

II. Model 90A, 2-PCL-SM (cont'd)

Maximum Weight	Landplane: 1610 lbs. Seaplane: 1771 lbs.
No. Seats	2 (+25)
Maximum Baggage	Landplane: 76 lbs. Seaplane: 35 lbs.
Fuel Capacity	28 gal (+22) (14-gal. tank in each wing)
Oil Capacity	2½ gal (-17)
Serial No. Eligible	A-662 and up
Required Equipment	Landplane: Items 4, 101(b) or (c), 201(a), 203, 205(a) Seaplane: Items 4, 101(b), 102(b), 207(b), 301(a)

(Seaplane type also must have control stops per Edo Dwg. 47-S-029 installed in addition to fuselage reinforcements. Elevator up movement 15 degrees and rudder movement 16 degrees from centerline of airplane).

III. Model 90AF, 2-PCLM, Approved 1942

(Similar to Model 90A except engine installation, control system, and minor revisions)

Engine	Franklin 4AC-199-E3
Engine Limits	For all operations, 2500 r.p.m. (90 hp)
Airspeed Limits (CAS)	Level flight or climb 130 m.p.h. Glide or dive 156 m.p.h. Flaps extended 100 m.p.h.
Propeller Limits	Static r.p.m. at maximum permissible throttle setting: Not more than 2100, not less than 2000 (No additional tolerance permissible) Diameter: Not more than 74 inches, not less than 72 inches
C.G. Range	(+16.5) to (+18.6) (Rearmost C.G. limit with baggage is +20)
Empty Weight C.G. Range	(+15.5) to (+16.7) (with or without baggage)

When Empty Weight C.G. falls within this range, computation of critical fore-and-aft C.G. positions is unnecessary. Range is not valid for non-standard arrangements.

Maximum Weight	1610 lbs.
No. Seats	2 (+25)
Maximum Baggage	76 lbs. (+47)
Fuel Capacity	28 gal (+22) (14-gal. tank in each wing)
Oil Capacity	2 gal (-28)
Serial No. Eligible	A-816 and up
Required Equipment	Items 4, 101(d), 102(c), 103(a), 104, 106(a), 201(b), 204(a) or (b), 205(d), 301(c), 302(b)

IV. Model 90AF-100, 2-PCLM, Approved September 17, 1948

(Similar to Model 90AF except engine installation, cowling, main landing gear wheels and minor changes)

Engine	Franklin 4A4-100-B3
Fuel	80 minimum-octane aviation gasoline
Engine Limits	For all operations, 2550 r.p.m. (100 hp)
Airspeed Limits (CAS)	Level flight or climb 130 m.p.h. Glide or dive 156 m.p.h. Flaps extended 100 m.p.h.
C.G. Range	(+15.8) to (+19.2) or (+15.8) to (+21.7) provided airplane is placarded: "INTENTIONAL SPINS PROHIBITED"
Empty Weight C.G. Range	None
Maximum Weight	1610 lbs.
No. Seats	2 (+25)
Maximum Baggage	76 lbs. (+47)

IV. Model 90AF-100, 2-PCLM (cont'd)

Fuel Capacity	28 gal (+22) (14-gal. tank in each wing)
Oil Capacity	2 gal (-29.5)
Control Surface Movements	Elevator 22 degrees up 26.5 degrees down Aileron 16 degrees up 20 degrees down Rudder 22 degrees right and left Flaps 27 degrees down
Serial No. Eligible	861 and up
Required Equipment	Items 1, 201(d), 202, 204(c)

V. Model 90AL-115, 2-PCLM, Approved September 17, 1948

(Similar to Model 90AF except engine installation, cowling, main landing gear wheels and minor changes)

Engine	Lycoming O-235-C1
Fuel	80 minimum-octane aviation gasoline
Engine Limits	Maximum continuous 2600 r.p.m. (108 hp) Take-off (One minute) 2800 r.p.m. (115 hp)
Airspeed Limits (CAS)	Level flight or climb 130 m.p.h. Glide or dive 156 m.p.h. Flaps extended 100 m.p.h.
C.G. Range	(+15.8) to (+18.7) or (+15.8) to (+21.7) provided airplane is placarded: "INTENTIONAL SPINS PROHIBITED"
Empty Weight C.G. Range	None
Maximum Weight	1610 lbs.
No. Seats	2 (+25)
Maximum Baggage	76 lbs. (+47)
Fuel Capacity	28 gal (+22) (14-gal. tank in each wing)
Oil Capacity	2 gal (-24.5)
Control Surface Movements	Elevator 22 degrees up 26.5 degrees down Aileron 16 degrees up 20 degrees down Rudder 22 degrees left 22 degrees right Flaps 27 degrees down
Serial No. Eligible	861 and up
Required Equipment	Items 1, 201(d), 202, 204(c)

SPECIFICATIONS PERTINANT TO ALL MODELS

Datum	Wing leading edge
Leveling means	Lower surface of wing between spars, 12 inches outboard of root section
Certification basis	Type Certificate 306 (Models 90, 90A and 90AF based on Aeronautics Bulletin 7-A, Models 90AF-100 and 90AL-115 based on Aeronautics Bulletin 7-A and CAR 4a)
Production basis	None
Equipment	A plus (+) or minus (-) sign preceding the weight of an item indicates net weight change when that item is installed

Propellers and Propeller Accessories

	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
1. Propeller: Sensenich 72TM50 or any other fixed-pitch wood propeller rated for required hp and r.p.m. with following limits: Model 90AF-100: static r.p.m., not over 2110, not under 2010 Diameter: not over 72 in., not under 70 in. Model 90AL-115: static r.p.m., not over 2050, not under 1950 Diameter: not over 72 in., not under 70 in. (No additional tolerance on static r.p.m. limits permitted.)	11	---	---	---	(-42)	(-43)

SPECIFICATIONS PERTINANT TO ALL MODELS (cont'd)**Propellers and Propeller Accessories (cont'd)**

	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
2. Propeller: Automatic Controllable Koppers Aeromatic F200/0074E, Parts list and assem. No. 4283. Low-pitch setting 11.4 at 24-in sta. Static r.p.m. at max. permissible throttle setting: not over 2550, not under 2450. No additional tolerance permitted. Diameter: not over 74 in., not under 72.5 in. (Adjustment of counter-weights and flight r.p.m. must be done as stipulated in Koppers "Installation Procedures and Operating Limitations." Compliance with paragraph 'E' of above is mandatory for operation below base elevation for which counterweights were last set. Adjustments For higher altitudes are optional.)	21	---	---	---	(-43)	----
3. Propeller: 2-position controllable Sensenich C-2FM4/PC276A6-2. Pitch setting measured at 27.75 in. sta.: Low 9.7 degrees, high 15 degrees. Diameter: not over 74 in., not under 72.5 in.	18	---	---	---	----	(-45)
4. Propeller: fixed-pitch wood	22 11	eligible ---	eligible ---	--- (-43)	---- ----	---- ----
5. Propeller: adj. metal (Ham. std. hub 7029, blades 25V2).	13	eligible	eligible	---	----	----
6. Propeller: adj. wood (Freedman-Burnham hub PC203, blades P203-78).	8	---	eligible	---	----	----
7. Propeller: fixed-pitch metal, McCauley 1S110-GF-7650: Static r.p.m. at max, permissible throttle setting: not over 2150, not under 2050. No additional tolerance permitted. Diameter: not over 76 in., not under 74.5 in.	19	---	---	---	----	(-43)
8. Propeller: McCauley, fixed-pitch metal, Model 1090-LM Static r.p.m. at max, permissible throttle setting: not over 2200, not under 2150. No additional tolerance permitted. Diameter: not over 72 in., not under 70.5 in.	13	---	---	---	----	(-43)

Engine and Engine Accessories: Fuel and Oil System

	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
101. Engine ring cowl						
a) Plain	9	eligible	---	---	----	----
b) Cup type	15	---	eligible	---	----	----
c) Tunnel type (for serial nos. below A-699)	15	---	eligible	---	----	----
d) Dwg. 367	15	---	---	(-28)	----	----

Engine and Engine Accessories: Fuel and Oil System (cont'd)

	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
102. Starter						
a) Electric	19	eligible	---	---	----	----
b) Eclipse Y - 150	19	---	(-14)	---	----	----
c) Autolite MBG 4009	15	---	---	(18)	----	----
d) Delco-Remy 1109651	16	---	---	---	(-17)	eligible
e) Delco-Remy 1109657	17	---	---	---	----	(-27)
103. Carburetor Heater	5	---	---	(-28)	----	----
a) Dwg. 367 right	5	---	---	(-28)	----	----
b) Dwg. 2002A, 2005A	---	---	---	---	eligible	----
c) Dwg. 3002, 3005	---	---	---	---	eligible	----
104. Oil Cooler (Harrison HE 212)	5	---	---	(-28)	----	----
105. Engine compartment ventilator tube	1	---	eligible	---	----	----
106. Cabin Heater	2	---	eligible	---	----	----
a) Dwg. 367 left	4	---	---	(-28)	----	----
107. Dual Throttle Control	2	---	eligible	---	----	----
30 gal. fuel capacity (15 gal. tank in ea wing)	---	eligible	---	---	----	----
14.5 gal. auxiliary fuel tank installation (Rearward C.G. of +20 may be used and following placard required:	11	---	---	(+47)	----	----
a) Use in level flight only						
b) No baggage may be carried						
c) Tank valve 'OFF' when not in use						
d) Empty auxiliary tank first						
e) No intentional acrobatics						
f) Drain daily through sediment bowl						

Landing Gear

	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
201. Wheels						
a) 6.50 – 10 with brakes and 6.50 – 10 tires	60	eligible	(+5)	---	----	----
b) 18x18 – 3 with brakes and tires	29	eligible	(+5)	---	----	----
	36	---	---	(+5)	----	----
c) 21 in. streamline with brakes and tires	54	---	(+5)	---	----	----
d) 6.00 – 6 Type III Firestone Model 6C5YFB with brakes	16	---	---	---	(+5)	(+5)
202. 2 main-wheel 4-ply rating tires, 6.00 – 6 Type III, with regular tubes (for use with item 201(d))	18	---	---	---	(+5)	(+5)
203. Tail Skid	---	eligible	eligible	---	----	----
204. Tail Wheels						
a) 3 3/8 in. diameter – fixed or swivel	1	eligible	eligible	eligible	----	----
	3	---	---	---	(+180)	(+180)
b) Steerable, 3 3/8 inch diameter	2	---	eligible	eligible	----	----
	3	---	---	---	(+180)	(+180)
c) 6 in. full-swiveling – steerable (Maule Co.)	2	---	---	(+192)	(+192)	(+192)

Landing Gear (cont'd)

	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
205. Landing Gears						
a) 'Type F' (Cantilever with shock cord and tread of approx. 66 in.)	14	eligible	eligible	---	----	----
b) With oleo shock struts (approx. 66 in. tread)	---	eligible	---	---	----	----
c) 'Optional Type F' (Cantilever with shock cord and wide tread of approx. 78 in.). For use with 21 in. streamline or 6.50 – 10 wheels only)	7	---	eligible	---	----	----
d) 'Type C' (similar to 'Optional Type F' except for special axle – for use with 18x18 – 3 wheels only).	7	---	eligible	eligible	----	----
206. Wheel Streamlines	25	eligible	---	---	----	----
a) For use with item 205(c) only	22	---	eligible	---	----	----
b) For use with item 205(d) only	17	---	eligible	---	----	----
c) Per Dwg. F-30520	15	---	---	(+5)	(+5)	(+5)
207. Floats						
a) Edo H. Large – type tail surfaces required with this item. Large fin has two brace wires on each side, rudder has overall height of 54 3/8 in. and stabilizer has no sweepback of leading edge.	---	eligible	---	---	----	----
b) Edo 47 – 1965, with water rudder. Seaplane fin (+2 lb) under fuselage is required with this item.	273	---	eligible	---	----	----
208. Skis (use actual weight)						
a) Washington Aircraft 1625	---	---	eligible	---	----	----
b) Alaska Airmotive 3	---	---	eligible	---	----	----
<u>Electrical Equipment</u>						
	Lbs.	90	90A	90AF	90-AF-100	90-AL-115
301. Batteries	35	(-10)	---	---	----	----
a) Exide 6-AC7-1	17	---	(-10)	---	----	----
b) Exide 6TS-7-1	27	---	(-10)	---	----	----
c) Reading R24L	24	---	---	(-13)	(-14)	(-18)
302. Generators						
a) Wind-driven, mounted under fuselage	7	---	(+7)	---	----	----
b) Autolite GDY4106, 10 amp	12	---	---	(-18)	----	----
c) Delco-Remy 17556	16	---	---	---	(-17)	----
d) Delco-Remy 110878	10	---	---	---	----	(-29)
303. Landing Lights						
a) Pyle National, LAN605, one or two in wing leading edge each	7	---	(+3)	(+3)	----	----
b) Grimes ST-250, one or two each	4	---	(+14)	(+14)	----	----
c) Two Grimes ST-250	9	---	---	---	(+14)	(+14)

Interior Equipment

		Lbs.	90	90A	90AF	90-AF-100	90-AL-115
401.	Three 1 ½ min. flares, International MK-1	17	---	(+72)	(+72)	(+72)	(+72)
402.	Golf Compartment (opening into baggage compartment) (Max. capacity 20 lbs. Weight of baggage carried in golf compartment must be included in total baggage as originally placarded)	3	---	(+60)	(+60)	----	----
403.	Dual wheel control (Monocoupe Dwg. 353)	---	---	eligible	---	----	----
404.	Extra door on left side	---	---	eligible	---	----	----

NOTE 1 Current weight and balance report including list of equipment included in certificated weight empty, and loading instructions when necessary, must be in each aircraft at the time of original certification and at all times thereafter.

NOTE 2 The following placards must be displayed on models indicated:

- (a) On all models, on instrument panel in full view of the pilot:
“INTENTIONAL ACROBATICS WITH BAGGAGE PROHIBITED”
- (b) On Models 90AF-100 and 90AL-115 at each fuel valve:
“WHEN THIS VALVE IN ON, OTHER VALVE MUST BE TURNED OFF”
- (c) On Models 90AF-100 and 90AL-115 at fuel tank drain valves:
“DRAIN SEDIMENT DAILY”
- (d) On Models 90AF-100 and 90AL-115 on instrument panel in full view of pilot when C.G. range of (+15.8) to (+21.7) is utilized:
“INTENTIONAL SPINS PROHIBITED”

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