



FAA APPROVED

# Airplane Flight Manual Supplement No. 1

FOR

**MAULE MT-7-420**

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

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

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated January 07, 2003 when **Wipline Model 3000 Amphibious Floats** are installed in accordance with *Maule Drawing No. 9203A, Revision F or later revision.*

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 R. Bollin  
for Manager, Aircraft Certification Office  
Federal Aviation Administration  
Atlanta, Georgia USA

DATE: JAN 07 2003

Page 1 of 21

**ITS PERFORMANCE THAT COUNTS!**  
**2099 Georgia Hwy. 133 South~Moultrie, GA 31768**  
**Tel: 229-985-2045~Fax: 229-890-2402**

MAULE AEROSPACE TECHNOLOGY, INC.  
 AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
 ON WIPLINE 3000 AMPHIBIOUS FLOATS

**SECTION I**

**GENERAL:**

1.23 PROPELLER:

Propeller Manufacturer	Hartzell
Blade model number	T10173F-21
Propeller Diameter	80 inches
Blade model number	T10173F-11 or T10173-11R
Propeller Diameter	90 inches

1.126 MAXIMUM WEIGHT:

Takeoff and Landing weight	2750 lbs.
----------------------------	-----------

1.27 STANDARD AIRPLANE WEIGHT:

Standard weight empty	1900 lbs.
Maximum useful load	850 lbs.

**SECTION II**

**LIMITATIONS**

2.9 WEIGHT LIMITS:

Maximum takeoff weight	2750 lbs.
Maximum landing weight	2750 lbs.
Maximum weight in baggage compartment	250 lbs.

2.10 CENTER OF GRAVITY LIMITS:

Forward Limit Inches aft of Datum	Rearward Limit Inches aft of Datum	Weight - Pounds Takeoff/Land
14.0	19.0	2750
12.0	19.0	2100 or less

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

FAA APPROVED  
 DATE: JAN 07 2003

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
FOR **MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

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.

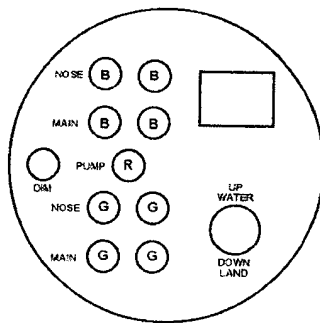
SOME POWER OFF STALLS MAY RESULT  
IN ALTITUDE LOSS OF UP TO 300 FEET

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

FAA APPROVED  
DATE: JAN 07 2003

Page 3 of 21

**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**

- 1. Landing Gear..... UP
- 2. Water Rudders..... RETRACT
- 3. Wing Flaps..... 0° or 24° (1<sup>ST</sup> or 2<sup>ND</sup> NOTCH)  
SMOOTH APPLICATION TO  
TAKEOFF POWER (90 PSI)
- 4. POWER Control..... 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.

FAA APPROVED  
 DATE: JAN 07 2003

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

TAKEOFF ON WATER

6. Wing Flaps..... UP - AFTER ALL OBSTACLES ARE  
CLEARED
7. Climb Speed..... 87 K (100 MPH)

(B) NORMAL CLIMB

1. Airspeed..... 87 K (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.

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

TO REDUCE TAKEOFF WATER RUN, THE TECHNIQUE OF RAISING  
ONE FLOAT OUT OF THE WATER MAY BE USED. THIS PROCEDURE  
IS DESCRIBED IN THE AMPLIFIED PROCEDURES IN THIS SECTION.

(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

TAKEOFF ON LAND

1. Water Rudders..... RETRACT
2. Wing Flaps..... 0° or 24° (1<sup>st</sup> or 2<sup>ND</sup> NOTCH)
3. POWER Control..... SMOOTH APPLICATION TO  
TAKEOFF POWER (90 PSI  
TORQUE OR 810° T.O.T. LIMITS  
MAXIMUM)

FAA APPROVED  
DATE: JAN 07 2003

Page 5 of 21

MAULE AEROSPACE TECHNOLOGY, INC.  
 AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
 ON WIPLINE 3000 AMPHIBIOUS FLOATS

**TAKEOFF ON LAND**      Cont'd

- 4. Rotate..... FOR LIFT-OFF
- 5. Wing Flaps..... UP, AFTER ALL OBSTACLES ARE  
CLEARED
- 6. Landing Gear..... RETRACT
- 7. Climb Speed..... 87 K (100 MPH)

(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

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

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

(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

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

POSITIONING OF POWER CONTROL BELOW THE FLIGHT IDLE  
 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.

FAA APPROVED  
 DATE: JAN 07 2003

MAULE AEROSPACE TECHNOLOGY, INC.  
 AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
 ON WIPLINE 3000 AMPHIBIOUS FLOATS

**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**

**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

**LANDING ON LAND**

- 1. Touchdown..... SLIGHTLY TAIL LOW
- 2. Control Wheel..... LOWER NOSEWHEELS TO  
RUNWAY
- 3. Landing Roll..... DIRECTIONAL CONTROL AND  
REVERSE THRUST IF DESIRED  
(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.

FAA APPROVED  
 DATE: JAN 07 2003

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

TAXIING ON WATER Cont'd

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.

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 backpressure 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

FAA APPROVED  
DATE: JAN 07 2003

Page 8 of 21



MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

**TAKEOFF ON WATER** Cont'd

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 backpressure on the control wheel will allow the amphibian to fly off smoothly.

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 65 K (75 mph), retract to First Notch (0°) and climb at 78 K (90 mph).

FAA APPROVED  
DATE: JAN 07 2003

Page 9 of 21

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

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.

**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 3000 floats are presented in this section.

//////////////////// THERE IS NO SUBSTITUTE FOR PROPER AND COMPLETE  
////WARNING//// PREFLIGHT PLANNING 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.....  | <b>UP (4 BLUE lights)</b>                         |
| 2. Water Rudders..... | <b>UP</b>   |
| 3. Wing Flaps.....    | <b>AS REQUIRED</b>                                |
| 4. Doors.....         | <b>UNLATCH PRIOR TO APPROACH</b>                  |
| 5. Touchdown.....     | <b>SLIGHTLY TAIL LOW</b>                          |
| 6. Control Wheel..... | <b>HOLD FULL AFT AS AMPHIBIAN<br/>DECELERATES</b> |

FAA APPROVED  
DATE: JAN 07 2003

Page 10 of 21

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

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.

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

FAA APPROVED  
DATE: JAN 07 2003

Page 13 of 21

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

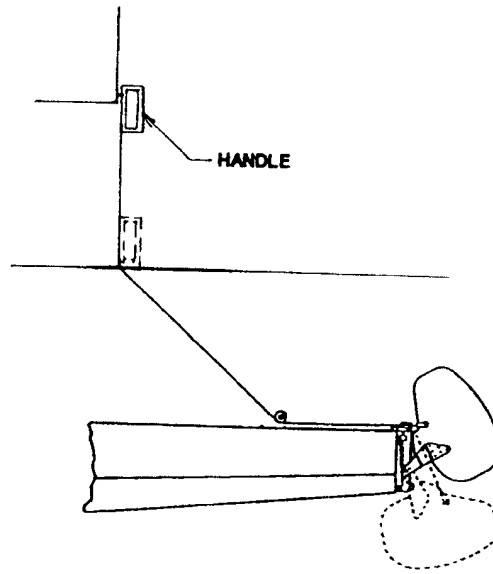


Figure 1

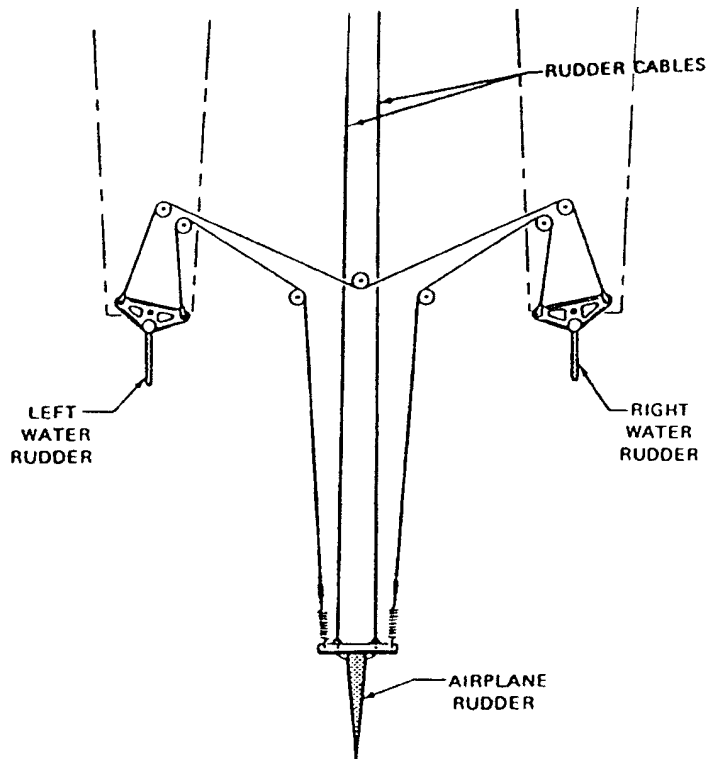


Figure 2

FAA APPROVED  
DATE: JAN 07 2003

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

AMPHIBIAN OPERATION Cont'd

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.
- 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"

FAA APPROVED  
DATE: JAN 07 2003

Page 15 of 21

MAULE AEROSPACE TECHNOLOGY, INC.  
AFM SUPPLEMENT No. 1  
**FOR MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

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).

#### 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: JAN 07 2003

Page 16 of 21

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..... 2750 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>
+14.0 to +19.0 inches	2750 lbs.
+12.0 to +19.0 inches	2100 lbs. or less

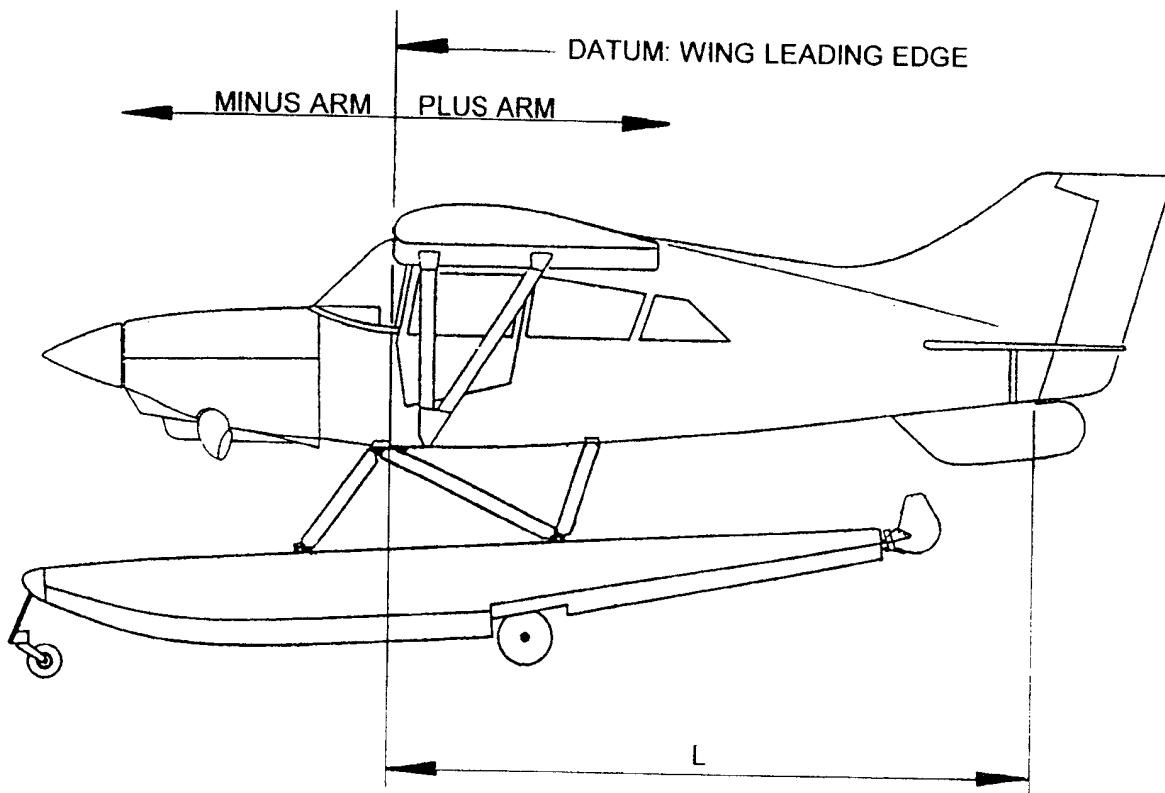
NOTE: Straight line variation between given points  
DATUM: Wing leading edge

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

MAULE AEROSPACE TECHNOLOGY, INC. WEIGHT AND BALANCE  
AFM SUPPLEMENT NO. 1  
FOR **MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

5.1 WEIGHT AND BALANCE: (Cont'd)

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



January 7, 2003

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.



MAULE AEROSPACE TECHNOLOGY, INC. WEIGHT AND BALANCE  
AFM SUPPLEMENT NO. 1  
FOR **MAULE MT-7-420**  
ON WIPLINE 3000 AMPHIBIOUS FLOATS

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 4.6 gallons of fuel in it or if totally empty, place a 31.0 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 31.0 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.

January 7, 2003

MAULE AEROSPACE TECHNOLOGY, INC.    WEIGHT AND BALANCE  
 AFM SUPPLEMENT NO. 1  
 FOR **MAULE MT-7-420**  
 ON WIPLINE 3000 AMPHIBIOUS FLOATS

10. Calculations for determining 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 2010 lbs. and an empty weight arm of 14.6 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)	2010	14.6	29,346
Pilot and Front Passenger	340	*	6,800
Fuel - 43 gal. in Mains	<u>290**</u>	*	<u>6,960</u>
	2640	16.3	43,106

By locating the point corresponding to 2640 lb. aircraft weight and a C.G. Location of 16.3 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

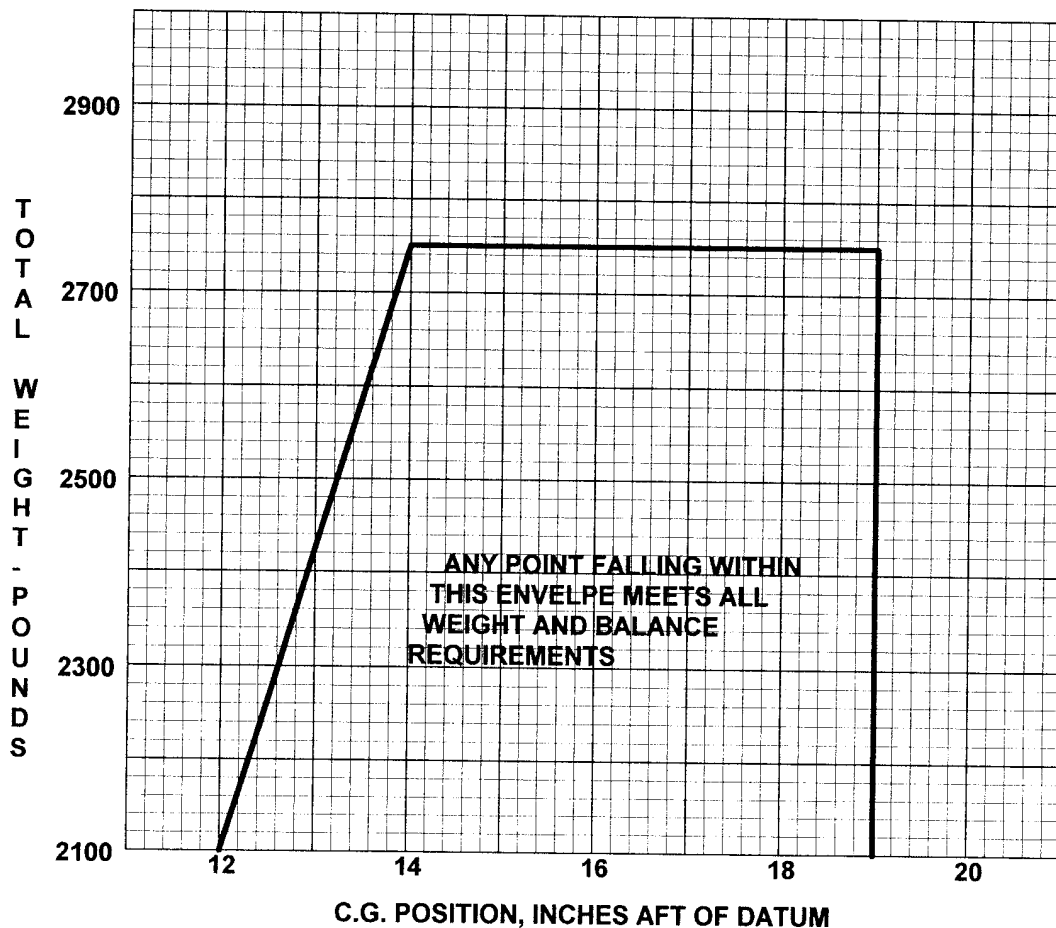
//////////  
 ///NOTE///  
 ////////////  
 When floats are installed, it is possible to exceed the maximum takeoff weight with all seats occupied and minimum fuel.

////////////////////////////////////  
 ///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.

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

\*\*Note: Fuel weights based on Jet A, 6.74 lbs./US gallon. See Page 40 of Airplane Flight Manual for weight of fuels other than Jet A.

**WEIGHT AND BALANCE ENVELOPE**



**MT-7-420 ON WIPLINE 3000 AMPHIBIOUS FLOATS**

January 7, 2003