FEDERAL AVIATION AGENCY

A-778
Revision 5
SUPERIOR
(CULVER)
V
V-2

November 1, 1963

AIRCRAFT SPECIFICATION NO. A-778

Holder of Type Certificate: Superior Aircraft Company
3832 Minerva Avenue
Los Angeles 66, California

I - Model V, 2 PCLM (Normal Category), Approved April 9, 1947

Engine: Continental C-85-12FHJ (See Item 109 for optional engine)

Fuel: 73 min. octane aviation gasoline

Engine limits: For all operations, 2575 rpm (85 hp)
Takeoff (one minute), 2650 rpm (87 hp)

Airspeed limits:

Maneuvering	118 mph (103 knots) True Ind.
Cruising	125 mph (109 knots) True Ind.
Never exceed	157 mph (137 knots) True Ind.
Flaps extended	92 mph (80 knots) True Ind.
Landing gear extended	118 mph (103 knots) True Ind.

C.G. range: (+29.2) to (+32.4) with landing gear extended. Effect of retracting gear (+503 in. lbs.)

Empty weight C.G.: (+29.7) to (+30.3). 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: 1600 lbs.

No. seats: 2 (+40)

Maximum baggage: 70 lbs. (60 lbs. in main compartment at +7 and 10 lbs. aft of seats at +52).

Fuel capacity: 32 gal. (+26), Item 104. See Item 105 for optional tanks.

Oil capacity: 6 qt. (-6)

Control surface movements:

Flaps		Up	10°	Down	9.5°
Elevator with -	flaps full up	Up	14.5°	Down	10.5°
	flaps full down	Up	21.5°	Down	14.5°
(See Item 109 for values with optional engine)					
Ailerons		Up	10°	Down	14°
Rudder		Right	10°	Left	10°
Stabilizer (trailing edge)		Up	1°	Down	6°

The movement indicated for the rudder is the travel relative to the chord plane of the fin. The angles shown for all other surfaces are not actual travels; they are angles between lines on the surfaces and the centerline of the fuselage.

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With the airplane leveled these angles are measured by means of a bubble protractor or inclinometer resting on the control surface (for the Model V flap the protractor rests on a straight edge held against the bottom surface) at the trailing edge just forward of the pinked tape and at the stations indicated below. A slight pressure of the thumb and finger holding the rear of the instrument against the surface is necessary.
Ailerons - at inner end rib.
Flaps - at first rib inboard of middle hinge.
Stabilizer - at first rib outboard of elevator.
Elevator - at end rib.
Since any variation in the relationship between the flap and stabilizer angles has critical effects on the operational characteristics of the airplane no tolerance on these angles is permitted.

Serial Nos. eligible: V-2, V-3A, V-4, V-4A and up, 526 and up

Required equipment: Items 1, 102, 103, 104, 106, 201, 202, 301, 302, 401.

II - Model V-2, 2 PCLM (Normal Category), Approved April 9, 1947
(Same as Model V except for new wing outer panels, ailerons, flaps, wing fillets and tail fillets; revised wing main panel trailing edge, fuel tanks and flap and stabilizer control systems).

Engine: Continental C-85-12FHJ

Fuel: 73 min. octane aviation gasoline

Engine limits: For all operations, 2575 rpm (85 hp)
Takeoff (one minute), 2650 rpm (87 hp)

Airspeed limits:

Maneuvering	121 mph (105 knots) True Ind.
Cruising	131 mph (114 knots) True Ind.
Never exceed	165 mph (144 knots) True Ind.
Flaps extended	90 mph (78 knots) True Ind.
Landing gear extended	118 mph (103 knots) True Ind.

C.G. range: (+29.2) to (+32.4) with landing gear extended. Effect of retracting gear (+503 in. lbs.)

Empty weight C.G. range: (+29.4) to (+30.3). 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: 1600 lbs.

No. seats: 2 (+40)

Maximum baggage: 70 lbs. (60 lbs. in main compartment at +7 and 10 lbs. aft seats at +52).

Fuel capacity: 25 gals. (+26), Item 105. See Item 104 for optional tanks.

Oil capacity: 6 qts. (-6)

Control surface movements:

Flaps	Up	17°	Down	42.5°
Elevator with -				
stabilizer trailing edge full down	Up	15.5°	Down	9°
stabilizer trailing edge full up	Up	23.5°	Down	12°
Ailerons - Neutral 11.5°	Up	2.5°	Down	21.5°
Rudder	Right	10°	Left	10°
Stabilizer (trailing edge)	Up	3.5°	Down	5°

The movement indicated for the rudder is the travel relative to the chord plane of the fin. The angles shown for all other surfaces are not actual travels; they are angles between lines on the surfaces and the centerline of the fuselage. With the airplane leveled these angles are measured by means of a bubble protractor or inclinometer resting on the control surface at the trailing edge just forward of the pinked tape and at the stations indicated below. A slight pressure of the thumb and finger holding the rear of the instrument against the surface is necessary.
Ailerons - at inner end rib.
Flaps - at middle hinge.
Stabilizer - at first rib outboard of elevator.
Elevator - at end rib.
Since any variation in the relationship between the flap and stabilizer angles has critical effects on the operational characteristics of the airplane no tolerance on these angles is permitted.

Serial Nos. eligible: V2-501 and up.
Required equipment: Items 1, 102, 103, 105, 106, 201, 202, 301, 302, 401.

SPECIFICATIONS PERTINENT TO ALL MODELS

Datum: Forward face of firewall.

Leveling means: Right hand longeron of fuselage behind cockpit.

Certification basis: Type Certificate No. 778 (CAR 3)

Production basis: None. Prior to original certification a FAA representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, and a check of the flight characteristics.

Export eligibility: Eligible for export as landplane to all countries subject to the provisions of MOP 2-4.

Equipment: A Plus (+) or minus (-) sign preceding the weight of an optional item indicates the net weight change when that item is installed.

Approval for the installation of all items of equipment listed herein has been obtained by the aircraft manufacturer except those items preceded by an asterisk (*). The asterisk denotes that approval has been obtained by someone other than the aircraft manufacturer.
An item marked with an asterisk may not have been manufactured under a FAA monitored or approved quality control system. Conformity must be determined if the item is not identified by a Form ACA-186, PMA or other evidence of FAA production approval.

Propellers and Propeller Accessories

1. Sensenich controllable propeller - hub C2FB1, blades C276A2 or PC276A6 — 27 lbs. (-31)
   Diameter: 74-1/2" min., 76-1/8" max.
   Pitch at 28-1/2" Sta.: Low 8-3/4°, high 14-3/4° (Model V)
   Low 7-1/2°, high 12-1/4° (Model V-2)
   When C276A2 blades are installed following placard is required:
   "Avoid continuous operation between 1800 and 2000 rpm when landing gear is extended."

2. Propeller spinner (Culver Dwg. 11201) — 4 lbs. (-32)

*3.	Universal (Flottorp) controllable propeller (eligible on Model V with Continental C-85-12FHJ engine) Hub R003-100, blades R003-225-72 or R003-232-72 (See Propeller Specification No. P-804 for other interchangeable blades) Diameter: 72" max., 70 1/2" min. Pitch at 27" sta.: Low 12°, high 19° When this item is installed, the empty weight C.G. limits are not applicable and a placard showing direction of motion for increase and decrease of rpm must be provided at the propeller pitch control handle. Pitch control installation must be in accordance with Superior Dwg. No. 12386 or equivalent. The FAA Approved Airplane Flight Manual must be revised to reflect the new propeller identification and limits. The performance section must include the following statement: "Performance with the Universal R003-100/R003-225-72 (or /R003-232-72) propeller has been demonstrated to equal or exceed that shown herein."	36 lbs. (-31)
4.	Propeller spinner, Superior Dwg. No. 12201 (eligible with Universal R003-100 propeller only)	4 lbs. (-32)
5.	Universal (Flottorp) controllable propeller (eligible on Model V with Continental C-90-12F engine) Hub R003-100, blades R003-225-72 or R003-232-72 Diameter: 72" max., 70 1/2" min. Pitch at 27" sta.: Low 14 1/2°, high 21° When this item is installed, the empty weight C.G. limits are not applicable and a placard showing direction of motion for increase and decrease of rpm must be provided at the propeller pitch control. Pitch control installation must be in accordance with Superior Dwg. No. 12386.	36 lbs. (-31)

Engine and Engine Accessories - Fuel and Oil Systems

101.	Starter (Continental 50309)	16 lbs. (-6)
102.	Intake airscoop and filter	2 lbs. (-24)
103.	Wobble pump, Culver Model 10231 (eligible on Models V and V-2 with Continental C-85-12FHJ engine only)	2 lbs. (+23)
104.	Two fuel tanks, total capacity 32 gal.	10 lbs. (+26)
105.	Two fuel tanks, total capacity 25 gal.	7 lbs. (+26)
106.	Fuel sump tank (eligible on Models V and V-2 with Continental C-85-12FHJ engine only)	1 lb. (+29)
107.	Harrison oil cooler (Continental 40601) installed in accordance with Superior Dwg. 10378	5 lbs. (-4)
108.	Bendix Electric fuel pump modified and installed in accordance with Superior Dwg. 12231, Rev. "B"	Neglible wt. change
109.	Engine (a) Continental Model C-90-12F in Model V only when accomplished by the type certificate holder in accordance with approved technical data. In addition to the required equipment, the following items must be installed: Items 4, 5, 107 and 108. Item 103 must be replaced by Item 108. CAA Approved Airplane Flight Manual dated October 22, 1958 is required. Engine limits: Takeoff (five minutes), 2625 rpm (95 hp) Max. continuous, 2475 rpm (90 hp) When this engine is installed, the pertinent elevator deflections are: Elevators with:	Neglible wt. change

Flaps up	17°	Up	10.5°	Down
Flaps full down	24°	Up	14.5°	Down

Landing Gear and Floats

201.	Main gear: Firestone Model DFA218, 6.00-6, Type III, wheel-brake assembly (Wheel Assembly #DFA180, Brake Assembly #CFA287) with 6.00-6 4-ply rating tires	32 lbs. (+42)
202.	Nose gear: Firestone Model 5C2M-1, 5.00-4 Type III wheel with 5.00-4 6-ply tire (Wheel to be placarded for this tire.)	6 lbs. (-15)

Electrical Equipment

301.	Engine driven generator (Continental 40435)	10 lbs. (-5)
302.	Battery 12 volt-19 amp. hr. (5 hr. rate)	18 lbs. (-3)
303.	Landing lights (Grimes SK229)	1 lb.ea. (+26)

Interior Equipment

401.	FAA Approved Flight Manual and pertinent revisions applicable to the particular model and serial number.	
402.	Cabin heater and controls	1 lb. (-14)

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 (except in the case of air carrier operators having an approved weight control system).
The certificated weight empty and corresponding C.G. location must include undrainable oil of 1 lb. at (-10).

NOTE 2. The following placards must be displayed on the instrument panel in full view of the pilot:
(a) "This airplane must be operated in compliance with Sections II and III 'Operating Limitations of the Approved Operating Manual'."
(b) "No acrobatic maneuvers, including spins, approved."
(c) "On all take-offs maintain take-off setting until 200 ft. above ground." (Model V only).
(d) "With C-276A blades installed avoid continuous operation between 1800 and 2000 rpm when the nose landing gear is extended."

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