



FAA APPROVED

# Airplane Flight Manual Supplement No. 1

FOR

**MAULE MX-7-180AC**

Reg. No. \_\_\_\_\_

Ser. No. \_\_\_\_\_

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **May 4, 2000** when **AQUA Model 2200 Floats** are installed in accordance with **Maule Drawing 9225A**.

The information contained herein supersedes and supplements the information of the basic Airplane Flight Manual; for limitation, procedures and performance information not contained in this Supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: \_\_\_\_\_

*Randy Crew*  
Manager, Aircraft Certification Office  
Federal Aviation Administration  
Atlanta, Georgia

DATE: OCT 29 2002

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**ITS PERFORMANCE THAT COUNTS!**  
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MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT NO. 1  
FOR **MAULE MX-7-180AC**  
on AQUA 2200 FLOATS

LOG OF REVISIONS

REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE

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*SECTION I*

**GENERAL: NORMAL CATEGORY OPERATION**

- 1.1 MAXIMUM WEIGHT: 2400 lbs.
- 1.2 CENTER OF GRAVITY LIMITS: +15.0 to +20.5 inches @ 2400 lbs.  
+13.5 to +20.5 inches @ 1600 lbs. or less

Straight line variation between points given  
Datum: Wing leading edge

*SECTION II*

**LIMITATIONS**

- 2.1 AIRSPEED LIMITS: (IAS)
- A. AIRSPEED INDICATOR MARKINGS:  
Red Radial – VNE 142 K (164 MPH)
- B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:  
Red Radial Line - Never Exceed Speed (V<sub>NE</sub>) (Seaplane), 142 K (164 mph):  
Maximum safe speed smooth air.

2.4 PLACARDS:

The following placards are in the cockpit in clear view of the pilot:

RETRACT WATER RUDDER FOR FAST TAXI, TAKEOFF AND LANDING.

SEAPLANE FLAP LIMITATIONS  
TAKEOFF - 24° (2ND NOTCH) MAX.  
LANDING - 40° (3RD NOTCH) MAX.

Located adjacent to Airspeed Indicator:

SEAPLANE V<sub>NE</sub> 142 KTS (Airspeed Indicator calibrated in Knots)

SEAPLANE V<sub>NE</sub> 164 MPH (Airspeed Indicator calibrated in MPH)

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*SECTION III*

**NORMAL PROCEDURES**

3.1 **PREFLIGHT INSPECTION:**

B. EXTERIOR:

- 1. Airplane Flight Manual and Approved Flight Manual Supplement..... AVAILABLE IN THE AIRPLANE
- 31. Floats..... CHECK FOR ATTACHMENT AND WATER RUDDER RIGGING
- 32. Float Compartments..... INSPECT FOR WATER ACCUMULATION

3.2 **OPERATION CHECK LIST:**

D. BEFORE TAKEOFF:

- 2. Wing Flaps..... 2<sup>ND</sup> NOTCH FOR T.O. (MAXIMUM 24°)
- 16. Water Rudders..... RETRACT

E. BEFORE LANDING:

- 5. Flaps..... 3RD NOTCH FOR LANDING (MAXIMUM 40°)
- 6. Water Rudders..... RETRACT

3.3 **NORMAL FLIGHT OPERATIONS:**

B. RECOMMENDED FLAP SETTINGS:

Flap settings are given in number of notches above the fully retracted position which is handle full down (Normal -7°).

Normal Takeoff - Use Second Notch (24°) for takeoff. When clear of obstacles and above 65 K (75 mph), retract to First Notch (0°) and climb at 78 K (90 mph).

*SECTION V*

5.1 **WEIGHT AND BALANCE DATA:**

Weight and Balance Data pages 5 through 9 of this supplement are in effect for this modification, with exception, new Basic Empty Weight for entry on the following page 5 may be computed using Equipment Change page 25 in Weight and Balance Data of the Airplane Flight Manual in lieu of reweighing Floatplane per pages 6, 7 and 8 of this supplement.

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SECTION V

5.1 **WEIGHT AND BALANCE:**

Serial Number \_\_\_\_\_ Registration Number \_\_\_\_\_

It is the responsibility of the airplane owner and the pilot to insure that the airplane is loaded properly. The empty weight, empty weight center of gravity and useful load are listed below for this airplane. If the airplane has been altered, refer to the aircraft log and/or aircraft records for this information.

WEIGHT AND BALANCE DATA SUMMARY:

Basic Empty Weight (including engine oil)..... \_\_\_\_\_ Lbs.  
Gross Weight..... 2400 Lbs.  
Useful Load..... \_\_\_\_\_ Lbs.  
Empty Center of Gravity..... \_\_\_\_\_ Inches  
Empty Weight Moment..... \_\_\_\_\_ Inch Lbs.

CENTER OF GRAVITY RANGE:

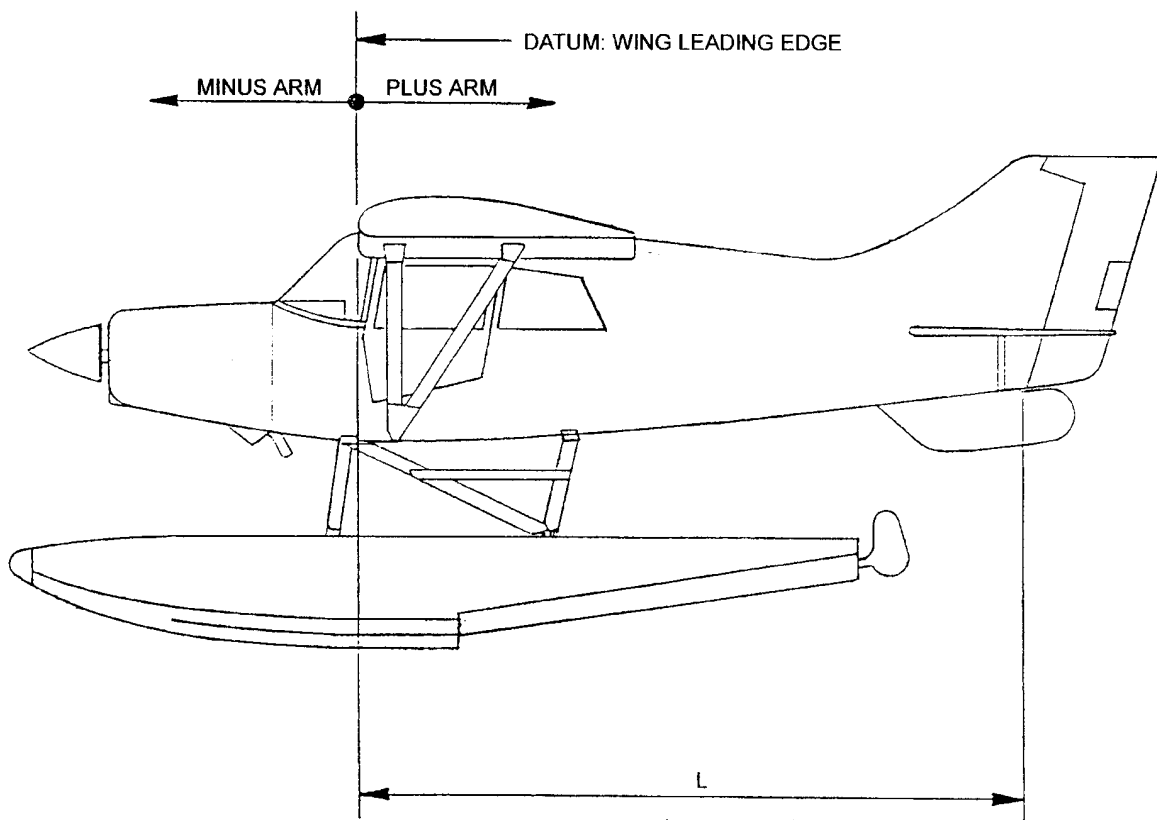
<u>Center of Gravity Range</u>	<u>At Weight of</u>
+15.0 to +20.5 inches	2400 lbs.
+13.5 to +20.5 inches	1600 lbs. or less

NOTE: Straight line variation between given points  
DATUM: Wing leading edge

CERTIFIED BY \_\_\_\_\_ DATE \_\_\_\_\_

5.1 WEIGHT AND BALANCE: (Cont'd)

DETAILED CALCULATIONS OF EMPTY WEIGHT AND EMPTY WEIGHT CENTER OF GRAVITY:



PROCEDURE:

1. Using a block and tackle, lift the airplane and place each float on a scale at approximately the datum.
2. Elevate the tail on a scale to the approximate flight attitude. The tail weight point is preferably directly beneath the rear fin attach point and a round metal rod should be placed between the fin and the tare of scale.
3. Place a level on the leveling mark and leveling lug on the bottom of the right wing near the root. Adjust the height of the tail until the level reads level. Be sure the aft end of the level is even with the aft leveling mark.

5.1 WEIGHT AND BALANCE: (Cont'd)

4. Using a plumb bob, mark the outsides of the floats at the datum. Raise the airplane off the scales and pass a string under the float keels between these marks. Mark the keels at the datum.
5. Place a round rod between the keel and the scale at the datum mark and carefully lower the floats onto the scale, being sure the rod remains under the datum mark.
6. Level the aircraft again per step 3.
7. Insure that each main fuel tank has 2.3 gallons of fuel in it or if totally empty, place a 13.8 lb. weight over each main tank 24 inches aft of the wing leading edge. Check to be sure the engine has approximately 8 quarts of oil in it.
8. Record the following weights:
  - a. Right Float, with tare, = \_\_\_\_\_ lbs., minus  
tare of \_\_\_\_\_ lbs., = net Right Float weight of \_\_\_\_\_ lbs.
  - b. Left Float, with tare, = \_\_\_\_\_ lbs., minus  
tare of \_\_\_\_\_ lbs., = net Left Float weight of \_\_\_\_\_ lbs.
  - c. Tail, with tare, = \_\_\_\_\_ lbs., minus  
tare of \_\_\_\_\_ lbs., = net Tail weight (**T**) of \_\_\_\_\_ lbs.

TOTAL EMPTY WEIGHT (**W**) = \_\_\_\_\_ lbs.

9. Measure the horizontal distance from the datum to the tail weight point, (L).

L = \_\_\_\_\_ inches

The above empty weight includes unusable fuel of 27.6 lbs. at 24 inches and 8 quarts of oil at minus 36.5 inches, plus all items of equipment as marked on the accompanying equipment lists. The certificated empty weight is the above weight less 16 lbs. drainable

oil at a minus arm of 36.5 inches and for this airplane is \_\_\_\_\_ lbs. The corres-

ponding empty weight center of gravity is \_\_\_\_\_ inches.

5.1 WEIGHT AND BALANCE: (Cont'd)

10. Calculations for determining weight, C.G. and moment:

a. Center of Gravity (inches) =  $\frac{L \times T}{W}$

i.e., C.G. = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ inches.

b. Moment (inch pounds) = **W** x C.G.

i.e., Moment = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ inch lbs.

**EXAMPLE OF WEIGHT AND BALANCE CALCULATION FOR LOADED AIRCRAFT:**

An airplane with an empty weight of 1660 lbs. and an empty weight C.G. of 15.3 inches is loaded with a pilot and front seat passenger, and fuel.

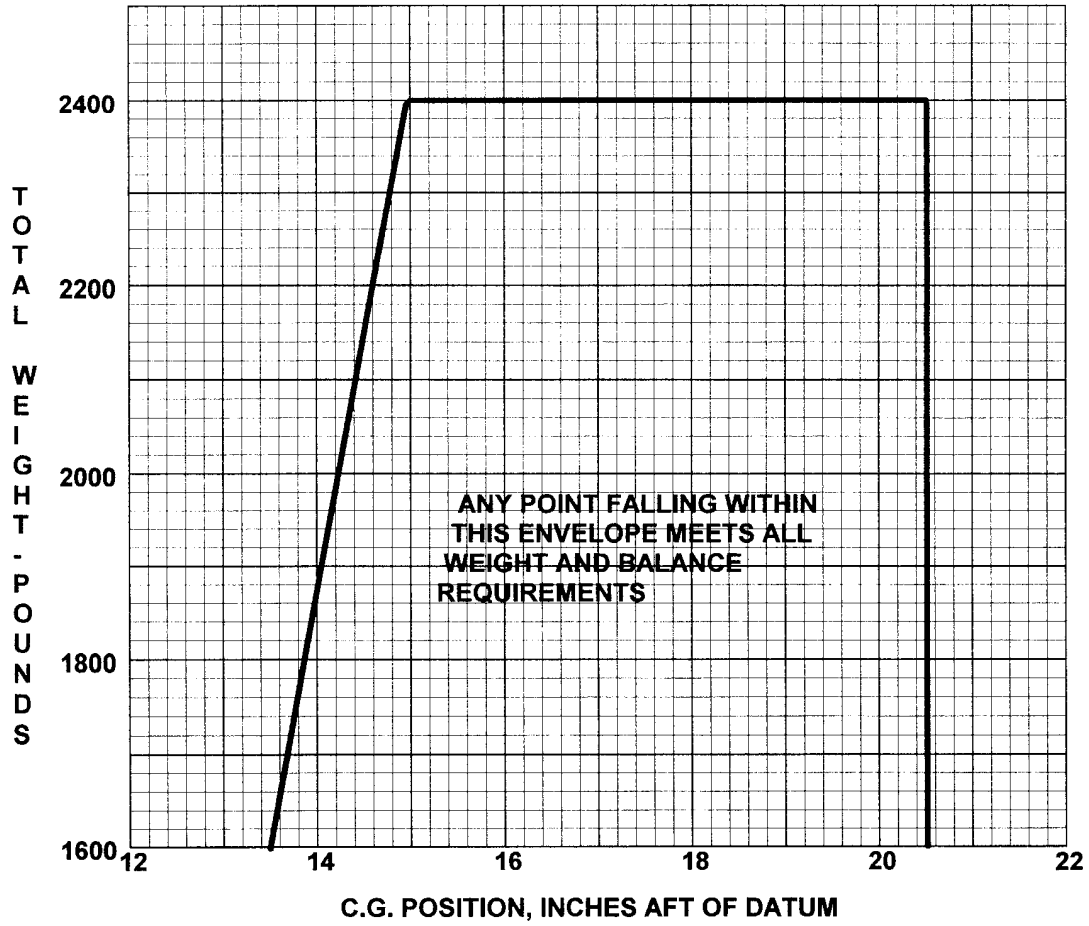
Item	Weight, lbs.	Arm, Ins.	Moment, In.lbs.
Empty Weight (including engine oil)	1660	15.3	25,398
Pilot and Front Passenger	340		6,800
Fuel - 43 gal. in Mains	<u>258</u>		<u>6,192</u>
	2258	17.0	38,390

\*Moments can be read directly from the loading graph in the basic Flight Manual.

By locating the point corresponding to 2258 lb. aircraft weight and C.G. location of 17.0 inches on Center of Gravity Envelope graph, you can see that this point falls within the envelope, signifying the loading is acceptable.



**WEIGHT AND BALANCE ENVELOPE**



**MX-7-180AC ON AQUA 2200 FLOATS**