



FAA APPROVED

**AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 1**

FOR

**MAULE MX-7-420**

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

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

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **1 June 1989** when **2150X-43/-48 Wing assemblies** are installed in accordance with Maule Modification Kit No. **31**.

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: *Robert Copps*  
*for Anne Collins*  
Manager, Aircraft Certification Office  
Federal Aviation Administration  
Atlanta, Georgia

DATE: 10-26-98

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**EXPERIENCE THE PERFORMANCE**  
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MAULE AEROSPACE TECHNOLOGY, INC.  
MOULTRIE, GEORGIA  
**AFM SUPPLEMENT NO. 1**  
FOR MAULE **MX-7-420**

SECTION I

GENERAL

**1.21 AIRPLANE DIMENSIONS:**

The airplane dimensions are shown in Figure 1.1, with exception, wing span is 32'11", aileron is 5' long and Flap is 114 5/8" long.

SECTION II

LIMITATIONS

**2.15c FUEL SUPPLY:**

Fuel Capacity - See Instrument Panel Placard for Tank configuration installed in this Aircraft

Note: On this aircraft the two Main Tanks are considered one tank.

Tank Config.	Tank Location	Usable Fuel (Gal.)	Unusable Fuel (Gal.)
C	Main	43.0	4.6
	Aux. (ea.)	15.0	0.0
D	Main	43.0	4.6
	Aux. (ea.)	21.0	0.0

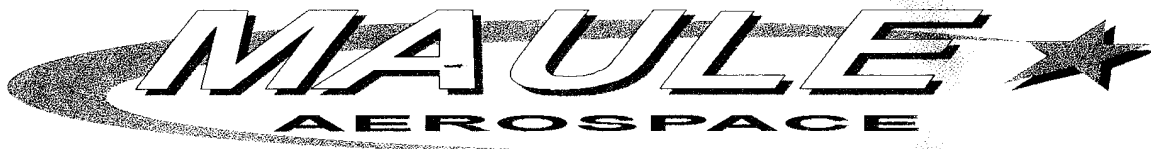
SECTION V

**5.1 WEIGHT AND BALANCE:**

(Page 28): The above empty weight includes unusable fuel of \*\* lbs. at 24 inches.  
\*\*Use 31.0 lbs. for "C" or "D" Tank configurations.

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**AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 2**

FOR

**MAULE MX-7-420**

(Includes MX-7-420 with 2150X-43/-48 Wing Assemblies installed per Modification kit #31)

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

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

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **1 June 1989** when **Wipline Model 2350 Amphibious Floats** are installed in accordance with Maule Drawing No. **9179A**.

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: Eugene L. Bellin  
for Manager, Aircraft Certification Office  
Federal Aviation Administration  
Atlanta, Georgia USA

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**SECTION I**

**GENERAL:**

1.23 **PROPELLER:**

Propeller Manufacturer	Hartzell
Blade model	T10173F-21
Propeller diameter	80 inches

1.126 **MAXIMUM WEIGHT:**

Takeoff and Landing weight	2500 lbs.
----------------------------	-----------

1.27 **STANDARD AIRPLANE WEIGHT:**

Standard weight empty	1800 lbs.
Maximum useful load	700 lbs.

**SECTION II**

**LIMITATIONS**

2.9 **WEIGHT LIMITS:**

Maximum takeoff weight	2500 lbs.
Maximum landing weight	2500 lbs.
Maximum weight in baggage compartment	250 lbs.

2.10 **CENTER OF GRAVITY LIMITS:**

Weight - Pounds	Forward Limit Inches aft of Datum	Rearward Limit Inches aft of Datum
Takeoff/Land 2500	14.1	18.5
2090 or less	12.6	18.5

NOTE: (1) Straight line variation between points given  
 (2) The Datum Line is located at the Wing Leading Edge

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2.19 PLACARDS:

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

WATER RUDDER UP FOR ALL FLIGHT OPERATIONS

DO NOT LAND ON WATER UNLESS GEAR IS FULLY RETRACTED

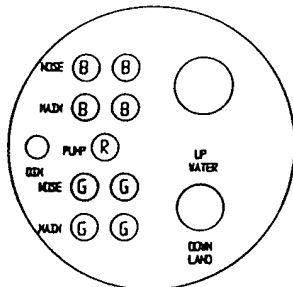
SEAPLANE FLAP LIMITATIONS:  
TAKEOFF - 24° (2<sup>ND</sup> NOTCH) MAX.  
LANDING - 40° (3<sup>RD</sup> NOTCH) MAX.

Locate at the emergency gear hand pump:

EMERGENCY HAND PUMP

PULL GEAR MOTOR CIRCUIT BREAKER  
SELECT DESIRED GEAR POSITION  
PUMP GEAR TO DESIRED POSITION

Locate on the gear selector switch:



At the water rudder retract handle:

WATER RUDDER CONTROL

DOWN

UP

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**SECTION III**

**NORMAL PROCEDURES**

3.1 **PREFLIGHT INSPECTION:**

1. Airplane Flight Manual and Amphibian  
Approved Flight Manual Supplement.....AVAILABLE IN THE AIRPLANE
2. Floats, Struts and Fairings.....INSPECT FOR DENTS, CRACKS,  
SCRATCHES, ETC.
3. Float Compartments.....INSPECT FOR WATER  
ACCUMULATION

////////// REMOVE RUBBER PLUGS THAT SERVE AS STOPPERS ON THE  
////NOTE//// STANDPIPE IN EACH FLOAT COMPARTMENT AND PUMP OUT ANY  
////////// ACCUMULATION OF WATER. REINSTALL RUBBER PLUGS WITH  
ENOUGH PRESSURE FOR A SNUG FIT.

4. Water Rudders..... CHECK ACTUATION CABLES

3.2 **OPERATION CHECK LIST:**

**BEFORE STARTING ENGINE**

1. Water Rudder Operation..... CHECK VISUALLY
2. Water Rudders..... DOWN FOR TAXIING ON WATER

**TAKEOFF AND IN FLIGHT**

**TAKEOFF ON WATER**

(A) **NORMAL TAKEOFF**

1. Landing Gear..... UP
2. Water Rudders..... RETRACT
3. Wing Flaps..... 0° OR 24° (1<sup>ST</sup> OR 2<sup>ND</sup> NOTCH)
4. POWER Control..... SMOOTH APPLICATION TO  
TAKEOFF POWER (90 PSI  
TORQUE OR 810° T.O.T. LIMITS  
MAXIMUM)
5. Control Wheel..... MOVE FORWARD WHEN THE  
NOSE STOPS RISING TO ATTAIN  
PLANING ATTITUDE (ON THE  
STEP). APPLY LIGHT BACK  
PRESSURE TO LIFT OFF.

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TAKEOFF ON LAND      Cont'd

- 5. Wing Flaps..... UP, AFTER ALL OBSTACLES  
ARE CLEARED
- 6. Landing Gear..... RETRACT
- 7. Climb Speed..... 100 MPH

(B) NORMAL CLIMB

- 1. Airspeed..... 100 MPH
- 2. Engine Ice Protection..... AS REQUIRED
- 3. POWER Control..... MCP 90 PSI TORQUE OR 738°
- 4. CONDITION Lever..... 1800 TO 2030 N<sub>2</sub> RPM

////////////////////  
////CAUTION////  
////////////////////

DO NOT ROTATE CONDITION LEVER OUT OF THE FLIGHT  
POSITION AS ENGINE MAY BE INADVERTENTLY SHUT DOWN.

(C) CRUISE

- 1. Engine Ice Protection..... AS REQUIRED
- 2. POWER Control..... SET (OBSERVE T.O.T. AND/OR  
TORQUE LIMITS FOR M.C.P.)
- 3. Elevator and Rudder Trim .....ADJUST

(D) DESCENT

- 1. Engine Ice Protection..... AS REQUIRED (SEE  
EMERGENCY PROCEDURES)
- 2. POWER Control..... SET "FLIGHT IDLE" OR ABOVE  
AS REQUIRED
- 3. Seat Belts & Shoulder Harnesses..... SECURE

**BEFORE LANDING**

BEFORE LANDING ON WATER

- 1. Landing Gear..... UP
- 2. Landing Gear Lights..... 4 **BLUE** (CHECK ON)
- 3. Landing Gear Position..... CONFIRM VISUALLY
- 4. Water Rudders..... UP
- 5. Wing Flaps..... AS DESIRED
- 6. POWER Control..... FLIGHT IDLE MINIMUM
- 7. Elevator Trim..... ADJUST FOR LIGHT PULL  
FORCE

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**BEFORE LANDING ON WATER** Cont'd

//////////////////// POSITIONING OF POWER CONTROL BELOW THE FLIGHT IDLE  
////WARNING//// STOP WHILE IN FLIGHT IS PROHIBITED. SUCH POSITIONING  
//////////////////// COULD LEAD TO LOSS OF AIRPLANE CONTROL OR MAY RESULT  
IN AN ENGINE OVERSPEED CONDITION AND CONSEQUENT LOSS  
OF ENGINE POWER.

**BEFORE LANDING ON LAND**

1. Landing Gear.....DOWN
2. Landing Gear Lights..... 4 **GREEN** (CHECK ON)
3. Landing Gear Position..... CONFIRM VISUALLY
4. Water Rudders..... UP
5. Wing Flaps..... AS DESIRED
6. POWER Control..... FLIGHT IDLE MINIMUM

**LANDING**

//////////////////// USE OF REVERSE THRUST WITH THE CONDITION LEVER AT LESS  
////CAUTION//// THAN THE 2030 POSITION IS NOT APPROVED. AT LESS THAN 2030  
//////////////////// RPM CONDITION LEVER POSITION, N1 RPM DECAY, ENGINE OVER  
TEMPERATURE AND LOSS OF POWER CAN BE ENCOUNTERED.  
MAXIMUM REVERSE IS 20 PSI TORQUE, OR 75% N1.

**LANDING ON WATER**

1. Touchdown..... SLIGHTLY TAIL LOW
2. Control Wheel..... HOLD FULL AFT AS AMPHIBIAN  
DECELERATES TO TAXI SPEED
3. POWER Control..... "GROUND IDLE", THEN BETA, IF  
REQUIRED

//////////////////// WITH FORWARD LOADING, A SLIGHT NOSE-DOWN PITCH MAY  
////NOTE//// OCCUR IF THE ELEVATOR IS NOT HELD FULL UP AS FLOATPLANE  
//////////////////// COMES DOWN OFF STEP.

4. Landing Roll..... DIRECTIONAL CONTROL AND  
REVERSE THRUST IF DESIRED  
(SEE CAUTION RANGE)
5. Wing Flaps..... RETRACTED

**LANDING ON LAND**

1. Touchdown..... SLIGHTLY TAIL LOW

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LANDING ON LAND Cont'd

- |                       |   |
|-----------------------|---|
| 2. Control Wheel..... | LOWER NOSEWHEELS TO<br>RUNWAY   |
| 3. Landing Roll.....  | DIRECTIONAL CONTROL AND<br>REVERSE THRUST IF DESIRED<br>(SEE CAUTION RANGE) |
| 4. Wing Flaps.....    | RETRACTED   |
| 5. Brakes.....        | USE AS REQUIRED   |

AFTER LANDING

- |                       |                       |
|-----------------------|-----------------------|
| 1. Water Rudders..... | DOWN (EXCEPT ON LAND) |
|-----------------------|-----------------------|

**AMPLIFIED PROCEDURES**

TAXIING ON WATER

Taxi with water rudders down and at minimum speed as water piles up in front of floats at higher speeds. During all low speed taxi operations, the elevator should be positioned to keep the float bows out of the water as far as possible. Normally, this requires holding the control wheel full aft.

Although taxiing is very simple with the water rudders, it is sometimes necessary to sail the floatplane under high wind conditions. In addition to the normal flight controls, the wing flaps and cabin doors will aid in sailing. Water rudders should be retracted during sailing.

To taxi great distances, it may be advisable to taxi on the step with the water rudders retracted. Turns on the step from an upwind heading may be made with safety providing they are not too sharp and if ailerons are used to counteract any overturning tendency.

TAXIING ON LAND

The nosewheels are full swiveling on the amphibian. Steering is accomplished by use of the brakes installed on the main wheels. An occasional tapping of the brakes may be utilized to maintain the desired taxi path under normal conditions.

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TAKEOFF ON WATER

Start the takeoff by applying the power control smoothly while holding the control wheel full aft. When the nose stops rising, move the control wheel forward slowly to place the amphibian on the step. Slow control movement and light control pressures produce the best results. Attempts to force the floatplane into the planing attitude will generally result in loss of speed and delay in getting on the step. The floatplane will assume a planing attitude, which permits acceleration to takeoff speed, at which time the floatplane will fly off smoothly.

The use of 24° wing flaps throughout the takeoff run is recommended. Upon reaching a safe altitude and airspeed, retract the wing flaps slowly, especially when flying over glassy water because a loss of altitude is not very apparent over such a surface.

If porpoising is encountered while on the step, apply additional control wheel back-pressure to correct the excessively nose-low attitude. If this does not correct the porpoising, immediately reduce power to ground idle and allow the floatplane to slow to taxi speed, at which time the takeoff can again be initiated.

Under some adverse combinations of takeoff weight, pressure altitude, and air temperature, operation on glassy water may require significantly longer takeoff distances to accelerate to the liftoff speed, and allowance should be made for this.

If liftoff is difficult due to high lake elevation or glassy water, the following procedure is recommended: With the floatplane in the planing attitude, apply full aileron to raise one float out of the water. When one float leaves the water, apply slight elevator backpressure to complete the takeoff. Care must be taken to stop the rising wing as soon as the float is clear of the water, and in crosswinds, raise only the downwind wing. With one float out of the water, the floatplane accelerates to takeoff speed almost instantaneously.

Takeoff from larger bodies of water should always be made into the wind. The chop/waves generated in winds of 10 knots and more may inhibit engine operation due to spray and may prevent the amphibian from attaining the step under these conditions in crosswinds.

TAKEOFF ON LAND

Normal takeoffs are accomplished with the wing flaps extended 24°. As speed increases, the elevator control should be gradually moved aft of the neutral position, and when the amphibian feels light, a light back pressure on the control wheel will allow the amphibian to fly off smoothly.

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TAKEOFF ON LAND Cont'd

To clear an obstacle after takeoff, use 24° wing flaps. Upon reaching a safe altitude and airspeed, retract wing flaps slowly. The landing gear should be retracted when the point is reached where a wheels-down forced landing on that runway would be impractical.

GLASSY WATER LANDING

With glassy water conditions, flaps should be extended to 24° and enough power used to maintain a low rate of descent (approximately 200 feet per minute). The floatplane should be flown onto the water at this sink rate with no flare attempted since height above glassy water is nearly impossible to judge. Power should be reduced to idle and control wheel backpressure increased upon contacting the surface. As the floatplane decelerates off the step, apply full backpressure on the control wheel. If this glassy water technique is used in conjunction with an obstacle clearance approach, allowance should be made for appreciably longer total distances than are typical of normal water conditions.

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 75 mph, retract to First Notch (0°) and climb at 90 mph.

F. CROSSWIND LANDINGS & TAKEOFFS:

For a crosswind takeoff, start the takeoff run with wing flaps up, 0° (one notch) or -7°, ailerons deflected partially into the wind and water rudders extended for better directional control. Flaps should be extended to 24° and the water rudders retracted when the floatplane is on the step; the remainder of the takeoff is normal. If the floats are lifted from the water one at a time, the downwind float should be lifted first.

For a crosswind landing, place wing flaps up, 0° (one notch) or -7°. The wing-low slip method should be used with the upwind float contacting the surface first.

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SECTION IV

**EMERGENCY PROCEDURES**

INTRODUCTION

Checklist procedures contained in the basic Airplane Flight Manual generally should be followed. The additional or changed procedures specifically required for operation of the airplane equipped with Wipline Model 2350 floats are presented in this section.

//////////////////// There is no substitute for proper and complete preflight planning  
////WARNING//// habits and knowledgeable of hazards and conditions which represent  
//////////////////// potential dangers, and be aware of the capabilities and limitations of  
the airplane.

OPERATIONAL CHECKLISTS

Procedures in the Operational Checklists portion of this section shown in boldface type are immediate-action items that should be committed to memory.

**FORCED LANDINGS**

EMERGENCY LANDING ON WATER WITHOUT ENGINE POWER

1. Landing Gear..... **UP** (4 blue lights)
2. Water Rudders..... **UP**
3. Wing Flaps..... **AS REQUIRED**
4. Doors..... **UNLATCH PRIOR TO APPROACH**
5. Touchdown..... **SLIGHTLY TAIL LOW**
6. Control Wheel..... **HOLD FULL AFT AS AMPHIBIAN  
DECELERATES**

EMERGENCY LANDING ON LAND WITHOUT ENGINE POWER

1. Landing Gear..... **DOWN** (4 green lights) FOR  
SMOOTH TERRAIN  
**UP** (4 blue lights) FOR ROUGH  
TERRAIN
2. Water Rudders..... **UP**
3. Wing Flaps..... **AS REQUIRED** (40° recommended)
4. Doors..... **UNLATCH PRIOR TO APPROACH**
5. Touchdown..... **LEVEL ATTITUDE**
6. Control Wheel..... **FULL AFT (AFTER LANDING)**
7. Brakes..... **AS REQUIRED**

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**LANDING GEAR MALFUNCTION PROCEDURES**

**LANDING GEAR FAILS TO RETRACT OR EXTEND**

1. Battery Switch..... ON
2. Landing Gear Switch..... RECHECK IN DESIRED POSITION
3. Landing Gear Circuit Breaker..... CHECK IN
4. Gear Lights..... 4 BLUE FOR GEAR UP  
4 GREEN FOR GEAR DOWN
5. Gear Position..... CHECK VISUALLY

**If Gear Still In Improper Position:**

6. Gear Switch..... RECYCLE
7. Landing Gear Motor..... CHECK RED LIGHT ON
8. Airspeed..... REDUCE TO MINIMIZE AIRLOADS  
ON GEAR

**If Gear Motor Is Inoperative Or Gear Is Still Not In Desired Position:**

9. Landing Gear Circuit Breaker..... PULL
10. Landing Gear Switch..... DESIRED POSITION
11. Emergency Valve..... SELECT DESIRED POSITION
12. Emergency Handpump..... PUMP UNTIL RESISTANCE  
BECOMES HEAVY (MAY BE AS  
MANY AS 120 CYCLES)
13. Gear Position Lights..... CHECK DESIRED LIGHTS (4)  
ILLUMINATED
14. Gear Position..... CONFIRM VISUALLY

////////////////////  
////**WARNING**////  
////////////////////

**DO NOT LAND ON WATER UNLESS LANDING GEAR IS  
FULLY RETRACTED**

**GEAR UP OR PARTIALLY EXTENDED - LANDING ON LAND (ONLY)**

1. Seats, Seat Belts, Shoulder Harness..... SECURE
2. Runway..... SELECT LONGEST SMOOTH  
GROUND OR GRASS SURFACE  
AVAILABLE
3. Gear Switch..... UP TO PERMIT PARTIALLY  
EXTENDED GEAR TO RETRACT  
AND MAINTAIN LEVEL ATTITUDE  
DURING GROUND RUN
4. Wing Flaps..... 40° (3<sup>RD</sup> NOTCH)

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GEAR UP OR PARTIALLY EXTENDED - LANDING ON LAND (ONLY) Cont'd

5. Doors..... UNLATCH PRIOR TO TOUCHDOWN
6. Touchdown..... LEVEL WITH MINIMUM SINK
7. Control Wheel..... FULL AFT (AFTER TOUCHDOWN)
8. Fuel..... OFF (AFTER TOUCHDOWN)

SECTION V

**WEIGHT AND BALANCE**

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 18 through 22 of this supplement are in effect for this modification, with exception, new Basic Empty Weight for entry on page 18 may be computed using Equipment Change page 33 in the Weight and Balance Data of the Airplane Flight Manual in lieu of reweighting floatplane per pages 19, 20, and 21 of this supplement.

**AIRPLANE & SYSTEMS DESCRIPTION**

**THE AMPHIBIAN**

The floatplane is similar to the landplane with the following exceptions:

1. Floats, incorporating retractable landing gear and a water rudder steering system, replace the landing gear. A water rudder retraction handle connected to the dual water rudders by cables is located on the cabin floor between the front seats. Water rudders are locked in center when retracted for improved directional stability.
2. Additional fuselage structure is added to support the float installation.
3. Hoisting provisions are added to the top of the fuselage (optional).
4. Amphibian placards are added.
5. A ventral fin is installed on the bottom of the tailcone for added directional stability.

**WATER RUDDER SYSTEM**

Retractable water rudders (Figure 1) mounted at the aft end of each float, are connected by a system of cables and springs to the rudder pedals. Normal rudder pedal operation moves the water rudders to provide steering control (Figure 2) for taxiing.

The water rudders are equipped with centering locks (attached to each retraction hinge) which, when the water rudders are retracted, make contact with a plate on the stem of each float, locking the rudders in the centered position. Springs within the water rudder steering system permit normal airplane rudder action with the water rudders retracted, and improve directional stability in flight.

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WATER RUDDER SYSTEM Cont'd

A water rudder retraction handle, located on the cabin floor between the front seats, is used to manually raise and lower the water rudders. During takeoff, landing, and in flight the handle should be in the UP position. With the handle in this position the water rudders are up. When the handle is in the DOWN position, the water rudders extend to the full down position for water taxiing.

AMPHIBIAN OPERATION

1. Water operation procedures are similar to any common amphibian.
2. Landing gear operation:
  - a. The aircraft is equipped with landing gear powered by an electrohydraulic power pack (located on the firewall of the aircraft). An emergency hand pump is provided for operation of float landing gear in case of power or electrical failure.
  - b. A set of four blue lights (one for each wheel) indicates gear up position and a set of four green lights indicates gear down position. The four blue lights indicate gear up and locked. The four lights of each color are the means of identifying that the landing gear is locked in the up or down position. There are visual indicators also.
  - c. A red light marked "PUMP ON" is also provided to warn the pilot that the power pack is running during gear transit. It should shut off automatically after the desired gear position is attained by means of a pressure sensing switch cutting off the power when pressure builds up after gears are locked. Should this sensing device fail, and the pump does not shut off, the power can be manually turned off by pulling out the landing gear circuit breaker. The gear can still be operated using the power pack by turning the power back on (pushing the landing gear circuit breaker in) and selecting the next desired position and again manually turning off the power if necessary. The faulty pressure sensing switch should be repaired at the time of next landing.
  - d. The pressure switch is also designed to turn on the power pack when pressure in the system drops below a certain value to rebuild the system pressure back up to shut off pressure. Therefore, if the pump comes on momentarily (an aural cue) when turning on the master switch or the red light momentarily illuminates during flight, it merely means the pressure has fallen off and the pump is coming on to build it up. A sight gauge is provided on the power pack reservoir and the level should be kept in the upper 25% of the range. Excessive illumination of the red light indicates a significant hydraulic leak (either internal or external) and the circuit breaker should be pulled and fluid level checked followed by repair of the system.
  - e. An emergency hand pump is located on the floor between the two front seats for use in the event the normal hydraulic system fails. The hand pump may be used to retract or extend the landing gear.

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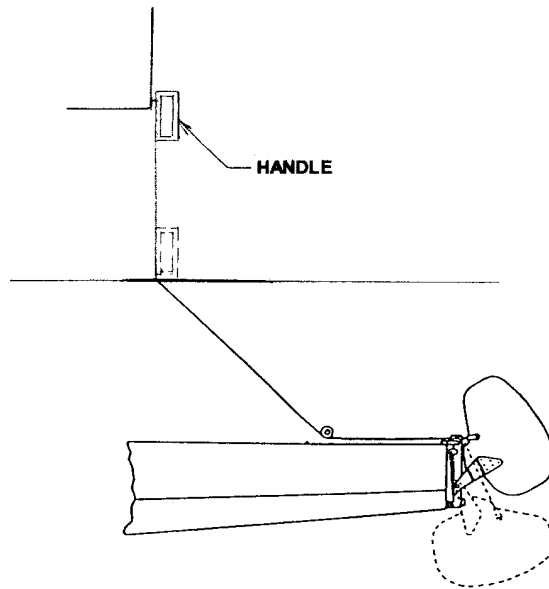


Figure 1

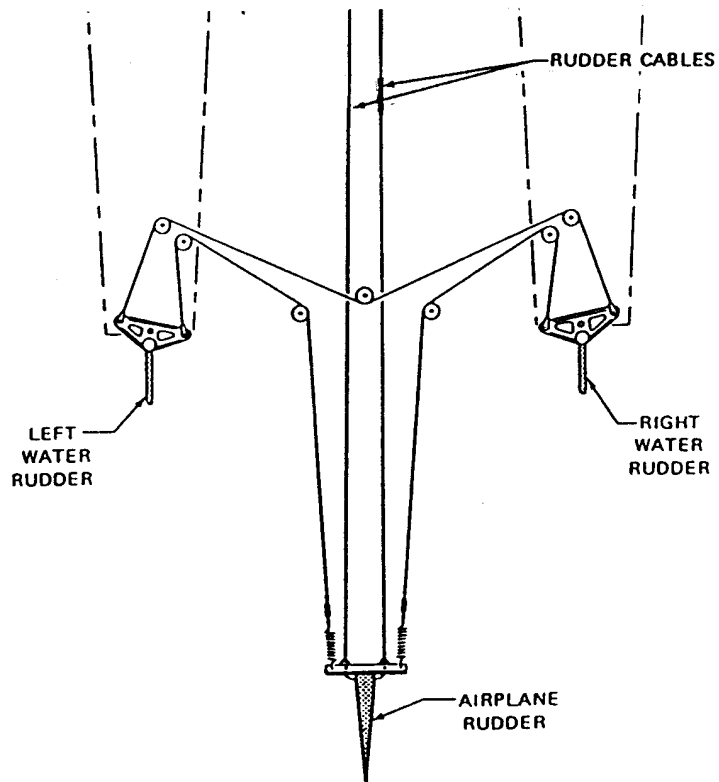


Figure 2

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AMPHIBIAN OPERATION Cont'd

- f. Prior to utilizing the emergency hand pump, pull the circuit breaker to deactivate the electric hydraulic pump. Select UP or DOWN using the normal landing gear selector handle. Hand pump handle, pump vertically (approximately 120 cycles for extension or retraction). When a gear reaches the selected position, its indicator light will illuminate. After all four gears are in the selected position, there is a noted increase in resistance of hand pump operation.

THE GEAR POSITION ADVISORY SYSTEM

The Gear Position Advisory System monitors the amphibious aircraft's airspeed and landing gear position. When, during flight, a predetermined airspeed is exceeded, the system arms itself. When the aircraft speed drops below that threshold, the position of the landing gear is noted, causing the annunciator light to flash and an audio advisory is given over the aircraft audio system. The advisories alerts the pilot of the current position of the aircraft landing gear, and the type of landing appropriate to that configuration.

"GEAR IS DOWN FOR RUNWAY LANDING"  
"GEAR IS UP FOR WATER LANDING"

In addition, if the gear stops in an abnormal position (such as one or more gear not fully extended or retracted), the pilot is prompted to check the gear.

"CHECK GEAR"

Note: It is normal for this message to be heard if the gear is extending as the aircraft decelerates below the airspeed threshold.

The system annunciator lamp and audio alert may be tested by pushing and holding the annunciator button for 4-5 seconds. This will cause the unit to play an introductory message and cycle through two (Up and Down) gear position messages. As each message is played, the annunciator will illuminate (flash) as well.

The audio output of the system may be adjusted over a range of 20%-100% of full output.

SECTION VI

**AIRPLANE HANDLING, SERVICE & MAINTENANCE**

6.1 INTRODUCTION

Section 6 of the basic Airplane flight Manual applies, in general, to the amphibian. The following recommended procedures apply specifically to the amphibian operation. (Cleaning and maintenance of the floats should be accomplished as suggested in the Wipline Floats Service and Maintenance Manual).

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6.5 MOORING

Proper securing of the amphibian can vary considerably, depending on the type of operation involved and the facilities available. Each operator should use the method most appropriate for his operation. Some of the most common mooring alternatives are as follows:

1. The amphibian can be moored to a buoy, using a yoke tied to the forward float cleats, so that it will freely weathervane into the wind.
2. The amphibian can be secured to a dock using the fore and aft cleats of one float, although this method is generally not recommended unless the water is calm and the amphibian is attended.
3. The amphibian may be removed from the water (by use of a special lift under the spreader bars) and by using the wing tiedown rings and float cleats or by using wing lift rings. If conditions permit the amphibian to be beached, ensure that the shoreline is free of rocks or abrasive material that may damage the floats.

SERVICING

Service the airplane in accordance with Section 6 of the basic flight manual.

FAA APPROVED  
DATE: AUG 20 1998

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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 as delivered from the factory. If the airplane has been altered, refer to the aircraft log and/or aircraft records for this information.

WEIGHT AND BALANCE DATA SUMMARY AS DELIVERED FROM THE FACTORY:

Basic Empty Weight (including engine oil)..... \_\_\_\_\_ Lbs.  
Gross Weight..... 2500 Lbs.  
Useful Load..... \_\_\_\_\_ Lbs.  
Empty Center of Gravity..... \_\_\_\_\_ Inches  
Empty Weight Moment..... \_\_\_\_\_ Inch Lbs.

CENTER OF GRAVITY RANGE:

<u>At Weight of</u>	<u>Center of Gravity Range</u>
2500 lbs.	+14.1 to +18.5 inches
2090 lbs. or less	+12.6 to +18.5 inches

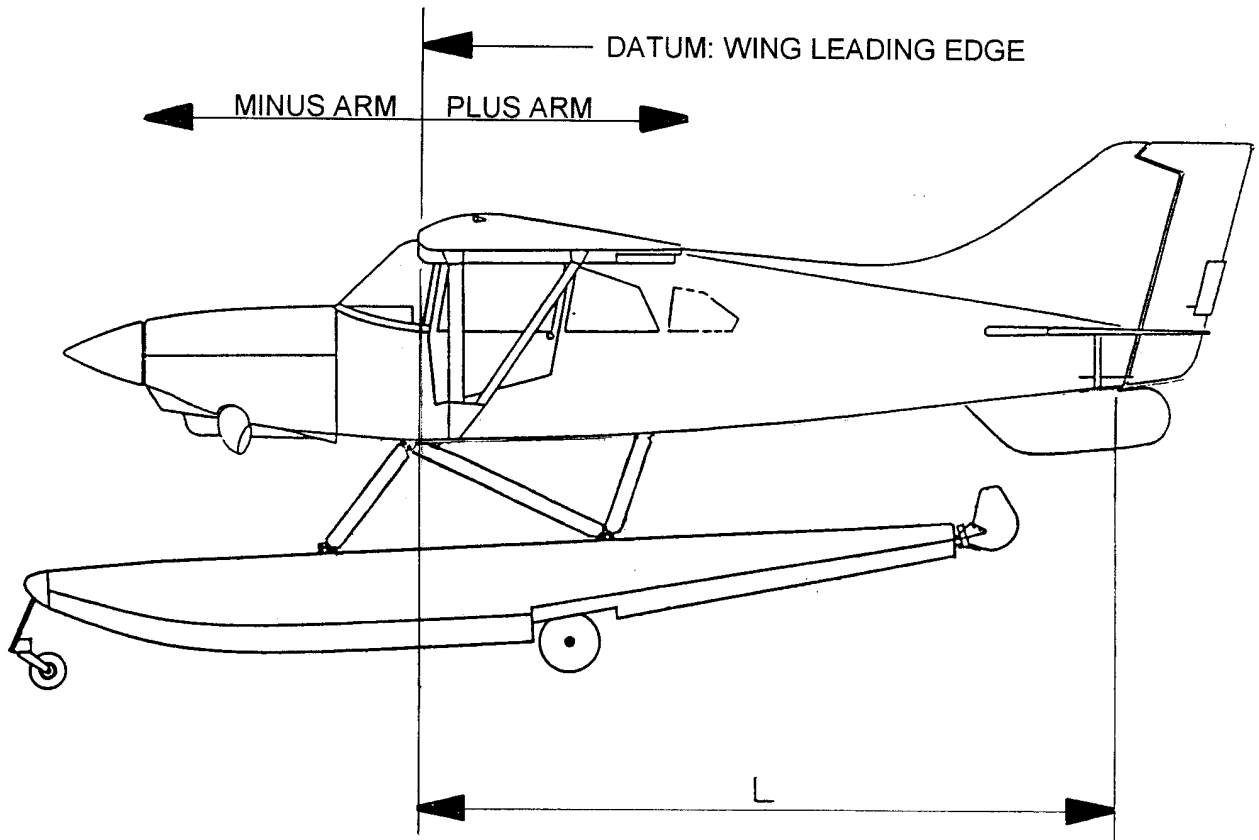
NOTE: Straight line variation between given points

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 \* gallons of fuel in it or if totally empty, place a \* lb. weight over each main tank 24 inches aft of the wing leading edge. Check to be sure that the engine has approximately 10 quarts of oil in it.
8. Measure the following distances:

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 \*\* lbs. at 24 inches and 10 quarts of oil at minus 22.5 inches, plus all items of equipment as marked on the accompanying equipment lists. The certificated empty weight is the above weight less 20 lbs.

drainable oil at a minus arm of 22.5 inches, and for this airplane is \_\_\_\_\_ lbs.

The corresponding empty weight center of gravity is \_\_\_\_\_ inches.

\*Use 2.4 gallons or 16.2 lbs. (one tank) for "A" or "B" tank configurations and 4.6 gallons or 31 lbs. (one tank) for "C" or "D". (Refer to page 2 of AFM for tank configurations.)

\*\*Use 16.2 lbs. for "A" or "B" tank configurations and 31.0 lbs. for "C" or "D".

MAULE AEROSPACE TECHNOLOGY, INC.  
 AFM SUPPLEMENT NO. 2  
 FOR MAULE **MX-7-420**  
 ON WIPLINE 2350 AMPHIBIOUS FLOATS

WEIGHT AND BALANCE  
 DATE: 8/20/98

5.1 WEIGHT AND BALANCE: (Cont'd)

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

a. Center of Gravity (inches) = L x T

i.e., C.G. = \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ 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 1874 lbs. and an empty weight arm of 11.9 inches is loaded with a pilot and front seat passenger and fuel.

Item	Weight, lbs.	C.G. Location	Moment, In.lbs.
Empty Weight (including engine oil)	1874	11.9	22,300
Pilot and Front Passenger	340	*	6,800
Fuel - 40 gal. in Mains	<u>270</u>	*	<u>6,480</u>
	2484	14.3	35,580

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

By locating the point corresponding to 2484 lb. aircraft weight and a C.G. Location of 14.3 inches on the Center of gravity envelope graph, you can see that this point falls within the envelope, signifying the loading is acceptable.

FLOAT BAGGAGE COMPARTMENTS

Baggage may be carried in the float baggage compartments in accordance with the following limitations:

Compartment	Max. Wt.	C.G. Location	Moment
Left	50 Lbs.	20	1,000
Right	50 Lbs.	20	1,000

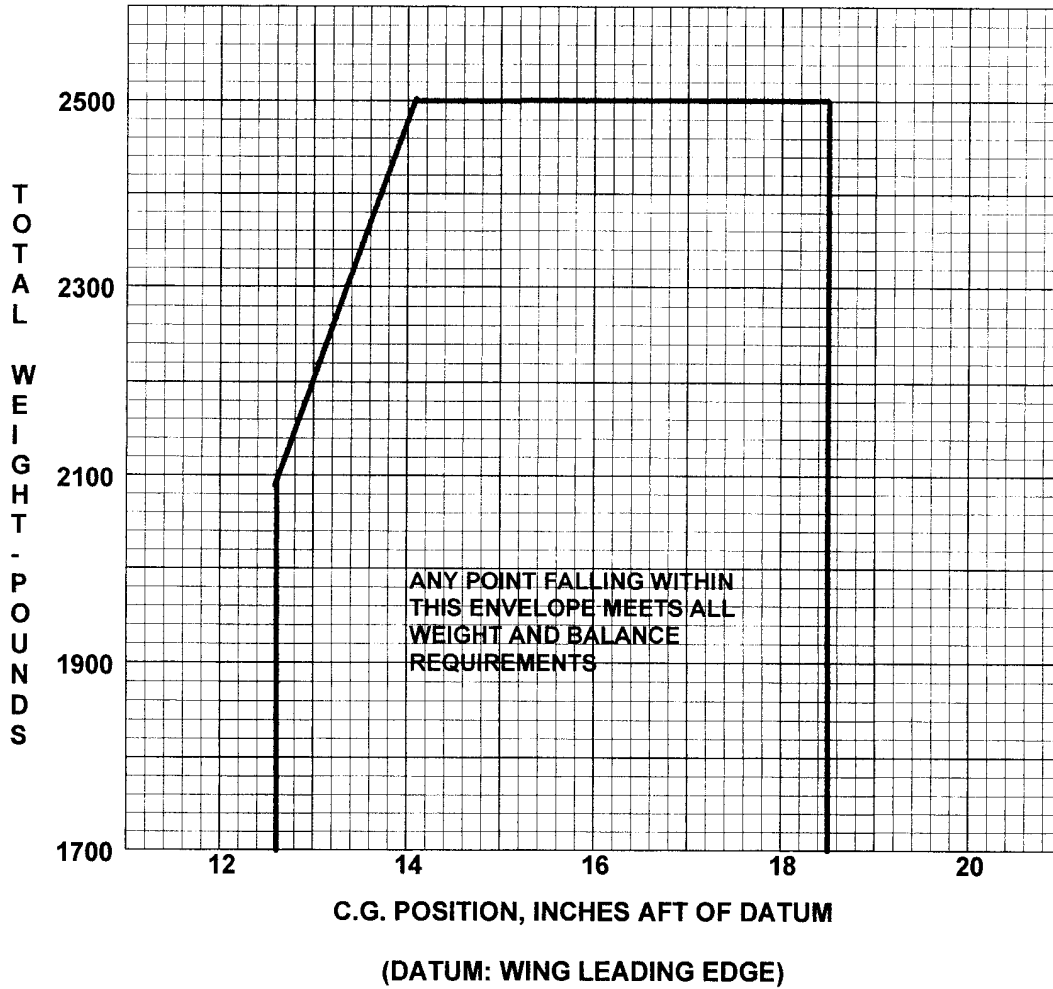
//////////  
 ///NOTE///  
 ////////////

When floats are installed, it is possible to exceed the maximum takeoff weight with all seats occupied and minimum fuel.

//////////  
 ///WARNING///  
 ////////////

It is the responsibility of the pilot to ensure that the amphibian is loaded properly. Operation outside of prescribed weight and balance limitations could result in an accident and serious or fatal injury.

**WEIGHT AND BALANCE ENVELOPE**



**MX-7-420 ON WIPLINE 2350 AMPHIBIOUS FLOATS**