



U.S. Department
of Transportation
**Federal Aviation
Administration**

FLIGHT STANDARDS DISTRICT OFFICE
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Hillsboro, Oregon 97124
(503) 681-5500, Fax: (503) 681-5555
1-800-847-3806

EXPERIMENTAL OPERATING LIMITATIONS
Operating Amateur-Built Aircraft

REG. NO.	MAKE:	MODEL:	SERIAL NO:
N424D	McDANIEL	RV-6-CH	AC-3

THESE OPERATING LIMITATIONS SHALL BE ACCESSIBLE TO THE PILOT

Phase I. Initial Flight Test in Restricted Area:

1. No person may operate this aircraft for other than the purpose of operating amateur-built aircraft to accomplish the operation and flight test outline in the applicant's letter, dated APRIL 21, 1996 in accordance with FAR Section 21.193. Phase I and II amateur-built operations shall be conducted in accordance with applicable air traffic and general operating rules of FAR Part 91 and the additional limitations herein prescribed under the provisions of FAR Section 91.319.
2. The initial **40** hours of flight shall be conducted within the geographical area described as follows:

50 mile radius from LaCenter, Washington.
3. Except for takeoffs and landings, no person may operate this aircraft over densely populated areas or in congested airways.
4. This aircraft is approved for day VFR operation only
5. Unless prohibited by design, acrobatics are permitted in the assigned flight test area. All acrobatics are to be conducted under the provisions of FAR Section 91.303.
6. No person may be carried in this aircraft during flight unless that person is required for the purpose of the flight.
7. The cognizant FAA office must be notified and their response received in writing prior to flying this aircraft after incorporating a major change, as defined by FAR Section 21.93.
8. The operator of this aircraft shall notify the control tower of the experimental nature of this aircraft when operating into or out of airports with operating control towers.

9. The pilot-in-command of this aircraft must, as applicable, hold an appropriate category/class rating, have an aircraft type rating, have a flight instructor's logbook endorsement, or possess a "Letter of Authorization" issued by an FAA Flight Standards Operations Inspector.
10. This aircraft does not meet the requirements of the applicable, comprehensive, and detailed airworthiness code as provided by Annex 8 to the Convention of International Civil Aviation. This aircraft may not be operated over any other country without the permission of that country.

Phase II:

Following satisfactory completion of the required number of flight hours in the flight test area, the pilot shall certify in the logbook that the aircraft has been shown to comply with FAR Section 91.319(b). Compliance with FAR Section 91.319(b) shall be recorded in the aircraft logbook with the following or similarly worded statement:

"I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics, or design features, and is safe for operation."

The Following Limitations Apply Outside of Flight Test Area:

1. Limitations 1, 3, 7, 8, 9, and 10 from Phase I are applicable.
2. This aircraft is approved for day VFR only, unless equipped for night VFR and/or IFR, in accordance with FAR Section 91.205.
3. This aircraft shall contain the placards, markings, etc., required by FAR Section 91.9.
4. This aircraft is prohibited from acrobatic flight, unless such flights were satisfactorily accomplished and recorded in the aircraft logbook during the flight test period.
5. No person may operate this aircraft for carrying persons or property for compensation or hire.
6. The person operating this aircraft shall advise each person carried of the experimental nature of this aircraft.
7. This aircraft shall not be operated for glider towing or parachute jumping operations, unless so equipped and authorized.
8. No person shall operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed, in accordance with FAR Part 43, Appendix D, and has been found to be in a condition for safe operation. In addition, this inspection shall be recorded in accordance with Limitation 10, listed below.

9. The builder of this aircraft, if certificated as a repairman, or an FAA certified mechanic holding an Airframe and Powerplant rating, may perform condition inspections, in accordance with FAR Part 43, Appendix D.
10. Condition inspections shall be recorded in the aircraft maintenance records showing the following or a similarly worded statement:

"I certify that this aircraft has been inspected on ~ (insert date) in accordance with the scope and detail of Appendix D of Part 43 and found to be in a condition for safe operation."

The entry will include the aircraft total time-in-service, the name, signature, and certificate type and number of the person performing the inspection.



Robert E. Eccles
Aviation Safety Inspector
PDX FSDO

Date issued: MAY 17, 1996

Make: McDaniel	Gross Weight (lbs): 1,750.00
Model: RV-6-CH	Wing Area (sq. ft.): 118.29
Serial Number: AC-3	Wing Loading (lbs/sq. ft.): 14.79
Registration Number: N424D	Mean Aerodynamic Chord (in): 59.67
Datum: Firewall	Leading Edge to Datum (in): 11.75
Leveling Method: Level on Canopy Slide	CG Limits (%MAC): 15-29

Instead of the standard 170lb person, I used more extreme (realistic) numbers for the extreme CG computations. The %MAC figures for 170lb persons are 17.19% most forward and 26.84% most aft.

Empty CG			
Location	Weight (lbs)	Arm (in)	Moment (in-lbs)
Left Wheel	477.00	7.25	3,458.25
Right Wheel	485.00	7.25	3,516.25
Tail Wheel*	63.00	181.38	11,426.63
Totals:	1,025.00	17.95	18,401.13

Most Forward CG			
	Weight (lbs)	Arm (in)	Moment (in-lbs)
Empty Weight	1,025.00	17.95	18,401.13
Oil (8 Qts)	15.00	-18.00	-270.00
Usable Fuel (36 Gals)	216.00	22.00	4,752.00
Pilot	110.00	50.00	5,500.00
Passenger	0.00	50.00	0.00
Baggage	0.00	71.50	0.00
Totals:	1,366.00	20.78	28,383.13
Percent MAC:	15.13		

Most Aft CG			
	Weight (lbs)	Arm (in)	Moment (in-lbs)
Empty Weight	1,025.00	17.95	18,401.13
Oil (8 Qts)	15.00	-18.00	-270.00
Usable Fuel (~45 min)	45.00	22.00	990.00
Pilot	210.00	50.00	10,500.00
Passenger	200.00	50.00	10,000.00
Baggage	80.00	71.50	5,720.00
Totals:	1,575.00	28.79	45,341.13
Percent MAC:	28.56		

Scale readings taken by:	David McDaniel
Scale readings verified by:	Lee McDaniel
Weight and balance computations by:	David McDaniel**

*Tare is zero for all wheels.

**With Microsoft Excel

Equipment List

No.	Item	Weight (lbs)	Arm (in)	Moment (in-lbs)
1	Engine (Continental IO-346-A)	271.75		
2	S4RN Mags	10.41	-14.50	-150.95
3	Generator	10.25	-29.25	-299.81
4	Starter	13.50	-6.50	-87.75
5	Wamke 72/74 Propeller	10.25	-39.00	-399.75
6	II Morrow Apollo 820 GPS	3.00	22.00	66.00
7	GPS Antenna	0.24	15.00	3.66
8	Narco AT150 Transponder	2.30	22.00	50.60
9	Narco AR-850 Encoder	0.70	19.00	13.30
10	Transponder Antenna	0.19	28.00	5.25
11	TKM MX11 Comm	4.00	22.00	88.00
12	Comm Antenna	0.88	36.00	31.50
13	Ack E-01 ELT	3.38	75.00	253.13
14	ELT Remote	0.06	78.50	4.91
15	ELT Antenna	0.09	68.00	6.38
16	Battery	22.00	3.50	77.00
17	Altimeter	1.00	26.00	26.00
18	Turn Coordinator	0.88	26.00	22.75
19	Electronics Intl VA-1A Volt/Amp meter	0.56	26.50	14.91
20	Electronics Intl OPT-1 Oil Temp/Pressure	0.63	26.00	16.25
21	Electronics Intl R-1 switch	0.19	27.50	5.16
22	EGT/CHT/OAT Guage	0.50	26.50	13.25
23	Electric Clock/Timer	0.40	27.50	11.00
24	Magnetic Compass	0.70	26.50	18.55
25	Intercom	0.31	26.00	8.13
26	Electronics Intl Tachometer	0.63	26.00	16.25
27	8125-B655 True Airspeed Indicator	0.75	26.50	19.88
28	UMA-7-100-20 Manifold Pressure Guage	0.90	27.50	24.75
29	Electronics Intl FL-2R Dual Fuel Guage	0.63	27.50	17.33
30	Electronics Intl FP-5 Fuel Flow/Pressure	0.69	27.50	18.98
31	Flightcom 403d Intercom	0.38	26.00	9.75

Civil Aircraft Registry
PO Box 25504
Oklahoma City, Oklahoma 73125

April 2, 1996

Dear Sir,

When I was completing the FAA forms 8130-6 and 8130-12 to request airworthiness certification, I noticed that I had incorrectly designated the make of my home-built aircraft on the registration application. As the owner and co-builder of N424D (serial number AC-3), I would like to change the make/model of the aircraft as follows:

From: RV-6/Chard-6

To: McDaniel/RV-6-CH

All other registration information should remain unchanged. If you have any questions, please call me at [REDACTED] Thank you.

Sincerely,

David A McDaniel, Capt, USAF
[REDACTED]

Percent MAC Graphs for N424D

$$EW := 1025 \quad EA := \frac{6974.5 + (63 \cdot 181.38)}{1025} \quad EM := EW \cdot EA \quad EM = 18401.44$$

$$OilW := 15 \quad OilA := -18 \quad OilM := OilW \cdot OilA$$

$$PilotW := 210 \quad PilotA := 50 \quad PilotM := PilotW \cdot PilotA$$

$$PaxW := 200 \quad PaxA := 50 \quad PaxM := PaxW \cdot PaxA$$

$$BagW := 80 \quad BagA := 71.5 \quad BagM := BagW \cdot BagA$$

$$LEtoDatum := 11.75 \quad MAC := 63.5 \cdot \frac{60.25}{123.5} + 48 \cdot \frac{59.25}{123.5} + 12 \cdot \frac{58.25}{123.5} \quad MAC = 59.667$$

$$i := 0..220$$

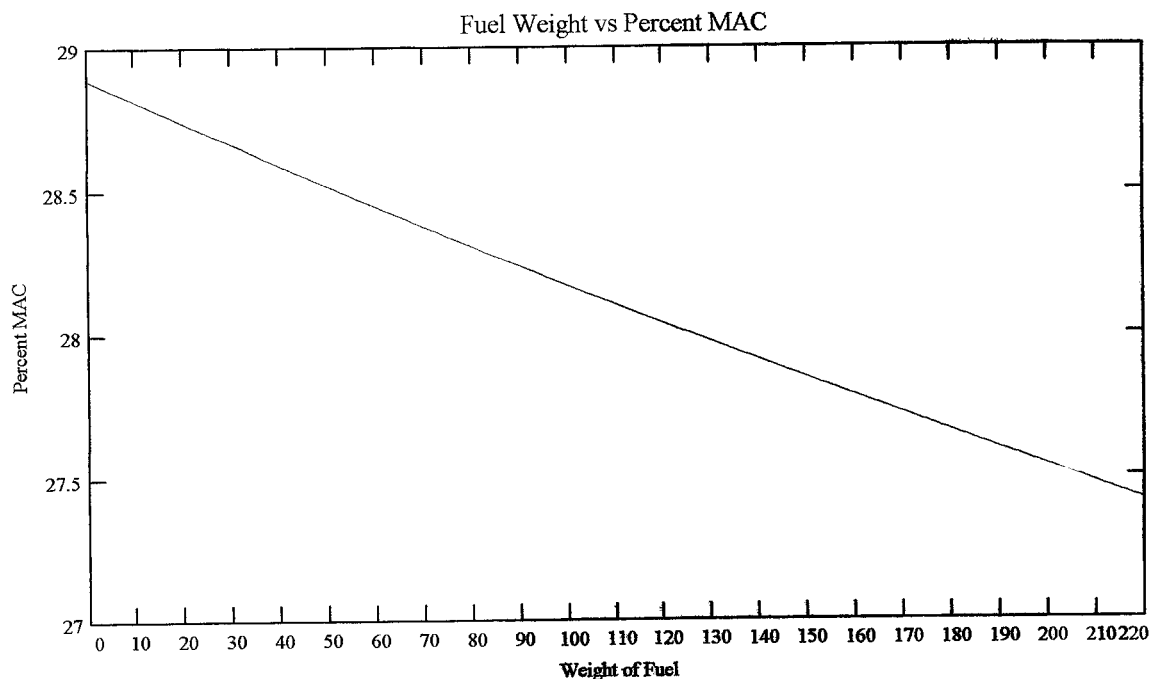
$$FuelW_i := i \quad FuelA := 22 \quad FuelM_i := FuelW_i \cdot FuelA$$

$$TotalW_i := EW + OilW + PilotW + PaxW + BagW + FuelW_i$$

$$TotalM_i := EM + OilM + PilotM + PaxM + BagM + FuelM_i$$

$$TotalA_i := \frac{TotalM_i}{TotalW_i} \quad PMAC_i := \frac{(TotalA_i - LEtoDatum) \cdot 100}{MAC}$$

This graph is for pilot (David McDaniel), a 200 pound passenger, and 80 pounds of baggage.



Gross Weight is 1,750 Pounds

CG Limits are 15-29% MAC

Percent MAC Graphs for N424D

$$EW := 1025 \quad EA := \frac{6974.5 + (63 \cdot 181.38)}{1025} \quad EM := EW \cdot EA \quad EM = 18401.44$$

$$OilW := 15 \quad OilA := -18 \quad OilM := OilW \cdot OilA$$

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$$BagW := 0 \quad BagA := 71.5 \quad BagM := BagW \cdot BagA$$

$$LEtoDatum := 11.75 \quad MAC := 63.5 \cdot \frac{60.25}{123.5} + 48 \cdot \frac{59.25}{123.5} + 12 \cdot \frac{58.25}{123.5} \quad MAC = 59.667$$

$$i := 0..220$$

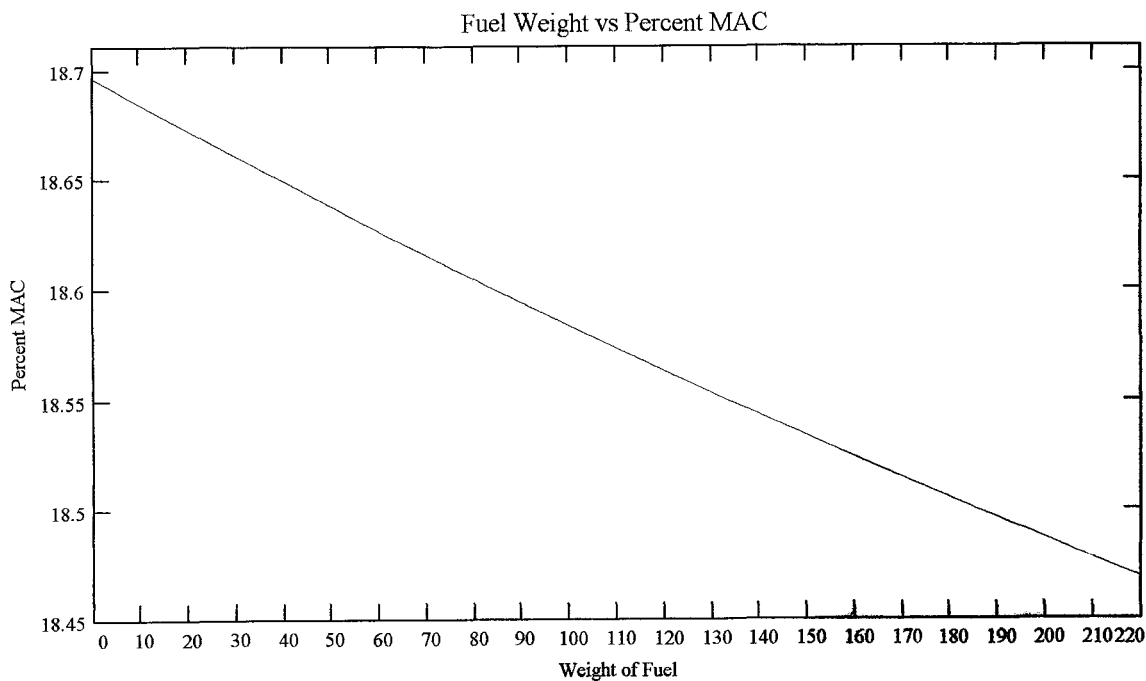
$$FuelW_i := i \quad FuelA := 22 \quad FuelM_i := FuelW_i \cdot FuelA$$

$$TotalW_i := EW + OilW + PilotW + PaxW + BagW + FuelW_i$$

$$TotalM_i := EM + OilM + PilotM + PaxM + BagM + FuelM_i$$

$$TotalA_i := \frac{TotalM_i}{TotalW_i} \quad PMAC_i := \frac{(TotalA_i - LEtoDatum) \cdot 100}{MAC}$$

This graph is for pilot only (David McDaniel).



Gross Weight is 1,750 Pounds

CG Limits are 15-29% MAC