

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A-787
Revision 33
Univair
(ERCO) 415-D
(ERCO) E
(ERCO) G
(Forney) F-1
(Forney) F-1A
(Alon) A-2
(Alon) A2-A
(Mooney) M10
July 14, 2005

TYPE CERTIFICATE DATA SHEET NO. A-787

Type Certificate Holder: Univair Aircraft Corporation
2500 Himalaya Road
Aurora, Colorado 80011

Model 415-D, 2 PCLM (Normal Category), Approved June 13, 1947

Engine Continental C75-12, -12F (See NOTE 4 for C85-12 or 12F)

Fuel 73 minimum grade aviation gasoline

Engine Limits For all operations, 2275 r.p.m. (75 hp.)

Airspeed Limits
 Maneuvering 108 mph (94 kts) True Ind.
 Max. structural cruising 114 mph (99 kts) True Ind.
 Never exceed 144 mph (125 kts) True Ind.

C. G. Range (+26.8) to (+30.4)
 Empty wt. C. G. Range (+26.2) to (+27.2) - range not valid for nonstandard arrangements.
 When empty weight C.G. falls within this range, computation of critical fore and aft C.G. positions is unnecessary.

Maximum Weight 1400 lbs.

No. of Seats 2 (+37)

Maximum baggage 65 lbs. (+57)

Fuel Capacity 24 gal. [9 gal. each wing (+25), 6 gal. in fuselage (+7)]

Oil Capacity 4 qt. (-14)

Control Surface Movements
 Elevator trim tab Up 0° Down 60°
 Elevator Up 9° Down 12°
 Aileron Up 40.5° Down 9.5°
 Rudders Out 20° In 3°

Serial Nos. Eligible 4424 and up. See Note 3 regarding S/N 113 thru 4423.

Required Equipment In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 1, 101(a), 102, 201(a), 202(a), 205(a), 206(a), 401(a).

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II. Model E, 2 PCLM (Normal Category), Approved July 8, 1948Model G, 2 PCLM (Normal Category), Approved January 28, 1949

(Model E is similar to Model 415-D except for engine installation, redesigned elevator, addition of low speed warning cushion to elevator control and other changes of a minor nature. Model G is similar to E except for installation of "Kiddy Seat", increased baggage capacity, compound curved windshield, revised nose cowling support, revised engine baffles, revised seat back structure and other changes of a minor nature.)

Engine	Continental C85-12, C85-12F			
Fuel	73 minimum grade aviation gasoline			
Engine Limits	For all operations, 2575 r.p.m. (85 hp.)			
Airspeed Limits	Maneuvering	108 mph (94 kts)	True Ind.	
	Max. structural cruising	114 mph (99 kts)	True Ind.	
	Never exceed	144 mph (125 kts)	True Ind.	
C. G. Range	(±26.4) to (±30.3)			
Empty wt. C. G. Range	Model E: (±25.7) to (±26.9) Model G: (±25.9) to (±26.7) Ranges not valid for nonstandard arrangements. When empty weight C.G. falls within the pertinent range, computation of critical fore and aft C.G. positions is unnecessary.			
Maximum Weight	1400 lbs.			
No. of Seats	2 (+37). Model G incorporates "Kiddy Seat" for maximum passenger weight of 75 lbs. at (+57). Weight of baggage and passenger not to exceed 75 lbs.			
Maximum baggage	Model E: 65 lbs. (+57) Model G: 75 lbs. (+57) Total weight of passenger on "Kiddy Seat" plus baggage not to exceed 75 lbs.			
Fuel Capacity	24 gal. [9 gal. each wing (+25), 6 gal. in fuselage (+7)]			
Oil Capacity	4.5 qt. (-14)			
Control Surface Movements	Elevator trim tab	Up 10°	Down	36°
	Elevator	Up 20°	Down	10°
	Aileron	Up 40°	Down	10°
	Rudders	Out 20°	In	3°
Serial Nos. Eligible	Model E: 3779, 4869 and up Model G: 4997 and up			
Required Equipment	In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 1, 101(a), 102, 201(a), 202(a), 205(b), 206(b), 401(b).			

III. Model F-1, 2 PCLM (Normal Category), Approved September 18, 1956

(Model F-1 is similar to Model G except for engine and propeller combination, revised engine cowling, metal covered outer wing panels, extended baggage compartment, and modified seats and instrument panel.)

Engine	Continental C90-12F			
Fuel	80 minimum grade aviation gasoline			
Engine Limits	For all operations, 2475 r.p.m. (90 hp.)			
Airspeed Limits	Maneuvering	108 mph	(94 kts)	True Ind.
	Max. structural cruising	114 mph	(99 kts)	True Ind.
	Never exceed	144 mph	(125 kts)	True Ind.
C. G. Range	(+26.4) to (+30.3)			
Empty wt. C. G. Range	(+25.9) to (+26.7) - range not valid for nonstandard arrangements. When empty weight C.G. falls within the pertinent range, computation of critical fore and aft C.G. positions is unnecessary.			
Maximum Weight	1400 lbs.			
No. of Seats	2 (+37). "Kiddy Seat" incorporated for maximum passenger weight of 75 lbs. at (+57).			
Maximum baggage	75 lbs. (+57). Total weight of passenger on "Kiddy Seat" plus baggage not to exceed 75 lbs.			
Fuel Capacity	24 gal. [9 gal. each wing (+25), 6 gal. in fuselage (+7)]			
Oil Capacity	4.5 qt. (-14)			
Control Surface Movements	Elevator trim tab	Up	10°	Down 36°
	Elevator	Up	20°	Down 10°
	Aileron	Up	40°	Down 10°
	Rudders	Out	20°	In 3°
Serial Nos. Eligible	5600 and up (see NOTE 5 for eligibility under section IV)			
Required Equipment	In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 4, 101(b), 102, 201(a), 202(a), 205(b), 206(b), 401(b) and 401(c).			

IV. Model F-1A, 2 PCLM (Normal Category), Approved December 22, 1959

(Model F-1A is similar to Model F-1 except for larger control rods, nose wheel fork, rear spar and minor changes.)

Engine	Continental C90-12F			
Fuel	80 minimum grade aviation gasoline			
Engine Limits	For all operations, 2475 r.p.m. (90 hp.)			
Airspeed Limits	Maneuvering	108 mph	(94 kts)	True Ind.
	Max. structural cruising	114 mph	(99 kts)	True Ind.
	Never exceed	144 mph	(125 kts)	True Ind.
C. G. Range	(+26.4) to (+30.3)			

IV. Model F-1A, 2 PCLM (Normal Category) (cont'd)

Empty wt. C. G. Range	(±25.9) to (±26.7) - range not valid for nonstandard arrangements. When empty weight C.G. falls within the pertinent range, computation of critical fore and aft C.G. positions is unnecessary.			
Maximum Weight	1450 lbs.			
No. of Seats	2 (+37). Optional "Kiddy Seat" at (+57)			
Maximum baggage	75 lbs. (+57). Total weight of passenger on "Kiddy Seat" plus baggage not to exceed 75 lbs.			
Fuel Capacity	24 gal. [9 gal. each wing (+25), 6 gal. in fuselage (+7)]			
Oil Capacity	4.5 qt. (-14)			
Control Surface Movements	Elevator trim tab	Up	10°	Down 36°
	Elevator	Up	20°	Down 10°
	Aileron	Up	40°	Down 10°
	Rudders	Out	20°	In 3°
Serial Nos. Eligible	5715 and up			
Required Equipment	In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 4, 101(b), 102, 201(a), 202(a), 205(b), 206(b), 401(d).			

V. Model A-2, 2 PCLM (Normal Category), Approved November 12, 1964, Model A-2A, 2 PCLM (Normal Category),Approved June 21, 1967

(Model A-2 is similar to Model F-1A except for revised canopy, control column and wheel, toe brake, welded fuel tanks, exhaust system, induction system and minor changes.)

Engine	Continental C90-12F or C90-16F			
Fuel	80 minimum grade aviation gasoline			
Engine Limits	For all operations, 2475 r.p.m. (90 hp.)			
Airspeed Limits Maneuvering	Maneuvering	108 mph (94 kts)	True Ind.	
	Max. structural cruising	114 mph (99 kts)	True Ind.	
	Never exceed	144 mph (125 kts)	True Ind.	
C. G. Range	(±27.0) to (±30.1) at 1450 lbs. (±26.4) to (±30.3) at 1400 lbs. or less Linear variation between points given.			
Maximum Weight	1450 lbs.			
No. of Seats	2 (+37). "Kiddy Seat" (optional) at (+57).			
Maximum baggage	Model A-2: 75 lbs. (+57) Model A2-A: 90 lbs. (+68). "Family Seat" optional. See Note 2, B. for placard.			
Fuel Capacity	24 gal. [9 gal. each wing (+25), 6 gal. in fuselage (+7)]			

V. Model A-2, 2 PCLM (Normal Category) (cont'd)

Oil Capacity	5 qt. (-14)				
Control Surface Movements	Elevator trim tab	Up	10°	Down	36°
	Elevator	Up	20°	Down	10°
	Aileron	Up	40°	Down	10°
	Rudders	Out	20°	In	3°
Serial Nos. Eligible	A-2: A-2 thru A-245 A2-A: B-246 thru B-297				
Required Equipment	In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 4, 101(c), 102, 201(b), 202(a), 205(d) or 205(e), 206(b) and 404.				

VI. Model M10, 2 PCLM (Normal Category), Approved September 27, 1968

(Model 10 is similar to Model A2-A except for new design empennage, ailerons and fuel tank vent.)

Engine Continental	C90-12F or C90-16F				
Fuel	80 minimum grade aviation gasoline				
Engine Limits	For all operations, 2475 r.p.m. (90 hp.)				
Airspeed Limits	Maneuvering	108 mph	(94 kts)	True Ind.	
	Max. structural cruising	114 mph	(99 kts)	True Ind.	
	Never exceed	144 mph	(125 kts)	True Ind.	
C. G. Range	(+27.0) to (+30.1) at 1450 lbs. (+26.4) to (+30.3) at 1400 lbs. or less Linear variation between points given.				
Maximum Weight	1450 lbs.				
No. seats	2 (+37). "Kiddy Seat" (optional) at (+57)				
Maximum baggage	90 lbs. (+68). "Family Seat" (optional)				
Fuel Capacity	24 gal. [9 gal. each wing (+25), 6 gal. in fuselage (+7)]				
Oil Capacity	5 qt. (-14)				
Control Surface Movements	Elevator trim tab	Up	7° to 10°	Down	32° to 36°
	Elevator	Up	25° to 29°	Down	20° to 24°
	Aileron	Up	24° to 28°	Down	9° to 11°
	Rudders	Left	25° to 27°	Right	25° to 27°
Serial Nos. Eligible	690001 and up				
Required Equipment	In addition to the pertinent required basic equipment specified in CAR 3, the following items of equipment must be installed: 4 or 8, 101(d), 102(e), 201(b), 202, 205(d) or 205(e), 206(b), 401(e), 405.				

Specifications Pertinent to All Models

Datum	Firewall Bulkhead
Leveling means	Hatch sill on either side of the fuselage

Certification basis	CAR 3, effective December 15, 1946 with no amendments, no exemptions. Type Certificate No.787 issued June 13, 1947. Application for Type certificate dated February 6, 1947.
Production basis	Alon Models A-2 and A2-A (subsequent to March 1, 1968), Erco Models 415-D, E, G, Forney Models F-1, F-1A and Mooney Model M10 - None. Prior to original certification of each aircraft manufactured, an 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 to all countries subject to the provisions of Advisory Circular 21-2, except as follows: Canada, Landplane eligible; Skiplane not eligible; however, structure complies with Canadian requirements. Maximum pedestal height 8-1/2 in. to center of axle; tread identical with landplane.
Equipment:	A plus (+) or minus (-) sign preceding the weight of an item of equipment 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 an FAA monitored or approved quality control system, and therefore conformity must be determined if the item is not identified by a Form FAA-186 or 8130-3 Airworthiness Approval Tag, TSO, PMA, or other evidence of FAA production approval.

Propellers and Propeller Accessories

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|----|--|----------|-------|
| 1. | Sensenich 74CT48 or 74KT48
(For flanged type crankshaft) or any other fixed pitch wood propeller, rated for the engine power and speed which meets the following limits:
Static r.p.m. at max. permissible throttle setting:
(Model 415-D with C75 engine): not over 2100, not under 2000.
(Models 415-D, E and G with C85 engine): not over 2100, not under 1900.
No additional tolerance permitted.
Diameter: not over 74 inches, not under 72 inches. | 14 lbs. | (-32) |
| 2. | McCauley 1A90CF or 1B90CM (Model 415-D with C75 engine)
Static r.p.m. at maximum permissible throttle setting:
Not over 2110, not under 2010.
No additional tolerance permitted.
Diameter: not over 73 inches, not under 71.5 inches. | +12 lbs. | (-32) |
| 3. | Hartzell hub HA12UO or HA12UF
Blades 7414 to 7014 or 7214M to 7014M (ground adjustable)
Eligible on all engines with static r.p.m. and diameter limits shown for fixed pitch wood propellers. | 18 lbs. | (-32) |
| 4. | Fixed pitch metal, McCauley 1A90CF or 1B90CM
Eligible on Models M10, A2, A2-A, 415-D (per note 4(b)), E, G, F-1 and F-1A.
Static r.p.m. at maximum permissible throttle settings:
For Models 415-D, E, or G: not over 2225, not under 2025.
For Models M10, A-2, A2-A, F-1, F-1A: not over 2375, not under 2250.
No additional tolerance permitted.
Diameter: not over 71 inches, not under 69.5 inches. | +12 lbs. | (-32) |
| 5. | Koppers Aeromatic F200 hub, 00-73 or -73F blades
Parts List Assembly No. 4305-A | +16 lbs. | (-32) |

- Static r.p.m. at maximum permissible throttle setting:
Not over 2575, not under 2465.
No additional tolerance permitted.
Pitch settings:
(a) With Continental C85 engine: low 11°, high 20°
(b) With Continental C75 engine: low 13°, high 20.3°
Diameter: not over 73 inches, not under 71.5 inches.
When this item is installed, the following note will be inserted in the Airplane Flight Manual:
"Aeromatic Propeller (F200/00-73 or -73F)
Installation and operation must be accomplished in accordance with Koppers
Installation Procedure and Operation Limitations dated April 27, 1948".
6. Fixed pitch metal, Sensenich M76AK-2 24 lbs. (-32)
(a) Model 415-D with C75 engine:
Static r.p.m. at maximum permissible throttle setting:
Not over 2125, not under 2050
No additional tolerance permitted.
Diameter: not over 74 inches, not under 72.5 inches.
(b) Models 415-D (per NOTE 4(b)), or E or G:
Static r.p.m. at maximum permissible throttle setting:
Not over 2250, not under 2175
No additional tolerance permitted.
Diameter: not over 74 inches, not under 72.5 inches.
7. Controllable Beech R002 or R003 with R003-225-72T blades 26 lbs. (-32)
Eligible on Models 415-D (per NOTE 4(b)), or E or G:
Diameter: not over 72 inches, not under 70.5 inches.
Pitch settings at 27 in. sta.: High 18.5° to 20.5°, low 13° to 14°.
Note: Check aircraft weight and balance to determine if ballast is required in
the baggage compartment when the aircraft is flown solo.
Propeller control 1 lb. (-10)
8. Fixed pitch metal, McCauley 1A105/SCM 7153 20 lbs. (-32)
Eligible for Models M10, A-2 and A2-A with C90 engine
Static r.p.m. at maximum permissible throttle setting:
Not over 2375, not under 2250.
No additional tolerance permitted.
Diameter: not over 71 inches, not under 69.5 inches.
101. Carburetor air heater
(a) Models 415-D, E and G Engineering & Research Corp. Dwg. 415-40400 5 lbs. (-2)
(b) Models F-1, F-1A, Forney Mfg. Co., Dwg F-40400 5 lbs. (-2)
(c) Models A-2, A2-A, Forney Mfg. Co., Dwg F-40400 2 lbs. (-10)
(d) Model M10, Mooney Dwg. 600275 2 lbs. (-10)
102. Fuel Pump - The following are eligible with C75, C85 and C90-12F engines only 2 lbs. (-27)
(a) AC P/N 1539051, Continental P/N 40585
(b) AC P/N 1539076, Continental P/N 40695
(c) AC P/N 1539003, Continental P/N 40281
(d) AC P/N 1537973, Continental P/N 40452
(e) AC P/N 5656861, Continental P/N 631391 (eligible with C90-16F engines only).
103. Starter - Delco-Remy No. 1109656, P/N 50309 16 lbs. (-7)
104. Baffle plate, ERCO P/N 405-40252 (optional - Neglect wt. change with all engines)
- * 105. Davis exhaust silencer - Model D-75-85ER installed per Davis 2 lbs. (-19.5)
Silencer Co. Dwg. D-75-85-ERI

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| 106. Engine - Continental C85-12, -12F
(Eligible on Model 415-D in accordance with NOTE 4)
Engine limits - for all operations, 2575 r.p.m. (85 hp.)
Fuel - 73 min. grade aviation gasoline.
Oil capacity - 5 qt. (-14) | +12 lbs. | |
| * 107. Oil Filter - Fram PB-5, Kit No. K-510, Fram installation Dwg. 61614 | 5 lbs. | (-2) |
| 108. Engine primer per Alon Dwg. A-48304 | 1 lb. | (+23) |

Landing Gear

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|---|--------------------|-------|
| 201. Two main wheel-brake assemblies, 6.00-6, Type III
(a) Goodyear LF6HBD
Wheel assy. 511960-M
Brake assy. 9520285 | 12 lbs. | (+44) |
| (b) Cleveland 6.00-6
Model 27-100D (Type 40-16) wheel and 30-4 brake | 12 lbs. | (+44) |
| 202. Two main 4-ply rating tires 6.00-6, Type III, with regular tubes. | 18 lbs. | (+44) |
| 205. One nose wheel, Type III
(a) ERCO 5.00-4, assy. 415-34204 | 3 lbs. | (-16) |
| (b) Firestone 5.00-5, Model DFA531, assy. DFA531
Eligible on Model 415-D with item 206(b) when revised nose wheel fork is installed per ERCO Dwg. 415-34360. | Neglect wt. change | |
| (c) Goodyear 6.00-6, Model L6NBD, assy. 511500-M
Eligible with item 206(c) when revised nose wheel fork is installed per ERCO Dwg. 415-34365. | Neglect wt. change | |
| (d) Cleveland 5.00-5, Model 21-100D (Type 40-17) | Neglect wt. change | |
| (e) Goodyear 5.00-5, P/N 9532926 | Neglect wt. change | |
| 206. One nose wheel tire, Type III, 4-ply rating with regular tube.
(a) 5.00-4 | 6 lbs. | (-16) |
| (b) 5.00-5 | Neglect wt. change | |
| (c) 6.00-6 | +3 lbs. | (-16) |
| * 210. Wilson Fendaire Model LW-1 (nose wheel only).
Installed per Wilson Fendaire Co. instructions dated 6-2-60. | 1 lb. | (-16) |

Electrical Equipment

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| 301. Battery
For list of approved batteries with their arms and weights,
see Univair Service Memorandum No. 67 | | Use act. wt. |
| 302. Generator
(a) Delco-Remy 1101876, P/N 40435 | 10 lbs. | (-8) |
| (b) Delco-Remy No. 1101890 | 10 lbs. | (-8) |
| (c) Delco-Remy No. 1101898 | 16 lbs. | (-8) |
| * 303. Two landing lights (Aviation Accessories Corp.
Model E) installed per AAC Dwg. E-1001. | 4 lbs. | (+29) |

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|------|--|--------|-------|
| 304. | Two landing lights installed per Sanders Aviation Co. dwg. 415-54108 and installation instructions SK28. | 3 lbs. | (+29) |
| 305. | Two landing lights, G.E. P/N 4509, installed per Alon Dwg. F14094 and F14095. | 3 lbs. | (+29) |

Interior Equipment

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|------|--|--------|--------------------|
| 401. | FAA Approved Airplane Flight Manuals
(a) Model 415-D dated June 13, 1947
(b) (1) Model E (tentative) dated July 1, 1948; (final) dated September 15, 1948
Revision "A", dated July 1, 1993
(2) Model G dated January 28, 1949
Revision "A", dated July 1, 1993
(c) Model F-1, Supplement dated September 7, 1956
Revision "A", dated July 1, 1993
(d) Model F-1A dated January 5, 1960
(e) Model M10 dated September 20, 1968 | | |
| 402. | Trim-O-Matic Control Kit installed per ERCO Service Memorandum No. 54 and ERCO Dwg. 415-52175. | | Neglect wt. change |
| 403. | Rudder pedals installed per ERCO Kit Instructions (Service Memoranda Nos. 59 and 59A) and Dwg. 415-52389. | 6 lbs. | (+18) |
| 404. | Placards for Models Alon A-2 and A2-A per NOTE 2, B. | | Neglect wt. change |
| 405. | Placards for Model Mooney M10 per Note 2, C. | | Neglect wt. change |

Miscellaneous (not listed above)

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| * 601. | Metal plating of wings
Models 415-D, E and G are eligible for certification when wings are covered with metal per Technical Instruction Report No. 103000 by Birtcraft Engineering Co., 11836 Cherry Ave., Inglewood, Calif. | 32 lbs. | (+36) |
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NOTES

- NOTE 1. A current weight and balance report including a list of the equipment included in the certificated empty weight, 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 operators having an approved weight control system.
- NOTE 2. Placards
- A. Models ERCO 415-D, E, G, Forney F-1, F-1A
- (1) On instrument panel in full view of the pilot:
 - (a) "This airplane must be operated as a Normal Category airplane in compliance with operating limitations, Secs. A and B, Approved Airplane Flight Manual."
 - (b) "This airplane characteristically incapable of spinning."
 - (c) "No acrobatic maneuvers are approved."
 - (2) To be displayed in Cabin: "No Smoking."

- B. Models Alon A-2 and A2-A
- (1) On instrument panel in full view of the pilot:
 - (a) "This airplane must be operated as a Normal Category airplane in compliance with the operating limitations stated in the form of placards and markings."
 - (b) "Do not open canopy in excess of 100 m.p.h. IAS."
 - (c) "This airplane characteristically incapable of spinning."
 - (d) "No aerobatic or inverted maneuvers approved."
 - (e) "Maximum maneuver speed - 108 m.p.h. TIAS."
 - (f) "Flight load factor positive 3.8g
Maximum gross weight - 1450 lbs.
Center of gravity limits:
(+26.4) to (+30.3) (Datum Firewall) to 1400 lbs.
(+27.0) to (+30.1) (Datum Firewall)
Linear variation between 1400 lbs. and 1450 lbs."
 - (2) Passenger and cargo compartment:

A-2: "Capacity this compartment 75 lbs. maximum."
A2-A: "Capacity this compartment 90 lbs. maximum."
- C. Model Mooney M10 (150059)
- (1) On instrument panel in full view of the pilot:
 - (a) "This airplane must be operated as a Normal Category airplane in compliance with the Airplane Flight Manual."
 - (b) "Do not open canopy in excess of 100 m.p.h. CAS."
 - (c) "No aerobatic maneuvers including spins approved."
 - (d) "Maximum maneuver speed - 108 m.p.h. CAS."
 - (e) "Flight load factor positive - 3.8g
Maximum gross weight - 1450 lbs.
Center of gravity limits:
26.4 to 30.3 (Datum, firewall) to 1400 lbs.
27.0 to 30.1 (Datum, firewall)
Linear variation between 1400 and 1450 lbs."
 - (f) "Check fuselage tank gage for floatation."
 - (2) Passenger and cargo compartment: "Capacity this compartment 90 lbs. maximum."

- NOTE 3. S/N 113 thru 4423 and 4500 and up, designated Model 415-C, also eligible as Model 415-D under terms of this specification provided the following changes are incorporated:
- (a) Correct propeller and propeller limits.
 - (b) Correct control surface travel for the elevator.
 - (c) Incorporate elevator tab per ERCO Dwg. 415-22031 (applies to S/N 113 thru 4423 only).
 - (d) Mark instruments per the FAA approved operating limitations in the Airplane Flight Manual.
 - (e) Include placards on the instrument panel and in the cabin per NOTE 2 above.
 - (f) Revise the orifices for the main and nose gear piston as follows:

	<u>Serial Nos.</u>	<u>Orifice Size</u>
Main Gear	113 thru 812	.067" diameter
Nose Gear	113 thru 1622	.281" diameter

- (g) Alter the nameplate to indicate the date of the conversion, new model number and type certificate number.
- (h) Install stainless steel upper skin in fuselage aft of firewall per ERCO Dwg. 415-31245. (S/N 113 thru 4423 only).

NOTE 4. Model 415-D eligible for installation of C85-12 or -12F engines provided:

- (a) Item 1, 3 or 5 propeller or
- (b) Item 4, 6 or 7 propeller and additional ERCO baffles (P/N 415-40487 left and right; 415-40488, one; 415-40597, two; 415-40598, two) installed.
- (c) Item 401(a), Airplane Flight Manual, is revised as follows:
 - I. "Limitations" section to include:
 - (1) Description of C85 engine and operating limits.
 - (2) Maximum cylinder head temperature: 540°F
 - (3) Description of propeller (Item 1, 3, 4, 6, or 7) installed, including static r.p.m., diameter limits and pertinent placard.
 - II. "Performance" section to include the following statement, as applicable:
"Performance" with C85-12 or -12F engine and the _____ model propeller has been demonstrated to equal or exceed that presented herein over the altitude and temperature range shown."
- (d) Conversion of the C75 engine to the C85 must be accomplished per Continental Service Bulletin M47-16 dated June 7, 1948 and the oil sump dip stick recalibrated to indicate full sump when serviced with 4.5 qt. of oil.

NOTE 5. Forney Model F-1 airplanes, S/N 5611 thru 5714 are eligible for operation under the provisions of Section IV of this specification, provided:

- (a) Larger control rods are installed per Forney Dwg. F-52085.
- (b) New type nose fork, F-34371, is installed per Univair Service Kit SK-17C or new type nose gear is installed per Univair Service Kit SK-17.
- (c) Belleville springs are installed in the main landing gear per Forney Dwg. F-33253.

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