 lbs.
311. Step on wing and tube in wing stub	9 lbs.
312. Engine ring cowl	16 lbs.
313. Engine - Kinner R-5 Series 2	16 lbs.*

Placard limits

Maximum, except take-off — in. Hg., 1850 rpm (160 hp)

Take-off (one minute) -- in. Hg., 1850 rpm (160 hp)

KINNER PLAYBOY R-1, 2 PCLM, ATC 518

Engine	Kinner R-5 160 hp
Fuel	52 gals. (39 gal. fuselage tank and 13 gal. right stub wing tank)
Oil	3-1/2 gals.
No. pass.	1
Baggage	71 lbs. (Includes 2 parachutes 20 lbs. each. Left wing stub compt. 59 lbs. and rear of cockpit compt. 12 lbs.) (See NOTE 1)
Standard weight	2200 lbs.
Spec. basis	Approved Type Certificate No. 518
Serial Nos.	84 and up mfrd. prior to 6-30-39 eligible. Approval expired as of that date due to sale to Kinner Motors, Inc.

Class I equipment:

101. Engine nose cowl	10 lbs.
102. Wheel streamlines	32 lbs.
103. Radio receiver	13 lbs.
104. "B" eliminator	13 lbs.
105. Battery - 6V	20 lbs.
106. Starter (Heywood)	30 lbs.
107. Tail fairing	6 lbs.
108. 8x3 tail wheel	
109. 6.50-10 wheels and brakes (Autofan) and 4-ply tires	66 lbs.
110. Propeller - adj. metal	

NOTE 1. When radio is removed baggage may be increased to 84 lbs., the rear of cockpit compt. to be placarded for 25 lbs.

KURSAWE KIRBY KITE (GLIDER), 1 POLM, 2-8

Type	Class I
Placard speeds	Glide or dive 108 mph True Ind.
	Airplane Tow 60 mph True Ind.
	Auto-winch tow 50 mph True Ind.
No. pass.	None (Pilot at (0))
Baggage	None
Standard weight	521 lbs.
Spec. basis	CAR 05.031
Serial Nos.	1, only, eligible

EQUIPMENT: (Datum is wing leading edge)

Class I.

101. Airspeed indicator (-20.5)

Class II.

200. Miscellaneous items as noted in approved weight and balance report.

Class III.

None.

NOTE 1. The following placards must be installed in full view of the pilot;

(a) "Inverted flying prohibited."

(b) "Instrument flight prohibited."

LAIRD LC-B, 3 POLB, 2-17

Engine	Wright J-5 220 hp
Fuel	80 gals.
Oil	6 gals.
No. pass.	2
Baggage	3 lbs.
Standard weight	2850 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	All mfrd. prior to 10-1-28 eligible.

LAIRD LC-B-200 AND LC-1B-200, 3 POLB, ATC 86

Engine	Wright J-5 220 hp (See NOTE 2)
Fuel	80 gals.
Oil	6 gals.
No. pass.	2
Baggage	3 lbs.
Standard weight	2850 lbs.
Spec. basis	Approved Type Certificate No. 86
Serial Nos.	152, 158, 171 and up mfrd. prior to 7-15-33 eligible. Approval expired as of that date.

NOTE 1. Model LC-B-200 has narrow type fuselage and model LC-1B-200 has wide type.

NOTE 2. Serial No. 158 is eligible with Wright J-4 200 hp

NOTE 3. Eligible for use in acrobatic stages of Civilian Pilot Training secondary course when operated in accordance with "Instructions for the operation of Laird LC-B-200 in the acrobatic stages of the Civilian Pilot Training Program Secondary Course" issued by Civilian Pilot Training.

LAIRD LC-1B-285, 2 POLB, 2-501

Engine	Wright R-760E-1 285 hp
Fuel	85 gals. (Two tanks - one 21 gal. in center section and one 64 gal. in fuselage)
Oil	7 gals.
No. pass.	1
Baggage	50 lbs. (Fwd. compt. 25 lbs., rear compt. 25 lbs.)
Standard weight	2909 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	199 only is eligible

Class I equipment: Engine ring cowl; radio with bonding and shielding 34 lbs.; Battery 38 lbs.; Starter (direct electric); Heater; Special instruments 12 lbs.; 27 in. streamline wheels; Tail wheel; Propeller - adj. metal.

NOTE 1. Same as Model LC-B-200, A.T.C. No. 86, except engine, fuel capacity and equipment.

LAIRD LC-B-300 AND LC-1B-300, 3 POLB, ATC 353

Engine	Wright R-975 330 hp
Prop.	Adj. metal
Fuel	74 gals.
Oil	8 gal.
No. pass.	2
Baggage	50 lbs.
Standard weight	3022 lbs.
Spec. basis	Approved Type Certificate No. 353
Serial Nos.	188 and up mfrd. prior to 9-30-39 eligible. Approval expired as of that date

NOTE 1. Model LC-B-300 has narrow type fuselage and model LC-1B-300 has wide type.

LAIRD LC-B-300 OR LC-1B-300, 3 POLB, 2-189

Engine	Wright R-975 330 hp
Fuel	74 gals.
Oil	8 gals.
No. pass.	2
Baggage	50 lbs.
Standard weight	3022 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	176, 184 and 186 eligible.

NOTE 1. Model LC-B-300 has narrow type fuselage and model LC-1B-300 has wide type.

LAIRD LCR-300, 3 POLB, ATC 176

Engine	Wright R-975 330 hp
Fuel	78 gals.
Oil	8 gals.
No. pass.	2
Baggage	50 lbs.
Standard weight	3010 lbs.
Spec. basis	Approved Type Certificate No. 176
Serial Nos.	178 and up mfrd. prior to 7-1-33 eligible. Approval expired as of that date.

LAIRD LC-RW-300, 3 POLB, ATC 377

Engine	P&W Wasp Jr. A300 hp (See NOTE 1)
Fuel	78 gals.
Oil	8 gals.
No. pass.	2
Baggage	50 lbs.
Standard weight	3010 lbs.
Spec. basis	Approved Type Certificate No. 377
Serial Nos.	180 and up mfrd. prior to 7-1-32 eligible. Approval expired as of that date.

NOTE 1. Serial No. 180 is also eligible as LC-RW-300 Special with P&W Wasp Jr. T3A engine with the following:

Placard limits	Maximum, except take-off 34 in. Hg., 2100 rpm (400 hp)
	Take-off (one minute) 34 in. Hg., 2100 rpm (400 hp)
No. pass.	1 (Crew 1)
Baggage	25 lbs. (rear of pilot)
Standard weight	2840 lbs.

Equipment: Engine ring cowl; Starter (Hand); Generator (Hodges) 9 lbs.; Battery - fwd. firewall 43 lbs.; Landing lights 15 lbs.; Flares and holders - three 1-1/2 Min. aft rear seat 17 lbs.; Radio (AVR-7A) - under front seat 24 lbs.; Radio (AVT-7) - under front seat 10 lbs.; Radio power unit - in baggage compt. 15 lbs.; 8.50-10 wheels, fairing on I struts; Wing root, wire and wing fairing; Oil radiator; Adj. metal propeller.

LAIRD LC-RW-450, 2 POLB, 2-346

Engine	P&W Wasp C-1 420 hp (See NOTE 1)
Fuel	104 gals.
Oil	8 gals.
No. pass.	1
Baggage	50 lbs.
Standard weight	3200 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	162 and 183 only eligible.

Class I equipment: NACA cowling; Battery (hot shot); Starter (hand inertia); Earth inductor compass; Pressure fire ext.; Two Gruss air struts; Bendix wheels.

NOTE 1. Serial No. 183 is also eligible with P&W Wasp SC-1 engine with the following:

Placard limits	Maximum, except take-off 30 in. Hg., 2100 rpm (450 hp)
	Take-off (one minute) 31 in. Hg., 2100 rpm (450 hp)

Equipment: Generator 19 lbs.; Radio - in baggage compt. 17 lbs.; Propeller - controllable metal, net increase 59 lbs.; Dynamotor 3 lbs.; Cables 3 lbs.; Radio bonding.

LINCOLN PAGE 1928, 3 POLB, ATC 28

Engine	Curtiss OX5 90 hp or OXX6 102 hp
Fuel	42 gals.
Oil	4 gals.
No. pass.	2
Baggage	None
Standard weight	2082 lbs.
Spec. basis	Approved Type Certificate No. 28
Serial Nos.	1 to 282 eligible

LINCOLN S-A, 3 POLB, 2-66

Engine	Hispano A or I 150 hp or E 180 hp
Fuel	77 gals. (See NOTE 1)
Oil	5 gals.
No. pass.	2
Baggage	None
Standard weight	2718 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	247, 248, 250 to 1002 eligible

NOTE 1. Serial No. 255 is also eligible with a fuel capacity of 25 gals.

LINCOLN AP-B5, 3 PCLM, ATC 372

Engine	Kinner B-5 125 hp
Fuel	36 gals.
Oil	4 gals.
No. pass.	2
Baggage	72 lbs.
Standard weight	2180 lbs.
Spec. basis	Approved Type Certificate No. 372
Serial Nos.	401 and 402 eligible.

LINCOLN PT, 2 POLB, ATC 181

Engine	Curtiss OX5 90 hp or OXX6 102 hp
Fuel	29 gals.
Oil	3-1/2 gals.
No. pass.	1
Baggage	None
Standard weight	1968 lbs.
Spec. basis	Approved Type Certificate No. 181
Serial Nos.	302 to 329 eligible.
Class III equipment:	Rigid airwheel landing gear installation.

LINCOLN PT-K, 2 POLB, ATC 279

Engine	Kinner K-5 100 hp
Propeller	Wood
Fuel	28-1/2 gals.
Oil	4 gals.
No. pass.	1
Baggage	50 lbs.
Standard weight	1767 lbs.
Spec. basis	Approved Type Certificate No. 279
Serial Nos.	328, 330, 601 to 617 and 954 eligible
Class III equipment:	Rigid airwheel landing gear installation; Skis - Federal SA-4

LINCOLN PT-T, 2 POLB, ATC 344

Engine	Light Mfg. Brownback Tiger C-400 90 hp
Fuel	28 gals.
Oil	4 gals.
No. pass.	1
Baggage	20 lbs. (Pay load includes 2 parachutes 20 lbs. each)
Standard weight	1762 lbs.
Spec. basis	Approved Type Certificate No. 344
Serial Nos.	951 to 954 eligible.

LINCOLN PT-W, 2 POLB, ATC 284

Engine	Warner Scarab 125 hp
Fuel	28-1/2 gals.
Oil	4 gals.
No. pass.	1
Baggage	50 lbs.
Standard weight	1794 lbs.
Spec. basis	Approved Type Certificate No. 284
Serial Nos.	801, 802, 804, and 851 eligible.
Class III equipment:	Rigid airwheel landing gear installation.

LOCKHEED ALTAIR 8D AND 8G, 2-425

I - SPECIFICATIONS PERTINENT TO BOTH MODELS:

Engine	P & W Wasp SC1
Placard limits	Maximum, except take-off (S.L.) 30½ in. Hg., 2100 rpm (442 hp) (6000 ft.) 30 in. Hg., 2100 rpm (450 hp) Take-off (one minute) 31 in. Hg., 2100 rpm (450 hp) or 32 in. Hg., 2000 rpm (450 hp) or 34 in. Hg., 1850 rpm (450 hp)
Fuel	80 min. octane (CFR) aviation gasoline
Spec. basis	Aero. Bulletin 7A, Section 3

II - MODEL 8D, 2 POLM:

Fuel capacity	191 gals.
Oil capacity	14 gals.
No. pass.	1
Baggage	142 lbs.
Standard weight	5200 lbs.
Serial Nos.	143 only eligible
Class I equipment:	Engine ring cowl 50 lbs.; Landing lights 35 lbs.; Battery 35 lbs.; Starter 36 lbs.; Generator 17 lbs.; Oil radiator 10 lbs.; Adj. metal propeller.

III - MODEL 8G, 1 POLM:

Placard speeds	Level flight or climb 200 mph True Ind. Glide or dive 230 mph True Ind. Flaps extended 100 mph True Ind.
Fuel capacity	116 gals. (4 tanks, interconnected in each wing: 2 at 29½ gals. each (+20) outboard, 2 at 28½ gals. each (+20) inboard)
Oil capacity	7 gals. (-25.3)
No. pass.	None (Pilot at -25)
Baggage	None
Standard weight	4651 lbs.
C.G. limits	(+10.6)(27.8% MAC) and (+17.8)(36.3% MAC)
MAC	64.7 in. L.E. MAC (-13)
Leveling means	Use transit and set rudder hinge fitting vertical
Serial Nos.	214 only eligible
Equipment:	(Datum is center line of the front spar)

Class I.		
101. Engine cowling and attaching brackets	52 lbs.	(-56)
102. Propeller - Ham. Std., hub 5406, blades A3A1-12	84 lbs.	(-74)
103. Starter (Eclipse Model 2087-6)	32 lbs.	(-37)
104. Generator (Eclipse C-1)	22 lbs.	(-39)
105. Battery (Hobbs) 12 volt	53 lbs.	(-7)
106. 11.00-12 wheels (Autofan)		(-11)
11.00-12 special 8 ply tires(Silvertown)		
107. 13.5 Tail wheel (Variety)		(+191)
13.5 4-Ply tire (Goodrich)		
Class II.		
200. Miscellaneous items as noted, under this number, in approved weight and balance report		
201. Dry cell batteries	27 lbs.	(-21)
202. Position lights (Grimes Model A)	2 lbs.	
203. Radio transmitter (Learadio T-3Q-A-B)	8 lbs.	(+52)
204. Radio receiver (Learadio R-3A-8)	6 lbs.	(+52)
205. Power pack (Learadio)	17 lbs.	(+6)
206. Booster coil installation	2 lbs.	(-15)
207. Pressure-fire extinguisher installation	13 lbs.	(+7)
Class III.		
None.		

NOTE 1. Eligible for export to all countries except Great Britian, Canada, Australia and New Zealand.

NOTE 2. Placard airplane: "Solo flight only".

LOCKHEED VEGA 1, 5 PCLM, ATC 49

Engine	Wright J-5 220 hp
Fuel	98 gals.
Oil	7 gals.
No. pass.	4
Baggage	104 lbs.
Standard weight	3470 lbs.
Spec. basis	Approved Type Certificate No. 49
Serial Nos.	6, 8 to 41 eligible

LOCKHEED VEGA 2-D, 2-377

I - SPECIFICATIONS PERTINENT TO ALL SERIAL NOS.:

Engine	P & W Wasp Jr. A 300 hp
Propeller	Adj. metal
Spec. basis	Aero. Bulletin 7A, Section 3

II - SERIAL NO. 38, DESIGNATION 5 PCLM:

Fuel	96 gals.
Oil	10 gals.
No. pass.	4
Baggage	225 lbs.
Standard weight	3600 lbs.

III - SERIAL NO. 40, DESIGNATION 5 PCL-SM:

Placard speed	Seaplane - Glide or dive 160 mph True Ind.
Fuel	120 gals. (Two tanks in wings, 48 gals. each (+97) and one 24 gal. tank in center section (+97))
Oil	10 gals. (+69.2)
No. pass.	4 (Two at (+103.2) and two at (+147.2)) Pilot at (+65.4)
Baggage	Compartment aft of cabin Landplane 61 lbs. Seaplane 72 lbs. (+175) (See NOTE 1)
Standard weight	Landplane 3600 lbs. Seaplane 4200 lbs.
C.G. limits	Seaplane (+84.0)(22.8% MAC) and (+91.2)(31.5% MAC). Datum is propeller center line. MAC = 82.5 in. L.E. MAC (+65.2)

Class I equipment: Seaplane - Aircraft Products A-9500 floats.

NOTE 1. As a seaplane, when no passengers are carried, 72 lbs. of baggage or ballast must be carried in the baggage compartment.

LOCKHEED AIR EXPRESS 3, 5 PCLM, ATC 102

Engine	P & W Wasp C1 420 hp or SC1 450 hp
Fuel	100 gals.
Oil	8 gals.
No. pass.	4
Baggage	332 lbs.
Standard weight	4375 lbs.
Spec. basis	Approved Type Certificate No. 102
Serial Nos.	1 to 93 and 130 eligible.

Class III equipment: Wheel streamlines 50 lbs.; Landing lights 30 lbs.; Flares 45 lbs.; NACA cowling 50 lbs.; Oil radiator 15 lbs.; Extra outboard wing fuel tanks - 2 at 43 gals. (Maximum fuel 180 gals.) 54 lbs.

LOCKHEED VEGA 5 AND 5A EXECUTIVE, 5 PCL-SM, ATC 93

Engine	P & W Wasp C1 420 hp or SC1 450 hp
Fuel	96 gals.
Oil	10 gals.
No. pass.	4
Baggage	169 lbs. (Seaplane includes anchor, paddle, pump and life preserver)
Standard weight	Landplane 4375 lbs. Seaplane 4670 lbs.
Spec. basis	Approved Type Certificate No. 93
Serial Nos.	Landplane - 18, 20 to 132 eligible Seaplane - 18, 48 to 132 eligible

Class I equipment: Electric starter, Battery; Edo K floats (Seaplane).

Class III equipment: Engine ring cowl 50 lbs.; Wheel streamlines 50 lbs.; Landing lights 30 lbs.; Flares - in baggage compartment 45 lbs.; Extra 48 gal. fuel tank in center section 27 lbs. or two outboard wing fuel tanks 44 gals. each 55 lbs.; Oil radiator 15 lbs.; Airwheels (Goodyear) 60 lbs.; Semiairwheels with 9.50-10 tires 25 lbs.; 15 gal. oil tank replacing 10 gal. tank, no change in weight.

LOCKHEED VEGA 5-C, 7 PCL-SM, ATC 384

Engine	P & W Wasp C1 420 hp, SC-1 450 hp or S3D1 450 hp
Fuel	96 gals.
Oil	10 gals.
No. pass.	6
Baggage	Landplane 180 lbs. Seaplane 84 lbs.
Standard weight	Landplane 4500 lbs. (See NOTE 1) Seaplane 4880 lbs. (See NOTE 1)
C.G. limits	22.2 in. and 36.5 in. aft of wing leading edge at fuselage
Serial Nos.	50, 72, 96, 134, 138 and up mfrd. prior to 9-30-39 eligible. Serials below 138 eligible upon receipt of mfr's. affidavit of conformity.

Class I equipment: Electric starter; Battery; Heater; Propeller - adj. metal; Edo K floats and auxiliary tail fin surface (Seaplane).

Class III equipment: Engine ring cowl 50 lbs.; Wheel streamlines 50 lbs.; Landing lights 30 lbs.; Flares - in baggage compt. 45 lbs.; Extra 48 gal. center section fuel tank 27 lbs. or two extra 44 gal. outboard wing fuel tanks 55 lbs.; Oil radiator 15 lbs.; Airwheels (Goodyear) 60 lbs.; Semi-airwheels with 9.50-12 tires 25 lbs.; 15 gal. oil tank replacing 10 gal. tank, no change in weight; 300 lb. baggage compt. in center section substituted for center section fuel tank; Controllable metal propeller (Ham. Std. hub S8460L, blades 6101A-12, low pitch setting 16°).

NOTE 1. Landplane standard weight may be increased to 4750 lbs. provided the following changes are made: (These changes are also required on all seaplanes)

(1) All plywood covering is removed from the top surface of the wings between spars.

(2) Additional stringers of same size as old stringers are installed between the present stringers extending between the ribs and parallel to the present stringers. The total number of stringers between each rib will be seven when completed.

(3) The top surface is recovered using 1/8 inch plywood between the spars and between the No. 10 ribs at each wing tip. The plywood elsewhere should be the same thickness as the present installation.

LOCKHEED ORION 9-C SPECIAL, 4 PCLM, 2-416

Engine	Wright Cyclone SR-1820F-2
Placard limits (Fuel - 87 min. octane, CFR)	Maximum, except take-off (Sea level) 33.3 in. Hg., 1950 rpm (650 hp) (7200 ft.) 31.0 in. Hg., 1950 rpm (650 hp) Take-off (one minute) 33.3 in. Hg., 1950 rpm (650 hp)
Placard speeds	Level flight or climb 200 mph Ind. Glide or dive 230 mph Ind. Flaps extended 125 mph Ind.
Fuel capacity	160 gals. (Two outboard wing tanks 28 gallons each (+31) Two inboard wing tanks 29 gals. each (+31) Two stub wing tanks 16 gals. each (+61) One tank in pilot's headrest 14 gals. (+31)
Oil capacity	20 gals. (One tank under pilot's seat) (+10)
No. pass.	3 (1 at +51 and 2 at +85)
Baggage	100 lbs. (+117)
Standard weight	5824 lbs.
C.G. Limits	25% MAC (+25) and 33.2% MAC (+33). Leading edge of MAC at (+4.88). The MAC is 84.7 inches long.
Spec. basis	Aeronautics Bulletin 7-A, Section 3
Serial No.	180 only eligible.

EQUIPMENT: Datum is leading edge of the wing at its intersection with the fuselage.

Class I.

101. Propeller - Hamilton Standard 2 blade controllable, hub 2E40-31, blades 6091A-12 (low pitch setting 16.5° at 42 inch station)		
102. Engine cowl and attaching brackets	62 lbs.	(-38)
103. Starter (Eclipse)	32 lbs.	(-22)
104. Generator (Eclipse 25 amp.)	20 lbs.	(-24)
105. Battery	35 lbs.	(+12)
106. Oil radiator (U.A.P. 7")	20 lbs.	(-19)
107. 11.00-12 wheels (Autofan)		(+16)
108. 11.00-12, 6 ply tires (Goodrich)		(+16)
109. 10.50 tail wheel (Autofan)		(+208)
110. Tail wheel tire (General) 10.5 in Streamline 4 ply		(+208)
111. Landing gear struts (Cleveland Aero l B2-62L)		(+16)

Class II.

200. Misc. items as noted in approved weight and balance report.		
201. Landing lights (S & M No. 2000)	10 lbs.	(+16)
202. Flares and holders (Wiley 3 min.)	50 lbs.	(+154)
203. Radio receiver	30 lbs.	(+145)
204. Radio transmitter	35 lbs.	(+141)
205. Heater	8 lbs.	(-15)
206. Radio shielding	10 lbs.	(-40)
207. Navigation lights (Pyle National)		

NOTE 1. Eligible for export to all countries except Great Britain, Canada and Australia. (April 5, 1940.)

LOCKHEED ORION 9D, 1 OR 5 PCLM, ATC 614

Engine	P&W Wasp S1D1 550 hp
Fuel	Passenger 130 gals. (Two tanks in each wing, one in center section) Cargo 192 lbs. (Same as passenger with additional tank in fuselage)
Oil	14 gals.
No. pass.	4 or None
Baggage	Passenger 234 lbs. (Rear compt.) Cargo 1050 lbs. (Fwd compt. in cabin 700 lbs., rear compt. 350 lbs.)
Standard weight	Passenger 5400 lbs. Cargo 5800 lbs.
Spec. basis	Approved Type Certificate No. 614
Serial Nos.	197 and up mfrd. prior to 9-30-39 eligible. Approval expired as of that date.

5-2/043

LOCKHEED ORION 9D (CONTINUED)

Class I equipment: Engine cowl ring 50 lbs.; Radio and mast 222 lbs.; Two landing lights 15 lbs.; Battery 63 lbs.; Four flares & brackets (rear) 39 lbs.; Starter (Electric) 32 lbs.; Generator 22 lbs.; Heater 25 lbs.; Internal weight balanced aileron; 8.50-10 wheels and brakes (Warner) with 11.00-12 tires; L.E. abrasion strips 20 lbs.; Retractable landing gear; Tail skid or wheel; Controllable metal propeller.

NOTE 1. Serial Nos. 205, 206 and 207 are eligible as 6 PCLM with wing flaps and the following:

Propeller	2-blade adj. metal (9 ft. 8 in. dia.) 112 lbs. 3-blade adj. metal (9 ft. 0 in. dia.) 154 lbs. 2-blade controllable metal (Ham. Std. hub 8460, blades 6095-6, low pitch setting 16°) 153 lbs. (Note: Not eligible with Smith R-3 hub and Dicks 400 blades)
Fuel	114 gals.
Oil	11 gals.
No. pass.	5
Baggage	255 lbs. (Rear of cabin)
Standard weight	5800 lbs.

Equipment: Radio 122 lbs.; Engine cowl ring 50 lbs.; Battery 65 lbs.; Two landing lights 15 lbs.; Two flares and brackets 50 lbs.; Wing flaps 70 lbs.; Starter (elec.) 35 lbs.; Generator 37 lbs.; Heater 22 lbs.; 8.50-12 wheels and brakes with 11.00-12 tires; Shutters 10 lbs.; Internal weight balanced aileron.

LOCKHEED ORION 9D-2, 4 OR 5 PCLM, 2-488

Engine	P&W Wasp S1D1 550 hp
Placard speeds	Glide or dive 270 mph Ind. Flaps extended 125 mph Ind.
Fuel	162 gals. (7 tanks - 3 in each wing at 28-1/2, 29-1/2 and 15 gals. ea. 1 reserve tank in fuselage headrest 16 gals.)
Oil	11 gals.
No. pass.	3 or 4
Baggage	100 lbs. (Single compt. aft of cabin)
Standard weight	5800 lbs.
Spec. basis	Aero. Bulletin 7A, Section 3
Serial Nos.	208 only eligible

Class I equipment: Engine ring cowl 50 lbs.; Two-way radio 220 lbs.; Two landing lights 15 lbs.; Battery - 12V 65 lbs.; Four flares and holders - 1-1/2 minute 25 lbs.; Starter (Electric) 35 lbs.; Generator 37 lbs.; Heater 22 lbs.; Pressure fire ext. 12 lbs.; Nose shutter 15 lbs.; One camera, nacelle and film 65 lbs.; 31 in. streamline wheels and tires; Cleveland Aero shock strut B262L; 5.00-4 tail wheel; Mechanical retracting landing gear; Robot pilot 118 lbs.; Internal weight balanced ailerons and spring type rudder bungee; Wing equipped with T.E. split flaps electrically operated.

LOCKHEED ELECTRA 10-A, 12 PCLM, TC 551

Engines	2 P&W Wasps Jr. SB, SB-2 or SB-3
Placard limits	Maximum, except take-off
87 min. oct. fuel	33½ in. Hg., 2200 rpm (400 hp)
80 min. oct. fuel	33½ in. Hg., 2200 rpm (400 hp)
	Take-off (one minute)
87 min. oct. fuel	36½ in. Hg., 2300 rpm (450 hp)
80 min. oct. fuel	34½ in. Hg., 2200 rpm (400 hp)
Propellers	Controllable metal (Ham. Std., hubs 2D30, blades 6095A-6; low pitch setting 14°) 152 lbs. each (-90) (See NOTE 8 and items 101, 116 and 118)
Placard speeds	Level flight or climb 210 mph True Ind.
	Glide or dive 261 mph True Ind.
	Flaps extended 125 mph True Ind.

Usable ceiling (May be realized under conditions shown)

Ceil. (ft.)	Weight (lbs.)	RPM	Manifold Pressure (in. Hg.)	T.I.A.S. (mph)	Min. Octane	Inop. Prop.
4600	10,500	2200	Full throttle	94	80 or 87	Feathered
0*	10,500	2200	METO	93	80 or 87	Idling at 700 rpm

* Note: Best one-engine inoperative; rate of climb at sea level for this condition is 8 ft. per minute.

Additional conditions (1) Standard air
(2) Either engine inoperative
(3) Carburetor intake on "cold air"
(4) Leading edge de-icers installed but not operating

Fuel capacity	194 gals. Std. (4 tanks in wing - 2 main at 81 gals. each (-21); 2 aux. tanks fwd. of spar at 16 gals. each (-21)
Oil capacity	14 gals. (2 tanks at 7 gals. each in each nacelle) (-49)
No. pass.	10
Baggage	Maximum capacity of compts.; (See NOTES 2 & 4) Compt. in nose 300 lbs. (-97½); compt. in each stub wing 250 lbs. (+20½)
Weights	Empty Use actual (Approx. 6290 lbs. (-2.5) as 12 PCLM with Class I items & residual weight of drained oil system.)
	Standard 10100 lbs. (See NOTES 5 & 7)
C.G. limits	(-10.1) and (+6.1) (Base line of cabin windows level)
Spec. basis	Type Certificate No. 551 (Aero. Bulletin 7A requirements)
Serial numbers	1001 and up eligible per NOTE A

EQUIPMENT: (Datum is centerline of the center section wing spar) (* Means net increase) (See NOTE 2)

Class I:

1. 2 Engine ring cowls	61 lbs. (-70)
2. 2 Exhaust collector rings	60 lbs. (-60)
3. 2 Oil radiators (UAP 5")	28 lbs. (-54)
4. 2 Landing & 1 warning light (in nose)	15 lbs. (-126)
5. Position lights	
6. Flares (two 3-min. & brackets 5 lbs.)	50 lbs. (-85)
7. 2 Flashlights & brackets	2 lbs. (-62)
8. 2 Starters (electric)	64 lbs. (-58)
9. Battery (Exide 6XT-13-12V)	65 lbs. (-32)
10. Generator (50-amp.)	36 lbs. (-61)
11. Pressure fire ext. system	35 lbs. (-45)
12. 35x15-6 wheels (Goodyear 6HBM)	68 lbs. (-23)
13. 35x15-6 (Goodyear) heavy duty 6-ply tires and plain tubes (Wheels must be placarded for these tires)	109 lbs. (-23)
14. Retracting land. gear, elec. worm drive (100-amp. fuse required)	269 lbs. (-20)
15. Shock struts (Aerol SP-400E)	96 lbs. (-23)
16. Wing split trailing edge flaps, elec. operated (60 amp. fuse required)	75 lbs. (+55)
17. Rudder equipped with trailing edge tab (single) & spring type bungee 3 lbs.	
18. Elevator equipped with balance weights (external) 12 lbs.; aux. flap 3 lbs.; tabs 2 lbs. (+310) total 17 lbs.	
19. Radio (2-way complete)(See NOTE 1)	160 lbs. (-33)
20. Ventilating system	20 lbs. (+85)
21. Cabin heaters	40 lbs. (+45)
22. Toilet equipment	15 lbs. (+180)

LOCKHEED ELECTRA 10-A (Continued)

23. Container & 1 gal. water	12 lbs. (+168)
24. Cabin Deluxe equipment	19 lbs. (+60)
25. 2 Bag. straps (nose compt.)	4 lbs. (-98)
26. 16x7-3 tail wheel (Goodyear 3TW) with 4-ply tire	12 lbs. (+313)
27. Tail wheel strut (Aerol 300ET)	17 lbs. (+300)
28. Instruments with panel	56 lbs. (-74)

Class II.

31. 2 Wheel fenders (12 lbs. on serials below 1018)	8 lbs. (-20)
32. Rudder lock in cockpit	1 lb. (-65)
33. Control wheel lock	2 lbs. (-29)
34. Tail wheel centering lock control	3 lbs. (-70)
35. Abrasion strips on lower fins	2 lbs. (+284)
36. Abrasion strips on tail surfaces (complete)	5 lbs. (+270)
37. De-icer installation (fixed portion 56 lbs.,removable 55 lbs.)(See NOTE 7)	111 lbs.*(-24)
38. Small type generator (25-amp.)	28 lbs. (-61)
39. Heavy duty battery	70 lbs. (-32)
40. 2 Cactus proof tire liners	22 lbs. (-23)
41. Oil radiator (UAP 6") (Replaces UAP 5")	39 lbs. (-54)
42. Radio receiver and cabinet	30 lbs. (-17)
43. Radio (H & K) and cabinet	140 lbs. (-17)
44. Radio (H & K), reel and bracket	7 lbs. (+327)
45. Radio (RCA	105 lbs.(-17)or(-35)
46. Radio cabinet and buffet	25 lbs. (-17)
47. Radio conduit and wiring	15 lbs. (+15)
48. Fuel capacity increase 51 gals., fwd. fuselage tank	40 lbs. (-17)
49. Fuel capacity increase 90 gals., two 45-gal. fuse. tanks	50 lbs. (+33)
50. Fuel capacity increase 56 gals., two 28-gal. wing tanks	62 lbs. (+17)
51. Oil capacity 28 gals. - 14 gal. tank in each nacelle, replacing standard 7 gal. tank	30 lbs.*(-49)
52. Couch (2-place)	55 lbs. (+40)
53. Couch (1-place) and pillows cloth covered	115 lbs. (+40)
54. Couch (2-place) and pillows cloth covered	115 lbs. (+40)
55. Couch (3-place) and pillows cloth covered	115 lbs. (+40)
56. Couch (3-place) and pillows leather covered	130 lbs. (+40)
57. Arm chair	26 lbs. (-17)
58. Std. pass. seats removed, deduct 20 lbs. each (Roman numerals in parenthesis signify number of seats removed)	
59. Clothes cabinet	18 lbs. (+152)
60. Extra cabinet	12 lbs. (+10)
61. Filing cabinet	22 lbs. (-17)
62. Buffet	24 lbs. (-17)
63. Card table	10 lbs. (+185)
64. End table and lamp	13 lbs. (+87)
65. Cabin carpet	21 lbs. (+70)
66. Radio cabinet	30 lbs. (-17)
67. Extra upholstering	22 lbs. (+50)
68. 2 Elec. fans in cabin (variable)	4 lbs.
69. Extra heavy baggage nets	6 lbs. (+60)
70. Ladder and fittings	7 lbs. (+216)
71. 2 Thermos jugs and 2 gals. water	32 lbs. (-17) or (+157)
72. 1 Thermos jug and 1 gal. or 2 at 1/2 gal. and 1 gal. water	17 lbs. (-17) or (+157)
73. Ice box (See NOTE 4)	40 lbs. (+143)
74. Robot pilot installation	120 lbs. (-80)
75. Lear compass	40 lbs. (-9)
76. G. E. earth inductor compass	11 lbs. (+210)
77. Map case	8 lbs. (-17)
78. External coat of paint	52 lbs. (+50)
79. Light weight sound proofing, deduct	30 lbs. (+60)
80. Heavier type inner cowling	15 lbs. (-65)
81. Sound-proofing in cockpit	5 lbs. (-50)
82. Miscellaneous accessories	26 lbs. (+60)

LOCKHEED ELECTRA 10-A (Continued)

83. Miscellaneous accessories 13 lbs. (+60)
84. Revised landing gear retracting mechanism with 12.5:1 gear ratio and EDC No. 45040 electric motor (100-amp. fuse required) 6 lbs. (-20)
85. Oil capacity 19 gals. (9.5 gal. tank in each nacelle, replacing std. 7-gal. tank) 4 lbs. (-49)
86. Oil capacity 17 gals. (two 8.5 gal. tanks in each nacelle) 2 lbs. (-49)
87. Pratt & Whitney oil regulator 6 lbs. (-54)
88. Cactus proof liner in tail wheel tire 3 lbs. (+313)
89. Radio mast and wiring 23 lbs. (0)
90. Misc. DeLuxe equipment (small items distributed throughout cabin) 63 lbs. (+60)
91. 2 Batteries (Exide 6TS-13-1) and box, 7 lbs. 81 lbs. (-32)
92. Sound proofing rear of cabin 8 lbs. (+190)
93. Heavy type landing gear yoke 14 lbs. (-23)
94. Carburetor induction system 10 lbs. (-65)
95. Double filler neck and plumbing 15 lbs. (-28)
96. Heavy type engine mount fittings 7 lbs. (-45)
97. Electric system 24-volt wiring 10 lbs. and extra weight landing lights 3 lbs. 13 lbs. (0)
98. Miscellaneous items as noted in approved weight and balance report.
99. Landing gear (knuckle type) retracting mechanism with 12.5:1 gear ratio and EDC No. 45040 electric motor (140-amp. fuse required)(replaces standard worm and sector type) 275 lbs. (-20)
100. Rudders equipped with fixed trimming tabs (replacing adjustable tabs) and 3 lbs. spring type bungee. No weight change
101. Constant speed propeller control installation (See NOTE 5) 20 lbs. (-64)
(a) When installed with 6095A-6 blades, low pitch setting 10°
(b) When installed with 6101A-12 blades, low pitch setting 9°
102. Exhaust gas analyzer (Cambridge) 12 lbs. (-40)
103. 2 Heavy gage 81 gal. fuel tanks (Lockheed No. 45732), replacing std. 81-gal. fuel tanks 26 lbs.*(-21)
104. Oil capacity 16 gals. - 8 gal. tank in each nacelle replacing std. 7-gal. tank. No change in weights
105. Lockheed Model 10 ski and ski gear (Lockheed dwg. 45204) 624 lbs.; tail ski & gear (Lockheed dwg. 45205) 51 lbs.; and original portion of landing gear structure retained 11 lbs.; total 686 lbs. Lockheed dwg. 45378 must be used when skis are installed with knuckle landing gear.
106. Landing lights (in wing) 11 lbs. (-10)
107. Oil capacity 23 gals. - 11.5 gal. tank in each nacelle (Lockheed dwg. 45889 or 45906), replacing std. 7-gal. tank 6 lbs.*(-49)
108. Oil immersion heaters 6 lbs. (-49)
109. Radio compass (RCA, AVR-8) 63 lbs. (-46)
110. Radio, 2-way (W.E.) 137 lbs. (-34)
111. 15.5 inch streamline tail wheel 12 lbs. (+313)
112. Oil radiator (U.A.P. 7") (Replaces U.A.P. 5") 42 lbs. (-54)
113. Ham. Std. 6101A-12 blades replacing 6095A-6 blades (Item 101b must be installed with this item)(See NOTE 8) 12 lbs.*(-90)
114. New beaded (hydropressed type main wing ribs (Dwg. 40200K) No weight change
115. 2 engine ring cowls (Engel Parts Nos. 1101, 1103, 1104, 1105, 1106, 1108, 1110, 1112, and 1114) 61 lbs. (-70)
116. Hamilton standard propeller blade 6167A-6 replacing blade 6095A-6 No weight change
117. 256 gal. fuel capacity installation replacing standard (in accordance with Northwest Airlines' Dwg. No. 40012-A) 59 lbs. (+17)

LOCKHEED ELECTRA 10-A (Continued)

118. 2 Full feathering hydromatic (Ham. Std., hubs 22D50, blades 6181A-6; low pitch setting 10°). (Northwest Airlines Dwg. 107411) 88 lbs.*(-61.6)

Class III.

None.

NOTE A. Each aircraft manufactured after October 7, 1941 must, prior to original certification, satisfactorily pass:
(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.
(b) A final inspection of the completed aircraft.
(c) A check of flight characteristics.

NOTE 1. Item 19, radio consists of following W.E. units: Trans. No. 13A, receivers Nos. 12A and 14A, power unit No. 4B, control unit No. 8. Radio may be replaced by factory installed equivalent lead weights.

NOTE 2. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in Class I or Class II equipment.

NOTE 3. (a) The following placard must be conspicuously posted at the right outboard wing fuel tank filler cap: "FILL WITH 87 OCTANE FUEL ONLY."
(b) The following placard must be placed at the fuel selector valve: "USE RIGHT WING OUTBOARD TANK FUEL FOR TAKE-OFF AND LANDING."
(c) When 87 (or 80) octane fuel is used in all tanks, the above placards may be deleted and the operation limits placard should bear the notation "87 OCTANE FUEL ONLY USED IN ALL TANKS").

NOTE 4. When Item 73 is installed, the total baggage may be increased not to exceed 45 lbs., to account for contents of the ice box. When either of Items 52, 53, 54, 55, or 56 is installed, the total baggage allowance may be increased not to exceed 100 lbs. to allow for 5 parachutes or less to be carried in back of crew seats and under couch.

NOTE 5. Standard weight may be increased to 10,600 lbs. provided Item 101 (constant speed prop. control) is installed.

NOTE 6. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (February 5, 1942)
(a) Canada - Landplane
Skiplane - not eligible. However, structure complies with Canadian requirements for ski installation when item 105 is installed.
(b) All other countries except New Zealand

NOTE 7. Standard weight may be increased an amount equal to .006 x standard weight when complete de-icer is installed.

NOTE 8. Propeller is eligible for use on engines without dynamic damper or with dynamic damper tuned to both 4½ and 9 times engine speed. Item 113 must be installed when engines are equipped with damper tuned to 4½ times only. When used on engines without dynamic dampers, the propeller shall not be operated in excess of 1500 hours and shall be operated in a cruising range of 1850 to 1950 rpm, taking every precaution to avoid nicks and eliminate them as soon as possible in the outer 14 inches of the blade. (Owners have been advised of this situation through Maintenance Bulletin No. 5).

NOTE 9. Fuel dump valves must be made positively inoperative pending satisfactory completion of dump tests in accordance with EI-11c.

NOTE 10. Placard lavatory door as follows:
"This room not to be occupied during take-off and landing.

LOCKHEED ELECTRA 10-B, 12 PCLM, TC 584

Engines	2 Wrights R975E-3
Placard limits	Maximum except take-off 34½ in. Hg., 2200 rpm (420 hp)
	Take-off (one minute) 36⅛ in. Hg., 2250 rpm (450 hp)
Propellers	Controllable metal (Ham. Std., Hubs 2D30, Blades 6095A-6 Low pitch setting 13° or 14°) 152 lbs. each (-90) (see Item 78)
Placard speeds	Level flight or climb 210 mph True Ind.
	Glide or dive 261 mph True Ind.
	Flaps extended 125 mph True Ind.

Usable ceiling (May be realized under conditions shown)

Ceil. (ft.)	Weight (lbs.)	RPM	Manifold Pressure (in.Hg.)	T.I.A.S. (mph)	Fuel Oct.	Inop. Prop.
1800	10,500	2200	Full throttle	93	80	Idling at 700 rpm

Additional conditions (1) Standard air
(2) Either engine inoperative
(3) Carburetor intake on "cold air"
(4) Leading edge de-icers installed but not operating

Fuel capacity	194 gals. (4 tanks in wings - 2 at 81 gals. ea. (-21); 2 forward of spar at 16 gals. each (-21)
Oil capacity	15 gals. (2 tanks at 7½ gals. each) (-49)
No. passengers	10
Baggage	Max. capacity of compts.: (See NOTES 2 & 4) Compt. in nose 300 lbs. (-97½); compts. in each stub wing 250 lbs. each (+20⅛)
Weights	Empty Use actual (Approx. 6364 lbs. as 12 PCLM with Class I items and residual weight of drained oil system)
	Standard 10200 lbs. (See NOTE 5)
C.G. limits	(-9.75) and (+6.1) (Base line of cabin windows level)
Spec. basis	Type Certificate No. 584(Aero. Bul.7A req'ts.)
Serial Numbers	1036 and up eligible per NOTE A

EQUIPMENT: (Datum is centerline of the center section wing spar) (* Means net increase) (See NOTE 2)

Class I.

1.	2 Engine ring cowls	61 lbs. (-70)
2.	2 Exhaust collector rings	60 lbs. (-60)
* 3.	2 Oil radiators (UAP 6")	38 lbs. (-54)
4.	2 Landing lights & 1 warning light (in wing)	22 lbs. (-10)
5.	Position lights	
6.	Flares (Two 3-Min. & brackets 5 lbs.)	50 lbs. (-85)
7.	2 Flashlights & Brackets	2 lbs. (-62)
8.	2 Starters (Electric)	64 lbs. (-58)
9.	Battery (Exide 6XHS-13-1)	74 lbs. (-32)
10.	Generator (50-amp.)	36 lbs. (-61)
11.	Pressure fire ext. system	35 lbs. (-45)
12.	35x15-6 wheels (Goodyear 6HBM)	68 lbs. (-23)
13.	35x15-6 (Goodyear) Heavy Duty 6-ply tires and plain tubes (Wheels must be placarded for these tires)	109 lbs. (-23)
14.	Retracting landing gear (Electric worm drive 100-amp. fuse required)	269 lbs. (-20)
15.	Shock struts (Aerol SP-400E)	96 lbs. (-23)
16.	Wing split trailing edge flaps, elec. operated (30 amp. fuse required)	75 lbs. (+55)
17.	Rudder equipped with trailing edge tab (single & spring type bungee (3 lbs.)	
18.	Elevator equipped with (external) balance weights 12 lbs., aux. flap 3 lbs. trailing edge tabs 2 lbs. Total	17 lbs. (+310)
19.	Radio (2-way complete) (See NOTE 1)	178 lbs. (-33)
20.	Ventilating system	20 lbs. (+85)
21.	Cabin heaters	40 lbs. (+45)
22.	Toilet equipment	15 lbs. (+180)
23.	Container and 1 gal. water	12 lbs. (+168)
24.	Cabin Deluxe equipment (Includes ash trays 4 lbs., hat nets 4 lbs., curtains 2 lbs., reading lights 5 lbs.)	

LOCKHEED ELECTRA 10-B (Continued)

25.	2 Baggage straps (nose compt.)	4 lbs. (-98)
26.	16x7-3 tail wheel (Goodyear 3TW) with 4-ply tire	12 lbs. (+313)
27.	Tail wheel strut (Aerol 300ET)	17 lbs.(+300)
28.	Instruments (complete with panel)	56 lbs.(-74)

Class II

31.	2 Wheel fenders	8 lbs. (-20)
32.	Rudder lock in cockpit	1 lbs. (-65)
33.	Control wheel lock	2 lbs. (-29)
34.	Tail wheel centering lock control	3 lbs. (-70)
35.	Abrasion strips on lower fins	2 lbs. (+284)
36.	230 gal. fuel capacity (with 2 extra 18 gal. tanks in wing - rear of spar)	45 lbs.*(+17)
37.	Deicer installation (fixed portion 56 lbs., removable 55 lbs.) (-24) 111 lbs.* (See NOTE 7)	
38.	35x15-6 cactus proof tire liners (two)	22 lbs.* (-23)
39.	Landing gear retracting mechanism with 12.5:1 gear ratio and EDC No. 45040 electric motor (100 amp. fuse required)	6 lbs. (-20)
40.	Heavy type landing gear yoke	14 lbs. (-23)
41.	Double filler neck and plumbing	15 lbs. (-28)
42.	Heavy type engine mount fittings	7 lbs. (-45)
43.	Extra radio battery	7 lbs.
44.	Higher seat backs	30 lbs.*(+45)
45.	Extra fire extinguisher	7 lbs.
46.	Indirect lighting shield and wiring	
47.	Fuel capacity increased 56 gals. (Two 28 gal. wing tanks aft of spar)	62 lbs. (+17)
48.	Miscellaneous items as noted in approved weight and balance report.	
49.	Landing gear (knuckle type) retracting mechanism with 12⅛ to 1 gear ratio and EDC No. 45040 electric motor (140 amp. fuse required) (replaces std. worm & sector type)	275 lbs. (-20)
50.	Fuel capacity increased 4 gals. (two 83 gal. main wing tanks replacing std. 81 gal. tanks when item 49 is installed)	20 lbs.*(-21)
51.	Oil tanks (two heavy gauge 7-1/2 gallon capacity replacing standard 7 1/2 gallon tanks. Refer to Drawing No. 45650)	6 lbs.*(-49)
52.	Rudders equipped with fixed trimming tabs (replacing adjustable tabs) and 3 lbs. spring type bungee. No change in weight	
53.	Standard passenger seats removed -- deduct 20 lbs. each (Roman numerals in parenthesis signify number of seats removed)	
54.	Fuel capacity increased 51 gals. (1 tank in fuselage, Lockheed No. 42505)	40 lbs.*(-18)
55.	Fuel capacity increased 49 gals. (1 tank in fuselage Lockheed No. 43826)	40 lbs.*(+26)
56.	Oil capacity 22 gals. (11 gal. tank, Lockheed No. 45859, in each nacelle replacing standard 7-1/2 gal. tanks)	10 lbs.*(-44)
57.	Constant speed propeller control unit (Low pitch setting 10°)	20 lbs. (-70)
58.	Abrasion strips on L.E. tail surfaces	5 lbs. (+264)
59.	Couch - 3 place	115 lbs. (+39)
60.	Card table	10 lbs. (+39)
61.	End table	8 lbs. (+87)
62.	Buffet and ice box	40 lbs.(+143)
63.	Radio and map cabinet	38 lbs. (-18)
64.	Radio antenna reel (HAK)	10 lbs.(+327)
65.	Radio wiring & conduit	10 lbs. (-15)
66.	Radio compass, transmitter and receiver	164 lbs. (-18)
67.	Two heavy gage 81 gal. fuel tanks (Lockheed No. 47534) replacing std. 81 gal. tanks	20 lbs.*(-21)
68.	External coat of paint	25 lbs. (+50)

LOCKHEED ELECTRA 10-B (Continued)

69. Leather upholstery (replacing standard fabric) 43 lbs.*(+40)
70. Automatic pilot (Sperry) 120 lbs. (-180)
71. Lockheed Model 10 ski and ski gear (Lockheed Dwg. 45204) 624 lbs.; tail ski and gear (Lockheed Dwg. 45205) 51 lbs.; and original portion of landing gear structure retained, 11 lbs., total 686 lbs. Lockheed Dwg. 45378 must be used when skis are installed with knuckle landing gear.
72. Exhaust gas analyzer (Cambridge) 12 lbs. (-40)
73. Cactus proof liner in tail wheel tire 5 lbs. (+313)
74. 15.5 inch streamline tail wheel 12 lbs. (+313)
75. Antenna reel (pilot's compt.) 5 lbs. (-40)
76. 2 Landing lights & 1 warning light (in nose) 15 lbs. (-126)
77. New beaded (hydropressed) type main wing ribs (Lockheed Drawing 40200 K). No weight change
78. Hamilton Standard propeller blade 6167A-6 replacing blade 6095A-6 with no changes in weight, low pitch setting or pertinent notations.

Class III

None.

NOTE A. Each aircraft manufactured after October 7, 1941 must, prior to original certification, satisfactorily pass:
(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.
(b) A final inspection of the completed aircraft.
(c) A check of flight characteristics.

NOTE 1. Item 19, radio (2-way complete consists of W.E. power unit No. 4B, transmitter No. 13A, receivers No. 12A, No. 14A, and No. 17E (18 lbs.) and control unit No. 8) Radio may be replaced by factory installed equivalent lead weights.

NOTE 2. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in Class I or Class II equipment.

NOTE 3. Same as Model 10-A (Spec. No. 551) except for change in engine, nacelles, and equipment.

NOTE 4. When item 62 is installed the total baggage may be increased (subject to C.G. limitations) not to exceed 45 lbs., to account for contents of the ice box)

NOTE 5. Standard weight may be increased to 10500 lbs. provided item 57 (constant speed prop. control) is installed.

NOTE 6. Eligible for export as follows, subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (February 5, 1942)
(a) Canada - Landplane
Skiplane - not eligible. However, structure complies with Canadian requirements for ski installation provided item 71 is installed.
(b) All other countries except New Zealand.

NOTE 7. Standard weight may be increased an amount equal to .006 x standard weight when complete de-icer is installed.

NOTE 8. Fuel dump valves must be made positively inoperative pending satisfactory completion of dump tests in accordance with EI-11c.

NOTE 9. Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

LOCKHEED ELECTRA 10-C, 12 PCLM, ATC NO. 559

Engines	2 P&W Wasps SC-1
Placard limits	Maximum, except take-off Below 2500 ft. press. alt. 30½ in. Hg., 2100 rpm (450 hp) 2500 ft. press. alt. and up 30 in. Hg., 2100 rpm (450 hp) Take-off (one minute) 31 in. Hg., 2100 rpm (450 hp)
Placard speeds	Level flight or climb 210 mph True Ind. Glide or dive 261 mph True Ind. Flaps extended 125 mph True Ind.
Placard ceiling	6000 ft. absolute (density altitude) either engine inoperative.
Fuel capacity	250 gals. (6 tanks in wing - 2 main at 81 gals. each, 2 aux. fwd. of spar at 16 gals. each, 2 reserve rear of spar at 28 gals. each)
Oil capacity	17 gals. (2 tanks at 8½ gals. each in each nacelle)
No. passengers	10
Baggage	Maximum capacity of compartments: Nose compartment 300 lbs. Stub wing compartments 250 lbs. ea.
Weights	Empty Use actual (Approx. 6736 lbs. as 12 PCLM with Class I items and residual weight of drained oil system) Standard 10600 lbs.
C.G. limits	(-11.65) and (+2.2)
Spec. Basis	Approved Type Certificate No. 559
Serial Nos.	1004 and up manufactured prior to 1-24-41 eligible. Approval expired as of that date.

EQUIPMENT: (Datum is centerline of center section wing spar) (* Means net increase) (See NOTE 3)

Class I.

101.	Two engine ring cowls	93 lbs.
102.	Two exhaust collector rings	87 lbs.
103.	Two oil radiators (UAP 6")	38 lbs.
104.	Two landing and one warning lights (in wing)	15 lbs.
105.	Position lights	
106.	Flares (two 3-Min.) and brackets	50 lbs.
107.	Two flashlights and brackets	3 lbs.
108.	Two starters (electric)	64 lbs.
109.	Battery (Exide 6XT-13-12V)	65 lbs.
110.	Generator (50 amp.)	28 lbs.
111.	Pressure fire extinguisher system	35 lbs.
112.	35x15-6 wheels (Goodyear 6HBM)	68 lbs.
113.	35x15-6 tires (Goodyear Heavy Duty) 6 ply and plain tubes	109 lbs.
114.	Retracting landing gear, electric worm and sector drive 12.5:1 gear and EDC No. 45040 electric motor (100 amp. fuse required)	275 lbs.
115.	Shock struts (Aerol SP-400E)	96 lbs.
116.	Wing split trailing edge flaps electrically operated, 30 amp. fuse required	75 lbs.
117.	Rudder equipped with trailing edge tab (single) and spring type bungee(3 lbs.)	
118.	Elevator equipped with balance weights (external) 12 lbs.; aux. flap 3 lbs.; tabs 2 lbs.	
119.	Radio	75 lbs.
120.	Ventilating system	20 lbs.
121.	Cabin heaters	40 lbs.
122.	Toilet equipment	15 lbs.
123.	Container and 1 gal. water	12 lbs.
124.	Cabin Deluxe equipment (incl. ash trays 4 lbs., hat nets 4 lbs., curtains 2 lbs., reading lights 5 lbs.)	
125.	Two baggage straps (nose compt.)	4 lbs.
126.	16x7-3 tail wheel (Goodyear 3TW) with 4 ply tire	12 lbs.
127.	Tail wheel strut (Aerol 300ET)	17 lbs.
128.	Instruments with panel	56 lbs.

LOCKHEED ELECTRA 10-C (Continued)

129.	Two wheel fenders	8 lbs.
130.	Rudder lock in cockpit	Neglect weight
131.	Control wheel lock	" "
132.	T il wheel centering lock control	" "
133.	Abrasion strips on tail surfaces (complete)	" "
134.	Two cactus-proof tire liners	22 lbs.
135.	Thermos jug with 1 gal. water	17 lbs.
136.	Propellers - controllable metal (Hmn. Std., hubs 8460, blades 6101A-12, low pitch setting 16°)	155 lbs. ea.

Class II.

201.	Standard passenger seats removed, deduct 20 lbs. each. (Roman numerals in parenthesis signify number of seats removed.)	
202.	Lockheed model 10 ski and ski gear (Lockheed Dwg. 45204) 624 lbs.; tail ski and gear (Lockheed Dwg. 45205) 51 lbs.; and original portion of landing gear structure retained 11 lbs.	686 lbs.
203.	Miscellaneous items as noted in approved weight and balance report.	
204.	(Deleted - February 6, 1942)	

Class III.

301.	New beaded (hydropressed) type main wing ribs (Lockheed Dwg. 40200K)	No weight change
302.	Fuel dump valve and chute installation (Pan American Airways Dwgs. 11.070.001B, 11.070.002C, and E-1 to E-8, inclusive) (See NOTE 2)	19 lbs. (+2)

NOTE 1. Eligible for export as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (July 13, 1939)

(a) Canada - Landplane
Skiplane - not eligible. However, structure complies with Canadian requirements for ski installation when item 202 is installed.

(b) All other countries except Great Britain and Australia.

NOTE 2. A. If provisions other than item 302 are made for dumping, the fuel dump valves shall be made positively inoperative.

B. If item 302 (which complies with SI-11c) is installed, the airworthiness certificate shall incorporate one of the following statements, as the case may be:

(1) Non-Air Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."

(2) Air Carrier. "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 3. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted with original inspector's report and each subsequent report covering change in equipment.

NOTE 4. Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

5-20986

LOCKHEED ELECTRA 10-E, 12 PCLM, TC 590

Engines	2 P&W Wasps S3H1
Placard limits	Maximum, except take-off Below 4000 ft. pressure alt. 30½ in. Hg., 2000 rpm (450 hp) 4000 ft. pressure alt. & up 29 in. Hg., 2000 rpm (450 hp) Take-off (one minute) 34½ in. Hg., 2200 rpm (550 hp)
Propeller	Item 61(a)
Placard speeds	Level flight or climb 210 mph True Ind. Glide or dive 261 mph True Ind. Flaps extended 125 mph True Ind.
Placard ceiling	(a) Deleted. (b) 9500 ft. absolute (density altitude) at 10500 lbs. with either engine inoperative with propeller (item 61) idling at 700 rpm (6101A-12 blades) (c) 0 ft. usable ceiling (density altitude) at 10500 lbs. with either propeller braked (see item 63) (Data on usable ceiling not available) (d) Deleted.
Fuel capacity	250 gals. (6 tanks in wing--2 main 81 gals. ea., 2 aux. fwd. of spar at 16 gals. ea., 2 reserve rear of spar 28 gals. ea.)
Oil capacity	17 gals. (One 8½ gal. tank in ea.nacelle)
No. passengers	10
Baggage	Maximum capacity of compts. (See NOTE 1) Compt. in nose 300 lbs. (-97-1/2); Compt. in ea. wing stub 250 lbs. (+20½)
Weights	Empty Use actual (Approx. 6989 lbs. (+9.96) as 12 PCLM (with Class I items only) Standard 10500 lbs.
C.G. limits	(-11.65) and (+2.9)
Spec. basis	Type Certificate No. 590 (Aero. Bulletin 7A requirements)
Serial numbers	1008 and 1041 and up eligible per NOTE A.

EQUIPMENT: (Datum is centerline of the center section spar) (* Denotes net increase) (See NOTE 1)

Class I.

1. 2 Engine ring cowls	93 lbs. (-70)
2. 2 Exhaust collector rings	87 lbs. (-60)
3. 2 Oil radiators (UAP 7")	38 lbs. (-54)
4. 2 Landing lights and 1 warning light (in wing)	25 lbs.
5. Position lights	
6. Flares (two 3-Min.) & brackets	50 lbs. (-85)
7. 2 Flashlights & brackets	2 lbs. (-62)
8. 2 Starters (electric)	64 lbs. (-58)
9. Battery (Exide 6XT-13-12V)	65 lbs. (-32)
10. Generator (50 amp.)	36 lbs. (-61)
11. Pressure fire extinguisher system	35 lbs. (-45)
12. 35x15-6 wheels (Goodyear 6HBM)	68 lbs. (-23)
13. 35x15-6 (Goodyear) heavy duty 6-ply tires and plain tubes (Wheels must be placarded for these tires)	109 lbs. (-23)
14. Retracting landing gear, electric worm drive 12.5:1 gear and EDC No. 45040 electric motor (100 amp. fuse required)	275 lbs. (-20)
15. Shock struts (Aerol SP-400E)	96 lbs. (-23)
16. Wing split trailing edge flaps, electric operated (30 amp. fuse required)	75 lbs. (+55)
17. Rudder equipped with trailing edge tab (single) and spring type bungee	3 lbs.
18. Elevator equipped with balance weights (external 12 lbs.; aux. flap 3 lbs.; tabs 2 lbs.	17 lbs. (+310)
19. Radio	75 lbs.
20. Ventilating system	20 lbs. (+85)
21. Cabin heaters	40 lbs. (+45)
22. Toilet equipment	15 lbs. (+180)

LOCKHEED ELECTRA 10-E, (Continued)

23. Container and 1 gal. water	12 lbs.(+168)
24. Cabin DeLuxe equipment (including ash trays 4 lbs., hat net 4 lbs., curtains 2 lbs., reading lights 6 lbs.)	19 lbs.(+60)
25. 2 baggage straps (nose compt.)	4 lbs.(-98)
26. 16x7-3 tail wheel	12 lbs.(+313)
27. Tail wheel strut(Aerol 300ET)	17 lbs.(+300)
28. Instruments with panel	56 lbs.(-74)
29. Pan American emergency equipment and container (Equivalent weight carried in metal box aft of cabin may be substituted for this item)	40 lbs.

Class II.

31. 2 Wheel fenders	8 lbs.(-20)
32. Rudder lock in cockpit	1 lbs.(-65)
33. Control wheel lock	2 lbs.(-29)
34. Tail wheel centering lock control	3 lbs.(-70)
35. Abrasion strips on lower fins	2 lbs.(+284)
36. Abrasion strips on tail surfaces complete)	5 lbs.(+270)
37. De-icer installation(fixed portion 58 lbs., removable 55 lbs.) (See NOTE 2)	113 lbs.*(-24)
38. Small type generator (25 amp.) (H & K)	28 lbs. (-61)
39. Heavy duty battery	70 lbs.(-32)
40. 2 Cactus-proof tire liners	22 lbs.(-23)
41. Thermos jug with 1 gal.water	17 lbs.(-17)
42. Miscellaneous items as noted in approved weight and balance report	
43. Tail wheel tire liner	3 lbs.(+313)
44. Standard passenger seats removed. Deduct 20 lbs. each. (NOTE: Number of seats removed will be noted by addition of Roman numeral after Item 44. "44(V)" represents five seats removed - 100 lbs.)	
45. Two heavy gage 81 gal. fuel tanks (Lockheed No. 47534) replacing standard 81 gal. fuel tanks	26 lbs.*
46. Rudders equipped with fixed trimming tabs (replacing adjustable tabs) and 3 lbs. spring type bungee No change in weights.	
47. Landing gear (knuckle type) retracting mech. with 12.5:1 gear ratio and EDC No. 45040 electric motor (140 amp. fuse required) (replaces standard worm and sector type)	275 lbs.(-20)
48. Fuel capacity increased 49 gals. (1 tank in fuselage, Lockheed No. 45826)	40 lbs*(+26)
49. Oil capacity 22 gals. (11 gal. tank, Lockheed No. 45859, in each nacelle replacing standard 7½ gal. tanks)	10 lbs. (-44)
50. Couch, 3 place, leather covered	130 lbs.(+40)
51. Buffet and ice box	40 lbs.(+143)
52. Card table	10 lbs.(+185)
53. End table	13 lbs.(+87)
54. Two electric fans in cabin	4 lbs.(+165)
55. Cabin carpet	21 lbs.(+70)
56. Two 2-quart thermos bottles	17 lbs.(+157)
57. Lux fire extinguisher	10 lbs.(-47)
58. Oil immersion heaters	6 lbs.(-44)
59. Bendix radio equipment	203 lbs.(-30)
60. Leather seat upholstery (replacing standard fabric)	20 lbs.*(+40)
61. (a) Propeller - controllable metal (Ham. Std., Hubs, 12D40, Blades 6101A-12, low pitch setting 11°)	362 lbs. (-93.5)
(b) Constant speed unit	20 lbs.*(-65)
63. Air Associates (Quick) propeller brake installation (Ham. Std. constant speed Hub 12D40, Blades 6101A-12)	62 lbs. (-87)
65. (Deleted - February 5, 1942)	
66. Lockheed model 10 ski and ski gear (Lockheed Dwg. 45204) 624 lbs.; tail ski and gear (Lockheed Dwg. 45205) 51 lbs.; and original portion of landing gear structure retained 11 lbs.	686 lbs.

LOCKHEED 10-E (Continued)

Class III.

62. New beaded (hydrocompressed) type wing ribs (Lockheed Dwg. No. 40200K) No weight change

64. Fuel dump valve and chute installation (PAA Dwgs. E-1, E-2, E-3, E-4, E-5, E-6, E-7, and E-8) (See NOTE 5) 19 lbs. (+2)

NOTE A. Each aircraft manufactured after October 7, 1941 must, prior to original certification, satisfactorily pass:

(a) An inspection for workmanship, materials and conformity before any covering, metal priming or final finish is applied. All woodwork may be varnished.

(b) A final inspection of the completed aircraft.

(c) A check of flight characteristics.

NOTE 1. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in Class I or Class II equipment.

NOTE 2. Standard weight may be increased 63 lbs. when complete de-icer is installed.

NOTE 3. Eligible for export as follows, subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (February 5, 1942)

(a) Canada - Landplane

Skiplane - not eligible. However, structure complies with Canadian requirements for ski installation when item 66 is installed.

(b) All other countries except Australia and New Zealand.

NOTE 4. Same as Model 10-A (Specification No. 551) except for change in engine, nacelles, and equipment.

NOTE 5. A. If provisions other than item 64 are made for dumping, the fuel dump valves must be made positively inoperative.

B. If item 64 (which complies with EI-11c) is installed, the airworthiness certificate shall incorporate one of the following statements, as the case may be:

(1) Non-Air Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."

(2) Air Carrier. "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 6. Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

LOCKHEED 12-B, 8 PCLM, TC 652

Engines	2 Wrights R-975E-3
Placard limits	Maximum, except take-off 34.5 in. Hg., 2200 rpm (420 hp) Take-off (one minute) 36.5 in. Hg., 2250 rpm (450 hp)
Propellers	2 controllable metal (Ham. Std., hubs 2D30, blades 6095A-8; low pitch setting 16°) 152 lbs. (-84)(Maximum permissible propeller diameter 9 ft.0 in.)
Placard speeds	Level flight or climb 240 mph True Ind. Glide or dive 275 mph True Ind. Flaps extended 125 mph True Ind.
Placard ceiling	5500 ft. usable in standard air at 8650 lbs. at an indicated airspeed of 96 mph with either engine inoperative and the inoperative propeller idling in high pitch (1100 rpm) The operating engine at full throttle at 2200 rpm.
Fuel capacity	200 gals. (4 tanks in wing; 2 fwd. of spar at 49 gals. each 62 lbs. (-15) and 2 aft of spar at 51 gals. each 60 lbs. (+17))
Oil capacity	14 gals. (2 tanks at 7 gals. each)(-37)
Baggage	450 lbs. (Nose compt. 200 lbs. (-101) and aft of cabin compt. 250 lbs. (+111)) (See NOTE 1)
Weights	Empty Use actual (Approx. 5800 lbs. (-10.77) as 8 PCLM with Class I items only) Standard 8650 lbs. (See NOTES 1 and 6) Provisional 9200 lbs. (See NOTES 1 and 6)
C.G. limits	(-16.3) and (+1.6)
Leveling means	Level for weighing on base line of main cabin windows.
Spec. basis	Type Certificate No. 652 Production Certificate No. 18
Serial numbers	1226 and up eligible

EQUIPMENT: (Datum is spar centerline on under side of wing) (* Means net increase) (See NOTE 1a)

Class I

1. Two engine ring cowls	75 lbs. (-63)
2. Two exhaust collector rings	105 lbs. (-44)
3. Two oil radiators (UAP 6 in.)	28 lbs.(-41)
4. Two retract. land. lights in wing, 1 warning light in nose	8 lbs. (-19)
5. Two flares and brackets (3 Min.)	50 lbs. (-88)
6. Two starters (electric)	64 lbs. (-48)
7. Battery (Exide 6-FHM-13-1)	75 lbs. (-81)
8. Generator (25 amp.)	21 lbs. (-54)
9. Pressure fire extinguisher system (Alfite, 5 lbs. bottle under co-pilot's seat, or at rear of nose baggage compt.)	23 lbs. (-43)
10. 30x13-6 wheels (Goodyear 6HBM)	62 lbs. (-28)
11. 30x13-6 tires (HD 6-ply) and plain tubes	86 lbs. (-28)
12. Shock struts (Aerol SP-350L-12)	89 lbs. (-28)
13. 13.25 in. streamline tail wheel and tire	10 lbs. (+290)
14. Tail wheel shock strut (Aerol 300L)	20 lbs. (+282)
15. Instruments and panel	50 lbs. (-72)
16. Wheel fenders	5 lbs. (-20)
17. (a) Residual fuel and oil in system	15 lbs. (-34)
(b) Old type dump valves and controls (Lockheed Dwgs. 68002, 68004) (See NOTE 6)	
18. (a) Heater and ventilator	32 lbs. (+35)
(b) Toilet equipment	16 lbs. (+131)
19. Six standard passenger seats at 20 lbs. each (-11, -11, +31, +64, +64). (See items 21 and 77)	

Class II.

21. Standard passenger chair removed; deduct 20 lbs. each (Roman numerals in parenthesis signify number of seats removed) (See items 19 and 77)	
22. Extra fire extinguisher	7 lbs. (-50)

LOCKHEED 12-B (Continued)

23. Cockpit partition and door assembly	25 lbs. (-30)
24. Constant speed propeller control (low pitch setting 11°or 11½° for 6095A-8 blades)	20 lbs. (-64)
25. Exhaust gas analyzer (Cambridge)	1½ lbs. (-45)
26. Pesco vacuum pumps (two)	10 lbs. (-59)
27. Vacuum pumps (two) (Eclipse or Romec)	14 lbs. (-59)
28. Couch - three place	81 lbs. (+42)
29. Card table	8 lbs. (+140)
30. Buffet and refrigerator (See NOTE 1b)	42 lbs. (-17)
31. Omitted	
32. Abrasion strips (tail surfaces (L.E.)	5 lbs. (+250)
33. Generator, 50 amp.	36 lbs. (+54)
34. (a) Antenna reel (H & E)	10 lbs. (+290)
(b) Antenna	5 lbs. (+20)
35. Automatic pilot (Sperry)	100 lbs. (-64)
36. Battery (Prestolite R-1213-G)	91 lbs. (-81)
37. Radio receiver (RCA)	25 lbs. (-14) or (-43)
39. Omitted	
41. Radio (complete 2-way W.E.)	160 lbs.(-29)
42. Omitted	
43. Omitted	
44. Omitted	
45. Omitted	
46. Oil immersion heaters	6 lbs. (-37)
47. De-icing equipment (fixed portion 30 lbs., removable 65 lbs.) (See NOTE 4)	95 lbs. (-13)
48. Radio compass and loop	45 lbs. (-24)
49. Extra antennae	10 lbs. (+50)
50. Abrasion strips on lower fins	2 lbs. (+270)
51. Carpet (cabin)	23 lbs. (+50)
52. Radio receivers (2 RCA AVR-7)	46 lbs. (-40)
53. (a) Radio transmitter (RCA AVT-12)	80 lbs. (+85)
(b) Radio transmitter (RCA AVT-12)	80 lbs. (-17)
(c) Radio transmitter (RCA-AVT-12)	80 lbs. (-85)
55. Radio compass and loop (RCA AVR-8 series)	63 lbs. (-22)
56. Radio (complete 2-way W.E.) (one receiver)	137 lbs. (-31)
58. Two electric fans (cabin)	4 lbs. (+50)
59. Brake controls dual set - co-pilot)	4 lbs. (-74)
60. Omitted	
61. Omitted	
62. 30x13-6 cactus proof tire liners	20 lbs. (-28)
63. Omitted	
64. Tail wheel lock	3 lbs. (-60)
65. Two foot rests	15 lbs. (+37)
66. Loading step	4 lbs. (+88)
67. Propeller spinners	16 lbs. (-84)
68. Omitted	
69. Omitted	
70. Cactus proof tail wheel and tire liner	3 lbs. (+290)
71. Antenna reel and fairlead	7 lbs. (-47)
72. Omitted	
73. Special cabin upholstery	10 lbs. (+20)
74. Omitted	
75. Cannon tuning unit	4 lbs. (+295)
76. Revised brake control system in accordance with data submitted June 18 and June 21, 1937	No change in weight
77. Standard Model 14 chair installed at 53 lbs. each (Roman numerals in parenthesis signify number of seats installed) (See items 19 and 21)	
78. Propeller spinners (Heavier type)	22 lbs. (-84)
79. Closeable dump valves, controls and discharge chutes (See NOTE 6)	14 lbs.* (+8)
80. Heavy type nose baggage compt. flooring	10 lbs.*(-101)
81. Revised empennage assembly with dynamically balanced rudders (Lockheed Dwg. 63012)	55 lbs.*(+273)
82. Aileron 100% static balance (Lockheed Dwg. 62002G)	23 lbs.*(+26)

LOCKHEED 12-B:(Continued)

83. Fuselage revised tail section, .032 replacing .025 skin (Lockheed Dwg. 60060E) 6 lbs.e(+187)
85 Miscellaneous items as noted in approved weight and balance report
86. Zeiss special camera installation 10 lbs. (+87)

Class III.

38. (A) Fuel capacity increased 49 gals. (One fuselage tank Lockheed No. 69300) 40 lbs. (-16)
(b) Oil capacity 19 gals. (9½ gal. tanks, Lockheed No. 64331 or 63429 in each nacelle replacing standard 7 gal. tanks) No. change in weight
40. Radio cabinet 20 lbs.(-15)
54. Fuel capacity increased 98 gals. 80 lbs.(-16)
57. Map case 16 lbs.(-15)
84. Wing fuel tank installation (Lockheed Dwg. 68007) (4 tanks in wing: 2 fwd. of spar at 49 gals. and 2 aft of spar at 80 gals.) Net decrease 62 lbs. (+0.5)
87. Hamilton Standard propeller blades 6167A replacing 6095-8 with no changes in weight, low pitch setting or pertinent notations.

NOTE 1. (a) Weight and balance report including list of equipment included in certificated weight empty, and loading schedule when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering changes in equipment. (This note applies when standard weight exceeds 8450 lbs.)
(b) When item 80 is installed, baggage may be increased 45 lbs. (capacity of refrigerator).

NOTE 2. Omitted.

NOTE 3. Eligible for export, at standard weight, as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (February 9, 1942)
(a) Canada - Landplane
Skiplane - not eligible
(b) All other countries except Australia and New Zealand.

NOTE 4. Standard weight may be increased 52 lbs. when complete de-icer is installed.

NOTE 5. Same as Model 12-A (ATC 616) except for change in engines.

NOTE 6. A. If provisions other than item 79 are made for dumping, the fuel dump valves shall be made positively inoperative.
B. If item 79 (which complies with EI-11c) is installed, the airworthiness certificate shall incorporate one of the following statements, as the case may be:
(1) Non-Air Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."
(2) Air Carrier.
(a) With authorized weight in excess of standard - "Landing shall not be made at a weight in excess of standard except in accordance with CAR 61.7811. Fuel shall not be dumped except in accordance with CAR 61.7811 and then only if the pilot deems it safer than landing at a weight in excess of standard."
(b) With authorized weight not in excess of standard - "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 7. Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

LOCKHEED 14-H, 14-H2, 14 PCLM, ATC 657

I - SPECIFICATIONS PERTINENT TO ALL MODELS.

Propellers	2 controllable metal, constant speed (Ham. Std., hubs 5E50, blades 6111-12; low pitch setting 18°) 695 lbs. (-110)
Placard speeds	Level flight or climb 240 mph True Ind. Glide or dive 284 mph True Ind. Flaps extended 115 mph True Ind.
Placard ceiling (See Item 243 and NOTE 10)	(a) 9350 ft. (usable) in standard air at an indicated airspeed of 113 mph at 15650 lbs. with either engine inoperative and the inoperative propeller idling in high pitch (b) 12000 ft. (usable) in standard air at an indicated airspeed of 118 mph at 15650 lbs. with either engine inoperative and the inoperative propeller fully feathered.
Fuel capacity	644 gals. (4 tanks in center section wing; 2 front tanks at 150 gals. each (-20.5) and 2 rear tanks not including fuel system at 172 gals. each (+22.5))
Oil capacity	44 gals. (1 tank in each nacelle at 22 gals. each (-52.5) not including capacity of oil system)
No. pass.	11 (See item 114) (Std. crew 2, pilots at -52.5) (See item 210)
Baggage	Maximum capacity of compartments: (See NOTES 1 and 9) No. 1 - Nose compartment 1500 lbs.(-133) No. 2 - Fwd. belly compartment 800 lbs.(-68.5) No. 3 - Mid. belly compartment 400 lbs.(-20.5) No. 4 - Rear belly compartment 700 lbs.(+30.5) Ballast compartment 350 lbs.(+230.5)
C.G. limits	(-0.3) and (+6.6) Level for weighing on main cabin floor or window line. MAC is 115.84 in. (L.E. MAC is 32.75 in fwd of spar center line)
Spec. basis	Approved Type Certificate No. 657
Serial Nos.	1401 and up manufactured prior to January 24, 1941 eligible. Approval expired as of that date.

EQUIPMENT: (Datum is spar center line on under side of wing)
(* Means net increase)

Class I.

101.	Two engine ring cowls (Lockheed 54022)	112 lbs. (-89)
102.	Two exhaust collector rings	103 lbs. (-60)
103.	Two oil radiators (UAP 9")	50 lbs. (-41)
104.	Two vacuum pumps (Pesco 207, type B-3)	10 lbs. (-76)
105.	Two starters (Eclipse E-160)	60 lbs. (-68)
106.	Generator (Eclipse E-5)	34 lbs. (-75)
107.	Battery (Exide 6-FHM-13)	75 lbs. (-47)
108.	(a) Pressure fire extinguisher (Lux type 36-1)	25 lbs. (-58)
	(b) Lux fire extinguisher hand type	8 lbs. (+177)
109.	Shock strut (Aerol XY-450L)	277 lbs. (-28.5)
110.	15.00-16 wheels (Goodyear 16HBM)	123 lbs. (-28.5)
111.	(a) 15.00-16 tires (Goodyear) 8-ply HD	171 lbs. (-28.5)
	(b) 15.00-16 tire tubes, plain	29 lbs. (-28.5)
112.	18 in. streamline tail wheel and 6-ply tire (Goodyear)	17 lbs. (+327)
113.	Tail wheel shock strut (Aerol B250L)	27 lbs. (+314)
114.	Eleven standard passenger chairs 53 lbs. each (-16.5, +26.5, +26.5, +61.5, +65.5, +96.5, +104.5, +131.5, +143.5, +166.5) (Roman numerals in parenthesis following item number signify number of seats removed) (See NOTE 9)	
115.	Ventilating system	57 lbs. (+57)
116.	Instruments and panel (Refer to West Coast Branch for itemized list dated March 1, 1938)	56 lbs. (-83)

LOCKHEED 14-H, 14-H2, (Continued)

117.	Heating system (Lockheed 57005)	61 lbs.(+57)
118.	Constant speed propeller control (Type 1A1)	20 lbs. (-60)
119.	Automatic mixture control (NAY-9C, G or H-23)	40 lbs.(-70)

Class II.

200.	Miscellaneous items as noted in approved weight and balance report.	
201.	Two retracting landing lights (in wing)	11 lbs.(-12)
202.	Two flares and brackets (International)	50 lbs.(+277)
203.	Two retractable oil radiator scoops (includes thermostatic control)	9 lbs.(-68)
204.	(a) Lavatory equipment including 3 gals. water	62 lbs.(+211)
	(b) 1/2 gal. water, bottle, and brackets	7 lbs.(+94)
205.	(a) Two flashlights in cockpit	3 lbs.(-69)
	(b) Extra cabin door lock	3 lbs. (+188)
206.	(a) Automatic pilot lines and brackets (b) Automatic pilot mechanism	80 lbs.(-65)
207.	(a) 2-1/2 gal. propeller anti-icer fluid tank and lines	6 lbs. (-110)
	(b) Propeller anti-icer pump	5 lbs.(-107.5)
	(c) Spinners and slinger rings	24 lbs.(-107.5)
	(d) Propeller anti-icer fluid (3 gals.)	24 lbs. (-103)
	(e) Slinger rings (for hydromatic propeller)	6 lbs.(-104)
208.	(a) Extra, two, "pint" fire extinguishers (Pyrene)	10 lbs. (-60)
	(b) Extra "quart" fire extinguisher (Pyrene)	8 lbs. (-60)
209.	Landing gear strut recess flaps	16 lbs.(-25)
210.	Folding type stewardess chair (See NOTE 2a)	16 lbs.(+177)
211.	15.00-16 cactus proof tire liners	25 lbs.(-28.5)
212.	18 in. cactus proof tail wheel tire liner	5 lbs.(+327)
213.	Plexiglass fuselage nose replacing standard metal nose	5 lbs.*(-180)
214.	Ten standard passenger chairs 53 lbs. ea. (replacing item 114) (-16.5, -16.5, +26.5, +26.5, +65.5, +65.5, +104.5, +104.5, +143.5, +143.5) (Roman numerals in parenthesis following the item number signify number of seats removed.)	
215.	Dump valve installation (Lockheed Dwgs. 58019 and 58077) (See NOTE 7)	18 lbs.*(+8)
216.	(a) Radio compass (RCA AVR8E)	68 lbs.(-147.5)
	(b) Hand reel and antenna (trailing)	12 lbs.(-57)
	(c) Radio receivers	50 lbs.
	(1) (RA2)	23 lbs. (+252)
	(2) (RA4)	15 lbs.(+252)
	(3) (WE17A)	12 lbs.(-55.5)
	(d) Radio transmitters (TA2)	47 lbs.(+252)
	(e) Radio power units (JBX-3)	49 lbs. (-55.5)
	(f) Wiring, etc., and compass loop	92 lbs.(-12)
	(g) Dipole antenna	5 lbs.(-44)
	(h) Vee antenna	15 lbs. (-20)
	(i) Two spare trailing type antenna	2 lbs.(+234)
	(j) Radio receivers	56 lbs.
	(1) (RA2)	23 lbs. (+252)
	(2) (RA4)	15 lbs.(+252)
	(3) (RA6)	18 lbs.(-55.5)
217.	(a) Cabin carpet (service)	38 lbs.(+65)
	(b) Cabin carpet (Deluxe, heavy type)	57 lbs.(+65)
	(c) Leather lavatory bench covering	5 lbs.(+232)
	(d) Leather upholstery on interior cabin bulkheads	4 lbs.(+65)
	(e) Upholstery (Laidlow replacing linen)	20 lbs.(+65)
	(f) Four blankets in cabin parcel nets	7 lbs.(+67)

LOCKHEED 14-H, 14-H2 (Continued)

218. (a) Auxiliary instruments and panel (refer to West Coast Branch for itemized list dated March 1, 1938) 10 lbs. (-83)
(b) Extra Sperry horizon indicator 5 lbs.(-83)
219. Emergency exit left hand side of cabin 5 lbs.*(+88)
220. (a) Abrasion string L.E. lower fin only 3 lbs. (+290)
221. (a) De-icer boots and removable equip. (wing) (See NOTE 8) 44 lbs.(-22)
(b) De-icer boots and removable equip. (stabilizer) (See NOTE 8) 11 lbs. (+268)
(c) De-icer boots and removable equip. (fin) (See NOTE 8) 11 lbs.(+300)
222. Tool kit (Lockheed) 17 lbs.(+252)
223. Fuel exhaust analyzer (Cambridge)12 lbs.(-42)
224. Fuel flowmeter (Bowser) 29 lbs.(-57)
225. Two engine ring cowls (Lockheed 53525 replacing Lockheed 54022) 103 lbs.(-89)
226. (a) Magazines, writing material, literature, etc. 13 lbs.(+67)
(b) 10 chairs head rest covers 1 lb. (+18)
(c) Tool kit in No. 4 cargo compartment 18 lbs.(+56)
227. Inconel exhaust collector ring (Lockheed 53506B) 14 lbs.*(-60)
228. Hamilton Standard hydromatic propeller installation, hubs 23E50, blades 6139A-12 (Lockheed Dwg. 53507) 145 lbs.*(-87)
229. (a) Elevator balance weight installed (Lockheed 56000F) 39 lbs.(+293)
(b) Elevator balance weight brackets (Lockheed 56000F) 3 lbs.(+293)
230. Revised stabilizer with .025" replacing .020" metal cover (Lockheed Dwgs. 53083, 86, 87, 88, 90, 91) 5 lbs.*(+323)
231. Bulkhead reenforcement, Fuselage Station 456 (Lockheed Dwg. 50124E) 12 lbs.(+268)
232. Addition of bronze and steel plates to Goodyear brake assembly 7 lbs.*(-28)
233. Brake fluid gravity tank and fluid (Dwg. 42402) 2 lbs.(-88)
234. Fuselage structural changes to accommodate camera (Lockheed Dwg. 55560) 10 lbs.(+85)
235. Hamilton Standard slinger ring installation for hydromatic propellers (Ham.Std. Part No. 52769) 6 lbs.(-104)
236. Auxiliary battery 11 lbs.(-32)
237. Structural increase (consisting of changes in shock strut, side strut and drag strut per Dwgs. 55007D, 55053D and 55008C; also tail bulkhead fitting 50460A, stringer 19A and 20A extended per Dwg. 50050G, windshield revisions per Dwgs. 50565A and 50801, window frame gussets per Dwg. 50050G, new emergency exit per Dwg. 50063, and miscellaneous center section and wing increases per Dwg. 51000F) 56 lbs.(-5)
238. Zinc chromate primer (interior) 20 lbs.(+20)
239. New flap actuating cylinder, maximum operating pressure 650 p.s.i. (Lockheed Dwg. 51851) 4 lbs.*(+67.5)
240. Fuselage reinforcements in No. 1 baggage compartment (Lockheed Service Bulletin No. 14-38) 6 lbs.(-104)
241. Radio operator's seat installation (Lockheed Dwg. 55460) 21 lbs. (-30.5)
242. Toe brake installation (Lockheed Dwg. 55380) 38 lbs.*(-88)
243. Fixed wing-slots installation 25 lbs.(-7)
(All placard ceilings reduced 130 ft. when this item is installed)

LOCKHEED 14-H, 14-H2 (Continued)

Class III.

301. (a) De-icer installation (wing and tail fixed portion) (See NOTE 8) 25 lbs. (0)
302. Emergency wheel lowering device (independent oildraulic system manually operated) 8 lbs. (0)

NOTE 1. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering change in equipment.

NOTE 2. (a) Stewardess' seat not to be occupied by passengers. Placard accordingly.
(b) Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

NOTE 3. Eligible for export, at standard weight, as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (June 6, 1939)
(a) Canada - Landplane
Skiplane - not eligible. However, structure complies with Canadian ski gear requirements provided that the geometry of the ski gear is in accordance with Lockheed Report No. 954
(b) All other countries.

NOTE 4. The following placards must be installed in locations noted: (In lieu of posting such placards, and subject to the approval of the Chief, Air Carrier Inspection Section, definite instructions must be issued by the operator to assure compliance therewith)
(a) At fuel selector valve: "All fuel (to within 2 or 3 gals.) shall be used from each tank in the order listed below before using fuel from succeeding tank: Right Front, Left Rear, Left Front, Right Rear."
(b) At fuel filler caps: "In filling fuel tanks, care must be observed to ascertain that tanks are full in the following order: Right Rear, Left Front, Left Rear, Right Front."

NOTE 5. Tab ranges are limited as follows:
Rudder Tab, Trim Travel Move to Right 25°. Servo Travel Move to Right 6°10'. Rudder Tab, Trim Travel Move to Left 25°. Servo Travel Move to Left 6°5'. Elevator Tab, Trim Travel Up 25°. Servo Travel Down 11°30'. Elevator Tab, Trim Travel Down 25°. Servo Travel Up 5°30'. Aileron, Trim Travel (L.H. Tab only) Up 26°, Down 24°30', as measured from a neutral position 5° down from chord plane of aileron.
Servo Travel Down 17°
Servo Travel Up 1°

NOTE 6. Relief Valve in hydraulic flap operation system must be set to open at from 850 lbs. per sq. inch to 1000 lbs. per sq. inch, unless Item number 239 is installed.

NOTE 7. A. If provisions other than item 215 are made for dumping, the fuel dump valves shall be made positively inoperative.
B. If item 215 (which complies with EI-11c) is installed, the airworthiness certificate shall incorporate one of the following statements, as the case may be:
(1) Non-Airline Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."
(2) Airline Carrier
(a) With authorized weight in excess of standard - "Landing shall not be made at a weight in excess of standard except in accordance with CAR 61.7811. Fuel shall not be dumped except in accordance with CAR 61.7811 and then only if the pilot deems it safer than landing at a weight in excess of standard."
(b) With authorized weight not in excess of standard - "Fuel shall not be dumped except in accordance with CAR 61.7811."

LOCKHEED 14-H, 14-H2 (Continued)

NOTE 8. Standard (and provisional) weight may be increased 93 lbs. when complete de-icer is installed.

NOTE 9. When airplanes of the subject models are operated as cargo carriers, no passengers may be carried. If no passenger seats are installed, the cabin may be divided into baggage compartments having a combined maximum total capacity of 2700 lbs. provided each compartment is conspicuously placarded as follows:

(a) "Load cargo so that its center of gravity rests directly over the center of gravity of the compartment."

(b) "The maximum permissible load density is 145 lbs. per linear foot of compartment length."

NOTE 10. When Goodrich propeller deicing strips are installed (the strips must not extend beyond the outside diameter of the engine cowl) the placard ceilings are reduced 1000 feet below the usable ceilings shown.

II - MODEL 14-H, DESIGNATION 14 PCLM

Engines	2 Pratt & Whitney Hornets S1EG
Placard limits	
Fuel (See NOTE 4)	Maximum, except take-off
87 min.octane	Below 1000 ft. 36.0 in.Hg.,2275 rpm (800 hp)
	Below 3000 ft. 35.5 in.Hg., 2275 rpm (800 hp)
	Above 3000 ft. 35.0 in.Hg.,2275 rpm (800 hp)
	Take-off (one minute)
87 min.octane	40.5 in.Hg.,2500 rpm (850 hp)
Weights	Empty Use actual (Approx. 10270 lbs. (-4.65) as 13 PCLM with Class I items only)
	Standard 15650 lbs. (See NOTE 7)
	Standard (as cargo carrier airplane) 17500 lbs. (See NOTE 9)
	Provisional 17500 lbs. (See NOTE 7)

III - Model 14-H2, DESIGNATION 14 PCLM

(Same as Model 14-H except engines 12 lbs.* (-89) when S1E2-G engines are installed and 36 lbs.* (-88) when S1E3-G engines are installed.)

Engines	2 Pratt & Whitney Hornets S1E2-G or S1E3-G
Placard limits	
Fuel (See NOTE 4)	Maximum, except take-off
87 min. octane	Sea level 36.5 in. Hg., 2250 rpm (800 hp)
	Straight line manifold pressure variation with altitude to 5500 ft. 34.5 in.Hg., 2250 rpm (800 hp)
	Take-off (one minute)
87 min. octane	Sea level 41.0 in.Hg.,2300 rpm (900 hp) or 39.5 in.Hg.,2500 rpm (885 hp)
Weights	With S1E2-G engines
	Empty Use actual (Approx. 10280 lbs. (-4.75) as 13 PCLM with Class I items only)
	Standard 15650 lbs. (See NOTE 7)
	Standard (as cargo carrier airplane) 17500 lbs. (See NOTE 9)
	Provisional 17500 lbs. (See NOTE 7)
	With S1E3-G engines
	Empty Use actual (Approx. 10304 lbs. (-4.94) as 13 PCLM with Class I items only)
	Standard 15650 lbs. (See NOTE 7)
	Standard (as cargo carrier airplane) 17500 lbs. (See NOTE 9)
	Provisional 17500 lbs. (See NOTE 7)

LOCKHEED 14-N, 14-N2, 14-N3, 14 PCLM, ATC 683

I - SPECIFICATIONS PERTAINING TO ALL MODELS

Placard speeds	Level flight or climb 240 mph True Ind. Glide or dive 284 mph True Ind. Flaps extended 115 mph True Ind.
Fuel capacity	644 gals. (4 tanks in center section wing; 2 front tanks at 150 gals. each (-20.5) and 2 rear tanks not including fuel system at 172 gals. ea. (+22.5) (See NOTE 4)
Oil capacity	44 gals. (1 tank in each nacelle at 22 gals. each (-52.5) not including capacity of oil system)
No. passengers	11 (See item 119 for location) (Standard crew 2, pilots at (-52.5) (See item 222)
Baggage	Maximum capacity of compartments: (See NOTE 1) No. 1 - Nose compartment 1500 lbs.(-133.5) No. 2 - Fwd. belly compartment 800 lbs. (-68.5) No. 3 - Mid. belly compartment 400 lbs. (-20.5) No. 4 - Rear belly compartment 700 lbs.(+30.5) Ballast compartment 350 lbs.(+230.5)
C.G. limits	(-0.3) and (+6.6) Level for weighing on main cabin floor or window line. MAC is 115.84 in. (L.E. MAC is 32.75 in fwd. of spar center line)
Spec. basis	Approved Type Certificate No. 683
Serial Nos.	1416 and up manufactured prior to January 24, 1941 eligible. Approval expired as of that date.

EQUIPMENT: (Datum is spar center line on under side of wing) (* Means net increase)

Class I.

101. Two engine ring cowls (Lockheed Dwg. 54022-4) 112 lbs. (-89)
102. Two exhaust collector rings (Lockheed Dwg. 53506B) 117 lbs. (-60
103. Two oil radiators (UAP 9) 50 lbs. (-41)
104. Two vacuum pumps (Pesco 207, type B-3) 10 lbs. (-76)
105. Fuel analyzer (Cambridge) (Exhaust gas) 12 lbs.(-42.5)
106. Two starters (Eclipse E-160) 60 lbs. (-68)
107. Constant speed propeller control 20 lbs. (-98)
108. Generator (Eclipse E-5) 36 lbs. (-75)
109. Battery (Exide 6-FHM-13) 75 lbs. (-47)
110. (a) Pressure fire extinguisher (Lux type 36-1) 25 lbs. (-58)
(b) Lux fire extinguisher hand type 8 lbs. (+177)
111. 15.00-16 wheels (Goodyear 16 HBM)123 lbs.(-28.5)
112. (a) 15.00-16 (Goodyear) 8-ply heavy duty tires 171 lbs. (-28.5)
(b) 15.00-16 plain tire tubes 29 lbs. (-28.5)
113. Shock struts (Aerol XY-450L) 277 lbs. (-28.5)
114. 18 in. streamline tail wheel and (Goodyear) 6-ply heavy duty tire 17 lbs. (+327)
115. Tail wheel shock strut (Aerol B250L)27 lbs.(+314)
116. Heating system (Lockheed 57005) 61 lbs.(+57)
117. Ventilating system 57 lbs.(+57)
118. Instruments and panel (Refer to West Coast Branch for itemized list dated March 1, 1938) 56 lbs. (-83)
119. Eleven standard passenger chairs 53 lbs. each (-16.5, -16.5, +26.5, +26.5, +61.5, +65.5, +96.5, +104.5, +131.5, +143.5, +166.5) (Roman numerals in parenthesis following the item number signify number of seats removed)

Class II.

200. Miscellaneous items as noted in approved weight and balance report.
201. Two retracting landing lights in wing 11 lbs. (-12)
202. Two exhaust collector rings (Solar 12-459) 122 lbs.(-60)
203. Two flares and brackets (International) 50 lbs.(+277)

LOCKHEED 14-N, etc. (CONTINUED)

204. (a) Lavatory equipment including 3 gals. water 62 lbs.(+211)
205. (a) Two flash lights in cockpit 3 lbs.(-69)
206. Automatic pilot 80 lbs.(-65)
207. (a) 2½ gal. propeller anti-icer fluid tank and lines 6 lbs.(-110)
(b) Propeller anti-icer pump 5 lbs.(-107.5)
(c) Spinners and slinger rings 24 lbs.(-107.5)
(d) Propeller and anti-icer fluid (3 gals.) 24 lbs.(-103)
208. Extra generator (Eclipse E-5) 36 lbs.(-75)
209. Extra battery (Exide 6-FHM-13) 75 lbs. (-47)
210. (a) Two one pint fire extinguishers (Pyrene) 10 lbs.(-60)
(b) Lux fire extinguisher Hand type (extra) 8 lbs.(-60)
211. Two landing gear strut recess flaps 16 lbs.(-25)
212. (a) 15.00-16 cactus proof tire liners 25 lbs.* (-28.5)
(b) 18 in. cactus proof tail wheel tire liner 5 lbs*(+327)
213. Heavy type landing gear drag struts 4 lbs.*(-12)
214. 18 in. streamline tail wheel (dural replacing magnesium) 5 lbs.*(+327)
215. Dump valve installation in accordence with Lockheed Dwgs. Nos. 58019 and 58007) (See NOTE 7) 18 lbs.*(+8)
216. (a) Radio receiver RA-1A (25 lbs.), RA-4A (15 lbs.) 40 lbs.(-58)
(b) Radio receiver RA-2A 23 lbs.(+253)
(c) Radio transmitter TA-2C 43 lbs.(+253)
(d) Radio loop and direction finder coupler 10 lbs.(-56)
(e) Antenna reel, shaft and control 19 lbs.(+240)
(f) Vee aerial 6 lbs.(+70)
(g) Radio power unit, wiring, etc. (rear) 137 lbs.(+32)
(h) Range receiver (RA-4) 15 lbs.(+253)
(i) Radio power unit, wiring, etc. (fwd.) 114 lbs.(-8)
(j) Radio loop installation (with control unit) 16 lbs.(-167)
217. (a) Cabin carpet (Service) 38 lbs.(+65)
(b) Cabin carpet (special heavy type, replacing std.) 19 lbs.*(+65)
(c) Leather lavatory bench covering 5 lbs.(+232)
(d) Cabin upholstery (Laidlow replacing linen) 20 lbs.*(+50)
(e) Cabin carpet (shorter than service) 28 lbs. (+55)
(f) Cabin mat, rubber 17 lbs.(+166)
218. (a) Extra airspeed installation 4 lbs.(-123)
(b) Special instruments replacing some of standard instruments (Refer to West Coast Branch for itemized list dated March 18, 1938) Net decrease 3 lbs.
219. (a) Two-passenger divan (Lockheed Dwg. 50383) 104 lbs.(+29.5)
(b) Chart table 46 lbs. (+29.5)
(c) Card table and clamps 13 lbs.(+172)
(d) Blue denim chair covers 6 lbs.(+65)
(e) Three-passenger divan (Lockheed 59303)(+17.5, +40.5, +63.5) 93 lbs.(+40.5)
(f) Clothes bench 2 lbs.(+170)
(g) Map case (Lockheed 59293) 33 lbs.(-21)
(h) Oxygen supply cabinet (Lockheed 59320) 11 lbs.(-21)
220. (a) Two passenger foot stools (Dwg. 59315) 19 lbs.(+100)
(b) Passenger loading step 4 lbs.(+160)
(c) Passenger interphone installation 2 lbs.(+188)
(d) Passenger oxygen installation (Lockheed 58328) 5 lbs.(+40)
(e) Passenger oxygen installation (Lockheed 58329) 64 lbs.(+48)

LOCKHEED 14-N, etc. (CONTINUED)

221. (a) Deicer boot and removable equipment (wing) (See NOTE 8) 44 lbs. (-22)
(b) Deicer boot and removable equipment (stabilizer) (See NOTE 8) 11 lbs.(+268)
(c) Deicer boot and removable equipment (fin) (See NOTE 8) 11 lbs.(+300)
222. Folding type stewardess chair (See NOTE 2a) 16 lbs.(+177)
223. Plexiglass nose replacing metal nose 5 lbs.*(-180)
224. Addition of bronze and steel plates to Goodyear brake assembly 7 lbs.*(-28.5)
225. Bulkhead reenforcement, Fuselage Station 456 (Lockheed Dwg. 50124E) 12 lbs.(+268)
226. Brake fluid gravity tank and fluid (Dwg. 42402) 2 lbs.(-88)
227. Fuselage structural changes to accommodate camera (Lockheed Dwg. 55560) 10 lbs.(+85)
228. Auxiliary battery 11 lbs.(-32)
229. Structural increase (consisting of changes in shock strut, side strut and drag strut per Dwgs. 55007D, 55053D and 55008C; also tail bulkhead fitting 50460A, stringer 19A and 20A extended per Dwg. 50050G, windshield revisions per Dwgs. 50565A and 50801, window frame gussets per Dwg. 50050G, new emergency exit per Dwg. 50063, and miscellaneous center section and wing increases per Dwg. 51000F) 56 lbs.(-5)
230. Zinc chromate primer (Interior) 20 lbs. (+20)
231. New flap actuating cylinder, maximum operating pressure 650 p.s.i. (Lockheed Dwg. 51851) 4 lbs.*(+67.5)
232. W.A.C. dynamic suspension engine mount used in conjunction with Hamilton Standard propeller, hub 3E50, blades 6111-12 (W.A.C. Dwg. LS 7199) 11 lbs.* (-77)
233. Fuselage reinforcements in No. 1 baggage compartment (Lockheed Service Bulletin No. 14-38) 6 lbs.(-104)
234. Radio operator's seat installation (Lockheed Dwg. 55450) 21 lbs.(-30.5)
235. Toe brake installation (Lockheed Dwg. 55380) 38 lbs.(-88)
236. Fixed wing-slots installation 25 lbs. (-7) (All placard ceilings reduced 130 ft. when this item is installed)
237. Hamilton Standard Hydromatic propeller installation (replacing controllable constant speed propeller) hubs 23E50, blades 6139A-12, low pitch setting 22° at propeller station 42 (in accordance with Lockheed Dwg. 54270 and Hamilton Standard wiring diagram No. SK 3576) (For Model 14-N) 141 lbs.*(-81)

Class III.

301. (a) Deicer installation (wing and tail) fixed portion (See NOTE 8) 25 lbs. (0)
302. Emergency wheel lowering device (independent oil-draulic system, manually operated) 8 lbs.(0)

NOTE 1. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering change in equipment.

NOTE 2. (a) Stewardess' seat limited to 130 lbs., not to be occupied by passengers. Placard accordingly.
(b) Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

LOCKHEED 14-N, etc. (Continued)

NOTE 3. Eligible for export, at standard weight, as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook; (July 19, 1939)
(a) Canada - Landplane
Skiplane - not eligible. However, structure complies with Canadian ski gear requirements provided that the geometry of the ski gear is in accordance with Lockheed Report No. 954.
(b) All other countries except Australia.

NOTE 4. The following placards must be installed in locations noted; (In lieu of posting such placards, and subject to the approval of the Chief, Air Carrier Inspection Section, definite instructions must be issued by the operator to assure compliance therewith.)
(a) At the fuel tank selector valve: "All fuel (to within 2 or 3 gals.) shall be used from each tank in the order listed below before using fuel from succeeding tank: Right Front, Left Rear, Left Front, Right Rear."
(b) At fuel tank filler caps: "In filling fuel tanks, care must be observed to ascertain that tanks are full in the following order: Right Rear, Left Front, Left Rear, Right Front."

NOTE 5. Tab ranges are limited as follows:
Rudder Tab, Trim Travel Move to Right 25°. Servo Travel Move to Right 6°10'.
Rudder Tab, Trim Travel Move to Left 25°. Servo Travel Move to Left 6°5'.
Elevator Tab, Trim Travel Up 25°. Servo Travel Down 11°30'.
Elevator Tab, Trim Travel Down 25°. Servo Travel Up 5°35'.
Aileron, Trim Travel (L.H. tab only) Up 26°, Down 24°30'. As measured from a neutral position 5° down from chord plane of aileron.
Servo Travel Down 17°. Servo Travel Up 1°.

NOTE 6. Relief Valve in hydraulic flap operating system must be set to open at from 850 lbs. per square inch to 1000 lbs. per square inch, unless Item number 231 is installed.

NOTE 7. A. If provisions other than item 215 are made for dumping, the fuel dump valves shall be made positively inoperative.
B. If item 215 (which complies with EI-11c) is installed, the airworthiness certificate shall incorporate one of the following statements, as the case may be:
(1) Non-Airline Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."
(2) Airline Carrier.
(a) With authorized weight in excess of standard - "Landing shall not be made at a weight in excess of standard except in accordance with CAR 61.7811. Fuel shall not be dumped except in accordance with CAR 61.7811 and then only if the pilot deems it safer than landing at a weight in excess of standard."
(b) With authorized weight not in excess of standard - "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 8. Standard (and provisional) weight may be increased 93 lbs. when complete de-icer is installed.

LOCKHEED 14-H, etc. (Continued)

II - MODEL 14-H, DESIGNATION 14 PCLM

Engines	2 Wright Cyclones GR-1820G-105
Placard limits	
Fuel	Maximum, except take-off
90 min. octane (CFR)	At sea level 36.7 in. Hg., 2200 rpm (900 hp) (Low impeller ratio)
90 min. octane (CFR)	AT 6000 ft. 35.0 in. Hg., 2200 rpm (900 hp) (Low impeller ratio
95 min. octane (CFR)	At 11000 ft. 36.0 in. Hg., 2200 rpm (750 hp) (High impeller ratio)
95 min.octane (CFR)	At 17000 ft. 33.0 in.Hg., 2200 rpm (750 hp) (High impeller ratio)
	Take-off (one minute)
90 min.octane (CFR)	43.0 in.Hg., 2200 rpm (1100 hp)
Propellers	2 controllable metal, constant speed (Ham. Std., hubs 3E50, blades 6111-12; low pitch setting 18°) 695 lbs.(-107.5) (See item 237)
Placard ceiling	10500 ft. usable, in standard air, at 15650 lbs. at an indicated airspeed of 110 mph with either engine inoperative, the inoperative propeller fully feathered and the remaining engine operating at full throttle at 2200 rpm. (See items 236 and 237)
Weights	Empty Use actual (Approx. 10940 lbs. (-6.12) as 13 PCLM with Class I items only)
	Standard 15650 lbs. (See NOTE 7)
	Provisional 17500 lbs. (See NOTE 7)

III - MODEL 14-H2 - Designation 14 PCLM

(Same as Model 14-H except for change in engines 16 lbs. net decrease)

Engines	2 Wright Cyclones GR-1820G-102
Placard limits	
Fuel	Maximum, except take-off
90 min. octane (CFR)	At sea level 36.7 in. Hg., 2200 rpm (900 hp) With straight line variation with altitude to 6000 ft. 35.0 in. Hg., 2200 rpm (900 hp)
	Take-off (one minute)
90 min.octane (CFR)	At sea level 43.0 in. Hg., 2200 rpm (1100 hp)
Propellers	2 controllable metal, constant speed (Ham. Std., hubs 3E50, blades 6111-12; low pitch setting 18°) 695 lbs.(-107.5)
Placard ceiling	10500 ft. usable, in standard air, at 15650 lbs. at an indicated air speed of 110 mph with either engine inoperative, the inoperative propeller idling at 760 rpm in high pitch, and the remaining engine operating at full throttle at 2200 rpm (See item 236)
Weights	Empty Use actual (Approx. 10925 lbs. (-6.06) as 13 PCLM with Class I items only)
	Standard 15650 lbs. (See NOTE 7)
	Provisional 17500 lbs. (See NOTE 7)

IV - MODEL 14-H3 Designation 14 PCLM

(Same as Model 14-H except for change in engines 0 lbs.* and propellers 145 lbs.*)

Engines	2 Wright Cyclones GR-1820G-105A
Placard limits	
Fuel	Maximum, except take-off
90 min. octane (CFR)	At sea level 37.5 in. Hg., 2300 rpm (900 hp) (Low impeller ratio)
	At 6700 ft. 35.4 in. Hg., 2300 rpm (900 hp) (Low impeller ratio)
	At 11000 ft. 36 in. Hg., 2300 rpm (775 hp) (High impeller ratio)
	At 17300 ft. 33.6 in. Hg., 2300 rpm (775 hp) (High impeller ratio)
	Take-off (one minute)
90 min.octane (CFR)	43.5 in. Hg., 2350 rpm (1100 hp)
Propellers	2 constant speed full feathering hydromatic (Lockheed Dwg. 54270) (Ham. Std., hubs 23E50, blades 6139A-12; low pitch setting 18°)840 lbs.(-104)
Placard ceiling	16000 ft. usable, in standard air, at 15650 lbs. at an indicated airspeed of 110 mph with any engine inoperative, the inoperative propeller fully feathered and the remaining engine operating at 2300 rpm and 34 in.Hg. manifold pressure (with supercharger operating in high impeller 10:1 gear ratio) (See item 236)
Weights	Empty Use actual (Approx. 11085 lbs. (-7.18) as 13 PCLM with Class I items only)
	Standard 15650 lbs. (See NOTE 7)
	Provisional 17500 lbs. (See NOTE 7)

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LOCKHEED 14WF62, 14 PCLM, ATC 666

Engines	2 Wright Cyclones GR-1820F-62
Placard limits	
Fuel	Maximum, except take-off
87 min. octane	Sea level 37.0 in. Hg., 2350 rpm (810 hp) 6000 ft. 35.4 in. Hg., 2350 rpm (810 hp)
	Take-off (one minute)
87 min. octane	40.0 in. Hg., 2350 rpm (900 hp)
Propellers	2 controllable metal, constant speed (Ham.Std. hubs 3E50, blades 6111-12; low pitch setting 18°) 695 lbs. (-107.5)
Placard speeds	Level flight or climb 240 mph True Ind. Glide or dive 284 mph True Ind. Flaps ext. 115 mph True Ind.
Placard ceiling (See Item 238)	(a) 12600 ft. absolute (density altitude) at 15650 lbs., either engine inoperative with standard propeller idling at 720 rpm (See NOTE 10) 10300 ft. absolute (density altitude) at 17500 lbs., either engine inoperative with standard propeller idling at 720 rpm (See NOTE 10) (b) 14300 ft. usable density altitude (50 ft. per min. climb) at 13500 lbs., either engine inoperative with item 229 propeller fully feathered. 8200 ft. usable density altitude (50 ft. per min. climb) at 17500 lbs., either engine inoperative with item 229 propeller fully feathered.
Fuel capacity	644 gals. (4 tanks in center section wing; 2 front tanks at 150 gals. each (-20.5) and 2 rear tanks not including fuel system at 172 gals. each (+22.5)) (See NOTE 4)
Oil capacity	44 gals. (1 tank in each nacelle at 22 gals. each (-52.5) not including capacity of oil system.)
No. passengers	10 or 11 (See item 119 for location) (Crew 2, 3 or 4; Pilots (-52.5), radio operator (-16.5), stewardess at 130 lbs. (+177.5))
Baggage	Maximum capacity of compartments: (See NOTE 1) No. 1 - Nose compartment 1500 lbs. (-133.5) No. 2 - Fwd. belly compartment 800 lbs. (-68.5) No. 3 - Mid. belly compartment 400 lbs. (-20.5) No. 4 - Rear belly compartment 700 lbs. (+30.5) Ballast compartment 350 lbs. (+230.5)
eights	Empty: Use actual (Approx. 10400 lbs. (-5.54, as 13 PCLM with Class I items only) Standard 15650 lbs. (See NOTE 7) Provisional 17500 lbs. (See NOTE 7)
C.G. limits	(-0.3) and (+6.8) Level for weighing on main cabin floor or window line. MAC is 115.84 in. (L.E. MAC is 32.75 in. fwd. of spar center line)
Spec. basis	Approved Type Certificate No. 666
Serial numbers	1410 and up manufactured prior to January 24, 1941 eligible. Approval expired as of that date.

EQUIPMENT: *(Datum is spar center line on under side of wing)
(* Means net increase)

Class I.

101.	Two engine ring cowls	103 lbs. (-89)
102.	Two exhaust collector rings	103 lbs. (-68)
103.	Two oil radiators (UAP 9)	50 lbs. (-41)
104.	Two vacuum pumps (Pesco 207, type B-3)	10 lbs. (-76)
105.	Fuel analyzer (Cambridge)	12 lbs. (-42.5
106.	Constant speed propeller control	20 lbs. (-98)
107.	Two starters (Eclipse E-160)	60 lbs. (-68)
108.	Generator (Eclipse E-5)	36 lbs. (-75)
109.	Battery (Exide 6-FHM-13)	75 lbs. (-47,

LOCKHEED 14WF62, (Continued)

110.	(a) Pressure fire extinguisher (Lux type 36-1)	25 lbs. (-68)
	(b) Lux fire extinguisher hand type	8 lbs. (+177)
111.	15.00-16 wheels (Goodyear 16HBM)	123 lbs. (-28.5)
112.	(a) 15.00-16 (Goodyear) 8-ply heavy duty tires (b) 15.00-16 plain tire tubes	200 lbs. (-28.5)
113.	Shock struts (Aerol XY-450L)	277 lbs. (-28.5)
114.	18 in. streamline tail wheel and 6 ply heavy duty tire (Goodyear)	17 lbs. (+327)
115.	Tail wheel shock strut (Aerol B250L)	27 lbs.(+314)
116.	Heating system	56 lbs.(+57)
117.	Ventilating system	57 lbs.(+57)
118.	Instruments and panel (Refer to West Coast Branch for itemized list dated February 8, 1938)	56 lbs.(-83)
119.	Eleven standard passenger chairs 53 lbs. each (-16.5, -16.5, +26.5, +26.5, +61.5, +65.5, +96.5, +104.5, +131.5, +143.5, +165.5) (Roman numerals in parenthesis following the item number signify number of seats removed)	

Class II

200.	Miscellaneous items as noted in approved weight and balance report.	
201.	Two retracting landing lights in wing	11 lbs. (-12)
202.	Two flares and brackets (International)	50 lbs.(+277)
203.	Two wheel fenders	16 lbs. (-25)
204.	(a) Lavatory equipment including 3 gals. water	62 lbs.(+211)
	(b) Special tank and 5 gals. water (replacing std.)	18 lbs.* (+200)
205.	(a) Two flashlights in cockpit	3 lbs. (-69)
	(b) Extra cabin door lock	3 lbs.(+188)
206.	Automatic pilot	80 lbs.(-65)
207.	(a) 2-1/2 gal. propeller anti-icer fluid tank and lines	6 lbs. (-110)
	(b) Propeller anti-icer pump	5 lbs. (-107.5)
	(c) Spinners and slinger rings	24 lbs. (-107.5)
	(d) Propeller and anti-icer fluid (3 gals.)	24 lbs. (-103)
208.	Extra generator (Eclipse E-5)	36 lbs. (-75)
209.	(a) Radio receiver RA-1A or RA-1D, Tuning Unit MT-36-B) (b) Radio transmitter TA-2-D, Power Unit MP-10B	209 lbs. (+100)
210.	(a) Two one pint fire extinguishers (Pyrene)	10 lbs. (-60)
	(b) Lux fire extinguisher - hand type (extra)	8 lbs. (-60)
211.	Folding type stewardess chair	16 lbs. (+177)
212.	(a) 15.00-16 cactus proof tire liners	25 lbs.*(-28.5)
	(b) 18 in. cactus proof tail wheel tire liner	5 lbs.*(+327)
213.	Heavy type landing gear drag struts	4 lbs.*(-12)
214.	18 in. streamline tail wheel (dural replacing magnesium)	5 lbs.*(+327)
215.	Dump valve installation in accordance with Lockheed Dwgs. Nos. 58019 and 58077) (See NOTE 7)	18 lbs.* (+8)
216.	(a) Radio operator's chair replacing standard chair	23 lbs. (-16.5)
217.	(a) Cabin carpet (standard)	38 lbs. (+65)
	(b) Cabin carpet (special heavy type, replacing std.)	19 lbs.*(+65)
	(c) Leather lavatory bench covering	5 lbs.(+232)
	(d) Cabin upholstery (Laidlow replacing linen)	20 lbs.*(+50)

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LOCKHEED 14WF62 (Continued)

218. (a) Drift indicator (Gatty) 5 lbs. (-54)
(b) Kelvin compass and mounting 8 lbs. (-63)
(c) Elekaclock 1 lb. (-79)
(d) Special instruments (Refer to West Coast Branch for list dated February 8, 1938) (Extra instruments 11 lbs.* - Instruments replaced 12 lbs. Net decrease 1 lb. (-83)
219. Emergency exit left hand side of cabin 5 lbs.*(+88)
220. Abrasion strips L.E. tail surfaces 6 lbs. (+278)
221. Special first aid kit replacing standard 20 lbs.*(+200)
222. (a) Cockpit ventilating system 3 lbs. (-66)
(b) Additional tail stiffeners (in accordance with Dwg. No. 14-Z42) 4 lbs.(+290)
(c) Fireproofing paint on woodwork and floor 6 lbs. (+65)
223. Addition of bronze and steel plates to Goodyear brake assembly 7 lbs.*(-28.5)
224. Fuselage structural changes to accommodate camera (Dwg. No. 55560) 10 lbs. (+85)
225. (a) Deicer boots and removable equipment (wing) (See NOTE 8) 44 lbs. (-22)
(b) Deicer boots and removable equipment (stabilizer) (See NOTE 8) 11 lbs. (+268)
(c) Deicer boots and removable equipment (fin) (See NOTE 8) 11 lbs. (+300)
226. Brake fluid gravity tank and fluid (Dwg. 42402) 2 lbs.(-88)
227. Bulkhead reenforcement, Fuselage Station 456 (Lockheed Dwg. 50124E) 12 lbs. (+268)
228. Pantry cabinets
(a) Forward (Lockheed Dwg. 55597) (Maximum capacity 10 lbs.) 8 lbs. (-26)
(b) Aft (Lockheed Dwg. 55598) (Maximum capacity 10 lbs.) 13 lbs. (-7)
229. Hamilton Standard Hydromatic propeller installation (replacing controllable constant speed propeller), hubs 23E50, blades 6139A-12 (Lockheed Dwg. 54270) 145 lbs.* (-87)
230. Hamilton Standard slinger ring installation for Hydromatic propellers (Ham. Std. part 52903) 6 lbs. (-104)
231. Auxiliary battery 11 lbs. (-32)
232. Structural increases (consisting of changes in shock strut, side strut and drag strut shown on Dwgs. 55007D, 55053D & 55008C also tail bulkhead fitting 50460A, stringer 19A and 20A extended per Dwg. 50050G, windshield revisions per 50665A and 50801, window frame gussets per 50050G, new emergency exit per 50063, and miscellaneous center section and wing increase per Dwg. 51000F) 56 lbs. (-5)
233. Zinc chromate primer (Interior) 20 lbs. (+20)
234. New flap actuating cylinder, maximum operating pressure 850 p.s.i. (Lockheed Dwg. 51851) 4 lbs.*(+67.5)
235. Fuselage reinforcements in No. 1 baggage compartment (Lockheed Service Bulletin No. 14-38) 6 lbs.(-104)
236. Radio operator's seat installation (Dwg. 55450) 21 lbs.(-31)
237. Toe brake installation (Dwg. 55380) 38 lbs.*(-88)
238. Fixed wing slot installation 25 lbs. (-7) (All placard ceilings reduced 130 ft. when this item is installed)

LOCKHEED 14WF62 (Continued)

Class III.

301. (a) Deicer installation (wing and tail) fixed portion (See NOTE 8) 25 lbs. (0)
302. Emergency wheel lowering device (independent oildraulic system manually operated) 8 lbs. (0)
303. Revised wing assembly (Lockheed Dwgs. 51015 and 52020) 66 lbs. (+6)

NOTE 1. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering change in equipment.

NOTE 2. (a) Stewardess' seat not to be occupied by passengers. Placard accordingly.
(b) Radio operator's seat (when installed) not to be occupied by passengers. Placard accordingly.
(c) Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

NOTE 3. Eligible for export, at standard weight, as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (June 6, 1939)
(a) Canada - Landplane
- Skiplane - not eligible. However, structure of serial Nos. 1471 and up complies with Canadian ski gear requirements provided that the geometry of the ski gear is in accordance with Lockheed report No. 964.
(b) All other countries except Australia.

NOTE 4. The following placards must be installed in locations noted: (In lieu of posting such placards, and subject to the approval of the Chief, Air Carrier Inspection Section, definite instructions must be issued by the operator to assure compliance therewith)
(a) At fuel selector valve: "All fuel (to within 2 or 3 gals.) shall be used from each tank in the order listed below before using fuel from succeeding tank: Right Front, Left Rear, Left Front, Right Rear."
(b) At fuel tank filler caps: "In filling fuel tanks, care must be observed to ascertain that tanks are full in the following order: Right Rear, Left Front, Left Rear, Right Front."

NOTE 5. Tab ranges are limited as follows:
Rudder Tab, Trim Travel Move. to Right 25°. Servo Travel Move. to Right 6°10'
Rudder Tab Trim Travel Move. to Left 25°. Servo Travel Move. to Left 6°5'
Elevator Tab, Trim Travel Up 25°. Servo Travel Down 11°30'
Elevator Tab, Trim Travel Down 25°. Servo Travel Up 5°35'
Aileron, Trim Travel (L.H. Tab only) Up 26°, Down 24°30'. As measured from neutral position 5° down from chord plane of aileron.
Servo Travel Down 17°
Servo Travel Up 1°.

NOTE 6. Relief valve in hydraulic flap operating system must be set to open at from 850 lbs. per square inch to 1000 lbs. per square inch, unless Item number 234 is installed.

LOCKHEED 14WF62 (Continued)

NOTE 7. A. If provisions other than item 215 are made for dumping, the fuel dump valves shall be made positively inoperative.

B. If item 215 (which complies with El-11c) is installed the airworthiness certificate shall incorporate one of the following statements, as the case may be:

(1) Non-Airline Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."

(2) Airline Carrier

(a) With authorized weight in excess of standard - "Landing shall not be made at a weight in excess of standard except in accordance with CAR 61.7811. Fuel shall not be dumped except in accordance with CAR 61.7811 and then only if the pilot deems it safer than landing at a weight in excess of standard."

(b) With authorized weight not in excess of standard - "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 8. Standard (and provisional) weight may be increased 93 lbs. when complete de-icer is installed.

NOTE 9. Same as Model 14-H (ATC No. 657) except for change in engine and equipment.

NOTE 10. When Goodrich propeller deicing strips are installed (the strips must not extend beyond the outside diameter of the engine cowl) the placard ceilings are reduced 1000 feet below the usable ceilings shown.

LOCKHEED 14WG3, 14 PCLM, ATC 673

Engines	2 Wright Cyclones GR-1820G-5B
Placard limits	(See NOTE 9)
Fuel	Maximum, except take-off
87 min. octane (CFR)	Sea level 38.5 in. Hg., 2100 rpm (820 hp) 8800 ft. 35.3 in. Hg., 2100 rpm (820 hp)
	Take-off (one minute)
87 min. octane (CFR)	41 in. Hg., 2350 rpm (900 hp)
Propellers	2 controllable metal, constant speed (Ham. Std., hubs 3E50, blades 6111-12; low pitch setting 18°) 695 lbs.(-107.5)
Placard speeds	Level flight or climb 240 mph True Ind. Glide or dive 284 mph True Ind. Flaps extended 115 mph True Ind.
Placard ceiling (See item 231 and NOTE 11)	12800 ft. absolute (density altitude) at 15650 lbs. either engine inoperative with propeller idling 760 rpm 11000 ft. absolute (density altitude) at 17500 lbs. either engine inoperative with propeller idling 760 rpm.
Fuel capacity	644 gals. (4 tanks in center section wing: 2 front tanks at 150 gals. each (-20.5) and 2 rear tanks not including fuel system at 172 gals. each (+22.5)) (See NOTE 4)
Oil capacity	44 gals. (1 tank in each nacelle at 22 gals. each (-52.5) not including capacity of oil system)
No. passengers	11 (See item 119 for location) (Std. crew 2, pilots at (-52.5)) (See item 209)
Baggage	Maximum capacity of compartments: (See NOTE 1) No. 1 - Nose compartment 1500 lbs.(-133.5) No. 2 - Fwd. belly compartment 800 lbs.(-68.5) No. 3.-Mid. belly compartment 400 lbs.(-20.5) No. 4 - Rear belly compartment 700 lbs.(+30.5) Ballast compartment 350 lbs.(+230.5)
Weights	Empty Use actual (Approx. 10600 lbs. (-7.38) as 13 PCLM with Class I items only) Standard 15650 lbs. (See NOTE 7) Provisional 17500 lbs. (See NOTE 7)
C.G. limits	(-0.3) and (+6.6) Level for weighing on main cabin floor or window line. MAC is 115.84 in. (L.E. MAC is 32.75 in. fwd. of spar center line).
Spec. basis	Approved Type Certificate No. 673
Serial numbers	1426 and up manufactured prior to January 24, 1941 eligible. Approval expired as of that date.

EQUIPMENT: (Datum is spar center line on under side of wing)
(* Means net increase)

Class I.

101. Two engine ring cowls	103 lbs. (-89)
102. Two exhaust collector rings	117 lbs. (-60)
103. Two oil radiators (UAP 9)	50 lbs. (-41)
104. Two vacuum pumps (Pesco 207, type B-3)	10 lbs. (-76)
105. Fuel analyzer (Cambridge)	12 lbs. (-42.5)
106. Two starters (Eclipse E-160)	60 lbs. (-68)
107. Constant speed propeller control	20 lbs. (-98)
108. Generator (Eclipse E-5)	36 lbs. (-75)
109. Battery (Exide 6 FHM-13)	75 lbs. (-47)
110. (a) Pressure fire extinguisher (Lux type 36-1)	25 lbs. (-58)
(b) Lux fire extinguisher (hand type)	8 lbs. (+177)
111. 15.00-16 wheels (Goodyear 16HBM)	123 lbs. (-28.5)
112. (a) 15.00-16 (Goodyear) 8 ply heavy duty tires (b) 15.00-16 plain tire tubes	200 lbs. (-28.5)
113. Shock struts (Aerol XY-450L)	277 lbs. (-28.5)

LOCKHEED 14WG3, (Continued)

114. 18 in. streamline tail wheel and 6 ply heavy duty tire (Goodyear)	17 lbs. (+327)
115. Tail wheel shock strut (Aerol B250L)	27 lbs. (+314)
116. Heating system	56 lbs. (+57)
117. Ventilating system	57 lbs. (+57)
118. Instruments and panel (Refer to West Coast Branch for itemized list dated February 8, 1938)	56 lbs. (-83)
119. Eleven standard passenger chairs (-16.5, -16.5, +26.5, +26.5, +61.5, +65.5, +96.5, +104.5, +131.5, +143.5, +166.5) (Roman numerals in parenthesis following item number signify number of seats removed)	53 lbs. each

Class II.

200. Miscellaneous items as noted in approved weight and balance report.	
201. Two retracting landing lights in wing	11 lbs.(-12)
202. Two exhaust collector rings and tailpipes (Solar Dwgs. Nos. 12-470 and 12-475)	122 lbs.(-60)
203. Two flares and brackets (International)	50 lbs. (+277)
204. (a) Lavatory equipment including 3 gals. water	62 lbs. (+211)
205. (a) Two flashlights in cockpit	3 lbs. (-69)
206. Automatic pilot	80 lbs. (-65)
207. (a) 2½ gal. propeller anti-icer fluid tanks and lines	6 lbs. (-110)
(b) Propeller anti-icer pump	5 lbs. (-107.5)
(c) Spinners and slinger rings	24 lbs. (-107.5)
(d) Propeller and anti-icer fluid (5 gals.)	24 lbs. (-103)
208. Extra generator (Eclipse E-5)	36 lbs. (-75)
209. Folding type stewardess chair	16 lbs. (+177)
210. (a) Two one pint fire extinguishers (Pyrene)	10 lbs. (-60)
(b) Lux fire extinguisher - hand type (extra)	8 lbs. (-60)
211. Two landing gear strut recess flaps	16 lbs. (-25)
212. (a) 15.00-16 cactus proof tire liners	25 lbs.*(-28.5)
(b) 18 in. cactus proof tail wheel tire liner	5 lbs.*(+327)
213. Heavy type landing gear drag struts	4 lbs.*(-12)
214. 18 in. streamline tail wheel (dural replacing magnesium)	5 lbs.*(+327)
215. Dump valve installation in accordance with Lockheed Dwgs. Nos. 58019 and 58077) (See NOTE 7)	18 lbs.*(+8)
216. (a) Bolted-in lead weight equivalent for radio installation	103 lbs.(+252)
217. (a) Cabin carpet (service)	33 lbs. (+65)
(b) Cabin carpet (Special heavy type, replacing std.)	19 lbs.*(+65)
(c) Leather lavatory bench covering	5 lb.s (+232)
(d) Cabin upholstery (Laidlow replacing linen)	15 lbs.*(+50)
218. (Deleted June 6, 1939)	
219. Addition of bronze and steel plates to Goodyear brake assembly	7 lbs.*(-28.5)
220. Bulkhead reenforcement, Fuselage Station 456 (Lockheed Dwg. 50124E)	12 lbs.(+268)
221. (a) Deicer boots and removable equipment (wing) (See NOTE 10)	44 lbs.(-22)
(b) Deicer boots and removable equipment (stabilizer) (See NOTE 10)	11 lbs.(+268)
(c) Deicer boots and removable equipment (fin) (See NOTE 10)	11 lbs. (+300)
222. Brake fluid gravity tank and fluid (Dwg. 42402)	2 lbs. (-88)

LOCKHEED 14WG3 (Continued)

223. Fuselage structural changes to accommodate camera (Dwg. 55560) 10 lbs. (+85)
224. Auxiliary battery 11 lbs. (-32)
225. Structural increases (consisting of changes in shock strut, side strut, and drag strut, shown on Dwgs. 55007D, 55053D and 55008C; also tail bulkhead fitting 50460A, stringer 19A and 20A extended per Dwg. 50050G, windshield revisions per 50565A and 50801, window frame gussets per 50050G, new emergency exit per 50063, and miscellaneous center section and wing increase per 51000F) 56 lbs. (-5)
226. Zinc chromate primer (interior) 20 lbs. (+20)
227. New flap actuating cylinder, maximum operating pressure 650 p.s.i. (Lockheed Dwg. No. 51851) 4 lbs.*(+67.5)
228. Fuselage reinforcements in No. 1 baggage compartment (Lockheed Service Bulletin No. 14-38) 6 lbs. (-104)
229. Radio operator's seat installation (Lockheed Dwg. No. 55450) 21 lbs. (-30.5)
230. Toe brake installation (Lockheed Dwg. No. 55380) 38 lbs.*(-88)
231. Fixed wing slot installation 25 lbs. (-7) (All placard ceilings reduced 130 ft. when this item is installed.)

Class III.

301. (a) Deicer installation (wing and tail) fixed portion (See NOTE 10) 25 lbs. (0)
302. Emergency wheel lowering device (independent oildraulic system manually operated) 8 lbs. (0)

NOTE 1. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering change in equipment.

NOTE 2. (a) Stewardess' seat limited to 130 lbs., not to be occupied by passengers. Placard accordingly.
(b) Placard lavatory door as follows: "This room not to be occupied during take-off and landing."

NOTE 3. Eligible for export, at standard weight, as follows subject to inspection for equipment specified in Chapter XII of Inspection Handbook: (June 6, 1939)
(a) Canada - Landplane
Skiplane - not eligible. However, structure of serial Nos. 1471 and up complies with Canadian ski gear requirements provided that the geometry of the ski gear is in accordance with Lockheed Report No. 954.
(b) All other countries except Australia.

NOTE 4. The following placards must be installed in locations noted: (In lieu of posting such placards, and subject to the approval of the Chief, Air Carrier Inspection Section, definite instructions must be issued by the operator to assure compliance therewith)
(a) At fuel selector valve: "All fuel (to within 2 or 3 gals.) shall be used from each tank in the order listed below before using fuel from succeeding tank: Right Front, Left Rear, Left Front, Right Rear."
(b) At fuel tank filler caps: "In filling fuel tanks, care must be observed to ascertain that tanks are full in the following order: Right Rear, Left Front, Left Rear, Right Front."

LOCKHEED 14WG3 (Continued)

NOTE 5. Tab ranges are limited as follows:
Rudder Tab, Trim Travel Move. to Right 25°. Servo Travel Move. to Right 6°10'
Rudder Tab, Trim Travel Move. to Left 25°. Servo Travel Move. to Left 6°5'
Elevator Tab, Trim Travel Up 25°. Servo Travel Down 11°30'
Elevator Tab, Trim Travel Down 25°. Servo Travel Up 6°35'
Aileron, Trim Travel (L.H. Tab only)
Up 26°
Down 24°30' (As measured from a neutral position 5° down from chord plane of aileron.)
Servo Travel Down 17°, Up 1°

NOTE 6. Relief valve in hydraulic flap operating system must be set to open at from 850 lbs. per sq. inch to 1000 lbs. per square inch, unless Item number 227 is installed.

NOTE 7. A. If provisions other than item 215 are made for dumping, the fuel dump valves shall be made positively inoperative.
B. If item 215 (which complies with E1-11c) is installed, the airworthiness certificate shall incorporate one of the following statements, as the case may be:
(1) Non-Airline Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."
(2) Airline Carrier.
(a) With authorized weight in excess of standard- "Landing shall not be made at a weight in excess of standard except in accordance with CAR 61.7811. Fuel shall not be dumped except in accordance with CAR 61.7811 and then only if the pilot deems it safer than landing at a weight in excess of standard."
(b) With authorized weight not in excess of standard - "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 8. Same as Model 14H (ATC 657) except for change in engine, and equipment.

NOTE 9. Eligible with either GR-1820G-3 engine with 6.2:1 compression ratio pistons (essentially a G-3B engine) or GR-1820G-3B engine but when the small (1.000 inches) dynamic damper pin and/or cylinder head WAC No. 65686 are installed, use the following placard limits:

Fuel	Maximum, except take-off	
87 min.octane (CFR)	(Sea level)	37.5 in.Hg., 2100 rpm (810 hp)
	(8700 ft.)	35.0 in.Hg., 2100 rpm (810 hp)
	Take-off (one minute)	
87 min.octane (CFR)		38.5 in.Hg., 2125 rpm (830 hp)

NOTE 10. Standard (and provisional) weight may be increased 93 lbs. when complete de-icer is installed.

NOTE 11. When Goodrich propeller de-icing strips are installed (the strips must not extend beyond the outside diameter of the engine cowl) the placard ceilings are reduced 1000 feet below the usable ceilings shown.

LOCKHEED 18-H, 17 PCLM, 2-556

Engines 2 P&W Hornets S1E2-G
Fuel 87 min. octane (CFR)
Engine limits Maximum, except take-off
(S.L.) 36.5 in.Hg., 2250 rpm (800 hp)
(5500 ft.) 34.5 in.Hg., 2250 rpm (800 hp)
Take-off (one minute)
41.0 in.Hg., 2300 rpm (900 hp)
or 39.5 in.Hg., 2500 rpm (885 hp)
Placard speeds Level flight or climb 238 mph True Ind.
Glide or dive 284 mph True Ind.
Flaps extended 115 mph True Ind.
Usable ceiling (a) Without de-icers installed:
6400 ft. in std. air at T.I.A.S. of 122 mph at 17500 lbs. at 34% MAC with either engine inoperative, the inoperative propeller fully feathered and the inoperative engine at full throttle
(b) With de-icers installed and operating (but not under icing conditions):
4800 ft. in std. air at T.I.A.S. of 122 mph at 17500 lbs. with either engine inoperative, the inoperative propeller fully feathered and the operative engine at full throttle
Fuel capacity 644 gals. (4 tanks in CS wing: 2 front at 150 gals. ea. (-20.5) and 2 rear, not incl. fuel system, at 172 gals. ea.(+22.5))
Oil capacity 44 gals. (1 tank in each nacelle at 22 gals. ea. (-52.5) not incl. capacity of oil system)
No. pass. 14 or 15 (See Items 114 and 210)(Std. crew 2 or 3 incl. 2 pilots at (-52.5) and stewardess at (+242.5))
Baggage Maximum capacity of compts.: (See NOTE 1)
No. 1 - Nose compt. 1500 lbs.(-133.5)
No. 2 - Fwd. belly compt. 800 lbs.(-68.5)
No. 3 - Mid. belly compt. 400 lbs.(-20.5)
No. 4 - Rear belly compt. 700 lbs.(+30.5)
Standard weight 17500 lbs. (See NOTES 5 and 6)
C.G. limits (See NOTE 7) (+0.26)(28.5% MAC) and (+10.11) (37.0% MAC)
MAC 115.84 in. L.E. MAC (-32.75)
Leveling means Level for weighing on window base line
Spec. basis CAR 04.031
Serial No. 1486 eligible (See NOTE 8)
EQUIPMENT: (Datum is spar center line on under side of wing)(* Means net increase)

Class I:

101.	Two engine ring cowls (Lockheed 54022)	112 lbs.	(-89)
102.	Two exhaust collector rings incl. tail pipes	165 lbs.	(-60)
103.	Two oil radiators (UAP 9")	50 lbs.	(-59)
104.	Two vacuum pumps (Pesco 207, type B-3)	10 lbs.	(-76)
105.	Two starters (Eclipse E-160)	60 lbs.	(-68)
106.	Generator (Eclipse E-5)	34 lbs.	(-75)
107.	Battery (Exide 6-FHM-13)	76 lbs.	(-47)
108.	(a) Pressure fire ext. (Lux type 36-1)	25 lbs.	(-58)
	(b) Fire ext. hand type (Lux 2 lbs. or Pyrene 1 qt.)	8 lbs.	(+224)
109.	Main shock strut (Aerol XY-450LA)	277 lbs.	(-28.5)
110.	15.00-16 wheels (Goodyear 16HBM)	123 lbs.	(-28.5)
111.	(a) 15.00-16 tires (Goodyear 8-ply HD)	171 lbs.	(-28.5)
	(b) 15.00-16 tire tubes, plain	29 lbs.	(-28.5)
112.	18 in. streamline tail wheel and 6-ply tire (Goodyear)	17 lbs.	(+393)
113.	Tail wheel shock strut (Aerol B250L)	27 lbs.	(+380)
114.	14 Warren-McArthur type pass. chairs each (-21.5, -21.5, +28.5, +28.5, +65.5, +65.5, +102.5, +102.5, +139.5, +139.5, +176.5, +176.5, +213.5, +213.5)(Roman numerals in parenthesis following item number signify number of seats removed)	30 lbs.	
115.	Ventilating system	78 lbs.	(+87)
116.	Instruments and panel (Refer to West Coast Branch for itemized list dated 3-1-38)	56 lbs.	(-83)
117.	Two retractable oil radiator scoops	9 lbs.	(-66)
118.	Two Ham. Std. hydromatic full feathering propellers, hubs 23E50, blades 6139A-12 or equivalent (See NOTE 6 of Prop. Spec. No. 603) (Lockheed Dwg. 53507)(Low pitch setting 18° at Station 42)	758 lbs.	(-106)
119.	Automatic mixture control (MAY-9C, G or H-23)	40 lbs.	(-70)
120.	Residual fuel and oil	35 lbs.	(-79)
121.	Flap actuating cylinder (Lockheed Dwgs. 51851 and 58302)	16 lbs.	(+67.5)
122.	Fixed wing-slots installation	25 lbs.	(-7)
123.	(a) Wing trailing edge extension (Lockheed Dwgs. 74349 or 79310)	37 lbs.	(+94)
	(b) Elevator control system damping unit (Lockheed Dwg. 73975). (When complete automatic pilot is installed, or when changes described in Lockheed Service Bulletin 18-44 are incorporated, this item may be omitted.)		

Class II:

200.	Miscellaneous items as noted in approved weight and balance report.		
201.	Two retracting landing lights (in wing)	11 lbs.	(-6)
202.	Two flare brackets (International) (Ballast for flares)	50 lbs.	(+343)
203.	Heating system (Lockheed 52314)	54 lbs.	(+80)
204.	Lavatory equipment incl. 3 gals. water	62 lbs.	(+277)
205.	Two flashlights in cockpit	3 lbs.	(-78)
206.	Automatic pilot installation	80 lbs.	(-65)
207.	Extra, two "one pint" fire exts. (Pyrene)	10 lbs.	(-73)
208.	Landing gear strut recess flaps	16 lbs.	(-33)
209.	Omitted		
210.	Folding type chair (Lockheed Dwg. 57009)	16 lbs.	(+242.5)
211.	Dump valve installation (Lockheed Dwg. 54418) (See NOTE 5)	53 lbs.	(+8)
212.	Cabin carpet	64 lbs.	(+106)
213.	Coat hangers	2 lbs.	(+276)
214.	(a) De-icer installation (fixed portion - wing & fuselage lines)(Lockheed 71274)	28 lbs.	(+31)
	(b) De-icer boots & attachments - wing (Lockheed 71274)	40 lbs.	(-16.5)
	(c) De-icer boots & attachments - stabilizer (Lockheed 71274)	16 lbs.	(+339)
	(d) De-icer boots & attachments - fin (Lockheed 71274)	13 lbs.	(+364.5)
	(e) 2½ gals. prop. anti-icer fluid tank & lines	6 lbs.	(-110)
	(f) Prop. anti-icer pump	5 lbs.	(-107.5)
	(g) Prop. anti-icer fluid - 3 gal.	24 lbs.	(-103)
	(h) Slinger rings for Hydro-prop.	6 lbs.	(-104)
215.	Fuel exhaust analyzer	12 lbs.	(-42)
216.	Prestolite battery - R1213G	93 lbs.	(-47)
217.	Solar exhaust collector equipment	122 lbs.	(-60)
218.	(a) Cactus proof tire liners	25 lbs.	(-28.5)

Class III:

301.	Emergency wheel lowering device (independent oildraulic system, manually operated)	8 lbs.	(0)

NOTE 1. Weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be submitted for each aircraft with original inspector's report and each subsequent report covering change in equipment.
NOTE 2. Placard lavatory door as follows: "This room not to be occupied during take-off and landing."
NOTE 3. Eligible for export to all countries except Canada, Great Britain and Australia. (4-30-40)
NOTE 4. The following placards must be installed in locations noted: (In lieu of posting such placards, and subject to the approval of the Chief, Air Carrier Division, definite instructions must be issued by the operator to assure compliance therewith)

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(a) At fuel selector valve: "All fuel (to within 2 or 3 gals.) shall be used from each tank in the order listed below before using fuel from succeeding tank: Right rear, Left front, Left rear, Right front."

(b) At fuel filler caps: "In filling fuel tanks, care must be observed to ascertain that tanks are filled in the following order: Right front, Left rear, Left front, Right rear."

NOTE 5. A. If provisions other than item 211 are made for dumping, the fuel dump valves shall be made positively inoperative.

B. If item 211 is installed, the aircraft operation record shall incorporate one of the following statements, as the case may be:

(1) Non-Air Carrier. "Fuel shall not be dumped except in accordance with the provisions of CAR 60.900."

(2) Air Carrier. "Fuel shall not be dumped except in accordance with CAR 61.7811."

NOTE 6. Standard weight may be increased 105 lbs. when complete de-icer is installed.

NOTE 7. C.G. limits determined during flight tests were based on the actual empty weight C.G. position with the landing gear extended. The airplane must be loaded so that its C.G. position with landing gear extended is always between the limits shown. The effect of retracting the landing gear may be accounted for by adding 30050 inch pounds.

NOTE 8. Additional model 14 aircraft eligible when changed to conform.

NOTE 9. Replacement surfaces which incorporate flush type riveting in accordance with Lockheed Dwg. No. 74883 may be substituted for surfaces having external head type rivets except that in the event that an outer wing panel or wing tip (with external head rivet) is being replaced by a flush type riveted panel, both left and right surfaces must be replaced.

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