LOG OF SUPPLEMENTS

SUP NO.	NO. OF PAGES	DESCRIPTION		APPROVAL DATE
1	9	Installation of **Aqua 2400 Floats** - Maule Dwg **9135A**. (03/01/95)	Rev. A	08/19/02
2	10	Installation of **EDO 797-2500 Amphibious Floats** - Maule Dwg **9139A**. (09/28/95)	Rev. A	08/19/02
3	2	Inst. of **McCauley B3D32C414-[ ]/[ ]-82NDA-2** (80") or **–4** (78") Propeller with Lycoming O-540-**B4B5** Engine - Maule Dwg **5490E**.		04/26/96
4	2	Operation of aircraft with **Center Seat** row at **56 inch** Station.		10/19/96
5	8	Installation of **EDO 248B2440 Floats** - Maule Dwg **9141A**, rev. **B** or later. (07/18/97)	Rev. A	08/19/02
6	6	Installation of **FluiDyne C3000H Wheel-Skis** - Maule Dwg **9174A**. (12/20/96)	Rev. A	08/19/02
7	5	Installation of **FluiDyne C3000(M)** (Manually Operated) **Skis** - Maule Dwg **9158A**.	Rev. A	08/19/02
8	5	Installation of **Fli-Lite 3000 MK IIIA Skis** - Maule Dwg **9081A**, Rev **E** or later revision.	Rev. A	08/19/02
9	21	Installation of **Wipline** Model **3000 Amphibious Floats** - Maule Dwg **9188A**. 05/17/99	Rev. A	08/19/02
10	2	Inst. of **Hartzell HC-C2YR-1BF/8477D-6** or **HC-C3YR-1RF/F-7693 (F)-( )** Propellers - Maule Dwg **5279F**.	Rev. B	01/28/04
11	6	English to **Metric Conversion Charts** - required in aircraft when registered **in Canada**.		09/03/99
12	9	Inst. of **S-TEC System 50 Two Axis Autopilot ST-418-50** (14v) - Maule Dwg **9193A**.		01/05/00
13	9	Inst. of **S-TEC System 30 Two Axis Autopilot ST-810-30** (14v) - Maule Dwg **9197A**. (Land)		01/21/00
14	9	Inst. of **S-TEC System 30 Two Axis Autopilot ST-810-30** (14v) - Maule Dwg **9197A**. (Sea)		01/21/00
15	9	Inst. of **S-TEC System 50 Two Axis Autopilot ST-609-50** (28v) - Maule Dwg **9200A**.		02/14/00
16	6	Inst. of **S-TEC System 55 Two Axis Autopilot ST-620** (14v) - Maule Dwg **9196A**. (Land)		04/04/00
17	6	Inst. of **S-TEC System 55 Two Axis Autopilot ST-620** (14v) - Maule Dwg **9196A**. (Sea)		04/04/00
18	8	Inst. of **S-TEC System 20 Single Axis Autopilot ST-810-20** (14v) - Maule Dwg **9197A**. (Land)		03/20/00
19	8	Inst. of **S-TEC System 20 Single Axis Autopilot ST-810-20** (14v) - Maule Dwg **9197A**. (Sea)		03/20/00
20	8	Inst. of **S-TEC System 20 Single Axis Autopilot ST-820-20** (28v) - Maule Dwg **9201A**.		03/20/00
21	7	Inst. of **S-TEC System 40 Single Axis Autopilot ST-609-40** (28v) - Maule Dwg **9200A**.		10/29/01
22	7	Inst. of **S-TEC System 40 Single Axis Autopilot ST-418-40** (14v) - Maule Dwg **9193A**.		10/29/01
-	4	Inst. of **S-TEC System 20 Single Axis Autopilot ST-872-20** (28v) - Maule Dwg **9211A**. (Land)		06/25/01
-	5	Inst. of **S-TEC System 30 Two Axis Autopilot ST-872-30** (28v) - Maule Dwg **9211A**. (Land)		06/25/01
-	5	Inst. of **S-TEC System 20 Single Axis Autopilot ST-872-20** (28v) - Maule Dwg **9211A**. (Sea)		06/25/01
-	5	Inst. of **S-TEC System 30 Two Axis Autopilot ST-872-30** (28v) - Maule Dwg **9211A**. (Sea)		06/25/01
-	5	Inst. of **S-TEC System 20 Single Axis Autopilot ST-873-20** (**14**/28v) - Maule Dwg **9212A**. (Land)		10/15/01
-	5	Inst. of **S-TEC System 30 Two Axis Autopilot ST-873-30** (**14**/28v) - Maule Dwg **9212A**. (Land)		10/15/01
-	5	Installation of **Apollo MX20 Multi-Function Display** - Maule Drawing 7265A.		08/15/02
-	3	Installation of **GARMIN GNS-430** (GPS/NAV/COMM) **System** - Maule Dwg **7205A**.		01/03/01
-	3	Installation of **GARMIN GNC-300XL** (GPS/COMM) **System** - Maule Drawing **7207A**.		01/03/01
-	3	Installation of **GARMIN GNC-250XL** (GPS/COMM) **System** - Maule Drawing **7209A**.		01/03/01
-	3	Installation of **Bendix-King KLX-135A** (GPS/COMM) **System** - Maule Drawing **7219A**.		01/03/01
-	8	Installation of **GARMIN GNC-420** (GPS/COMM) **System** - Maule Drawing **7251A**.		06/30/03
-	9	Installation of **GARMIN GNS-530** (GPS/NAV/COMM) **System** - Maule Drawing **7253A**.		06/30/03
-	4	Installation of **GARMIN GTX-330 Mode S Transponder Traffic Information System** (TIS) - Maule Drawing **7255A**.		06/30/03

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 1

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when ***AQUA*** *Model* ***2400 Floats*** are installed in accordance with *Maule Drawing No.* ***9135A.***

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: Roger D Anderson
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: MAR 0 1 1995

Rev. A: AUG 1 9 2002

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

LOG OF REVISIONS			
REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE
A	All	Changed primary airspeed units to knots. Updated to new format.	for Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 2002

SECTION I

GENERAL:NORMAL CATEGORY OPERATION

1.1 MAXIMUM WEIGHT: 2500 lbs.

1.2 CENTER OF GRAVITY LIMITS: +15.0 to +20.0 inches @ 2750 lbs.
+12.5 to +20.0 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 – V_{NE} 142 K (164 MPH)

B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line - Never Exceed Speed (V_{NE}) (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_{NE} 142 KTS	(Airspeed Indicator calibrated in Knots)
SEAPLANE V_{NE} 164 MPH	(Airspeed Indicator calibrated in MPH)

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.....	2ND NOTCH FOR T.O. (MAXIMUM 24°)
16. Water Rudders.....	RETRACT

E. BEFORE LANDING:

5. Flaps.....	3RD NOTCH FOR LANDING (MAXIMUM 40°)

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 for takeoff. When clear of obstacles and above 75 mph, retract to First Notch and climb at 90 mph.

SECTION V

WEIGHT AND BALANCE

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 5 – 9 of this supplement is 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 24 in Weight and Balance Data of the Airplane flight manual in lieu of reweighing floatplane per pages 6, 7 and 8 of this supplement.

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:

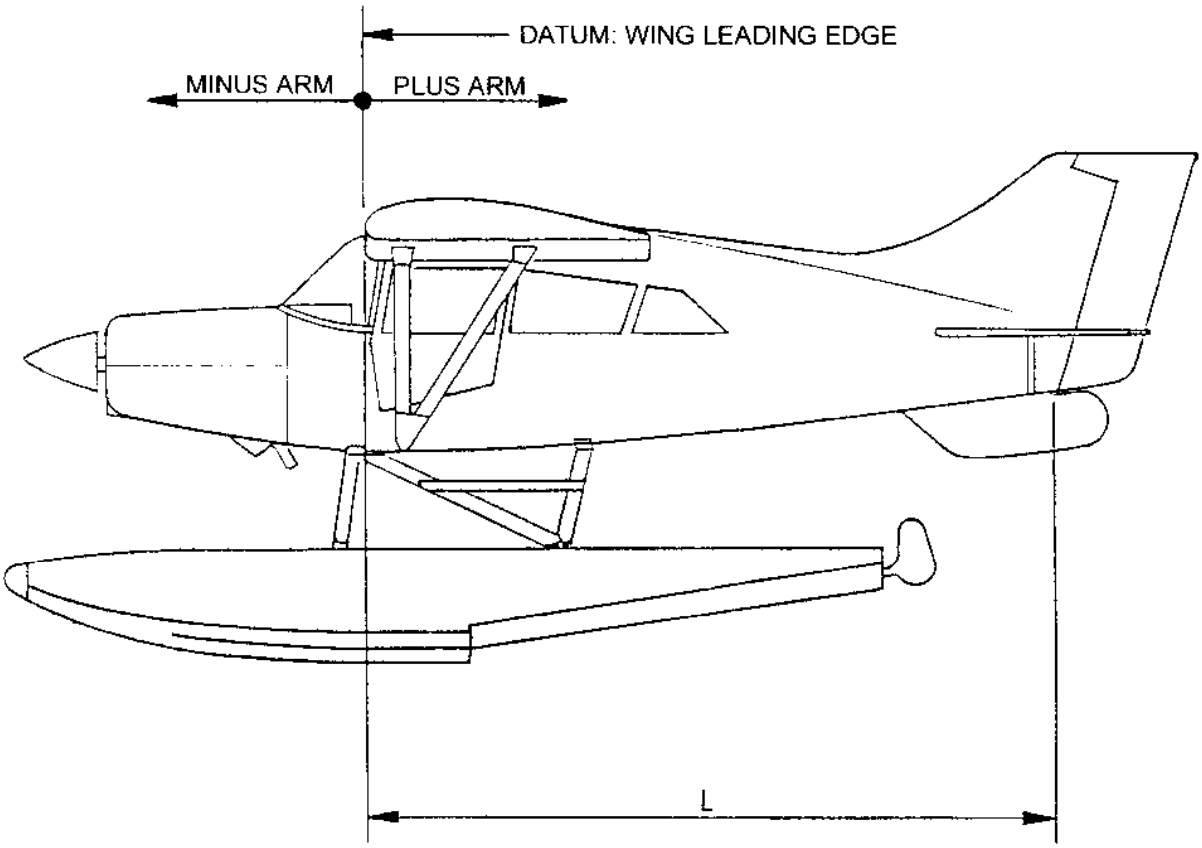
Center of Gravity Range	At Weight of
+15.0 to +20.0 inches	2750 lbs.
+12.5 to +20.0 inches	1600 lbs. or less

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 that the engine has approximately 8 quarts of oil in it for the IO-540 engine or 12 quarts for the O-540.

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 27.6 lbs.** at 24 inches and 8 quarts of oil at minus 34 inches for the IO-540 engine or 12 quarts of oil at minus 34 inches for the O-540 engine, 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 for the IO-540 engine or above weight less 20 lbs. drainable oil for the O-540 engine at a minus arm of 34 inches, and for this airplane is_____ lbs. The corresponding empty weight center of gravity is_____inches.

*Use 1½ gallons and 9 lbs. with "A" or "B" fuel tank configuration.
**Use 18 lbs. with "A" or "B" fuel tank configuration.

5.1 WEIGHT AND BALANCE: (Cont'd)

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

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

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:

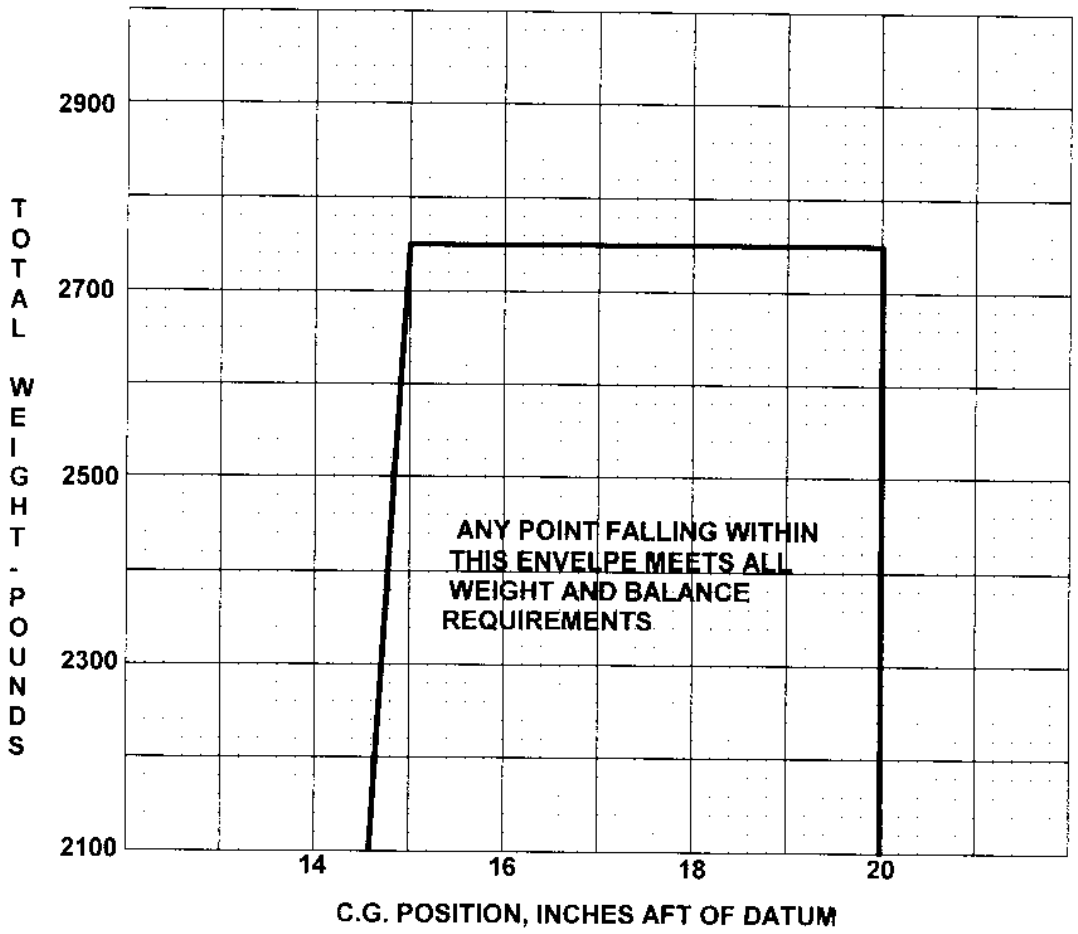
An airplane with an empty weight of 1874 lbs. and an empty weight arm of 14.6 inches is loaded with a pilot and front seat passenger and fuel.

Item	Weight, lbs.	C.G. Location	Moment, In.lbs.
Empty Weight (including engine oil)	1874	14.6	27,360
Pilot and Front Passenger	340	*	6,800
Fuel - 40 gal. in Mains	240	*	5,760
	2454	16.3	39,920

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

By locating the point corresponding to 2454 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.

WEIGHT AND BALANCE ENVELOPE



M-7-235B AQUA 2400 SEAPLANE

DO NOT DESTROY

IMPORTANT TECHNICAL DATA

COOPER AVIATION INDUSTRIES, INC.

2149 E. PRATT BOULEVARD
ELK GROVE VILLAGE, ILLINOIS 60007

TECHNICAL BULLETIN 112 C

Ceconite Coating Procedure

Ordinary doping and painting procedures for coating Ceconite have been improved tremendously by the sensational development of special Super Flite finishes such as "Dac-Proofer" and "Spra-Fill".

The following will demonstrate why a special finishing system over Ceconite was developed:

Inadequate Ordinary Dope Bond vs. "Dac-Proofer".

Ceconite consists of smooth surfaced intertwined monofilaments. These fibres are so smooth and tough that it is difficult to bond ordinary dope coats to the cloth. Laboratory and field tests show that usual doping procedures give a bond only hal as strong on Ceconite as the same finish on cotton or linen. Cotton or linen have fuzzy surface and absorption qualities which aid adhesion. The poor bond of ordinary dope to Ceconite can cause serious trouble at low temperatures.

To solve the adhesion problem we have formulated "Dac-Proofer" a special adhesive coating of great strength and flexibility to be used between the cloth and the dope coats. Two coats of "Dac-Proofer" brushed on the Ceconite before doping will give a dope-to-Ceconite bond twice as strong as the average bond between the usual dope to cotton or linen.

The use of "Dac-Proofer" also serves to seal the Ceconite and help in the build of the final job.

The use of "Dac-Proofer" gives the user a complete fire retardant system. This makes the use of the inflammable Nitrate Dope unnecessary on the first coats to enhance adhesion.

Superior Non Ring-Worm "Spra-Fill" Finish

Ceconite has a pronounced deep weave which is difficult to fill up to a smooth finish, as each succeeding coat tends to follow the pattern of the weave. Brushing of dope over Ceconite is highly unsatisfactory because of the uneven build caused by the brush marks. Some spots on the finished job will be smooth, others will show the weave and the finished job will be very uneven in appearance. This problem has been solved by spraying over the "Dac-Proofer" coats with "Spra-Fill", a special high solids non-shrinking Butyrate Dope containing aluminum which combines the function of both the clear coats and the aluminum coats of the usual dope job.

As all the shrinking of Ceconite can be controlled by heat, it is both undesirable and unnecessary to use regular shrinking type dope which continues to shrink during drying. A shrinking dope requires that the dope shrinkage factor must be taken into consideration when applying heat to Ceconite. In addition, the use of a non-shrinking dope allowed us to formulate a highly plasticized material which will resist brittleness and ring-worming. Tests made in sub-zero temperatures as low as 35° below zero indicated no loss of flexibility and no tendency towards brittleness. We were unable to ring-worm our test panels at this very low temperature, whereby, panels coated with conventional materials could be ring-wormed even at room temperatures.

Both products provide in our judgment the optimum in a finish over Ceconite and should be the material of choice when using Ceconite.

IMPORTANT: DO NOT HIDE GRAIN OF CLOTH. WHEN COMPLETELY PAINTED GRAIN OF CLOTH SHOULD BE VISIBLE AT 60° ANGLE WHEN VIEWED AT DISTANCE OF 12–24".

"Spra-Fill" and Super Flite Colored Butyrate Dopes are formulated to be completely compatible to each other. Some color coats made by other producers tend to tauten excessively, thereby tending toward a brittle finish. For the very best results we urge you to use Super Flite Colored Butyrate Dopes which are properly balanced and mated to "Spra-Fill" and which results in an unusually flexible finish which stays flexible and resists brittleness over prolonged periods of exposure.

The evenness of Ceconite combined with the excellent leveling properties of the sprayed "Spra-Fill" practically eliminate sanding except over cotton or linen tape. This also represents a substantial savings in labor.

FINISHING PROCEDURE:

After installing fabric, in accordance with Ceconite Manual 101, use Super Seam Cement to dope down all loose edges; brush a wet coat of Super Seam Cement to the frame, smoothing down the cloth over the wet Super Seam Cement. Brush another coat of Super Seam Cement over the cloth, and smooth the second layer of cloth over the first. Finish off with a final coat of Super Seam Cement.

m_7_235b_all.max

Because of the smoothness of Ceconite, Super Seam Cement must be used for the operation. Do not attempt to use dope as it does not have the body or strength to hold the cloth during the shrinking operations. Super Seam Cement is specially formulated to have the necessary strength. After the adhesive has set, at least two hours after application, the Ceconite is ready to be shrunk to the frame members.

Immediately following the shrinking operation the first coat of "Dac-Proofer" may be applied to the Ceconite. It should be brushed on in a full wet coat.

Do not reduce! Because of the drying characteristics, it will sink down into the cloth and dry to a smooth even coating. The success of the whole job depends upon getting a sufficient coat of "Dac-Proofer" on the cloth on this point. To assure this, "Dac-Proofer" is tinted blue and the applicator can tell at a glance by the color of the cloth whether enough primer is on the cloth. As soon as the first coat is dry, a second full wet brush coat is applied.

When the second coat is dry the job can be taped. Predoped tape is best for ease of handling and best adhesion. Apply two heavy coats of clear CAB Dope under the tape and two heavy coats over the tape, extending at least a half-inch on either side, keeping as even a ½" margin as possible. Remove excess dope on either side and from the top of the tapes by light sanding.

Also apply grommets and inspection rings after second coat of Dac-Proofer using Clear CAB Dope. Over the inspection ring, apply with CAB Dope, a circular patch of pinked Grade A Fabric ½" larger than the inspection ring. Circular inspection ring patches are available at 10¢ each.

The job is now ready for "Spra-Fill" and color coats. From this point, all surfaces must be sprayed as brushing would give an uneven finish. A pressure pot and a production spray gun would give the best and fastest results. Use 10 to 15 pounds pressure on the pot and 50 to 70 pounds on the gun.

Apply a full wet coat of "Spra-Fill" to the cloth spraying first in one direction and then at right angles. Getting a full coat on at this point is important as the build and gloss of the final job depends on it.

Apply two more coats of "Spra-Fill" in same manner as first coat allowing at least two hours between coats to dry. Allow the third and last coat to dry overnite.

Ceconite does not require sanding aside from scuffing off any dust particles that land on the job. The taped areas however, should be sanded smooth. Be sure to remove excess sanding dust. A damp cloth will do the job.

The job is now ready for color coats. For the first color coat reduce superflite CAB Dope with equal parts of #131 CAB Thinner and spray on using a pressure pot and production gun. If a cup gun is used, use more thinner to gain proper atomization. If greater flow-out is required use #132 Retarder Thinner in combination with #131 Thinner in proportions as required. The use of straight retarder will slow up the drying substantially and should not be used unless the time factor is not important or blushing occurs.

After two hours, apply the second coat. Use full wet cross coats for both coats of color as appearance of entire job depends on getting full wet coats on.

The job may be considered finished at this point, and may be rubbed and polished within 24 hours.

However, a final spray coat of the clear #1500 Superflite CAB dope to which 10% color has been added, reduced equal parts with retarder and sprayed over the entire job will result in a high gloss finish and eliminate the need for rubbing or polishing.

IMPORTANT

Where Ceconite is to be fastened to sharp metal edges, calling for 180° bend, it is advisable to fasten the cloth to the metal with Super Seam Cement, followed by another coat of Super Seam Cement.

"Spra-Fill" should not be reduced unless a cup gun is used in which case it should be reduced with CAB Thinner so it will spray. Extra coats will be necessary depending on how much extra thinning is used.

Due to high plasticizer content of Spra-Fill and other non-tautening dopes, we do not recommend the use of Automotive Lacquers or Synthetic Enamels for the color coats as the plasticizer tends to migrate through these finishes causing them to be soft for a period of time. For best results use Superflite CAB Colors. (Matching Synthetic Enamels are available for metal parts.)

To avoid "Pot Marks" where Ceconite is applied to metal surfaces, make sure metal is free of dirt, wax or grease or other contamination.

DIRECTIONS FOR APPLYING #103 CECONITE GLIDER CLOTH:

Use Ceconite Manual as directed.

Use finishing procedure as recommended for Ceconite #101 Cloth. Apply the following coats:

1st Coat – Dac-Proofer 2nd Coat – Spra-Fill 3rd Coat – Spra-Fill 4th Coat – CAB Color 5th Coat – CAB Color

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 2

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when ***EDO** Model **797-2500 Amphibious Floats*** are installed in accordance with *Maule Drawing No.* ***9139A.***

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: Clark Walker
for Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: 28 SEP 1995

Rev. A: AUG 19 2002

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

LOG OF REVISIONS

REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE
A	All	Changed primary airspeed units to knots. Updated to new format.	for Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 2002

SECTION I

GENERAL:NORMAL CATEGORY OPERATION

1.1 MAXIMUM WEIGHT: 2750 lbs.

1.2 CENTER OF GRAVITY LIMITS: +14.0 to +19.0 inches @ 2750 lbs.
+12.5 to +19.0 inches @ 2400 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 – V_{NE} 142 K (164 MPH)

B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line - Never Exceed Speed (V_{NE}) (Seaplane), 142 K (164 MPH):
Maximum safe speed smooth air.

Yellow Arc – Caution Range, 126 – 142 K (145 – 164 MPH)

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.

EMERGENCY HAND PUMP OPERATING INSTRUCTIONS: 1. PULL LANDING GEAR MOTOR CIRCUIT BREAKER. 2. MOVE LANDING GEAR POSITION SWITCH TO DESIRED POSITION. 3. ROTATE EMERGENCY GEAR SELECTOR VALVE TO DESIRED POSITION. 4. PUMP EMERGENCY GEAR HYDRAULIC PUMP UNTIL GEAR LOCKS IN DESIRED POSITION. ALWAYS KEEP GEAR SELECTOR VALVE IN OFF POSITION (DETENT ENGAGED) EXCEPT FOR EMERGENCY OPERATION.

2.4 PLACARDS: (Cont'd)

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

Place on left door:

EMERGENCY LANDING GEAR OPERATION: IF ELECTRIC DRIVEN HYDRAULIC PUMP FAILS, USE HAND OPERATED PUMP TO RETRACT & EXTEND LANDING GEAR. (SEE INSTRUCTIONS LAND ON SOD IF GEAR POSITION IS UNKNOWN) DO NOT LAND ON WATER UNLESS GEAR IS FULLY RETRACTED.

Located adjacent to Airspeed Indicator:

SEAPLANE V_{NE} 142 KTS	(Airspeed Indicator calibrated in Knots)
SEAPLANE V_{NE} 164 MPH	(Airspeed Indicator calibrated in MPH)

SECTION III

NORMAL PROCEDURES

3.1 PREFLIGHT INSPECTION:

A. INTERIOR

7. Emergency Gear selector Valve..... IN "OFF" DETENT

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..... 2ND NOTCH FOR T.O. (MAXIMUM 24°)
16. Water Rudders..... RETRACT

3.2 OPERATION CHECK LIST: (Cont'd)

E. BEFORE LANDING:

5. Flaps..... 3RD NOTCH FOR LANDING (MAXIMUM 40°)

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 for takeoff. When clear of obstacles and above 75 mph, retract to First Notch and climb at 90 mph.

SECTION IV

EMERGENCY PROCEDURES

4.17 EMERGENCY CHECKLISTS:

//
////EMERGENCY LANDING GEAR OPERATION////
//

1. Landing Gear Motor Circuit Breaker..... PULL
2. Landing Position Switch..... TO DESIRED POSITION
3. Emergency Gear Selector Valve..... ROTATE TO DESIRED POSITION
4. Emergency Gear Hydraulic Pump..... PUMP UNTIL GEAR LOCKS IN DESIRED POSITION

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

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

WEIGHT AND BALANCE

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 6 – 10 of this supplement is in effect for this modification, with exception, new Basic Empty Weight for entry on the following page 6 may be computed using Equipment Change page 24 in Weight and Balance Data of the Airplane flight manual in lieu of reweighing floatplane per pages 7, 8 and 9 of this supplement.

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:

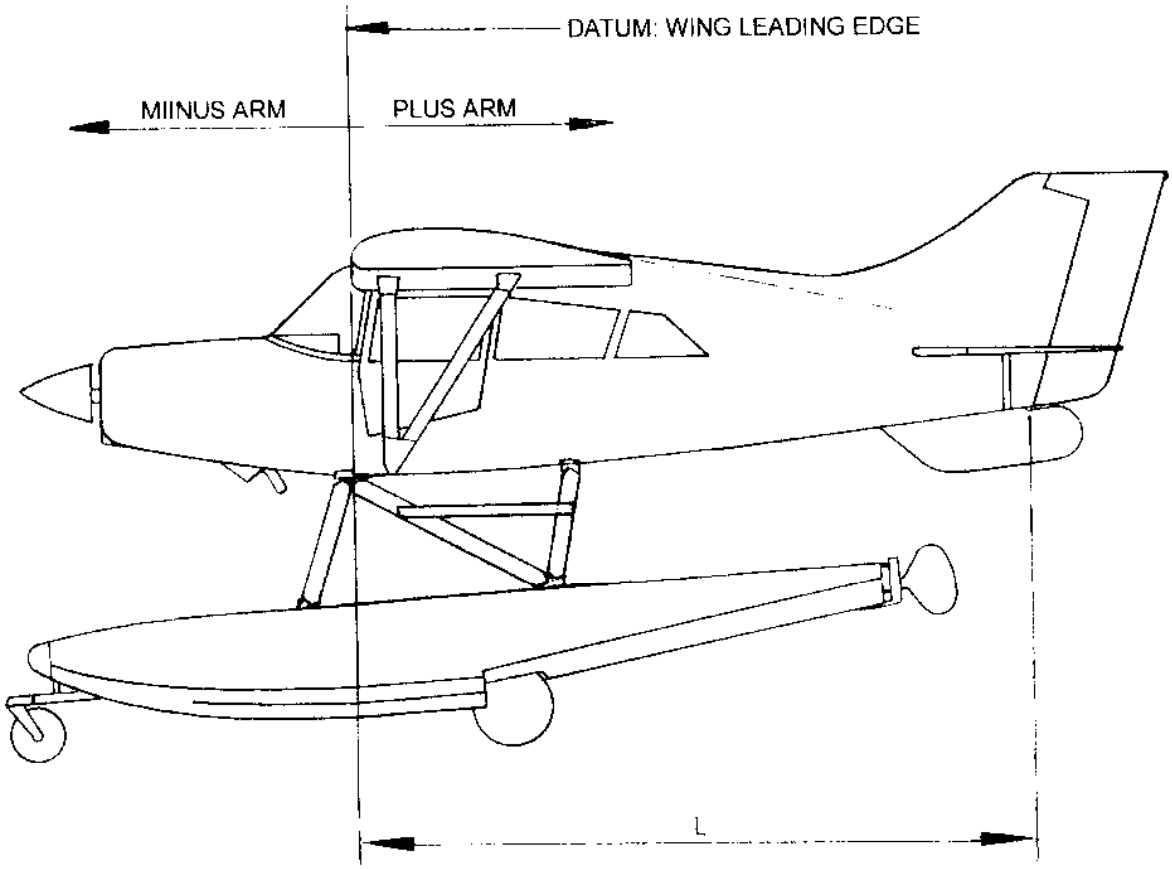
Center of Gravity Range	At Weight of
+14.0 to +19.0 inches	2750 lbs.
+12.5 to +19.0 inches	2400 lbs. or less

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 that the engine has approximately 8 quarts of oil in it for the IO-540 engine or 12 quarts for the O-540.

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 27.6 lbs.** at 24 inches and 8 quarts of oil at minus 34 inches for the IO-540 engine or 12 quarts of oil at minus 34 inches for the O-540 engine, 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 for the IO-540 engine or above weight less 20 lbs. drainable oil for the O-540 engine at a minus arm of 34 inches, and for this airplane is_____ lbs. The corresponding empty weight center of gravity is_____inches.

*Use 1½ gallons and 9 lbs. with "A" or "B" fuel tank configuration.
**Use 18 lbs. with "A" or "B" fuel tank configuration.

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:

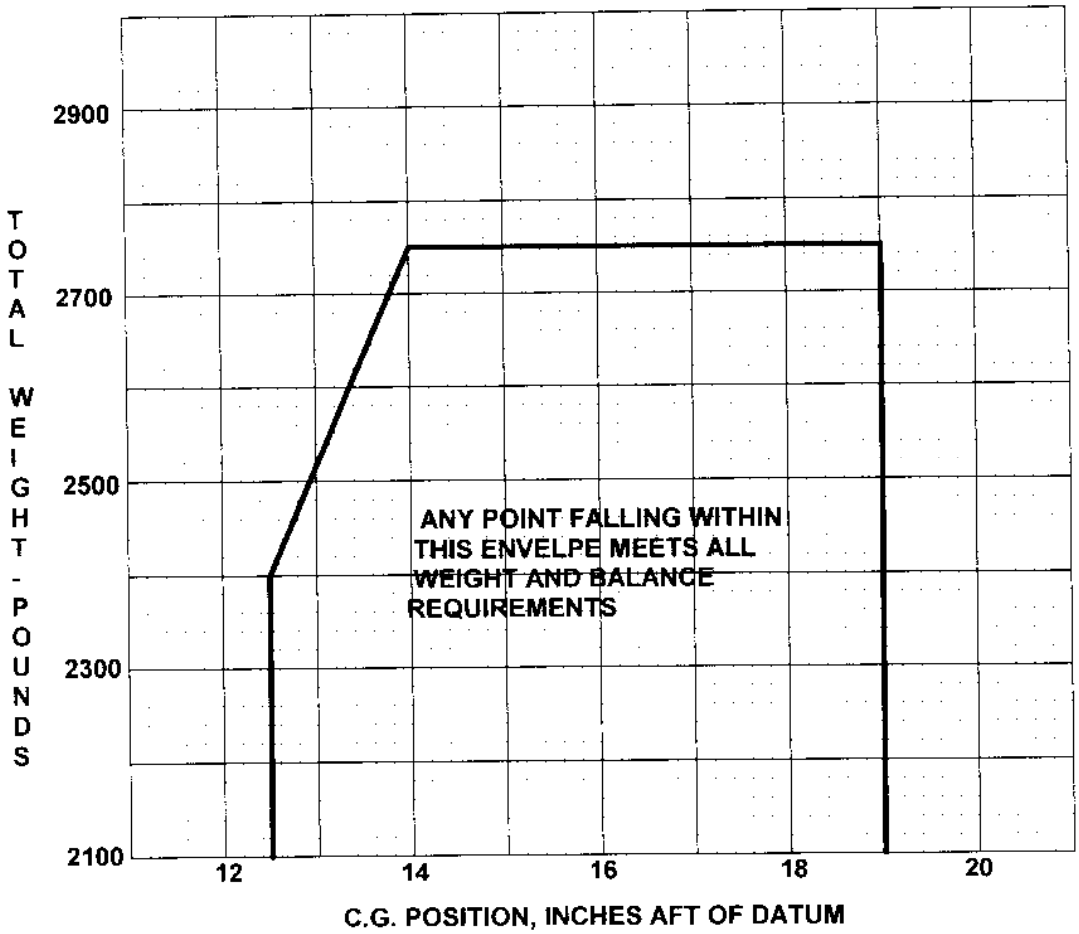
An airplane with an empty weight of 1874 lbs. and an empty weight arm of 14.6 inches is loaded with a pilot and front seat passenger and fuel.

Item	Weight, lbs.	C.G. Location	Moment, In.lbs.
Empty Weight (including engine oil)	1874	14.6	27,360
Pilot and Front Passenger	340	*	6,800
Fuel - 40 gal. in Mains	240	*	5,760
	2454	16.3	39,920

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

By locating the point corresponding to 2454 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.

WEIGHT AND BALANCE ENVELOPE



M-7-235B EDO 797-2500 AMPHIBIOUS FLOATPLANE

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 3

FOR

MAULE **M-7-235B**
with Lycoming **O**-540-**B4B5** Engine

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **19 October 1993** when **McCauley 3 Blade Propeller** Model **B3D32C414-[]/[]-82NDA-2 (80 inch)** or **-4 (78 inch)** is installed in accordance with Maule Drawing **5490E.**

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: _____
for Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: APR 2 6 1996

IT'S PERFORMANCE THAT COUNTS!

SECTION I

OPERATING LIMITATIONS

1.2 POWER PLANT LIMITATIONS:

Propeller: McCauley B3D32C414-[]/[]-82NDA-2 (80") or -4 (78")
(Use -2 with 7:00 x 6 tires or larger)

SECTION II

NORMAL OPERATING PROCEDURES

2.3 NORMAL FLIGHT OPERATIONS:

G. NOISE LEVEL:

The noise levels obtained during certification per FAR 36, were 76.48 dBA for -4 (78") and 78.10 dBA for -2 (80"). No determination has been made by the Federal Aviation Administration that the noise level of this airplane is or should be acceptable or unacceptable for the operation at, into, or out of any airport.

FAA APPROVED
DATE: APR 26 1996

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. **4**

FOR

MAULE ***M-7-235B***

Reg. No._____

Ser. No._____

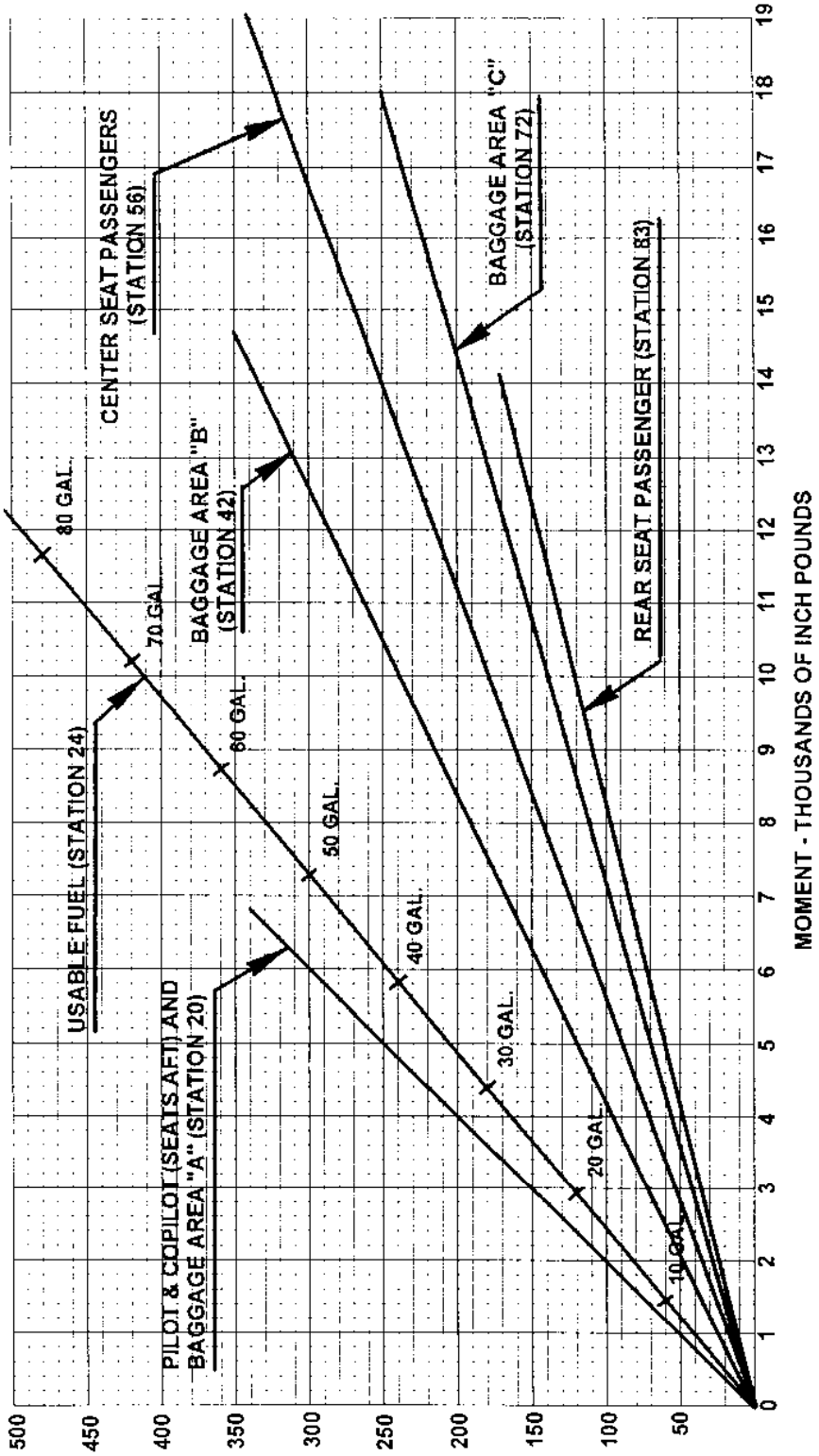
This supplement must be attached to the FAA Approved Airplane Flight Manual dated **19 October 1993** when the **Center Seat is installed** at **56 inch** Station in accordance with Maule Drawing No. **1340B.**

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

FAA APPROVED: Paul Stonger
for
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: OCT 3 1996

IT'S PERFORMANCE THAT COUNTS!



LOADING CHART

PROCEDURE FOR DETERMINING WEIGHT & CENTER OF GRAVITY:

1. Add weight of items to be carried to the basic weight of the aircraft.
2. Find moments of items to be carried by using the above loading graph and add these moments to the basic weight moment of the aircraft.
3. Using the total weight and moment from Step 2, find the point on the center of gravity envelope which corresponds to this total weight and total moment.

FAA APPROVED
DATE: OCT 3 1996

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. **5**

FOR

MAULE **M-7-235B**

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **19 October 1993** when **EDO 248B2440 Floats** are installed in accordance with Maule Drawing **9141A,** revision B 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 L. Bollin
for Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia

DATE: JUL 18 1997

Rev. A AUG 19 2002

IT'S PERFORMANCE THAT COUNTS!

LOG OF REVISIONS

REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE
A	1, 1a, 2, 3, 6	Changed primary airspeed units to knots. Updated information in 5.1.7 and .9 on page 6, to be applicable to either the new or earlier fuel tank configurations. Added page 1a.	Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 2002

SECTION I

GENERAL: NORMAL CATEGORY OPERATION

1.1 MAXIMUM WEIGHT: 2750 lbs.

1.2 CENTER OF GRAVITY LIMITS: +14.0 to +19.0 inches @ 2750 lbs.
+12.5 to +19.0 inches @ 2400 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_{NE}) (Seaplane), 142 K (164 mph): Maximum safe speed smooth air.

Yellow Arc – Caution Range, 126 – 142 K (145 – 164 mph)

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_{NE} 142 KTS	(Airspeed Indicator calibrated in Knots)

SEAPLANE V_{NE} 164 MPH	(Airspeed Indicator calibrated in MPH)

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.....	2ND NOTCH FOR T.O. (MAXIMUM 24°)
16. Water Rudders.....	RETRACT

E. BEFORE LANDING:

5. Flaps.....	3RD NOTCH FOR LANDING (MAXIMUM 40°)

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

WEIGHT AND BALANCE

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 4 through 8 of this supplement are in effect for this modification, with exception, new Basic Empty Weight for entry on the following page 4 may be computed using Equipment Change page 24 in Weight and Balance Data of the Airplane Flight Manual in lieu of reweighing Floatplane per pages 5, 6 and 7 of this supplement.

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..... 2750 Lbs.

Useful Load..... _____ Lbs.

Empty Center of Gravity..... _____ Inches

Empty Weight Moment..... _____ Inch Lbs.

CENTER OF GRAVITY RANGE:

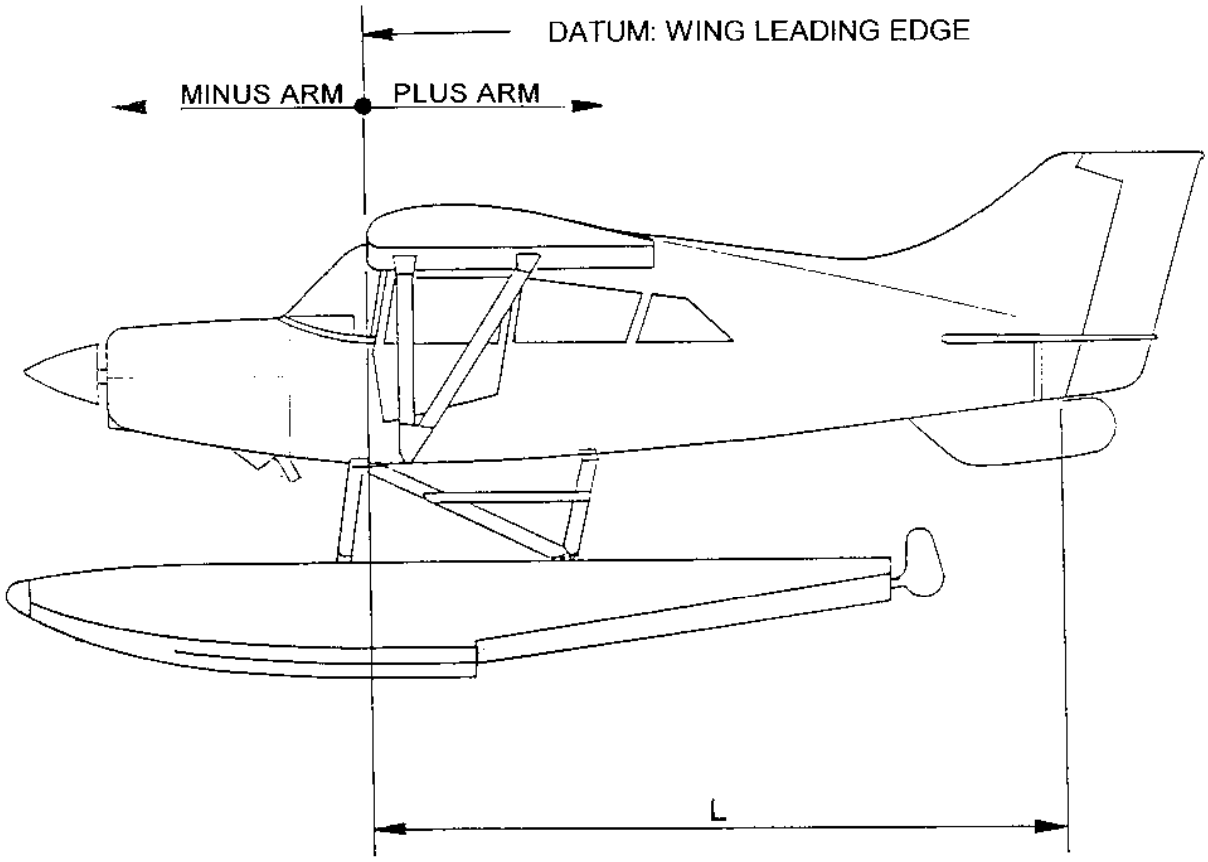
At Weight of	Center of Gravity Range
2750 lbs.	+14.0 to +19.0 inches
2400 lbs. or less	+12.5 to +19.0 inches

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.

m_7_235b_all.max

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 that the engine has approximately 8 quarts of oil in it for the IO-540 engine or 12 quarts for the O-540.

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 27.6 lbs.** at 24 inches and 8 quarts of oil at minus 34 inches for the IO-540 engine or 12 quarts of oil at minus 34 inches for the O-540 engine, 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 for the IO-540 engine or above weight less 20 lbs. drainable oil for the

   O-540 engine at a minus arm of 34 inches, and for this airplane is_____ lbs.

   The corresponding empty weight center of gravity is_____inches.

*Use 1½ gallons and 9 lbs. with "A" or "B" fuel tank configuration.
**Use 18 lbs. with "A" or "B" fuel tank configuration.

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.

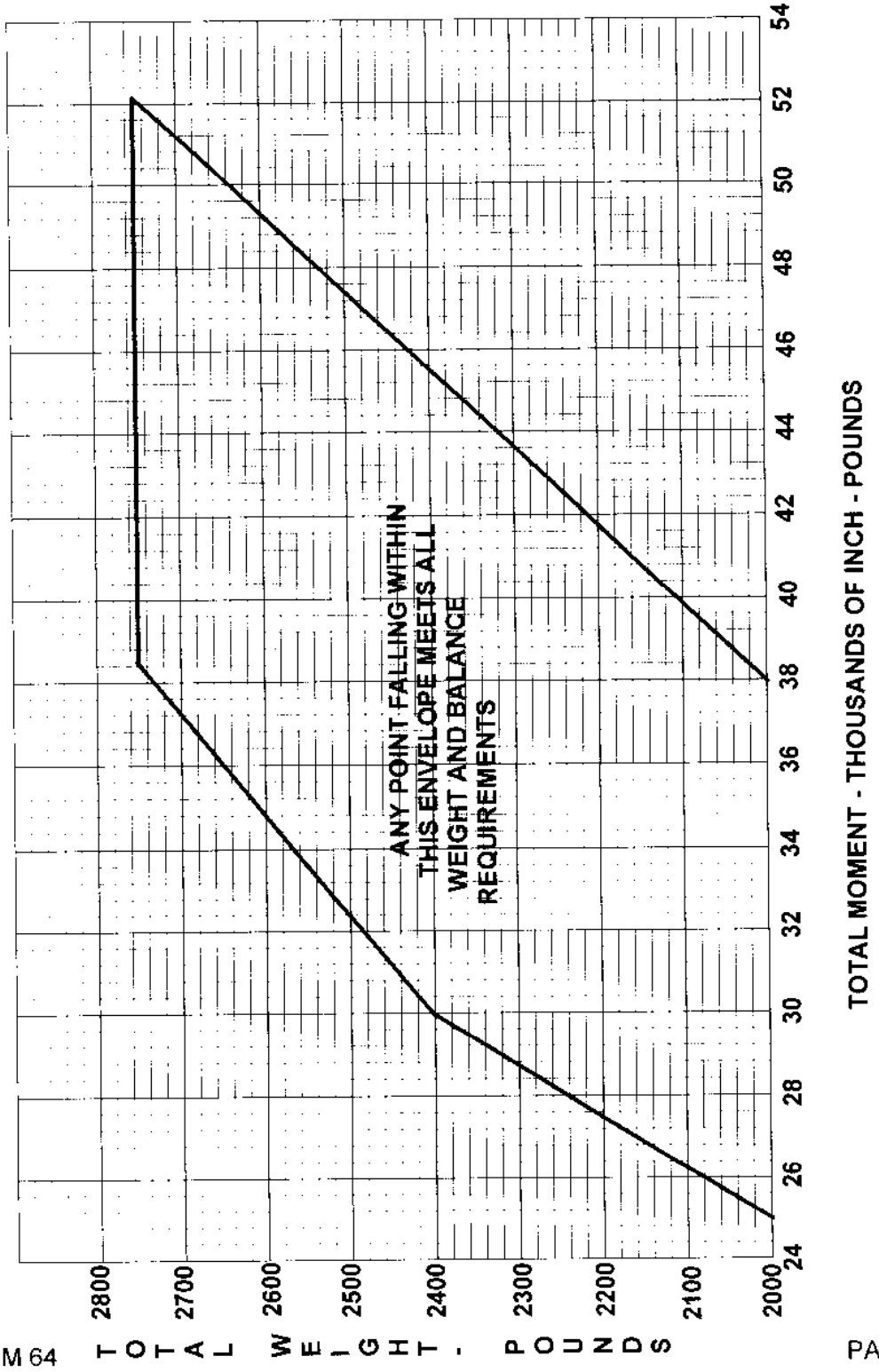
EXAMPLE OF WEIGHT AND BALANCE CALCULATION FOR LOADED AIRCRAFT:

An airplane with an empty weight of 1874 lbs. and an empty weight moment of 27,360 inch lbs. is loaded with a pilot and front seat passenger, and fuel.

Item	Weight, lbs.	Arm, Ins.	Moment, In.lbs.
Empty Weight (including engine oil)	1874	14.6	27,360
Pilot and Front Passenger	340		6,800
Fuel - 40 gal. in Mains	240		5,760
	2454		39,920

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

By locating the point corresponding to 2454 lb. aircraft weight and 39,920 inch lbs. total moment on Center of gravity envelope graph, you can see that this point falls within the envelope, signifying the loading is acceptable.



CENTER OF GRAVITY ENVELOPE

M-7-235B ON EDO 248B2440 FLOATS

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 6

FOR

MAULE ***M-7-235B***

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **19 October 1993** when **FluiDyne** Model **C3000H Wheel-Skis** are installed in accordance with Maule Drawing **9174A**.

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:_____
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia

DATE: DEC 2 0 1996

Rev. A AUG 1 9 2002

IT'S PERFORMANCE THAT COUNTS!

LOG OF REVISIONS

REV.	TO PAGE	DESCRIPTION	APPROVAL AND DATE
A	2	Changed primary airspeed units to knots.	Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 2002

SECTION I

GENERAL: NORMAL CATEGORY OPERATION

1.1 ***MAXIMUM WEIGHT***: 2500 lbs.

1.2 ***CENTER OF GRAVITY LIMITS***: +15.0 to +19.5 inches @ 2500 lbs.
+11.5 to +19.5 inches @ 1700 lbs. or less
Straight line variation between points given
Datum: Wing leading edge

SECTION II

LIMITATIONS

A. AIRSPEED INDICATOR MARKINGS:

Red Radial – V_{NE} 139 K (160 MPH)

B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line - Never Exceed Speed (V_{NE}) (Skiplane), 139 K (160 MPH): Maximum safe speed smooth air.

2.4 ***PLACARDS:***

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

SKIPLANE LIMITATIONS: MAXIMUM GROSS WEIGHT 2500 LBS. DO NOT EXCEED 139 K.	(Airspeed Indicator calibrated in Knots)
SKIPLANE LIMITATIONS: MAXIMUM GROSS WEIGHT 2500 LBS. DO NOT EXCEED 160 MPH.	(Airspeed Indicator calibrated in MPH)

THIS AIRCRAFT TO BE OPERATED IN ACCORDANCE WITH LIMITATIONS IN AIRPLANE FLIGHT MANUAL FOR SKIPLANE OPERATION.

DO NOT EXTEND OR RETRACT SKIS WHILE IN MOTION ON THE GROUND.

SKI CONTROL SELECTOR: WHEELS - FORWARD/NEUTRAL - CENTER/SKIS AFT

SECTION III

NORMAL PROCEDURES:

3.7 NORMAL PROCEDURES FOR SKI-WHEEL CONVERSION:

A. For ski landing or takeoff, move "Ski Control Selector" to "Skis" position and operate pump handle until the ski extends downward and under the tire to the full aft position. This will take approximately 45 strokes. When the full "Skis" position is reached, maximum hydraulic pressure will be developed and the pump handle cannot be operated any further. A visual check to determine that full "Skis" position has been reached should be made.

B. For wheel landing and takeoff, move "Ski Control Selector" to "Wheels" and operate pump handle (approximately 45 strokes) until the ski retracts to the full forward position ahead of the tire. When the full "Wheels" position is reached, maximum hydraulic pressure will be developed and the pump handle cannot be operated any further. A visual check should be made to determine that full "Wheels" position has been reached.

C. Before landing and taking off either on "Skis" or "Wheels", check position of the "Ski Control Selector" for desired position and operate pump handle to obtain maximum pump pressure.

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

Transfer from skis to wheels and vice versa cannot be performed on the ground while taxiing and should only be performed standing still or during flight.

D. Takeoff and landing distances under the most favorable conditions of smooth packed snow at temperatures of approximately 30° F, may be expected to increase as follows:

(a) Takeoff distance will be approximately 10% greater than the landplane.

(b) Landing distances will be approximately 20% greater than the landplane.

(c) Other conditions of snow will require proportionately greater distances for takeoff.

FAA APPROVED
DATE: DEC 2 0 1996

SECTION IV

EMERGENCY PROCEDURES

No Change.

SECTION V

WEIGHT AND BALANCE

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 18 through 20, 23 and 24 of the Airplane Flight Manual and pages 5 and 6 of this supplement are in effect for this modification. New Basic Empty Weight for entry on the following page 5 may be computed using Equipment Change page 24 in Weight and Balance Data of the Airplane Flight Manual in lieu of reweighing Skiplane.

FAA APPROVED
DATE: DEC 20 1996

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.

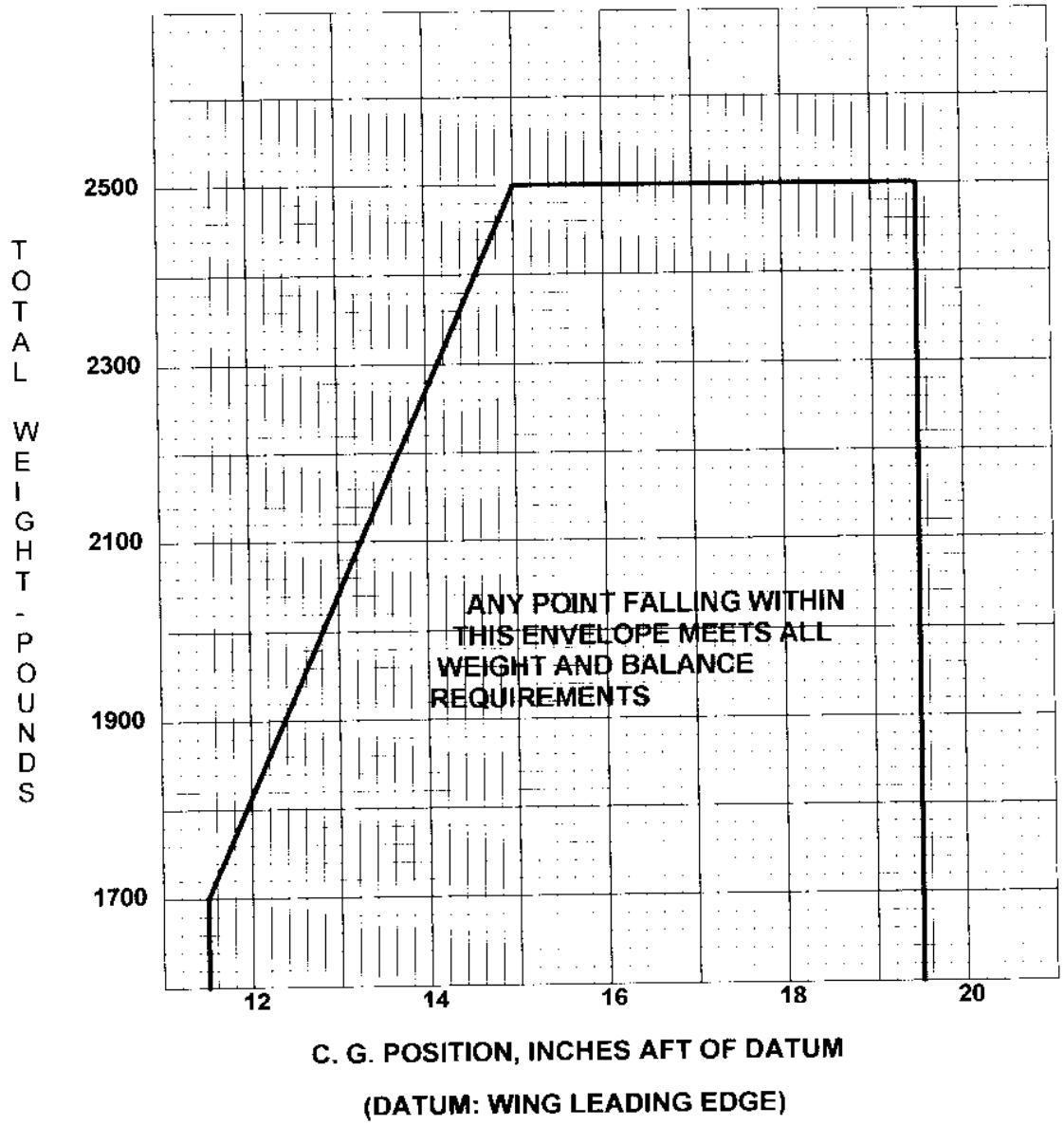
CENTER OF GRAVITY RANGE:

At Weight of	Center of Gravity Range
2500 lbs.	+15.0 to +19.5 inches
1700 lbs. or less	+11.5 to +19.5 inches

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

CERTIFIED BY_____DATE_____

WEIGHT AND BALANCE ENVELOPE



FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 7

FOR

MAULE ***M-7-235B***

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **19 October 1993** when **FluiDyne** Model **C3000** (Manually Operated) **Skis** are installed in accordance with Maule Drawing **9158A**.

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: _____
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia

DATE: DEC 2 0 1996

Rev. A AUG 1 9 2002

IT'S PERFORMANCE THAT COUNTS!

LOG OF REVISIONS

REV.	TO PAGE	DESCRIPTION	APPROVAL AND DATE
A	2	Changed primary airspeed units to knots.	for Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 2002

SECTION I

GENERAL: NORMAL CATEGORY OPERATION

1.1 ***MAXIMUM WEIGHT***: 2500 lbs.

1.2 ***CENTER OF GRAVITY LIMITS***: +15.0 to +19.5 inches @ 2500 lbs.
+11.5 to +19.5 inches @ 1700 lbs. or less

Straight line variation between points given
Datum: Wing leading edge

SECTION II

LIMITATIONS

A. AIRSPEED INDICATOR MARKINGS:

Red Radial – V_{NE} 139 K (160 mph)

B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line - Never Exceed Speed (V_{NE}) (Skiplane), 139 K (160 mph):
Maximum safe speed smooth air.

2.4 ***PLACARDS:***

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

SKIPLANE LIMITATIONS: MAXIMUM GROSS WEIGHT 2500 LBS. DO NOT EXCEED 139 K.	(Airspeed Indicator calibrated in Knots)
SKIPLANE LIMITATIONS: MAXIMUM GROSS WEIGHT 2500 LBS. DO NOT EXCEED 160 MPH.	(Airspeed Indicator calibrated in MPH)

THIS AIRCRAFT TO BE OPERATED IN ACCORDANCE WITH LIMITATIONS IN AIRPLANE FLIGHT MANUAL FOR SKIPLANE OPERATION.

SECTION III

NORMAL PROCEDURES:

3.7 NORMAL PROCEDURES FOR SKI-WHEEL CONVERSION:

A. For ski landing or takeoff, (ski actuation ski "up" to ski "down" position):
   a) Remove ski "up" lock pin from arm.
   b) Insert ski actuation bar into loops on ski arm.
   c) Swing arm over center so tire rests on ski board.
   d) Attach ski "down" restraining cable to lug at ski axle.

B. For wheel landing and takeoff, (ski actuation from ski "down" to ski "up" position):
   a) Detach ski "down" retraining cable.
   b) Insert ski actuation bar into loops on ski arm.
   c) Swing arm over center so tire rests on ground.
   d) Lock arm to ski "up" bracket with pin.

C. Takeoff and landing distances, under the most favorable conditions of smooth packed snow at temperatures of approximately 30°F, may be expected to increase as
follows:

   (a) Takeoff distance will be approximately 10% greater than the landplane.
   (b) Landing distances will be approximately 20% greater than the landplane.
   (c) Other conditions of snow will require proportionately greater distances for takeoff.

SECTION V

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 18 through 20, 23 and 24 of the Airplane Flight Manual and pages 4 and 5 of this supplement are in effect for this modification. New Basic Empty Weight for entry on the following page 4 may be computed using Equipment Change page 24 in Weight and Balance Data of the Airplane Flight Manual in lieu of reweighing Skiplane.

FAA APROVED
DATE: DEC 2 0 1996

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:

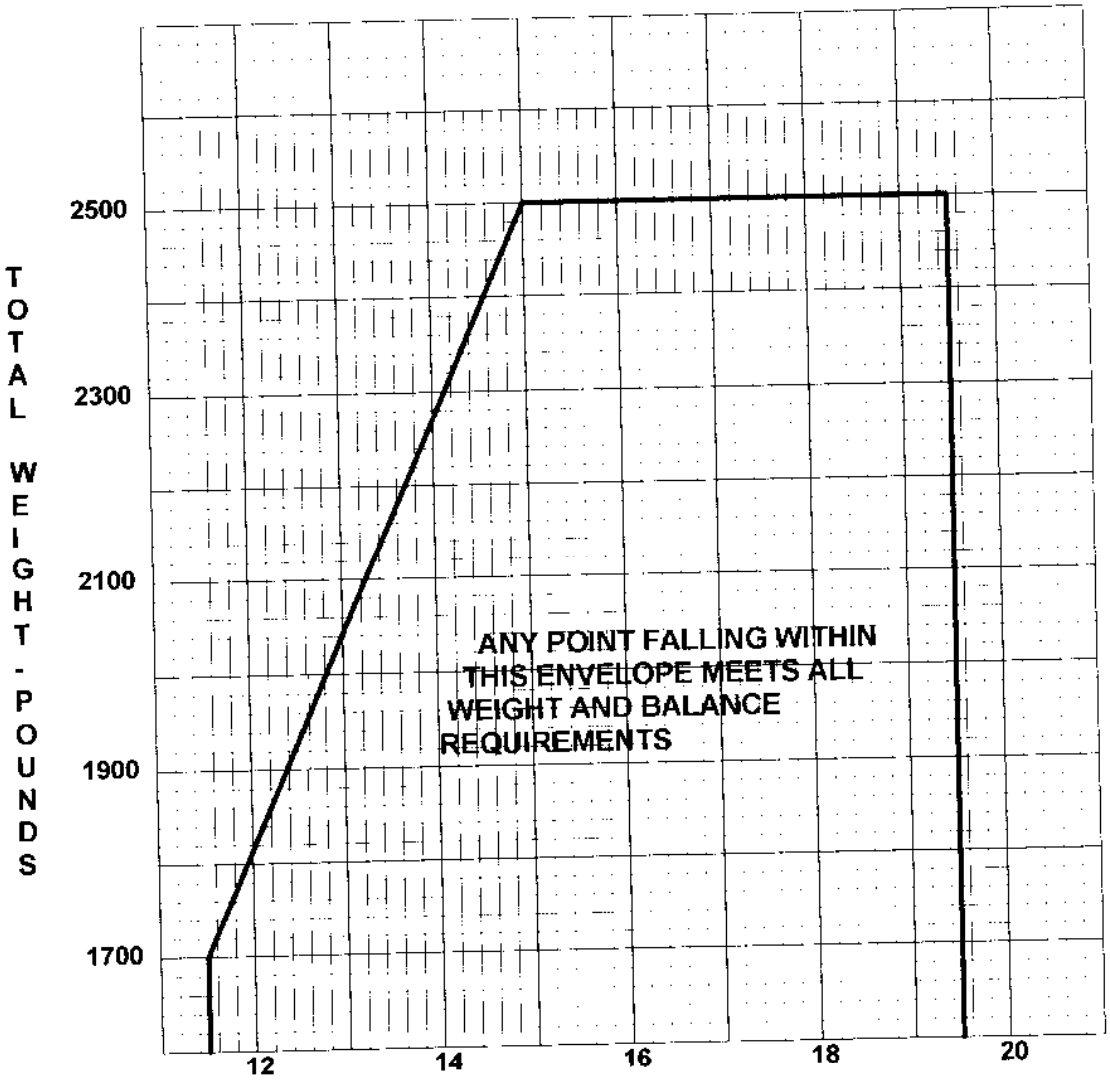
At Weight of	Center of Gravity Range
2500 lbs.	+15.0 to +19.5 inches
1700 lbs. or less	+11.5 to +19.5 inches

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

CERTIFIED BY_____DATE_____

20 DEC 2006

WEIGHT AND BALANCE ENVELOPE



MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 8

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **19 October 1993** when **Fli-Lite** Model **3000 MK IIIA Skis** are installed in accordance with Maule Drawing **9081A,** Rev. **E** or later.

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 Coppenhaver for Gene Bollier
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia

DATE: 10-26-98

Rev. A: AUG 19 2002

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Tel: 912-985-2045~Fax: 912-890-2402

LOG OF REVISIONS

REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE
A	1a, 2, 3	Changed primary airspeed units to knots.	for Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 [illegible]

SECTION II

LIMITATIONS

2.1 AIRSPEED LIMITS:

A. AIRSPEED INDICATOR MARKINGS:

Red Radial - V_{NE} 139 K (160 mph)

B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line - Never Exceed Speed (Skiplane), 139 K (160 mph): Maximum safe speed smooth air.

2.4 PLACARDS:

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

SKIPLANE LIMITATIONS: MAXIMUM GROSS WEIGHT 2500 LBS. DO NOT EXCEED 139 K.	(Airspeed Indicator calibrated in Knots)
SKIPLANE LIMITATIONS: MAXIMUM GROSS WEIGHT 2500 LBS. DO NOT EXCEED 160 MPH.	(Airspeed Indicator calibrated in MPH)

SKI OPERATION PROCEDURES: SET SELECTOR TO POSITION DESIRED THEN OPERATE PUMP UNTIL MAXIMUM PRESSURE IS DEVELOPED.

SKI CONTROL SELECTOR: SKIS - FORWARD / WHEELS - AFT

2.5 TIRES:

Use 6:00 x 6 or 7:00 x 6 tires only.

SECTION III

NORMAL PROCEDURES:

3.7 NORMAL PROCEDURES FOR SKI-WHEEL CONVERSION:

A. For ski landing or takeoff, (ski actuation ski "up" to ski "down" position), move "Ski Control Selector" to "Skis it position and operate pump handle until the ski extends downward and under the tire to the full aft position. This will take approximately 22 strokes. When the full "Skis" position is reached, maximum hydraulic pressure will be developed and the pump handle cannot be operated any further. A visual check to determine that full "Skis" position has been reached should be made.

B. For wheel landing or takeoff, move "Ski Control Selector" to "wheels" and operate put handle (approximately 17 strokes) until the ski retracts to the full forward position ahead of the tire. When the full "Wheel" position is reached, maximum hydraulic pressure will be developed and the pump handle cannot be operated any further. A visual check should be made to determine that full "Wheels" position has been reached.

C. Before landing or taking off either on "Skis" or "Wheels", check position of the "Ski Control Selector" for desired position and operate pump handle to obtain maximum pump pressure.

NOTE 1 To preclude the possibility of freezing the load transfer shoe in either forward or aft position following takeoff and landings in slush or wet snow, the skis should be actuated through one full cycle so as to cause any excess slush to fall free of the skis after becoming airborne. Skis then should be actuated to desired position for next anticipated landing; i.e., if wheel landing is next, skis should be actuated to "Wheel" position.

NOTE 2 Transfer from skis to wheels and vice versa can be performed on the ground while taxiing or standing still or at any time during flight.

NOTE 3 Landings on snow can be made with the "Wheels" position (ski retracted) without adversely affecting any of the ski structure. Normally, the "skis" position should be used for snow landings.

3.7 *NORMAL PROCEDURES FOR SKI-WHEEL CONVERSION:* Cont'd

4. Takeoff and landing distances, under the most favorable conditions of smooth packed snow at temperatures of approximately 30° F, may be expected to increase as follows:

   (a) Takeoff distance will be approximately 10% greater than the landplane.

   (b) Landing distances will be approximately 20% greater than the landplane.

   (c) Other conditions of snow will require proportionately greater distances for takeoff.

SECTION V

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 18 thru 24 of the Airplane Flight Manual and page 5 of this supplement are in effect for this modification. New Basic Empty Weight for entry on the following page 5 may be computed using Equipment Change page 24 in Weight and Balance Data of the Airplane Flight Manual in lieu of reweighing Skiplane.

FAA APROVED
DATE: OCT 2 6 1998

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 skiplane. 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....____2500____Lbs.

Useful Load....._____Lbs.

Empty Center of Gravity....._____Inches

Empty Weight Moment....._____Inch Lbs.

CENTER OF GRAVITY RANGE:

At Weight of	Center of Gravity Range
2500 lbs.	+15.0 to +20.0 inches
1700 lbs. or less	+12.5 to +20.0 inches

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

CERTIFIED BY_____DATE_____

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 9

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated ***19 October 1993*** when ***Wipline*** *Model* ***3000 Amphibious Floats*** are installed in accordance with Maule Drawing No. ***9188A***.

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

DATE: MAY 17 1999

Rev. A AUG 19 2002

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LOG OF REVISIONS

REV.	TO PAGES	DESCRIPTION	DATE AND APPROVAL
A	1, 3, 4, 9, 19	Changed primary airspeed units to knots. Updated information in 5.1.7 and .9 on page 19, to be applicable to either the new or earlier fuel tank configurations.	for Atlanta Aircraft Certification Office FAA, Atlanta, GA Date: AUG 19 2002

SECTION I

GENERAL: NORMAL CATEGORY OPERATION

1.1 MAXIMUM WEIGHT: 2750 lbs.

1.2 CENTER OF GRAVITY LIMITS: +14.0 to +19.0 inches @ 2750 lbs.
+12.0 to +19.0 inches @ 2100 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 – V_{NE} 142 K (164 MPH)

B. EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line - Never Exceed Speed (V_{NE}) (Seaplane), 142 K (164 MPH): Maximum safe speed smooth air.

Yellow Arc – Caution Range, 126 – 142 K (145 – 164 MPH)

2.4 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° (2ND NOTCH) MAX. LANDING - 40° (3RD NOTCH) MAX.

2.4 PLACARDS: Cont'd

Located adjacent to Airspeed Indicator:

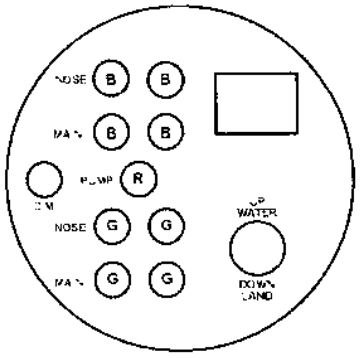
SEAPLANE V_{NE} 142 KTS	(Airspeed Indicator calibrated in Knots)

SEAPLANE V_{NE} 164 MPH	(Airspeed Indicator calibrated in MPH)

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

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

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

REMOVE RUBBER PLUGS THAT SERVE AS STOPPERS ON THE 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, UP FOR TAXIING ON LAND

TAKEOFF

TAKEOFF ON WATER

1. Landing Gear..... UP
2. Water Rudders..... RETRACT – HANDLE UP
3. Wing Flaps..... 24° (2ND NOTCH)
4. Control Wheel..... HOLD FULL AFT
5. Throttle..... FULL - (ADVANCE SLOWLY)
6. Mixture..... RICH - (OR LEAN TO OBTAIN MAXIMUM RPM ABOVE 3000 FT)
7. 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 WATER Cont'd

8. Wing Flaps..... UP - AFTER ALL OBSTACLES ARE CLEARED

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

TAKEOFF ON LAND

1. Water Rudders..... RETRACT – HANDLE UP
2. Wing Flaps..... 24° (SECOND NOTCH)
3. Throttle..... FULL

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

FOR SHORT FIELD TAKEOFFS, APPLY AND HOLD BRAKES WHILE THROTTLE AND MIXTURE ARE SET.

4. Mixture..... RICH - (OR LEAN FOR MAXIMUM RPM ABOVE 3000 FEET)
5. Rotate..... FOR LIFT-OFF
6. Wing Flaps..... UP, AFTER ALL OBSTACLES ARE CLEARED.
7. Landing Gear..... RETRACT

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

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

LANDING

LANDING ON WATER

1. Touchdown..... SLIGHTLY TAIL LOW
2. Control Wheel..... HOLD FULL AFT AS AMPHIBIAN DECELERATES TO TAXI SPEED

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

WITH FORWARD LOADING, A SLIGHT NOSE-DOWN PITCH MAY 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. Brakes..... USE AS REQUIRED

AFTER LANDING

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

AMPLIFIED PROCEDURES

TAXIING ON WATER

Taxi with water rudders down. It is best to limit the engine to 800 RPM for normal taxi because water piles up in front of the float bow at higher engine speeds. Taxiing with higher engine RPM may result in engine overheating and will not appreciably increase the taxi speed. In addition, it may lead to water spray striking the propeller tips, causing propeller tip erosion.

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 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.

TAKEOFF ON WATER

Start the takeoff by applying full throttle 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 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 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).

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.

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

There is no substitute for proper and complete 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.

ENGINE FAILURE:

ENGINE FAILURE DURING TAKEOFF RUN BEFORE BEING AIRBORNE

1. **Throttle.....IDLE**
2. **Control Wheel.....FULL AFT**
3. Mixture..... IDLE CUT-OFF
4. Ignition Switch.....OFF
5. Master Switch..... OFF

FORCED LANDINGS

EMERGENCY LANDING ON WATER WITHOUT ENGINE POWER

1. Landing Gear..... **UP** (4 blue lights)
2. Mixture..... **IDLE CUT-OFF**
3. Fuel Selector Valve..... **OFF**
4. Ignition Switch..... **OFF**
5. Water Rudders..... **UP**
6. Wing Flaps..... **AS REQUIRED**
7. Master Switch..... **OFF**
8. Doors..... **UNLATCH PRIOR TO APPROACH**
9. Touchdown..... **SLIGHTLY TAIL LOW**
10. 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.	Mixture	**IDLE CUT-OFF**
3.	Fuel Selector Valve	**OFF**
4.	Ignition Switch	**OFF**
5.	Water Rudders	**UP**
6.	Wing Flaps	**AS REQUIRED** (40° recommended)
7.	Master Switch	**OFF**
8.	Doors	**UNLATCH PRIOR TO APPROACH**
9.	Touchdown	**LEVEL ATTITUDE**
10.	Control Wheel	**FULL AFT** (AFTER LANDING)
11.	Brakes	**AS REQUIRED**

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

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DATE: MAY 17 1999

////////////////////
////***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° (3RD NOTCH)
5. Doors.....UNLATCH PRIOR TO TOUCHDOWN
6. Master Switch.....OFF
7. Touchdown.....LEVEL WITH MINIMUM SINK
8. Control Wheel.....FULL AFT (AFTER TOUCHDOWN)
9. Mixture.....IDLE CUT OFF (AFTER TOUCHDOWN)
10. Fuel.....OFF (AFTER TOUCHDOWN)

SECTION V

WEIGHT AND BALANCE

5.1 WEIGHT AND BALANCE DATA:

Weight and Balance Data pages 17 through 21 of this supplement are in effect for this modification, with exception, new Basic Empty Weight for entry on page 17 may be computed using Equipment Change page 24 in the Weight and Balance Data of the Airplane Flight Manual in lieu of reweighting floatplane per pages 18, 19, and 20 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.

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.

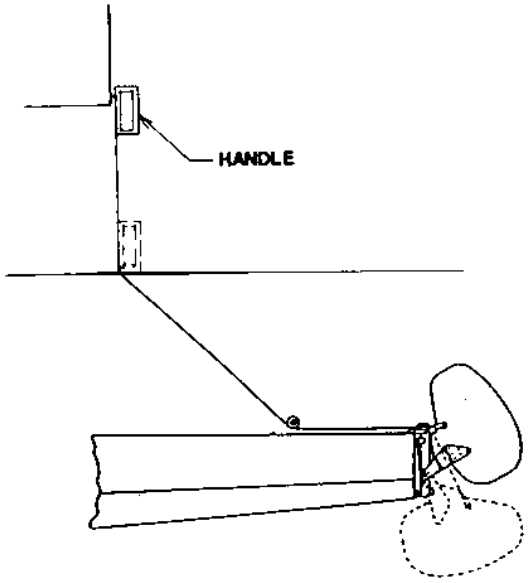

Figure 1

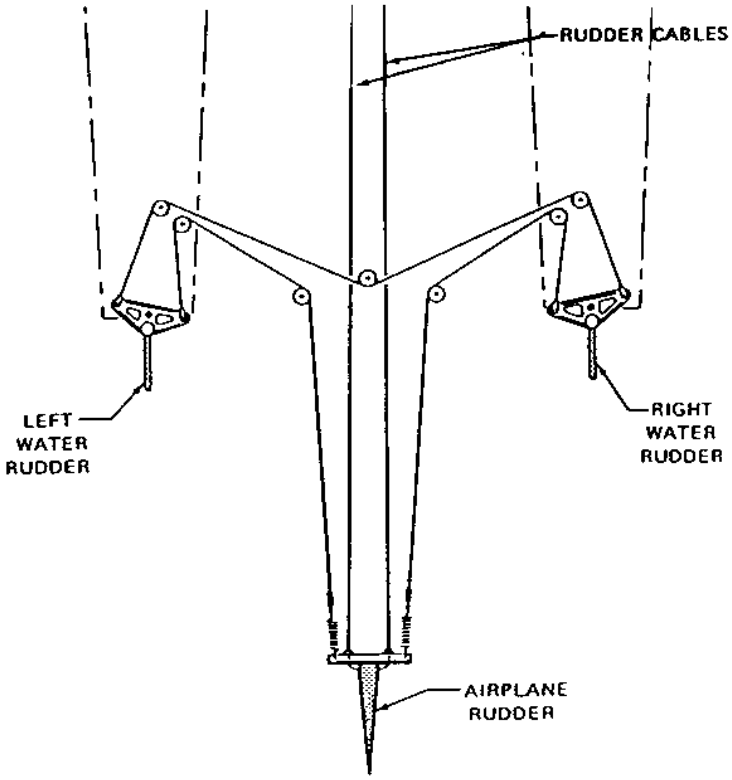

Figure 2

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DATE: MAY 17 1998

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-

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"

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DATE: MAY 17 1999

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.

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..... 2750 Lbs.

Useful Load..... _____ Lbs.

Empty Center of Gravity..... _____ Inches

Empty Weight Moment..... _____ Inch Lbs.

CENTER OF GRAVITY RANGE:

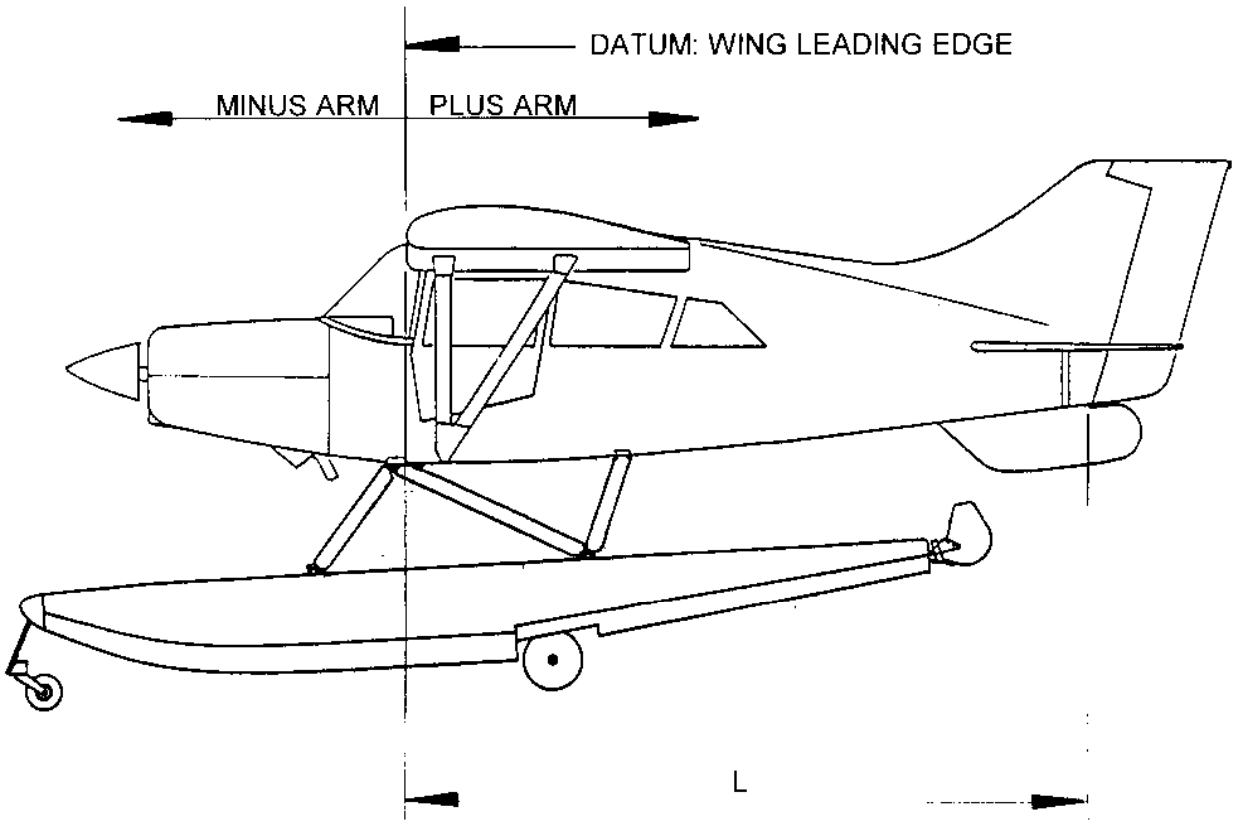
At Weight of	Center of Gravity Range
2750 lbs.	+14.0 to +19.0 inches
2100 lbs. or less	+12.0 to +19.0 inches

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 place 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 that the engine has approximately 8 quarts of oil in it for the IO-540 engine or 12 quarts for the O-540.

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 27.6 lbs.** at 24 inches and 8 quarts of oil at minus 34 inches for the IO-540 engine or 12 quarts of oil at minus 34 inches for the O-540 engine, 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 for the IO-540 engine or above weight less 20 lbs. drainable oil for

the O-540 engine at a minus arm of 34 inches, and for this airplane is_____lbs.

The corresponding empty weight center of gravity is_____inches.

*Use 1½ gallons and 9 lbs. with "A" or "B" fuel tank configuration.
**Use 18 lbs. with "A" or "B" fuel tank configuration.

5.1 WEIGHT AND BALANCE: (Cont'd)

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

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

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 2095 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)	2095	14.6	30,587
Pilot and Front Passenger	340	*	6,800
Fuel - 43 gal. in Mains	258	*	6,192
	2693	16.2	43,579

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

By locating the point corresponding to 2693 lb. aircraft weight and a C.G. Location of 16.2 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

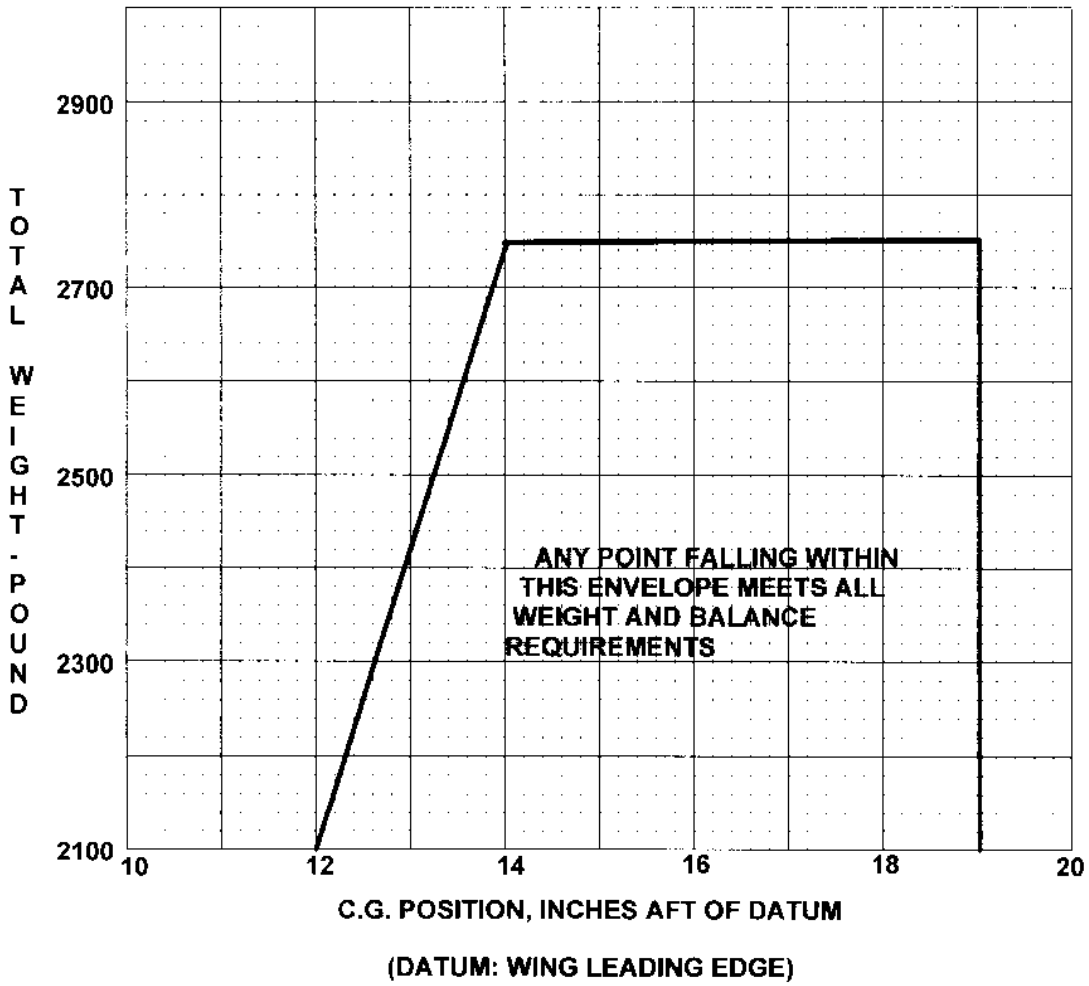
////////////////
////NOTE////
////////////////

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



M-7-235B on Wipline 3000 Amphibious Floats

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 10

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated ***19 October 1993*** when ***Hartzell*** *Model* ***HC-C2YR-1BF/8477D-6*** *or* ***HC-C3YR-1RF/F-7693(F)-( ) Propeller*** is installed in accordance with Maule Drawing No. ***5279F***.

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: _____
for Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: NOV 5 1993

Rev. A: APR 16 2002

Rev. B: JAN 28 2004

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2099 Georgia Hwy. 133 South~Moultrie, GA 31768
Tel: 912-985-2045~Fax: 912-890-2402

LOG OF REVISIONS

REV.	TO PAGE	DESCRIPTION	DATE AND APPROVAL
A	2	Added Propeller No. –7693(F) applicable for IO-540-W1A5 and -W1A5D engines.	FAA, Atlanta ACO Date: APR 16 2002
B	2	Added Noise Levels for Propeller No. –7693(F).	for FAA, Atlanta ACO Date: JAN 28 2004

SECTION II

LIMITATIONS

2.2 POWER PLANT LIMITS:

Propeller: Hartzell: HC-C2YR-1BF/8477D-6 (Use with -J3A5 or -B4B5 engines only)

HC-C3YR-1RF/F-7693(F)-( ) (Use with -J3A5, -W1A5, -W1A5D or -B4B5 engines only)
(Diameter limits: 78 to 76 inches)

3.5 NOISE LEVELS:

The following noise levels have been obtained per FAR 36, Appendix G for HC-C3YR-1RF/F-7693(F)-( ) propeller:

With -J3A5, -W1A5, or -W1A5D engine	73.8 dB(A)
With -B4B5 engine	78.3 dB(A)

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 11

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated **14 October 1993** when a Maule Model **M-7-235B aircraft is registered in Canada**.

The information contained herein supplements the information of the basic Airplane Flight Manual; for limitations, procedures and performance information consult the basic Airplane Flight Manual.

FAA APPROVED: Eugene R. Bollin
for Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: SEP 03 1999

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2099 Georgia Hwy. 133 South~Moultrie, GA 31768
Tel: 912-985-2045~Fax: 912-890-2402

The following Conversion Charts facilitate conversions between metric, imperial and U.S. units.

1. WEIGHT CONVERSIONS:

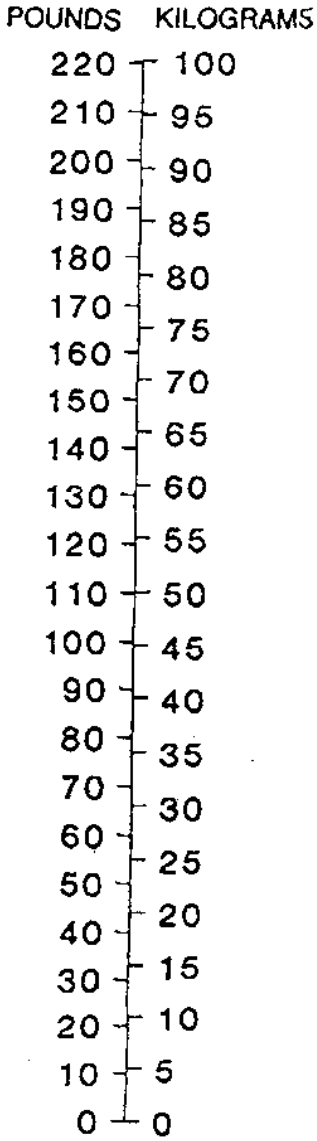
(Kilograms x 2.205 = Pounds) ~ (Pounds x .454 = Kilograms)

KILOGRAMS INTO POUNDS
KILOGRAMMES EN LIVRES

kg	0	1	2	3	4	5	6	7	8	9
	lb	lb.	lb.	lb.	lb.	lb.	lb.	lb	lb	lb.
0	..	2.205	4.409	6.614	8.819	11.023	13.228	15.432	17.637	19.842
10	22.046	24.251	26.456	28.660	30.865	33.069	35.274	37.479	39.633	41.888
20	44.093	46.297	48.502	50.706	52.911	55.116	57.320	59.525	61.729	63.934
30	66.139	68.343	70.548	72.753	74.957	77.162	79.366	81.571	83.776	85.980
40	88.185	90.390	92.594	94.799	97.003	99.208	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26
100	220.46	222.67	224.87	227.08	229.28	231.49	233.69	235.90	238.10	240.30

POUNDS INTO KILOGRAMS
LIVRES EN KILOGRAMMES

lb.	0	1	2	3	4	5	6	7	8	9
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
0	..	0.454	0.907	1.361	1.814	2.268	2.722	3.175	3.629	4.082
10	4.536	4.990	5.443	5.897	6.350	6.804	7.257	7.711	8.165	8.618
20	9.072	9.525	9.979	10.433	10.886	11.340	11.793	12.247	12.701	13.154
30	13.608	14.061	14.515	14.969	15.422	15.876	16.329	16.783	17.237	17.690
40	18.144	18.597	19.051	19.504	19.958	20.412	20.865	21.319	21.772	22.226
50	22.680	23.133	23.587	24.040	24.494	24.948	25.401	25.855	26.308	26.762
60	27.216	27.669	28.123	28.576	29.030	29.484	29.937	30.391	30.844	31.298
70	31.752	32.205	32.659	33.112	33.566	34.019	34.473	34.927	35.380	35.834
80	36.287	36.741	37.195	37.648	38.102	38.555	39.009	39.463	39.916	40.370
90	40.823	41.277	41.731	42.184	42.638	43.091	43.545	43.999	44.452	44.906
100	45.359	45.813	46.266	46.720	47.174	47.627	48.081	48.534	48.988	49.442



Units x 10, 100, etc

FAA APPROVED
DATE: SEP 03 1999

2. LENGTH CONVERSIONS:

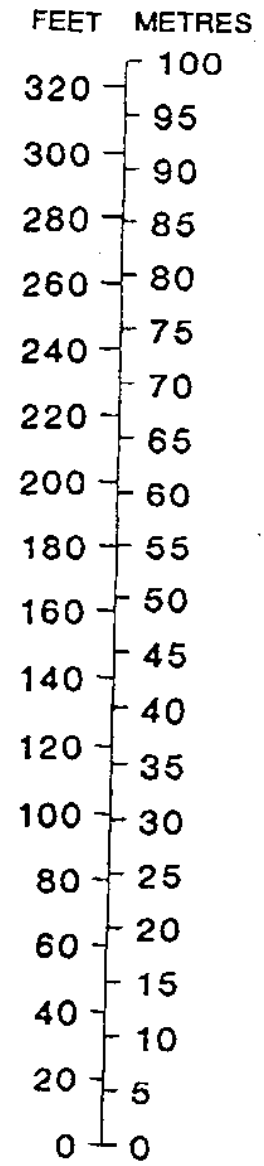
(Meters x 3.281 = Feet) ~ (Feet x .305 = Meters)

METRES INTO FEET
METRES EN PIEDS

m	0	1	2	3	4	5	6	7	8	9
	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet
0	..	3.281	6.562	9.842	13.123	16.404	19.685	22.966	26.247	29.528
10	32.808	36.089	39.370	42.651	45.932	49.212	52.493	55.774	59.055	62.336
20	65.617	68.897	72.178	75.459	78.740	82.021	85.302	88.582	91.863	95.144
30	98.425	101.71	104.99	108.27	111.55	114.83	118.11	121.39	124.67	127.95
40	131.23	134.51	137.79	141.08	144.36	147.64	150.92	154.20	157.48	160.76
50	164.04	167.32	170.60	173.88	177.16	180.45	183.73	187.01	190.29	193.57
60	196.85	200.13	203.41	206.69	209.97	213.25	216.53	219.82	223.10	226.38
70	229.66	232.94	236.22	239.50	242.78	246.06	249.34	252.62	255.90	259.19
80	262.47	265.75	269.03	272.31	275.59	278.87	282.15	285.43	288.71	291.99
90	295.27	298.56	301.84	305.12	308.40	311.68	314.96	318.24	321.52	324.80
100	328.08	331.36	334.64	337.93	341.21	344.49	347.77	351.05	354.33	357.61

FEET INTO METRES
PIEDS EN METRES

feet	0	1	2	3	4	5	6	7	8	9
	metres	metres	metres	metres	metres	metres	metres	metres	metres	metres
0	..	0.305	0.610	0.914	1.219	1.524	1.829	2.134	2.438	2.743
10	3.048	3.353	3.658	3.962	4.267	4.572	4.877	5.182	5.486	5.791
20	6.096	6.401	6.706	7.010	7.315	7.620	7.925	8.230	8.534	8.839
30	9.144	9.449	9.754	10.058	10.363	10.668	10.973	11.278	11.582	11.887
40	12.192	12.497	12.802	13.106	13.411	13.716	14.021	14.326	14.630	14.935
50	15.240	15.545	15.850	16.154	16.459	16.764	17.069	17.374	17.678	17.983
60	18.288	18.593	18.898	19.202	19.507	19.812	20.117	20.422	20.726	21.031
70	21.336	21.641	21.946	22.250	22.555	22.860	23.165	23.470	23.774	24.079
80	24.384	24.689	24.994	25.298	25.603	25.908	26.213	26.518	26.822	27.127
90	27.432	27.737	28.042	28.346	28.651	28.956	29.261	29.566	29.870	30.175
100	30.480	30.785	31.090	31.394	31.699	32.004	32.309	32.614	32.918	33.223



Units x 10, 100, etc.

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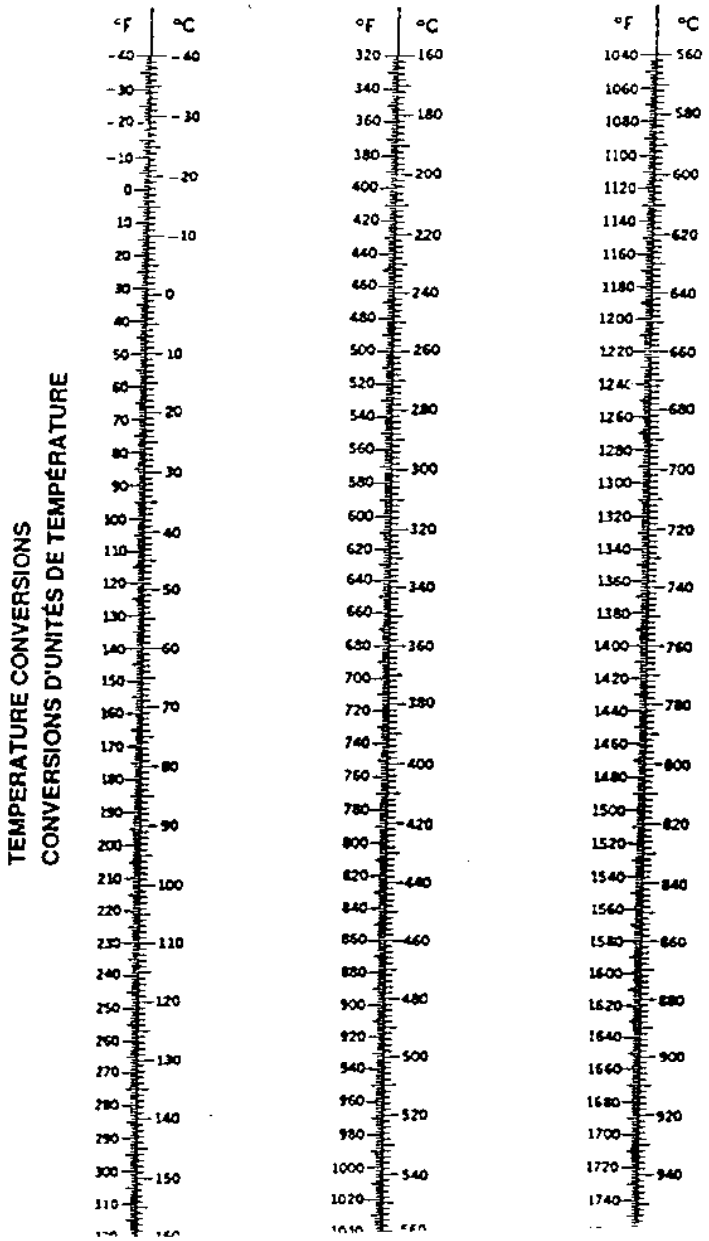
DATE: SEP 0 3 1999

3. TEMPERATURE CONVERSIONS:

(°F - 32) x 5/9 = °C x 9/5 + 32 = °F)

TEMPERATURE CONVERSIONS



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DATE: SEP 0 3 1999

4. VOLUME CONVERSIONS:

(Imperial Gallons x 1.2 = US Gallons) ~ (US Gallons x .833 = US Gallons)
(US Gallons x 3.785 = Liters) ~ (Liters x .264 = US Gallons)

IMPERIAL GALLONS	US GALLONS
100	120
95	115
90	110
	105
85	100
80	95
75	90
70	85
65	80
	75
60	70
55	65
50	60
45	55
40	50
	45
35	40
30	35
25	30
20	25
	20
15	15
10	10
5	5
0	0

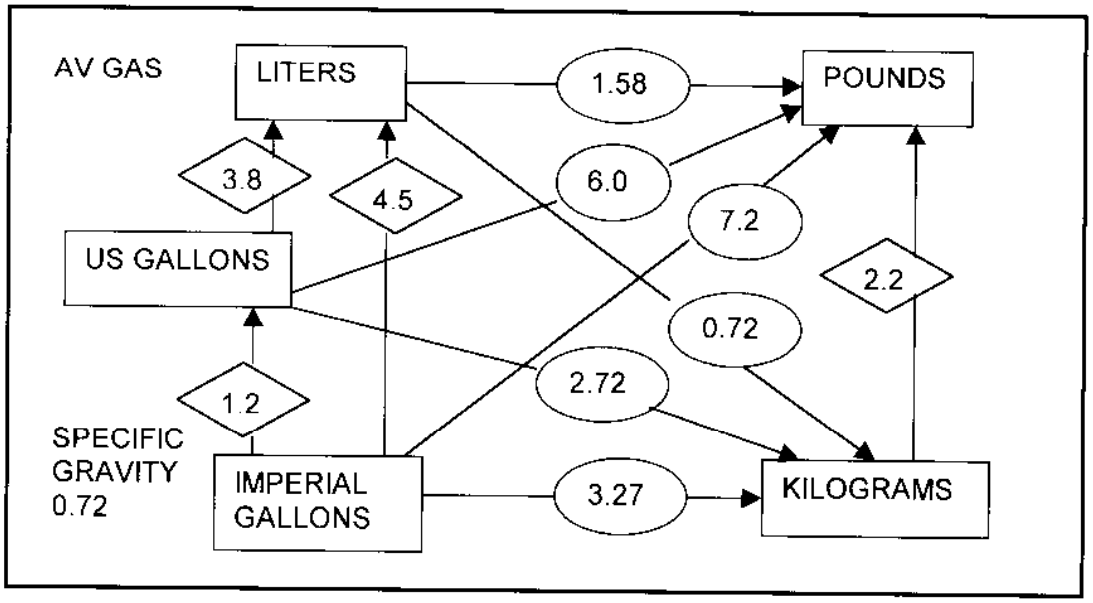
US GALLONS	LITRES
100	
95	360
90	340
85	320
80	300
75	280
70	260
65	240
60	220
55	200
50	180
45	160
40	140
35	120
30	100
25	80
20	60
15	40
10	20
5	0
0	

Units x 10, 100, 1000, etc.

FAA APPROVED
DATE: SEP 03 1999

5. QUICK CONVERSIONS:

In a world of US, Imperial and metric measures, below is a quick way to convert from one system to another. Follow arrow and multiply; backtrack the arrow and divide. Bear in mind that these figures are approximations for quick reference but with enough accuracy to eliminate gross errors.



FAA APPROVED
DATE: SEP 03 1999

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 12

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 50 Two Axis Auto-pilot Model ST-418-50*** *(14 volt)* installed in accordance with *Maule Drawing No.* ***9193A****, Rev. B or later revision.*

The information contained herein supplements or supersedes the basic manual; for limitations, procedures and performance information not contained in this supplement consult the basic Airplane Flight Manual.

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

DATE: JAN 0 5 2000

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2099 Georgia Hwy. 133 South~Moultrie, GA 31768
Tel: 912-985-2045~Fax: 912-890-2402

LOG OF REVISIONS				
REV.	PAGES AFFECTED	DESCRIPTION	APPROVED	DATE

SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 50 Two Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot operation prohibited above 165 MPH CAS.
2. Autopilot use prohibited with more than 24° (2 notches) flap extended.
3. Go-around or missed approach maneuver not authorized.
4. Autopilot must be OFF for takeoff and landing.
5. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
6. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation to be installed in clear view of the pilot.
7. Category I operations only.

SECTION III

NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 50 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes an automatic pre-flight test feature that allows a visual check of all the annunciator lamps and checks critical elements of the accelerometer system. The test feature will not enable autopilot function unless the automatic test sequence is satisfactorily completed.

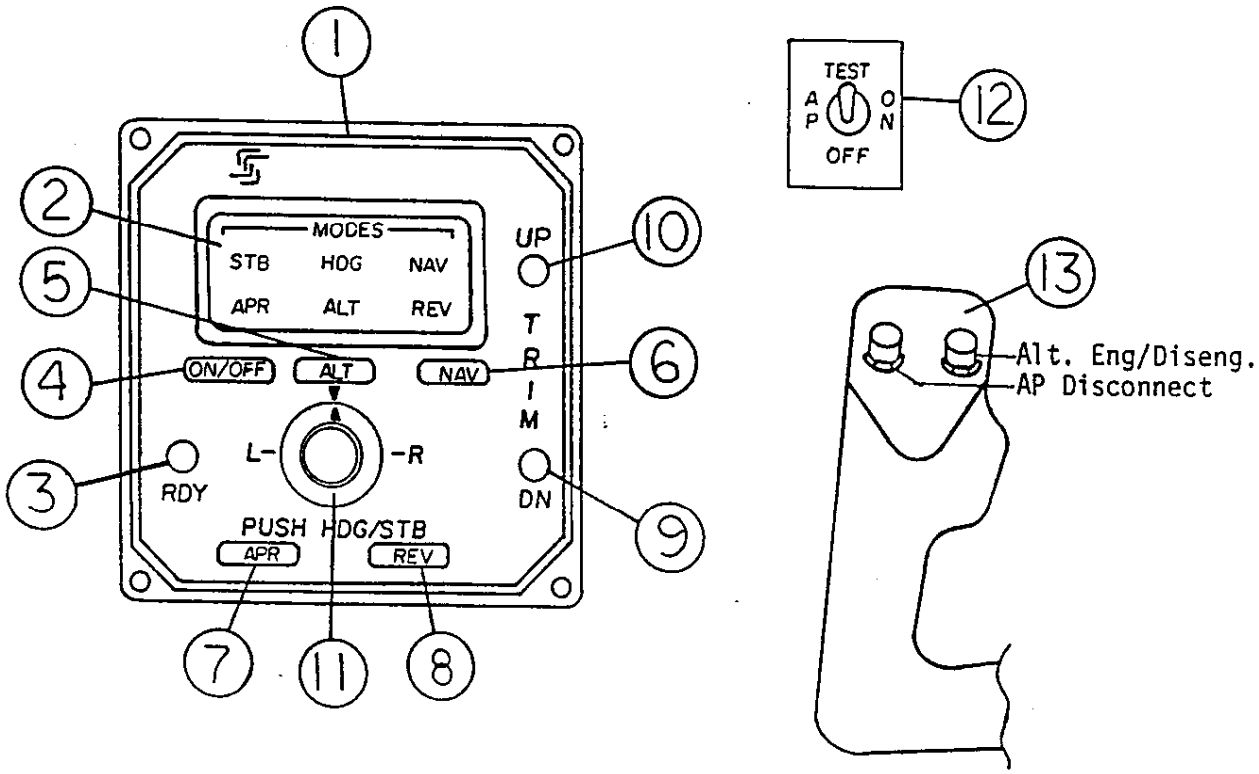
////////////////
////NOTE////
////////////////

The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

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

To optimize autopilot controllability, abrupt flap extension and retraction as well as large, rapid power changes should be avoided.

When the pre-flight test is satisfactorily completed and when the rate gyro RPM is correct, the green "RDY" light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.



FAA APPROVED
DATE: JAN 0 5 2000

Pitch axis control is provided for the altitude hold function by use of the accelerometer and the pressure transducer. When the altitude hold mode is engaged, an elevator trim sensor in the pitch servo will detect the elevator trim condition. When elevator trim is necessary to re-establish a trimmed condition, trim indicator lights on the programmer unit will illuminate to indicate the direction to trim to restore a trimmed condition.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.

1. Mode Programmer and Annunciator Unit - Provides mode switches and annunciation for the system.

2. Mode Annunciation Window - Displays mode in use.

3 Ready Light (RDY) - Green RDY lamp illuminates when autopilot is ready for engagement.

5. ON-OFF Stabilizer Mode Switch - Momentary actuation engages roll system in stabilizer (STB) Mode and allows use of the turn knob (Item 11) to command turn rate desired. When the system is operating a momentary actuation will disengage the system and cancel all annunciations.

5. Altitude Mode Switch (ALT) - Momentary actuation will engage altitude hold mode or disengage altitude mode if previously engaged. This function is also available by use of an optional control wheel mounted altitude engage/disengage switch, for added convenience.

6. Navigation Mode Switch (NAV) - Momentary activation will engage the VOR Tracking Mode. This mode provides low system gain for comfortable cross-country tracking.

7. Approach Mode Switch (APR) - Momentary actuation will engage the VOR or Localizer Tracking Mode. This mode provides a higher level of system gain for more active tracking of VOR or Localizer front course signals.

8. Reverse Approach Mode Switch (REV) - Momentary activation will engage the reverse tracking mode for use when tracking a Localizer backcourse. This mode provides the same system gain as the APR Mode with reverse needle sensing.

9. Down TRIM Light (DN) - This light illuminates to indicate the need for nose <u>down</u> trim. When both the <u>UP</u> and <u>DN</u> lights are not lighted, the aircraft is in trim longitudinally.

10. UP Trim Light (UP) - This light illuminates to indicate the need for nose <u>UP</u> trim.

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11. Turn Knob and Heading Switch - The turn knob allows the selection of turn rates up to standard rate (3°/second) either right or left. Turning the knob to the right or left will cause a turn that is proportional to the displacement of the knob from center. For level flight, the electronics provide a small dead zone of approximately 10° at the center indice. To actuate heading mode, momentarily depress the turn knob. To return to STB Mode from HDG, depress the turn knob. When the system is operating in any radio mode and the system is equipped with a D.G., depressing the turn knob will return the system to HDG Mode directly.

12. Autopilot Master ON-OFF Test Switch - Refer to Pre-Flight Procedures for operating details.

13. Optional remote AP disconnect switch and/or remote altitude hold engage-disengage switch.

PRE-FLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 VDC minimum.)

MANDATORY PRE-FLIGHT TEST

1. AP Master Switch - Move to TEST position.

   a. Observe all lights and annunciators illuminate.
   b. Observe the following light sequence of the trim indicators: (Sequence requires 9 seconds.)

      1. Initially both trim UP & ON lights are illuminated.
      2. Up light extinguishes momentarily and relights.
      3. DN light then extinguishes and will remain off.

2. AP Master Switch - Move to ON position, observe ready (RDY) light illuminates. Autopilot can be engaged and disengaged repeatedly without repeating the test sequence until electrical power is removed. Once power is interrupted the test must be reconducted to get a ready indication. If the ready light does not illuminate after the test a failure to pass the test is indicated and the system will require service.

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////NOTE////
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Altitude mode cannot be engaged unless power is on for more than 15 seconds.

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SYSTEM FUNCTIONAL TEST

3. Depress ON-OFF Switch - STB Annunciator illuminates. Rotate turn knob to the left and observe left rudder pedal moves forward. Repeat same thing to right. Center turn knob.

4. Set D.G. and place bug under lubber line (if installed). Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug left and right - observe proper left/ right rudder pedal action.

5. Overpower Test - Using rudder pedal action, overpower rudder servo left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

6. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage NAV Mode and move VOR OBS so that VOR needle moves left. Left rudder pedal moves slowly forward. Repeat same test with a right needle deflection.

   B. Select REV Mode - the rudder pedals should move in opposite direction of the NAV needle. (With a left needle deflection, the right pedal should move forward.)

   C. Select APR Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by NAV Mode.

7. Move Pitch control to level flight position - Engage ALT Mode. Move control wheel fore and aft to overpower pitch servo clutch. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the pitch servo installation inspected prior to flight.

8. Trim Check - Manually apply backpressure to control wheel for 2-3 seconds - observe the DN trim light illuminates. Apply forward pressure to the control wheel for 2-3 seconds, observe the UP trim light illuminates. Move the control wheel to center - observe both UP/DN lights extinguish.

9. Hold control wheel and depress ON-OFF Switch - note that rudder and pitch servos release. Move control wheel and rudder pedals to confirm rudder and pitch motions are free, with no control restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

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////NOTE////
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The required pre-flight test can be conducted in flight if necessary. It should be noted, however, that when the UP/DN lights are flashing the pitch servo will momentarily engage and disengage. This alternate engage-disengage sequence is part of the test function. Because of the engage-disengage sequence the test should not be conducted while maneuvering.

1. Check - RDY light on.

2. Trim aircraft for existing flight condition. Maintain Yaw Trim during all Autopilot operations.

3. Center turn-knob - depress ON-OFF Switch.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and depress knob to engage heading mode, select headings as desired.

6. At desired altitude, depress ALT Mode Switch. Trim aircraft as necessary to establish cruise condition - disengage ALT Mode to climb or descend.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10° of the course heading.

3. Engage NAV Mode for VOR tracking.

4. Engage APR Mode for VOR or LOC approach.

To track the localizer front course outbound to the procedure turn area, maneuver to the localizer center and, when on the outbound heading, select REV Mode. To track the localizer back course inbound, maneuver to the localizer back course center and, when on the inbound heading, select REV Mode.

Approach Mode may be used to track VOR radials cross country if desired. Use of APR Mode for cross country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality NAV Mode may provide more accurate tracking even with reduced gain.

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SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:

   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
   b. Depressing the "ON-OFF" Switch on the autopilot programmer unit.
   c. Moving autopilot master switch to "OFF" position.
   d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

   The above values are the worst case for this aircraft.

SECTION V

WEIGHT AND BALANCE

Text of this Section not affected by installation of this equipment.

FAA APPROVED
DATE: JAN 0 5 2000

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 13

FOR

MAULE M-7-235B

(LANDPLANE CONFIGURATION)

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 30 Two Axis Auto-pilot Model ST-810-30*** *(14 volt)* installed in accordance with Maule Drawing No. ***9197A***, *Rev. A* or later revision.

The information contained herein supplements or supersedes the basic manual; for limitations, 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 21 2000

ITS PERFORMANCE THAT COUNTS!
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SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 30 Two Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

LIMITATIONS

1. Autopilot operation prohibited above 165 MPH CAS.
2. Autopilot use prohibited with more than 2 notches of flap extended.
3. Autopilot must be OFF for takeoff and landing.
4. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
5. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation to be installed in clear view of the pilot.

SECTION III

NORMAL PROCEDURES

SYSTEM DESCRIPTION

The System 30 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes an automatic pre-flight test feature that allows a visual check of all the annunciator lamps and checks critical elements of the accelerometer system. The test feature will not enable autopilot function unless the automatic test sequence is satisfactorily completed.

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////NOTE////
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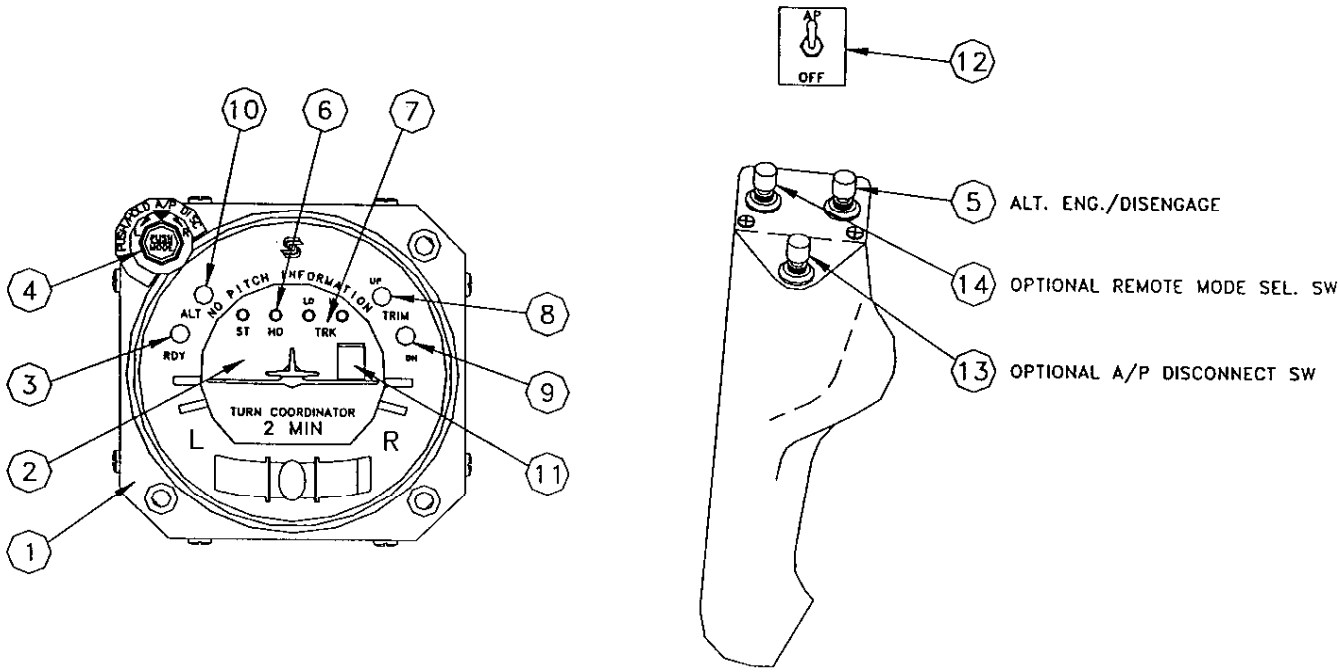
The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

When the pre-flight test is satisfactorily completed and when the rate gyro RPM is correct, the green "RDY" light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

Pitch axis control is provided for the altitude hold function by use of the accelerometer and the pressure transducer. When the altitude hold mode is engaged, an elevator trim sensor in the pitch servo will detect the elevator trim condition. When elevator trim is necessary to re-establish a trimmed condition, trim indicator lights on the programmer unit will illuminate to indicate the direction to trim to restore a trimmed condition. If the pilot ignores a trim light for more than five seconds, the light will begin to flash to get the pilot's attention.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.



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1. Turn Coordinator, Mode Programmer and Annunciator Unit - Provides basic flight information, autopilot mode switching and annunciation.

2. Mode Annunciation Window - Displays mode in use.

3 Green Ready (RDY) Light - Illuminates when autopilot is ready for engagement. When autopilot is disconnected "RDY" will flash for five seconds accompanied by beeping audio tone.

4. Mode Select/Disconnect Switch – Each momentary push of this knob will select an autopilot mode, left to right, beginning with ST (Stabilizer) mode and ending with (Hi) TRK mode. Holding the knob in for more than 2 seconds will disconnect the autopilot. Turning the knob left or right in the stabilizer mode will provide left/right commands to the autopilot proportional to knob displacement up to a standard rate turn.

5. Altitude Hold Engage/Disengage Switch – This control wheel mounted switch will engage or disengage the Altitude Hold mode as desired. The blue (ALT) light on the annunciator panel will illuminate when ALT. mode is engaged.

6. Heading Mode – If the system is equipped with a D.G., this mode will permit preselected left/right turns using the D.G. heading bug.

7. TRK (Track)- Using the (Lo) mode of the tracking feature will provide low system gain for comfortable cross country tracking of VOR or GPS signals. Using the (Hi) mode of the tracking feature will provide a higher level of system gain for more active tracking of VOR, GPS or Localizer front course signals.

8. Trim UP Light - Illuminates to indicate the need for nose UP trim.

9. Trim DOWN Light - Illuminates to indicate the need for nose DOWN trim. When both lights are out, the aircraft is in trim longitudinally.

10. Blue (ALT) light illuminates when altitude mode is engaged.

11. Flag Window - Red flag visible indicates lack of power (12/24 Volt) to primary turn coordinator unit.

12. Autopilot Master ON-OFF Switch - Refer to pre-flight procedures for operating details.

13. Optional remote AP disconnect switch.

14. Optional Remote Mode Selector Switch - Allows mode selection from the control wheel. Also disconnects autopilot when depressed for approximately two seconds.

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PREFLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 or 24 VDC minimum as appropriate.)

MANDATORY PRE-FLIGHT TEST

1. AP Master Switch - Move to A/P (on) position.

   A. Observe all lights and annunciators illuminate.
   B. Observe the following light sequence of the trim indicators: (Sequence requires 9 seconds.)

      1. Initially both trim UP & DN lights are illuminated.
      2. Up light extinguishes and remains off.
      3. DN light then extinguishes and remains off.
      4. All lights extinguish except for "RDY" light.

2. The autopilot can now be engaged and disengaged repeatedly but once the A/P Master is switched off, the test must be reconducted to get a "Ready" indication. If the "Ready" light does not illuminate after the test, a failure to pass the test is indicated and the system will require service.

////////////////
////NOTE////
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Altitude mode cannot be engaged unless power is on for more than 15 seconds.

SYSTEM FUNCTIONAL TEST

3. Push Mode Switch - STB Annunciator illuminates. Rotate turn knob to the left observe that left rudder pedal moves slowly forward. Repeat same test to the right then center the turn knob.

4. Set D.G. and place bug under lubber line (if installed) push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug to the left and observe that the left rudder pedal moves forward. Repeat same test to the right.

5. Overpower Test - Overpower rudder servo using the rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

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6. Radio Check – A. Turn on NAV Radio, with valid NAV signal, engage Lo TRK Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal moves forward with left needle, right pedal moves forward with right needle.

   B. Select Hi TRK Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by Lo TRK Mode.

7. Move control wheel to level flight position - Engage ALT Mode. Move control wheel fore and aft to overpower pitch servo clutch. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

8. Trim Check - Manually apply back pressure to control wheel for 2-3 seconds - observe the DN trim light illuminates. Apply forward pressure to the control wheel for 2-3 seconds, observe the UP trim light illuminates. Move the control wheel to center - observe both UP/DN lights extinguish.

9. Hold control wheel and push mode knob for 2 seconds - note that rudder and pitch servos release. Move control wheel and rudder pedals to confirm controls are free with no restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

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////NOTE////
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The required pre-flight test can be conducted in flight if necessary. It should be noted, however, that when the UP/DN lights are flashing the pitch servo will momentarily engage and disengage. This alternate engage-disengage sequence is part of the test function. Because of the engage-disengage sequence the test should not be conducted while maneuvering.

1. Check - RDY light on.

2. Trim aircraft for existing flight condition.

3. Center turn knob - Press turn knob to select stabilizer mode.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and press knob to engage heading mode, select headings as desired.

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6. At desired altitude, press ALT Mode Switch on control wheel. Trim aircraft as necessary to establish cruise condition – disengage ALT Mode to climb or descend.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10 degrees of the course heading.

3. Engage Lo TRK Mode for VOR tracking.

4. Engage Hi TRK Mode for VOR or LOC approach.

Hi TRK Mode may be used to track VOR radials cross-country if desired. Use of Hi TRK Mode for cross-country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality, Lo TRK Mode may provide more accurate tracking even with reduced gain.

GPS TRACKING AND GPS APPROACH

1. Begin track with a reliable GPS signal and CDI needle centered, with aircraft on the suggested heading to the waypoint.

2. Select the Hi track mode for GPS tracking or GPS approach.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:

   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
   b. Press and hold the mode selector knob for approximately 2 seconds.
   c. Moving autopilot master switch to "OFF" position.
   d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

The above values are the worst case for this aircraft.

SECTION V

WEIGHT AND BALANCE

See Section I, Items 4 and 5 for weight and balance limitations.

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DATE: JAN 2 1 2000

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 14

FOR

MAULE M-7-235B

(FLOATPLANE OR AMPHIBIAN CONFIGURATION)

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 30 Two Axis Auto-pilot Model ST-810-30*** *(14 volt)* installed in accordance with Maule Drawing No. ***9197A***, *Rev. A* or later revision.

The information contained herein supplements or supersedes the basic manual; for limitations, procedures and performance information not contained in this supplement consult the basic Airplane Flight Manual.

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

DATE: JAN 21 2000

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SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 30 Two Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

LIMITATIONS

1. Autopilot operation prohibited above 150 MPH IAS.
2. Autopilot operation prohibited below 75 MPH in Floatplane configuration.
3. Flap extension or retraction limited to 24° (2 notches) down during autopilot operations.
4. Autopilot operation prohibited during takeoff and landing.

SECTION III

NORMAL PROCEDURES

SYSTEM DESCRIPTION

The System 30 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes an automatic pre-flight test feature that allows a visual check of all the annunciator lamps and checks critical elements of the accelerometer system. The test feature will not enable autopilot function unless the automatic test sequence is satisfactorily completed.

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////NOTE////
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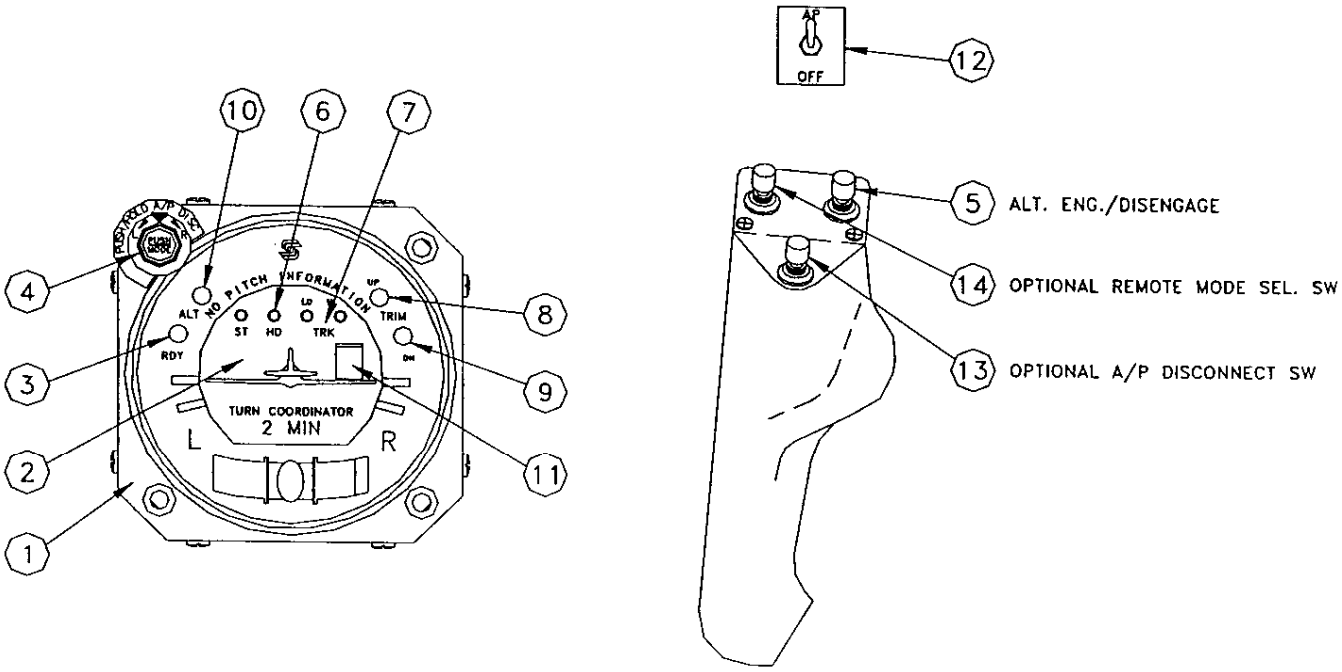
The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

When the pre-flight test is satisfactorily completed and when the rate gyro RPM is correct, the green "RDY" light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

Pitch axis control is provided for the altitude hold function by use of the accelerometer and the pressure transducer. When the altitude hold mode is engaged, an elevator trim sensor in the pitch servo will detect the elevator trim condition. When elevator trim is necessary to re-establish a trimmed condition, trim indicator lights on the programmer unit will illuminate to indicate the direction to trim to restore a trimmed condition. If the pilot ignores a trim light for more than five seconds, the light will begin to flash to get the pilot's attention.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.



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1. Turn Coordinator, Mode Programmer and Annunciator Unit - Provides basic flight information, autopilot mode switching and annunciation.

2. Mode Annunciation Window - Displays mode in use.

3 Green Ready (RDY) Light - Illuminates when autopilot is ready for engagement. When autopilot is disconnected "RDY" will flash for five seconds accompanied by beeping audio tone.

1. Mode Select/Disconnect Switch – Each momentary push of this knob will select an autopilot mode, left to right, beginning with ST (Stabilizer) mode and ending with (Hi) TRK mode. Holding the knob in for more than 2 seconds will disconnect the autopilot. Turning the knob left or right in the stabilizer mode will provide left/right commands to the autopilot proportional to knob displacement up to a standard rate turn.

2. Altitude Hold Engage/Disengage Switch – This control wheel mounted switch will engage or disengage the Altitude Hold mode as desired. The blue (ALT) light on the annunciator panel will illuminate when ALT. mode is engaged.

3. Heading Mode – If the system is equipped with a D.G., this mode will permit preselected left/right turns using the D.G. heading bug.

4. TRK (Track)- Using the (Lo) mode of the tracking feature will provide low system gain for comfortable cross country tracking of VOR or GPS signals. Using the (Hi) mode of the tracking feature will provide a higher level of system gain for more active tracking of VOR, GPS or Localizer front course signals.

5. Trim UP Light - Illuminates to indicate the need for nose UP trim.

6. Trim DOWN Light - Illuminates to indicate the need for nose DOWN trim. When both lights are out, the aircraft is in trim longitudinally.

7. Blue (ALT) light illuminates when altitude mode is engaged.

11. Flag Window - Red flag visible indicates lack of power (12/24 Volt) to primary turn coordinator unit.

12. Autopilot Master ON-OFF Switch - Refer to pre-flight procedures for operating details.

13. Optional remote AP disconnect switch.

14. Optional Remote Mode Selector Switch - Allows mode selection from the control wheel. Also disconnects autopilot when depressed for approximately two seconds.

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PREFLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 or 24 VDC minimum as appropriate.)

MANDATORY PRE-FLIGHT TEST

1. AP Master Switch - Move to A/P (on) position.

   A. Observe all lights and annunciators illuminate.
   B. Observe the following light sequence of the trim indicators: (Sequence requires 9 seconds.)

      1. Initially both trim UP & DN lights are illuminated.
      2. Up light extinguishes and remains off.
      3. DN light then extinguishes and remains off.
      4. All lights extinguish except for "RDY" light.

2. The autopilot can now be engaged and disengaged repeatedly but once the A/P Master is switched off, the test must be reconducted to get a "Ready" indication. If the "Ready" light does not illuminate after the test, a failure to pass the test is indicated and the system will require service.

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

Altitude mode cannot be engaged unless power is on for more than 15 seconds.

SYSTEM FUNCTIONAL TEST

3. Push Mode Switch - STB Annunciator illuminates. Rotate turn knob to the left observe that left rudder pedal moves slowly forward. Repeat same test to the right then center the turn knob.

4. Set D.G. and place bug under lubber line (if installed) push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug to the left and observe that the left rudder pedal moves forward. Repeat same test to the right.

5. Overpower Test - Overpower rudder servo using the rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

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6. Radio Check – A. Turn on NAV Radio, with valid NAV signal, engage Lo TRK Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal moves forward with left needle, right pedal moves forward with right needle.

   B. Select Hi TRK Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by Lo TRK Mode.

7. Move control wheel to level flight position - Engage ALT Mode. Move control wheel fore and aft to overpower pitch servo clutch. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

8. Trim Check - Manually apply back pressure to control wheel for 2-3 seconds - observe the DN trim light illuminates. Apply forward pressure to the control wheel for 2-3 seconds, observe the UP trim light illuminates. Move the control wheel to center - observe both UP/DN lights extinguish.

9. Hold control wheel and push mode knob for 2 seconds - note that rudder and pitch servos release. Move control wheel and rudder pedals to confirm controls are free with no restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

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////NOTE////
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The required pre-flight test can be conducted in flight if necessary. It should be noted, however, that when the UP/DN lights are flashing the pitch servo will momentarily engage and disengage. This alternate engage-disengage sequence is part of the test function. Because of the engage-disengage sequence the test should not be conducted while maneuvering.

1. Check - RDY light on.

2. Trim aircraft for existing flight condition.

3. Center turn knob - Press turn knob to select stabilizer mode.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and press knob to engage heading mode, select headings as desired.

FAA APPROVED
DATE: JAN 2 1 2000

6. At desired altitude, press ALT Mode Switch on control wheel. Trim aircraft as necessary to establish cruise condition – disengage ALT Mode to climb or descend.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10 degrees of the course heading.

3. Engage Lo TRK Mode for VOR tracking.

4. Engage Hi TRK Mode for VOR or LOC approach.

Hi TRK Mode may be used to track VOR radials cross-country if desired. Use of Hi TRK Mode for cross-country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality, Lo TRK Mode may provide more accurate tracking even with reduced gain.

GPS TRACKING AND GPS APPROACH

1. Begin track with a reliable GPS signal and CDI needle centered, with aircraft on the suggested heading to the waypoint.

2. Select the Hi track mode for GPS tracking or GPS approach.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:

    a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
    b. Press and hold the mode selector knob for approximately 2 seconds.
    c. Moving autopilot master switch to "OFF" position.
    d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Climb	30°/NONE	3°
Cruise	50°/-180'	4°
Descent	40°/-200'	3°

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Maneuvering	20°/-50'	3°
Approach (coupled or uncoupled)	15°/-20'	3°

The above values are the worst case for this aircraft.

SECTION V

WEIGHT AND BALANCE

Text of this Section not affected by installation of this equipment.

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 15

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 50 Two Axis Autopilot Model ST-609-50*** *(28 volt)* installed in accordance with *Maule Drawing No.* ***9200A,*** *rev.* ***A*** *or later revision.*

The information contained herein supplements the information of the basic manual; for limitations, procedures and performance information not contained in this supplement consult the basic Airplane Flight Manual.

FAA APPROVED for Rick Jones
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: FEB 1 4 2000

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LOG OF REVISIONS				
REV.	PAGES AFFECTED	DESCRIPTION	APPROVED	DATE

SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 50 Two Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot operation prohibited above 165 MPH IAS.
2. Flap extension or retraction limited to 24° (2 notches) down during operations in altitude hold mode.
3. Autopilot must be OFF for takeoff and landing.
4. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
5. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation to be installed in clear view of the pilot.

SECTION III

NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 50 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes a pre-flight test feature that allows a visual check of all the annunciator lamps.

When the pre-flight test is satisfactorily completed and when the rate gyro RPM is correct, the green "RDY" light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

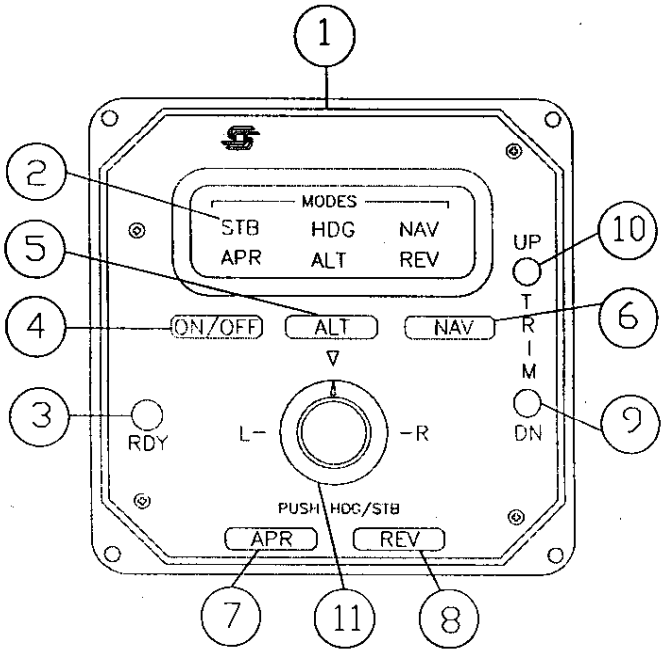
Pitch axis control is provided for the altitude hold function by use of the accelerometer and the pressure transducer. When the altitude hold mode is engaged, an elevator trim sensor in the pitch servo will detect the elevator trim condition. When elevator trim is necessary to reestablish a trimmed condition, trim indicator lights on the programmer unit will illuminate to indicate the direction to trim to restore a trimmed condition.

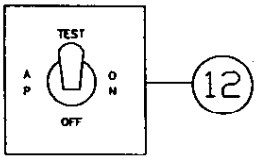
The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.

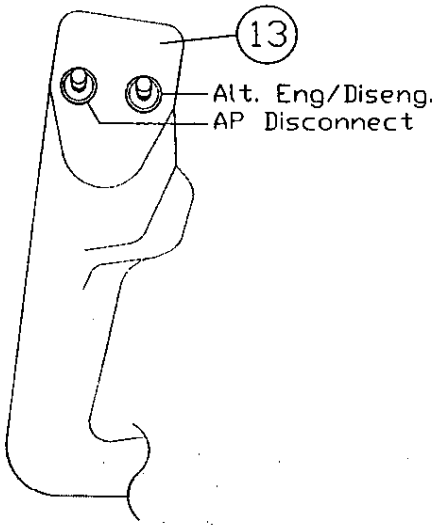
1. Mode Programmer and Annunciator Unit - Provides mode switches and annunciation for the system.

2. Mode Annunciation Window - Displays mode in use.

3. Ready Light (RDY) - Green RDY lamp illuminates when autopilot is ready for engagement.







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4. ON-OFF Stabilizer Mode Switch - Momentary actuation engages roll system in stabilizer (STB) Mode and allows use of the turn knob (Item 11) to command turn rate desired. When the system is operating a momentary actuation will disengage the system and cancel all annunciations.

5. Altitude Mode Switch (ALT) - Momentary actuation will engage altitude hold mode or disengage altitude mode if previously engaged. This function is also available by use of an optional control wheel mounted altitude engage/disengage switch, for added convenience.

6. Navigation Mode Switch (NAV) - Momentary activation will engage the VOR Tracking Mode. This mode provides low system gain for comfortable cross-country tracking.

7. Approach Switch (APR) - Momentary actuation will engage the VOR or Localizer Tracking Mode. This mode provides a higher level of system gain for more active tracking of VOR or Localizer front course signals.

8. Reverse Approach Mode Switch (REV) - Momentary activation will engage the reverse tracking mode for use when tracking a localizer backcourse. This mode provides the same system gain as the APR Mode with reverse needle sensing.

9. Down TRIM Light (DN) - This light illuminates to indicate the need for nose down trim. When both the UP and DN lights are not lighted, the aircraft is in trim longitudinally.

10. UP Trim Light (UP) - This light illuminates to indicate the need for nose UP trim.

11. Turn Knob and Heading Switch - The turn knob allows the selection of turn rates up to standard rate (3°/second) either right or left. Turning the knob to the right or left will cause a turn that is proportional to the displacement of the knob from center. For level flight the electronics provide a small dead zone of approximately 10° at the center indice. To actuate heading mode, momentarily depress the turn knob. To return to STB Mode from HDG, depress the turn knob. When the system is operating in any radio mode and the system is equipped with a D.G., depressing the turn knob will return the system to HDG Mode directly.

12. Autopilot Master ON-OFF Test Switch - Refer to Pre-Flight Procedures for operating details.

13. Optional remote AP disconnect switch and/or remote altitude hold engage-disengage switch.

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DATE: FEB 1 4 2000

PRE-FLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 or 24 VDC minimum as appropriate)

MANDATORY PRE-FLIGHT TEST

1. AP Master Switch - Move to TEST position.

   a. Observe all lights and annunciators illuminate.
   b. Observe the following light sequence of the trim indicators: (Sequence requires 9 seconds)

      1. Initially both trim UP & DN lights are illuminated.
      2. Up light extinguishes momentarily and relights.
      3. DN light then extinguishes and will remain off.

2. AP Master Switch - Move to ON position, observe ready (RDY) light illuminates. Autopilot can be engaged and disengaged repeatedly without repeating the test sequence until electrical power is removed. Once power is interrupted the test must be reconducted to get a ready indication. If the ready light does not illuminate after the test, a failure to pass the test is indicated and the system will require service.

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////NOTE////
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ALTITUDE MODE CANNOT BE ENGAGED UNLESS POWER IS ON FOR MORE THAN 15 SECONDS.

SYSTEM FUNCTIONAL TEST

3. Depress ON-OFF Switch - STB Annunciator illuminates. Rotate turn knob to the left and observe left rudder pedal moves forward. Repeat same thing to right. Center turn knob.

4. Set D.G. and place bug under lubber line (if installed). Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug left and right. Observe proper left/ right rudder pedal action.

5. Overpower Test - Using rudder pedal action, overpower rudder servo left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

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6. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage NAV Mode and move VOR OBS so that VOR needle moves left. Left rudder pedal moves slowly forward. Repeat same test with a right needle deflection.

   B. Select REV Mode - the rudder pedals should move in opposite direction of the NAV needle. (With a left needle deflection, right pedal should move forward).

   C. Select APR Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by NAV Mode.

7. Move pitch control to level flight position - Engage ALT Mode. Move control wheel fore and aft to overpower pitch servo clutch. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

8. Trim Check - Manually apply backpressure to control wheel for 2-3 seconds - observe the DN trim light illuminates. Apply forward pressure to the control wheel for 2-3 seconds, observe the UP trim light illuminates. Move the control wheel to center - observe both UP/DN lights extinguish.

9. Hold control wheel and depress ON-OFF Switch - note that rudder and pitch servos release. Move control wheel and rudder pedals to confirm rudder and pitch motions are free with no control restriction or binding. If the optional disconnect switch is installed, it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

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////NOTE////
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The required pre-flight test can be conducted in flight, if necessary. It should be noted, however, that when the UP/DN lights are flashing the pitch servo will momentarily engage and disengage. This alternate engage-disengage sequence is part of the test function. Because of the engage-disengage sequence the test should not be conducted while maneuvering.

1. Check - RDY light on.

2. Trim aircraft for existing flight condition. Maintain Yaw Trim during all Autopilot operations.

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3. Center turn-knob - depress ON-OFF Switch.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and depress knob to engage heading mode, select headings as desired.

6. At desired altitude, depress ALT Mode Switch. Trim aircraft as necessary to establish cruise condition - disengage ALT Mode to climb or descend.

VOR TRACKING AND VOR-LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10° of the course heading.

3. Engage NAV Mode for VOR tracking.

4. Engage APR Mode for VOR or LOC approach.

To track the localizer front course outbound to the procedure turn area, maneuver to the localizer center and, when on the outbound heading, select REV Mode. To track the localizer back course inbound, maneuver to the localizer back course center and, when on the inbound heading, select REV Mode.

Approach Mode may be used to track VOR radials cross country, if desired. Use of APR Mode for cross country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality, NAV Mode may provide more accurate tracking even with reduced gain.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

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1. Autopilot may be disconnected by:

   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
   b. Depressing the "ON-OFF" Switch on the autopilot programmer unit.
   c. Moving autopilot master switch to "OFF" position.
   d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

   The above values are the worst case for this aircraft.

SECTION V

WEIGHT AND BALANCE

See Section II, Items 5 and 6, for weight and balance limitations.

FAA APPROVED
DATE: FEB 1 4 2000

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 16

FOR

MAULE M-7-235B

(LANDPLANE CONFIGURATION)

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 55 Two Axis Autopilot Model ST-620*** *(14 volt)* installed in accordance with *Maule Drawing No.* ***9196A****, Rev.* ***A*** *or later.*

The information contained herein supplements or supersedes the basic manual. For limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: Chuck Walker

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

DATE: APR 04 2000

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SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 55 Two Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot use prohibited above 165 MPH CAS.
2. Autopilot use prohibited with more than 24° (2 notches) flap extended.
3. Go-around or missed approach maneuver not authorized.
4. Autopilot must be "OFF" for takeoff and landing.
5. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
6. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation, to be installed in clear view of the pilot.
7. Category I operations only.
8. Autopilot use prohibited below 200' AGL during coupled approach operations.

SECTION III

NORMAL OPERATING PROCEDURES

For detailed operating instructions, including system description, pre-flight and inflight procedures refer to S-TEC System 55 Pilot's Handbook, P/N 8747.

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

The S-TEC autopilot installation in this aircraft uses servo control about the pitch and yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

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

To optimize autopilot controllability, abrupt flap extension and retraction as well as large, rapid power changes should be avoided.

FAA APPROVED
DATE: APR 0 4 2000

ELECTRIC TRIM SYSTEM (IF INSTALLED)

The S-TEC Electric Trim System is designed to accept any single failure, either mechanical or electrical, without uncontrolled operation resulting during operations in the Manual Electric Trim Mode. During autotrim mode the system is designed to limit the effect of any failure causing trim operation. In order to assure proper operation of these safeguards, it is necessary to conduct a simple pre-flight test of the system. Following is the trim pre-flight test procedure:

ELECTRIC TRIM CHECK (IF OPTIONAL AUTOTRIM IS INSTALLED)

Manual Electric Trim - Test Prior to Each Flight

a. Trim Switch and A/P Master Switch - ON

b. Operate Trim Switch (Both Knob Sections) - Nose DN - Check trim moves nose down and trim in motion indicator ("TRIM") in A/P Programmer flashes. Operate trim switch - Nose UP - Check trim moves nose up and for "in motion" trim light.

c. With trim operating Nose UP and DN - grasp manual trim control and overpower electric trim to stop trim action.

d. Operate each half of the trim switch separately - trim should not operate unless both switch knob segments are moved together.

e. With Trim Operating - Depress trim interrupt switch – Trim motion should stop while interrupt switch is depressed - when released trim should operate normally.

Autotrim

a. Engage HDG and VS modes of the autopilot.

b. Grasp control and apply forward pressure (NOSE DOWN) - After approximately three (3) seconds trim should run NOSE UP.

c. Apply aft pressure (NOSE UP) to control wheel - after approximately three (3) seconds trim should run NOSE DOWN.

d. Move manual trim switch UP or DN - Autopilot should disconnect and trim operates in the commanded direction. (Trim Switch will disconnect autopilot only when pitch is engaged.)

e. Reengage autopilot HDG and VS Modes and depress Trim Interrupt/AP Disconnect Switch - Autopilot should disconnect.

f. Retrim aircraft for takeoff - Check all controls for freedom of motion and to determine that the autopilot and trim have disconnected.

If either the manual electric or autotrim fails any portion of the above check procedure, move the Trim Master Switch "OFF" and do not attempt to use the trim system until the fault is corrected. With the Trim Master Switch "OFF" the autopilot trim indicators and audio system will return to operation. If the electric trim system suffers a power failure in flight the system will automatically revert to the indicator lights and audio horn. If this occurs turn the Trim Master Switch "OFF" and trim manually, using the indicators until the fault can be located and corrected.

GLIDE SLOPE FLIGHT PROCEDURE

Approach the GS intercept point (usually the OM) with the flaps set to approach deflection of 0 - 24° (2 notches) at 85 - 95 MPH (See Limitations Section) and with the aircraft stabilized in altitude hold mode. At the glide slope intercept, adjust power for the desired descent speed. For best tracking results make power adjustments in small, smooth increments to maintain desired airspeed. At the missed approach point or the decision height, disconnect the autopilot for landing or for the go-around maneuver (See Limitations Section). If a missed approach is required, the autopilot may be reengaged after the aircraft has been reconfigured for and established in a stabilized climb.

OPTIONAL EQUIPMENT

ALTITUDE SELECTOR/VERTICAL SPEED SELECTOR P/N 0114 (OPTIONAL)

The altitude selector option operates in conjunction with an altitude encoder and transponder. For detailed operating procedures refer to the Pilot's Handbook for Altitude Selector and Altitude Vertical Speed Selector, P/N 8702. This option does not affect the limitations or emergency procedures section of this supplement.

ALTITUDE SELECTOR/ALERTER/VERTICAL SPEED SELECTOR P/N 0140 (OPTIONAL)

The altitude selector/alerter option is a digital device providing a digital liquid crystal display of the selected altitude, the vertical speed and other functions. The altitude selector function operates in conjunction with an altitude encoder and transponder. For detailed operating procedures refer to the Pilot's Handbook for Altitude Selector/Alerter, P/N 8716. This option does not affect the limitations or emergency procedures section of this supplement.

////////////////
////NOTE////
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When using either of the above referenced Altitude Selectors with the System 55 Autopilot, the pilot should always program the desired altitude and vertical speed into the altitude selector before simultaneously pressing ALT and VS modes on the System 55 Autopilot programmer. This action will isolate the VS selector knob on the autopilot and the aircraft will respond only to the respective altitude selector commands until capturing the desired altitude.

FAA APPROVED
DATE: APR 0 4 2000

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or anytime the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then immediately disconnect the autopilot. Do not re-engage the autopilot until the problem has been identified and corrected.

1. The autopilot may be disconnected by:
   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel.
   b. Placing the "AP Master Switch" in the "OFF" position.
   c. Momentarily interrupting aircraft electrical power at the battery master switch.
   d. Pulling the autopilot circuit breaker.

2. Trim: (IF INSTALLED)
   a. In the event of a trim failure, manually control aircraft and DEPRESS AND HOLD "Trim Interrupt/AP Disconnect Switch" on control wheel.
   b. Place trim master switch in "OFF" position, pull circuit breaker, release interrupt switch.
   c. Retrim aircraft. Leave trim system OFF until corrected.

3. Altitude loss during a malfunction and recovery:
   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-200'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (Coupled or Uncoupled)	15°/-150'

The above values are the worst case for the model covered by this document.

SECTION V

WEIGHT AND BALANCE

See Section II, Items 5 and 6, for Weight and Balance Limitations.

FAA APPROVED
DATE: APR 0 4 2000

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 17

FOR

MAULE M-7-235B

(FLOATPLANE AND AMPHIBIAN CONFIGURATION)

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 55 Two Axis Autopilot Model ST-620*** *(14 volt)* installed in accordance with *Maule Drawing No.* ***9196A****, Rev.* ***A*** *or later revision.*

The information contained herein supplements or supersedes the basic manual. For limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED:_____
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: APR 0 4 2000

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SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 55 Two Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot use prohibited above 150 MPH IAS.
2. Autopilot operation prohibited below 75 MPH in Floatplane configuration.
3. Flap extension or retraction limited to 24° down during autopilot operations.
4. Autopilot coupled missed approach or go-around maneuver not authorized.
5. Autopilot operation prohibited during takeoff and landing.
6. Category I operations only.
7. Autopilot use prohibited below 200' AGL during coupled approach operations.

SECTION III

NORMAL OPERATING PROCEDURES

For detailed operating instructions, including system description, pre-flight and inflight procedures refer to S-TEC System 55 Pilot's Handbook, P/N 8747.

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

The S-TEC autopilot installation in this aircraft uses servo control about the pitch and yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

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

To optimize autopilot controllability, abrupt flap extension and retraction as well as large, rapid power changes should be avoided.

FAA APPROVED
DATE: APR 0 4 2000

ELECTRIC TRIM SYSTEM (IF INSTALLED)

The S-TEC Electric Trim System is designed to accept any single failure, either mechanical or electrical, without uncontrolled operation resulting during operations in the Manual Electric Trim Mode. During autotrim mode the system is designed to limit the effect of any failure causing trim operation. In order to assure proper operation of these safeguards, it is necessary to conduct a simple pre-flight test of the system. Following is the trim pre-flight test procedure:

ELECTRIC TRIM CHECK (IF OPTIONAL AUTOTRIM IS INSTALLED)

Manual Electric Trim - Test Prior to Each Flight

a. Trim Switch and A/P Master Switch - ON

b. Operate Trim Switch (Both Knob Sections) - Nose DN - Check trim moves nose down and trim in motion indicator ("TRIM") in A/P Programmer flashes. Operate trim switch - Nose UP - Check trim moves nose up and for "in motion" trim light.

c. With trim operating Nose UP and DN - grasp manual trim control and overpower electric trim to stop trim action.

d. Operate each half of the trim switch separately - trim should not operate unless both switch knob segments are moved together.

e. With Trim Operating - Depress trim interrupt switch – Trim motion should stop while interrupt switch is depressed - when released trim should operate normally.

Autotrim

a. Engage HDG and VS modes of the autopilot.

b. Grasp control and apply forward pressure (NOSE DOWN) - After approximately three (3) seconds trim should run NOSE UP.

c. Apply aft pressure (NOSE UP) to control wheel - after approximately three (3) seconds trim should run NOSE DOWN.

d. Move manual trim switch UP or DN - Autopilot should disconnect and trim operates in the commanded direction. (Trim Switch will disconnect autopilot only when pitch is engaged.)

e. Reengage autopilot HDG and VS Modes and depress Trim Interrupt/AP Disconnect Switch - Autopilot should disconnect.

f. Retrim aircraft for takeoff - Check all controls for freedom of motion and to determine that the autopilot and trim have disconnected.

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If either the manual electric or autotrim fails any portion of the above check procedure, move the Trim Master Switch "OFF" and do not attempt to use the trim system until the fault is corrected. With the Trim Master Switch "OFF" the autopilot trim indicators and audio system will return to operation. If the electric trim system suffers a power failure in flight the system will automatically revert to the indicator lights and audio horn. If this occurs turn the Trim Master Switch "OFF" and trim manually, using the indicators until the fault can be located and corrected.

GLIDE SLOPE FLIGHT PROCEDURE

Approach the GS intercept point (usually the OM) with the flaps set to approach deflection of 24° (2 notches) at 85 - 95 MPH (See Limitations Section) and with the aircraft stabilized in altitude hold mode. At the glide slope intercept, lower the landing gear (if amphibian) and adjust power for the desired descent speed. For best tracking results make power adjustments in small, smooth increments to maintain desired airspeed. At the missed approach point or the decision height, disconnect the autopilot for landing or for the go-around maneuver (See Limitations Section). If a missed approach is required, the autopilot may be reengaged after the aircraft has been reconfigured for and established in a stabilized climb.

OPTIONAL EQUIPMENT

ALTITUDE SELECTOR/VERTICAL SPEED SELECTOR P/N 0114 (OPTIONAL)

The altitude selector option operates in conjunction with an altitude encoder and transponder. For detailed operating procedures refer to the Pilot's Handbook for Altitude Selector and Altitude Vertical Speed Selector, P/N 8702. This option does not affect the limitations or emergency procedures section of this supplement.

ALTITUDE SELECTOR/ALERTER/VERTICAL SPEED SELECTOR P/N 0140 (OPTIONAL)

The altitude selector/alerter option is a digital device providing a digital liquid crystal display of the selected altitude, the vertical speed and other functions. The altitude selector function operates in conjunction with an altitude encoder and transponder. For detailed operating procedures refer to the Pilot's Handbook for Altitude Selector/Alerter, P/N 8716. This option does not affect the limitations or emergency procedures section of this supplement.

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////NOTE////
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When using either of the above referenced Altitude Selectors with the System 55 Autopilot, the pilot should always program the desired altitude and vertical speed into the altitude selector before simultaneously pressing ALT and VS modes on the System 55 Autopilot programmer. This action will isolate the VS selector knob on the autopilot and the aircraft will respond only to the respective altitude selector commands until capturing the desired altitude.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or anytime the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then immediately disconnect the autopilot. Do not re-engage the autopilot until the problem has been identified and corrected.

1. The autopilot may be disconnected by:
   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel.
   b. Placing the "AP Master Switch" in the "OFF" position.
   c. Momentarily interrupting aircraft electrical power at the battery master switch.
   d. Pulling the autopilot circuit breaker.

2. Trim: (IF INSTALLED)
   a. In the event of a trim failure, manually control aircraft and DEPRESS AND HOLD "Trim Interrupt/AP Disconnect Switch" on control wheel.
   b. Place trim master switch in "OFF" position, pull circuit breaker, release interrupt switch.
   c. Retrim aircraft. Leave trim system OFF until corrected.

3. Altitude loss during a malfunction and recovery:
   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Climb	20°/-60'	3°
Cruise	50°/-200'	4°
Descent	40°/-250'	3°

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Maneuvering	20°/-200'	N/A
Approach (Coupled or Uncoupled)	15°/-60'	3°

The above values are the worst case for the aircraft covered by this document.

SECTION V

WEIGHT AND BALANCE

See applicable AFM Floatplane Supplement for Weight and Balance Limitations.

FAA APPROVED
DATE: APR 0 4 2000

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 18

FOR

MAULE M-7-235B

(LANDPLANE CONFIGURATION)

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 20 Single Axis Autopilot Model ST-810-20*** *(14 volt)* installed in accordance with *Maule Drawing No.* ***9197A****, Rev.* ***B*** *or later revision.*

The information contained herein supplements or supersedes the basic manual; for limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: Daniel Green

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

DATE: MAR 2 0 2000

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LOG OF REVISIONS				
REV.	PAGES AFFECTED	DESCRIPTION	APPROVED	DATE

SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 20 Single Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot operation prohibited above 165 MPH IAS.
2. Autopilot must be OFF for takeoff and landing.
3. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
4. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation to be installed in clear view of the pilot.

SECTION III

NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 20 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes a pre-flight test feature that allows a visual check of all the annunciator lamps.

////////////////
////NOTE////
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The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

The pre-flight test feature is operated by use of the remote master power ON-OFF switch located on the instrument panel. When the system master power switch is on and the rate gyro RPM is correct, the green "RDY light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.

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////NOTE////
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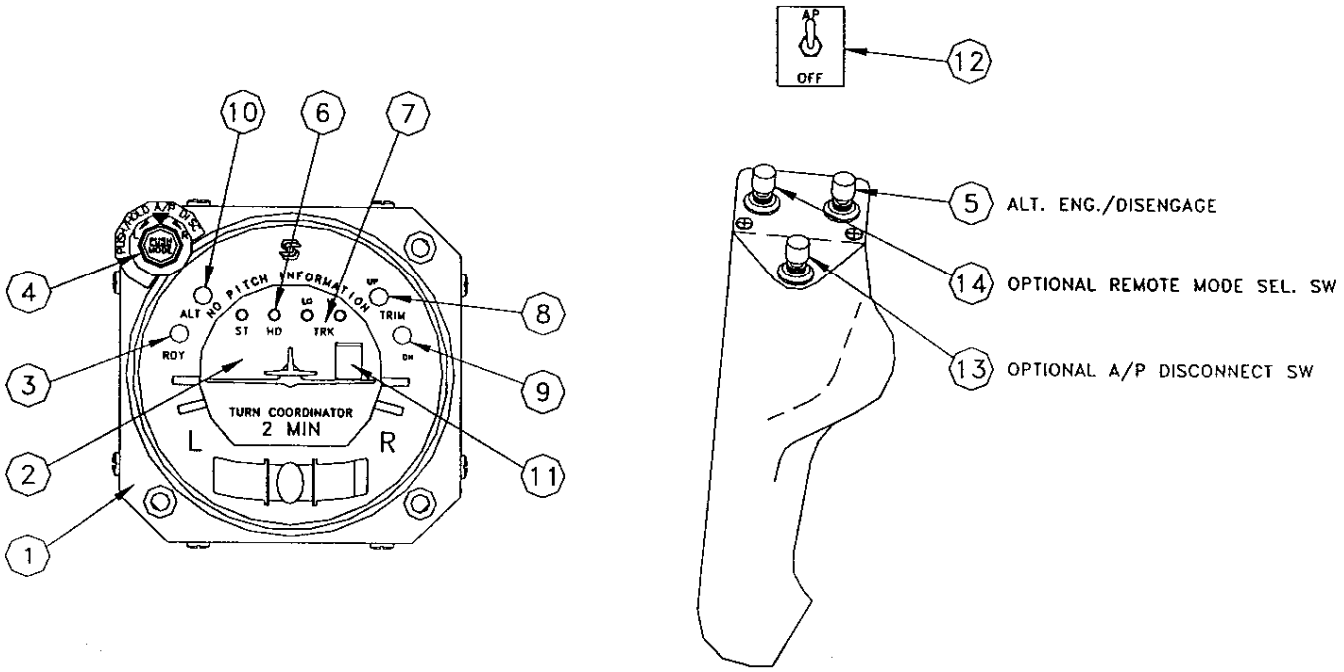
Some of the features shown in the illustration (page 4) are not available on the System 20 Single Axis Autopilot but are only available on the S-TEC System 30 Autopilot which includes the altitude hold feature. These items are depicted only because both autopilots use the same turn coordinator instrument.



1. Turn Coordinator, Mode Programmer and Annunciator Unit - Provides basic flight information, autopilot mode switching and annunciation.

FAA APPROVED
DATE: MAR 2 0 2000

2. Mode Annunciation Window - Displays mode in use.

3. Green Ready (RDY) Light - Illuminates when autopilot is ready for engagement.

4. Mode Select/Disconnect Switch – Each momentary push of this knob will select an autopilot mode, left to right, beginning with ST (Stabilizer) mode and ending with (Hi) TRK mode. Holding the knob in for more than 2 seconds will disconnect the autopilot. Turning the knob left or right in the stabilizer mode will provide left/right commands to the autopilot proportional to knob displacement up to a standard rate turn.

5. This switch not available on the system 20 autopilot.

6. Heading Mode – If the system is equipped with a D.G., this mode will permit preselected left/right turns using the D.G. heading bug.

7. TRK (Track)- Using the (Lo) mode of the tracking feature will provide low system gain for comfortable cross country tracking of VOR or GPS signals. Using the (Hi) mode of the tracking feature will provide a higher level of system gain for more active tracking of VOR, GPS or Localizer front course signals.

8. This switch not available on the system 20 autopilot.

9. This switch not available on the system 20 autopilot.

10. This switch not available on the system 20 autopilot.

11. Flag Window - Red flag visible indicates lack of power (12/24 Volt) to primary turn coordinator unit.

12. Autopilot Master ON-OFF Switch - Refer to pre-flight procedures for operating details.

13. Optional remote AP disconnect switch.

14. Optional Remote Mode Selector Switch - Allows mode selection from the control wheel. Depressing this switch for more than two seconds will also disconnect the autopilot.

PREFLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 or 24 VDC minimum as appropriate.)

FAA APPROVED
DATE: MAR 2 0 2000

FUNCTIONAL PRE-FLIGHT TEST

1. AP Master Switch - Move to A/P (on) position – Observe all lights and annunciators illuminate. After a few seconds all lights excepts the "READY" light will extinguish indicating that the autopilot is ready to be engaged.

2. Momentarily Press Mode Knob – STB Annunciator illuminates. Rotate turn knob to the left and observe that the left rudder pedal moves slowly forward. Repeat the same test to the right. Center turn knob.

3. Set D.G. (if installed) and place bug under lubber line. Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug to the left and observe that the left rudder pedal moves slowly forward. Repeat same test to the right.

4. Overpower Test - Overpower rudder servo using the rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

5. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage Lo TRK Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal moves forward with left needle, right pedal moves forward with right needle.

   B. Select Hi TRK Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by Lo TRK Mode.

6. Push mode knob for 2 seconds - note that rudder servo releases. Move rudders left and right to confirm rudders are free with no restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

1. Check - RDY light on.

2. Trim aircraft for existing flight condition.

3. Center turn-knob – Press mode knob once to enter stabilizer mode.

4. Set turn knob to level or turning flight, as desired.

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DATE: MAR 2 0 2000

5. Set HDG bug to desired heading (if installed) and press mode knob again to engage heading mode, select headings as desired.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10 degrees of the course heading.

3. Engage Lo TRK Mode for VOR tracking.

4. Engage Hi TRK Mode for VOR or LOC approach.

Hi TRK Mode may be used to track VOR radials cross-country if desired. Use of Hi TRK Mode for cross-country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality, Lo TRK Mode may provide more accurate tracking even with reduced gain.

GPS TRACKING AND GPS APPROACH

1. Begin track with a reliable GPS signal and CDI needle centered, with aircraft on the suggested heading to the waypoint.

2. Select the Hi track mode for GPS tracking or GPS approach.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:

    a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
    b. Press and hold the mode selector knob for approximately 2 seconds.
    c. Moving autopilot master switch to "OFF" position.
    d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

The above values are the worst case for this aircraft.

SECTION V

WEIGHT AND BALANCE

See Section II, Items 3 and 4 for weight and balance limitations.

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MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 19

FOR

MAULE M-7-235B

(FLOATPLANE OR AMPHIBIAN CONFIGURATION)

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 20 Single Axis Autopilot Model ST-810-20*** *(14 volt)* installed in accordance with *Maule Drawing No.* ***9197A****, Rev.* ***B*** *or later revision.*

The information contained herein supplements or supersedes the basic manual; for limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: _____
Manager, Aircraft Certification Office
Federal Aviation Administration
Atlanta, Georgia USA

DATE: MAR 2 0 2000

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SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 20 Single Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot operation prohibited above 150 MPH IAS.
2. Autopilot operation prohibited during takeoff and landing.

SECTION III

NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 20 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes a pre-flight test feature that allows a visual check of all the annunciator lamps.

////////////////
////NOTE////
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The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

The pre-flight test feature is operated by use of the remote master power ON-OFF switch located on the instrument panel. When the system master power switch is on and the rate gyro RPM is correct, the green "RDY light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.

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////NOTE////
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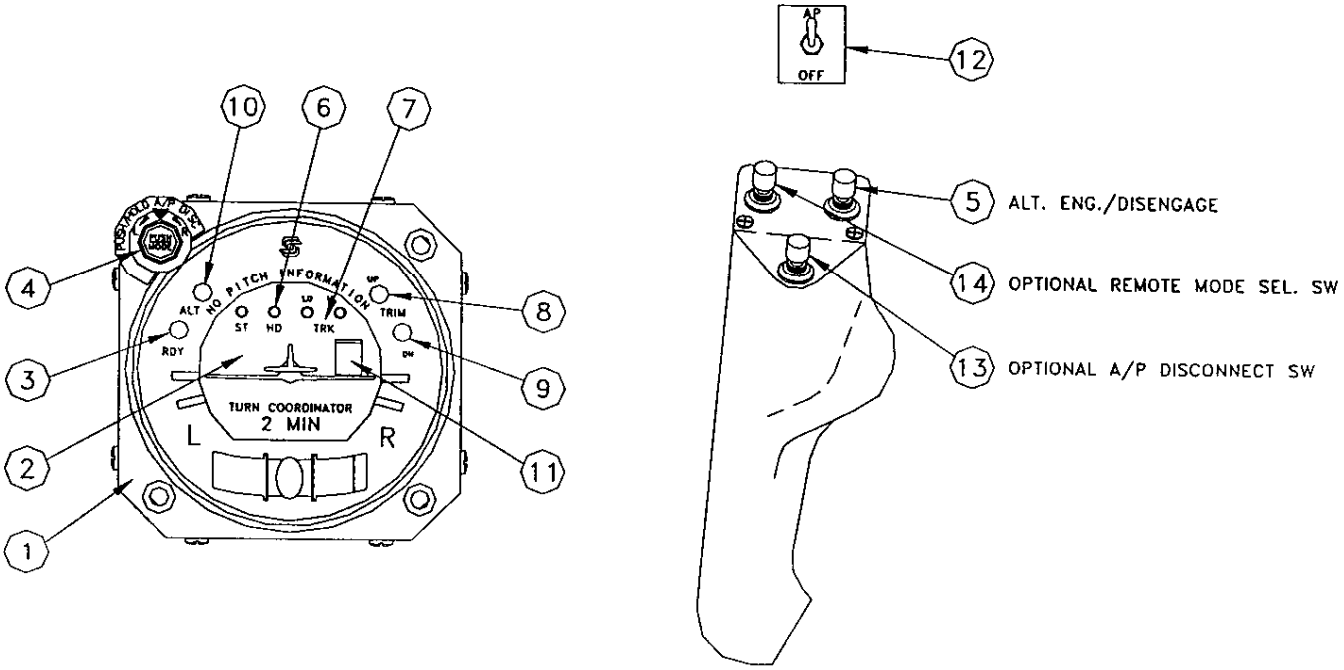
Some of the features shown in the illustration (page 4) are not available on the System 20 Single Axis Autopilot but are only available on the S-TEC System 30 Autopilot which includes the altitude hold feature. These items are depicted only because both autopilots use the same turn coordinator instrument.



1. Turn Coordinator, Mode Programmer and Annunciator Unit - Provides basic flight information, autopilot mode switching and annunciation.

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2. Mode Annunciation Window - Displays mode in use.

3. Green Ready (RDY) Light - Illuminates when autopilot is ready for engagement.

4. Mode Select/Disconnect Switch – Each momentary push of this knob will select an autopilot mode, left to right, beginning with ST (Stabilizer) mode and ending with (Hi) TRK mode. Holding the knob in for more than 2 seconds will disconnect the autopilot. Turning the knob left or right in the stabilizer mode will provide left/right commands to the autopilot proportional to knob displacement up to a standard rate turn.

5. This switch not available on the system 20 autopilot.

6. Heading Mode – If the system is equipped with a D.G., this mode will permit preselected left/right turns using the D.G. heading bug.

7. TRK (Track)- Using the (Lo) mode of the tracking feature will provide low system gain for comfortable cross country tracking of VOR or GPS signals. Using the (Hi) mode of the tracking feature will provide a higher level of system gain for more active tracking of VOR, GPS or Localizer front course signals.

8. This switch not available on the system 20 autopilot.

9. This switch not available on the system 20 autopilot.

10. This switch not available on the system 20 autopilot.

11. Flag Window - Red flag visible indicates lack of power (12/24 Volt) to primary turn coordinator unit.

12. Autopilot Master ON-OFF Switch - Refer to pre-flight procedures for operating details.

13. Optional remote AP disconnect switch.

14. Optional Remote Mode Selector Switch - Allows mode selection from the control wheel. Depressing this switch for more than two seconds will also disconnect the autopilot.

PREFLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 or 24 VDC minimum as appropriate.)

FAA APPROVED
DATE: MAR 2 0 2000

FUNCTIONAL PRE-FLIGHT TEST

1. AP Master Switch - Move to A/P (on) position – Observe all lights and annunciators illuminate. After a few seconds all lights excepts the "READY" light will extinguish indicating that the autopilot is ready to be engaged.

2. Momentarily Press Mode Knob – STB Annunciator illuminates. Rotate turn knob to the left and observe that the left rudder pedal moves slowly forward. Repeat the same test to the right. Center turn knob.

3. Set D.G. (if installed) and place bug under lubber line. Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug to the left and observe that the left rudder pedal moves slowly forward. Repeat same test to the right.

4. Overpower Test - Overpower rudder servo using the rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

5. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage Lo TRK Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal moves forward with left needle, right pedal moves forward with right needle.

   B. Select Hi TRK Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by Lo TRK Mode.

6. Push mode knob for 2 seconds - note that rudder servo releases. Move rudders left and right to confirm rudders are free with no restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

1. Check - RDY light on.

2. Trim aircraft for existing flight condition.

3. Center turn-knob – Press mode knob once to enter stabilizer mode.

4. Set turn knob to level or turning flight, as desired.

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5. Set HDG bug to desired heading (if installed) and press mode knob again to engage heading mode, select headings as desired.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10 degrees of the course heading.

3. Engage Lo TRK Mode for VOR tracking.

4. Engage Hi TRK Mode for VOR or LOC approach.

Hi TRK Mode may be used to track VOR radials cross-country if desired. Use of Hi TRK Mode for cross-country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality, Lo TRK Mode may provide more accurate tracking even with reduced gain.

GPS TRACKING AND GPS APPROACH

1. Begin track with a reliable GPS signal and CDI needle centered, with aircraft on the suggested heading to the waypoint.

2. Select the Hi track mode for GPS tracking or GPS approach.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:

   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
   b. Press and hold the mode selector knob for approximately 2 seconds.
   c. Moving autopilot master switch to "OFF" position.
   d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Climb	30°/NONE	3°
Cruise	50°/-40'	4°
Descent	40°/-200'	3°

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Maneuvering	20°/-20'	3°
Approach (coupled or uncoupled)	15°/-20'	3°

The above values are the worst case for this aircraft.

WEIGHT AND BALANCE

Text of this Section not affected by installation of this equipment.

FAA APPROVED
DATE: MAR 2 0 2000

MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 20

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 20 Single Axis Autopilot Model ST-820-20 (28 volt)*** installed in accordance with *Maule Drawing No.* ***9201A****, Rev.* ***A*** *or later revision.*

The information contained herein supplements or supersedes the basic manual; for limitations, procedures and performance information not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: _____
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Federal Aviation Administration
Atlanta, Georgia USA

DATE: MAR 2 0 2000

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SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 20 Single Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS *(LANDPLANE CONFIGURATION)*

1. Autopilot operation prohibited above 165 MPH IAS.
2. Autopilot operation prohibited during takeoff and landing.
3. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
4. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation to be installed in clear view of the pilot.

OPERATING LIMITATIONS *(FLOATPLANE OR AMPHIBIAN CONFIGURATION)*

1. Autopilot operation prohibited above 150 MPH IAS.
2. Autopilot operation prohibited during takeoff and landing.

SECTION III

NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 20 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor and an accelerometer and an absolute pressure transducer as pitch rate sensors. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes a pre-flight test feature that allows a visual check of all the annunciator lamps.

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The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

The pre-flight test feature is operated by use of the remote master power ON-OFF switch located on the instrument panel. When the system master power switch is on and the rate gyro RPM is correct, the green "RDY light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat, except for the "trim" indicators which always illuminate at full intensity.

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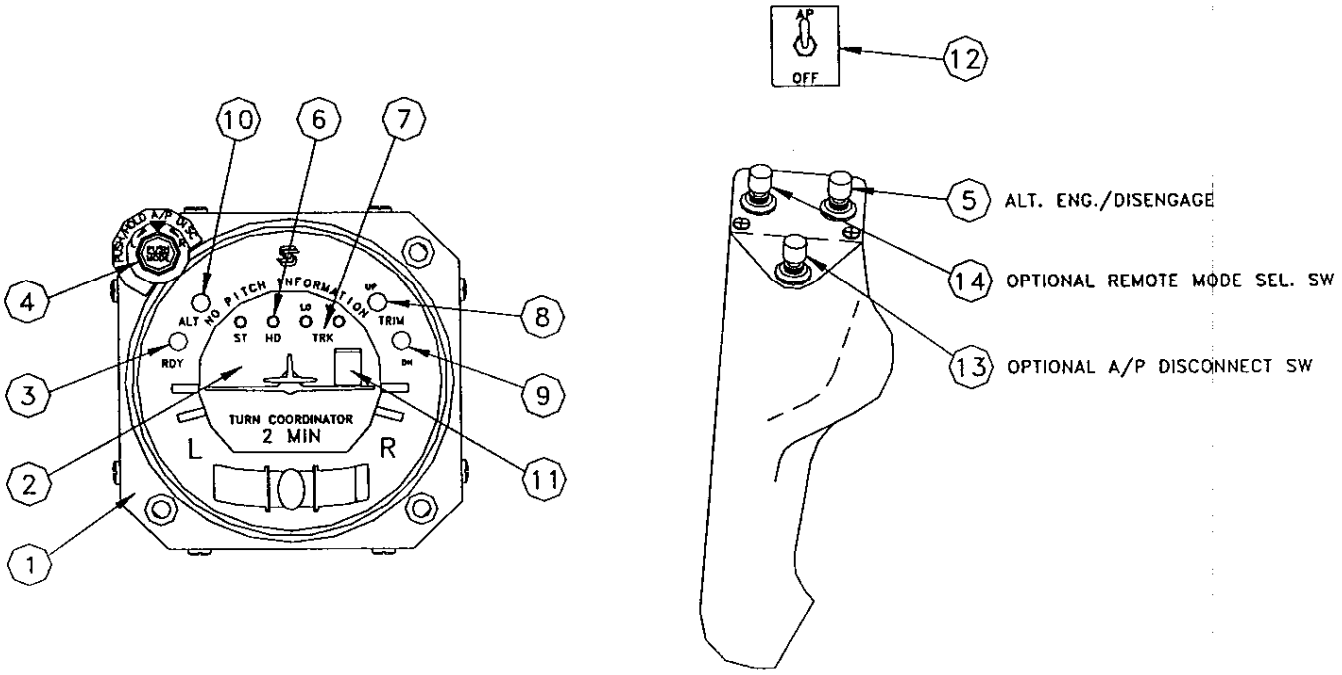

1. Turn Coordinator, Mode Programmer and Annunciator Unit - Provides basic flight information, autopilot mode switching and annunciation.

FAA APPROVED
DATE: MAR 2 0 2000

2. Mode Annunciation Window - Displays mode in use.

3. Green Ready (RDY) Light - Illuminates when autopilot is ready for engagement.

4. Mode Select/Disconnect Switch – Each momentary push of this knob will select an autopilot mode, left to right, beginning with ST (Stabilizer) mode and ending with (Hi) TRK mode. Holding the knob in for more than 2 seconds will disconnect the autopilot. Turning the knob left or right in the stabilizer mode will provide left/right commands to the autopilot proportional to knob displacement up to a standard rate turn.

5. This switch not available on the system 20 autopilot.

6. Heading Mode – If the system is equipped with a D.G., this mode will permit preselected left/right turns using the D.G. heading bug.

7. TRK (Track)- Using the (Lo) mode of the tracking feature will provide low system gain for comfortable cross country tracking of VOR or GPS signals. Using the (Hi) mode of the tracking feature will provide a higher level of system gain for more active tracking of VOR, GPS or Localizer front course signals.

8. This switch not available on the system 20 autopilot.

9. This switch not available on the system 20 autopilot.

10. This switch not available on the system 20 autopilot.

11. Flag Window - Red flag visible indicates lack of power (12/24 Volt) to primary turn coordinator unit.

12. Autopilot Master ON-OFF Switch - Refer to pre-flight procedures for operating details.

13. Optional remote AP disconnect switch.

14. Optional Remote Mode Selector Switch - Allows mode selection from the control wheel. Depressing this switch for more than two seconds will also disconnect the autopilot.

PREFLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 or 24 VDC minimum as appropriate.)

FUNCTIONAL PRE-FLIGHT TEST

FAA APPROVED
DATE: MAR 2 0 2000

1. AP Master Switch - Move to A/P (on) position – Observe all lights and annunciators illuminate. After a few seconds all lights excepts the "READY" light will extinguish indicating that the autopilot is ready to be engaged.

2. Momentarily Press Mode Knob – STB Annunciator illuminates. Rotate turn knob to the left and observe that the left rudder pedal moves slowly forward. Repeat the same test to the right. Center turn knob.

3. Set D.G. (if installed) and place bug under lubber line. Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug to the left and observe that the left rudder pedal moves slowly forward. Repeat same test to the right.

4. Overpower Test - Overpower rudder servo using the rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

5. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage Lo TRK Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal moves forward with left needle, right pedal moves forward with right needle.

   B. Select Hi TRK Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by Lo TRK Mode.

6. Push mode knob for 2 seconds - note that rudder servo releases. Move rudders left and right to confirm rudders are free with no restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

<u>IN-FLIGHT PROCEDURES</u>

1. Check - RDY light on.

2. Trim aircraft for existing flight condition.

3. Center turn-knob – Press mode knob once to enter stabilizer mode.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and press mode knob again to engage heading mode, select headings as desired.

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DATE: MAR 2 0 2000

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10 degrees of the course heading.

3. Engage Lo TRK Mode for VOR tracking.

4. Engage Hi TRK Mode for VOR or LOC approach.

Hi TRK Mode may be used to track VOR radials cross-country if desired. Use of Hi TRK Mode for cross-country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality, Lo TRK Mode may provide more accurate tracking even with reduced gain.

GPS TRACKING AND GPS APPROACH

1. Begin track with a reliable GPS signal and CDI needle centered, with aircraft on the suggested heading to the waypoint.

2. Select the Hi track mode for GPS tracking or GPS approach.

SECTION IV

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:

    a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
    b. Press and hold the mode selector knob for approximately 2 seconds.
    c. Moving autopilot master switch to "OFF" position.
    d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery. *(LANDPLANE CONFIGURATION)*

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

2. Altitude loss during a malfunction and recovery. *(FLOATPLANE OR AMPHIBIAN CONFIGURATION*

   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Climb	30°/NONE	3°
Cruise	50°/-40'	4°
Descent	40°/-200'	3°

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss	Yaw
Maneuvering	20°/-20'	3°
Approach (coupled or uncoupled)	15°/-20'	3°

The above values are the worst case for this aircraft.

SECTION V

WEIGHT AND BALANCE *(LANDPLANE CONFIGURATION)*

See Section II, Items 3 and 4 for weight and balance limitations.

WEIGHT AND BALANCE *(FLOATPLANE OR AMPHIBIAN CONFIGURATION)*

Text of this Section not affected by installation of this equipment.

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MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 21

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 40 Single Axis Autopilot Model ST-609-40 (24 volt)*** installed in accordance with *Maule Drawing No.* ***9200A****, Rev.* ***B*** *or later revision.*

The information contained herein supplements or supersedes the basic manual; for limitations, procedures and performance information not contained in this supplement consult the basic Airplane Flight Manual.

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

DATE: OCT 29 2001

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LOG OF REVISIONS				
REV.	PAGES AFFECTED	DESCRIPTION	APPROVED	DATE

SECTION I

GENERAL

This manual is to acquaint the pilot with the features and functions of the System 40 Single Axis Autopilot and to provide operating instructions for the system when installed in the aircraft. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II

OPERATING LIMITATIONS

1. Autopilot operation prohibited above 165 MPH CAS.
2. Autopilot must be OFF for takeoff and landing.
3. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
4. With autopilot installed, Placard P/N 56139 specifying C.G. Limitation to be installed in clear view of the pilot.

SECTION III

NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 40 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes a pre-flight test feature that allows a visual check of all the annunciator lamps.

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////NOTE////
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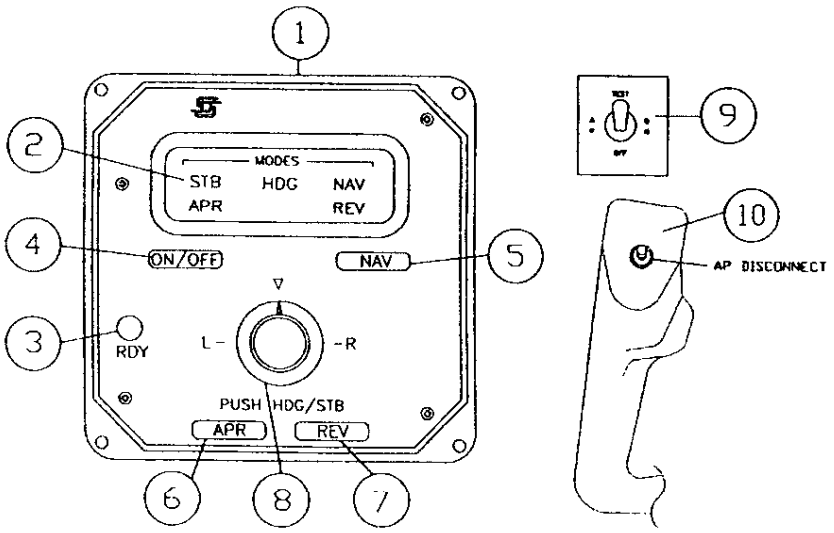
The S-TEC autopilot installation in this aircraft uses servo control about the yaw axis only, to maintain control of aircraft. There is no aileron servo. This necessitates that aircraft lateral trim control be maintained by two methods: (1) the aileron fixed trim tab must be properly ground adjusted and (2) the pilot must maintain proper wing fuel balance. In addition, the pilot should monitor uncoordinated flight indications and manually adjust aileron position to assist in maintaining wing level flight if necessary. (If the aircraft tends to fly slightly wing low the pilot should raise the low wing using aileron only.)

The preflight test feature is operated by use of the remote master power ON-OFF test switch located on the instrument panel. When the system master power switch is on and the rate gyro RPM is correct, the green "RDY" light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat.



1. Mode Programmer and Annunciator Unit - Provides mode switches and annunciation for the system.

2. Mode Annunciation Window - Displays mode in use.

3. Ready Light (RDY) - Green RDY lamp illuminates when autopilot is ready for engagement.

4. ON-OFF Stabilizer Mode Switch - Momentary actuation engages roll system in stabilizer (STB) Mode and allows use of the turn knob (Item 8) to command turn rate desired. When the system is operating a momentary actuation will disengage the system and cancel all annunciations.

5. Navigation Mode Switch (NAV) - Momentary activation will engage the VOR Tracking Mode. This mode provides low system gain for comfortable cross-country tracking.

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DATE: OCT 29 200

6. Approach Mode Switch (APR) - Momentary actuation will engage the VOR or Localizer Tracking Mode. This mode provides a higher level of system gain for more active tracking of VOR or Localizer front course signals.

7. Reverse Approach Mode Switch (REV) - Momentary activation will engage the reverse tracking mode for use when tracking a Localizer backcourse. This mode provides the same system gain as the APR Mode with reverse needle sensing.

8. Turn Knob and Heading Switch - The turn knob allows the selection of turn rates up to standard rate (3°/second) either right or left. Turning the knob to the right or left will cause a turn that is proportional to the displacement of the knob from center. For level flight, the electronics provide a small dead zone of approximately 10° at the center indice. To actuate heading mode, momentarily depress the turn knob. To return to STB Mode from HDG, depress the turn knob. When the system is operating in any radio mode and the system is equipped with a D.G., depressing the turn knob will return the system to HDG Mode directly.

9. Autopilot Master ON-OFF Test Switch - Refer to Pre-Flight Procedures for operating details.

10. Optional remote AP disconnect switch.

PRE-FLIGHT PROCEDURES

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////NOTE////
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During system functional checks the system must be provided adequate DC voltage (24 VDC minimum.)

FUNCTIONAL PRE-FLIGHT TEST

1. AP Master Switch - Move to TEST position - observe all lights and annunciators illuminate.

2. AP Master Switch - Move to ON position, observe ready (RDY) light illuminates.

3. Depress ON-OFF Switch - STB Annunciator illuminates. Rotate turn knob to the left and observe left rudder pedal moves forward. Repeat same thing to right. Center turn knob.

4. Set D.G. and place bug under lubber line (if installed). Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug left and right - observe left rudder pedal moves forward then right rudder moves forward (motion will be relatively slow).

5. Overpower Test - Overpower rudder servo using rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

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DATE: OCT 29 2001

6. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage NAV Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal forward with left needle; right pedal forward with right needle.

   B. Select REV Mode - the rudder pedals should move in opposite direction of the NAV needle.

   C. Select APR Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by NAV Mode.

7. Depress ON-OFF Switch - note that rudder servos releases. Move rudder left and right to confirm free action, with no control restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

1. Check - RDY light on.

2. Trim aircraft for existing flight condition. Maintain Yaw Trim during all Autopilot operations.

3. Center turn-knob - depress ON-OFF Switch.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and depress knob to engage heading mode, select headings as desired.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10° of the course heading.

3. Engage NAV Mode for VOR tracking.

4. Engage APR Mode for VOR or LOC approach.

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To track the localizer front course outbound to the procedure turn area, maneuver to the localizer center and, when on the outbound heading, select REV Mode. To track the localizer back course inbound, maneuver to the localizer back course center and, when on the inbound heading, select REV Mode.

Approach Mode may be used to track VOR radials cross country if desired. Use of APR Mode for cross country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality NAV Mode may provide more accurate tracking even with reduced gain.

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:
   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
   b. Depressing the "ON-OFF" Switch on the autopilot programmer unit.
   c. Moving autopilot master switch to "OFF" position.
   d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.
   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

   The above values are the worst case for this aircraft.

WEIGHT AND BALANCE

See Section II, Items 3 and 4 for weight and balance limitations.

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MAULE AEROSPACE TECHNOLOGY, INC.

FAA APPROVED

Airplane Flight Manual Supplement No. 22

FOR

MAULE M-7-235B

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated *October 19, 1993* when modified by the installation of ***S-TEC System 40 Single Axis Autopilot Model ST-418-40 (14 volt)*** installed in accordance with *Maule Drawing No.* ***9193A****, Rev.* ***C*** *or later revision.*

The information contained herein supplements or supersedes the basic manual; for limitations, 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: OCT 29 2001

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LOG OF REVISIONS				
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1. Autopilot operation prohibited above 165 MPH IAS.
2. Autopilot must be OFF for takeoff and landing.
3. With autopilot installed, aircraft aft C.G. limited to 18.5 inches aft of datum.
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NORMAL OPERATING PROCEDURES

SYSTEM DESCRIPTION

The System 40 is a pure rate autopilot which uses an inclined rate gyro in the Turn Coordinator instrument as the primary roll and turn rate sensor. The turn coordinator includes an autopilot pick-off, a gyro RPM detector and an instrument power monitor. Low electrical power will cause the instrument "flag" to appear while low RPM will cause the autopilot to disconnect. The autopilot includes a pre-flight test feature that allows a visual check of all the annunciator lamps.

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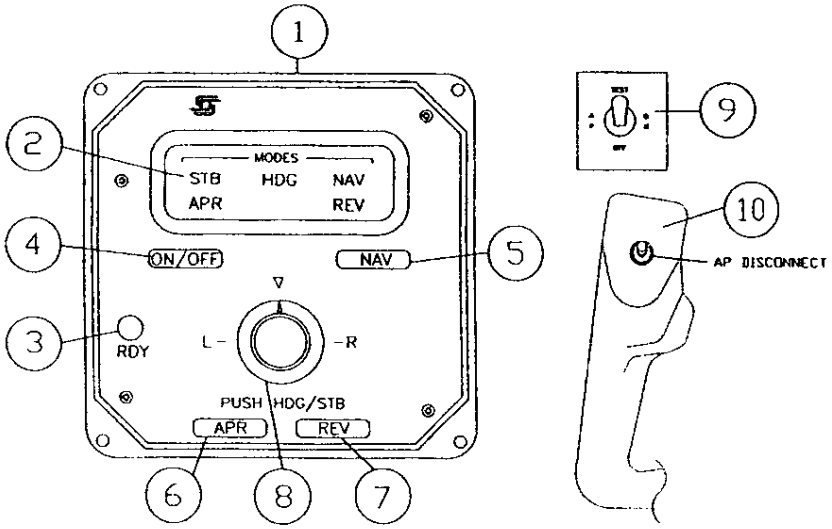
DATE: OCT 29 2001

The preflight test feature is operated by use of the remote master power ON-OFF test switch located on the instrument panel. When the system master power switch is on and the rate gyro RPM is correct, the green "RDY" light will illuminate indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the "RDY" light is illuminated. When the system is equipped with the optional 3" Air Driven Directional Gyro (D.G.) or a compass system, directional information is provided to the autopilot by a heading bug in the instrument.

The indicator and annunciator lamp brilliance is controlled through the aircraft instrument light rheostat.



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3. Ready Light (RDY) - Green RDY lamp illuminates when autopilot is ready for engagement.

4. ON-OFF Stabilizer Mode Switch - Momentary actuation engages roll system in stabilizer (STB) Mode and allows use of the turn knob (Item 8) to command turn rate desired. When the system is operating a momentary actuation will disengage the system and cancel all annunciations.

5. Navigation Mode Switch (NAV) - Momentary activation will engage the VOR Tracking Mode. This mode provides low system gain for comfortable cross-country tracking.

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DATE: OCT 29 2001

6. Approach Mode Switch (APR) - Momentary actuation will engage the VOR or Localizer Tracking Mode. This mode provides a higher level of system gain for more active tracking of VOR or Localizer front course signals.

7. Reverse Approach Mode Switch (REV) - Momentary activation will engage the reverse tracking mode for use when tracking a Localizer backcourse. This mode provides the same system gain as the APR Mode with reverse needle sensing.

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9. Autopilot Master ON-OFF Test Switch - Refer to Pre-Flight Procedures for operating details.

10. Optional remote AP disconnect switch.

PRE-FLIGHT PROCEDURES

////////////////
////NOTE////
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During system functional checks the system must be provided adequate DC voltage (12 VDC minimum.)

FUNCTIONAL PRE-FLIGHT TEST

1. AP Master Switch - Move to TEST position - observe all lights and annunciators illuminate.

2. AP Master Switch - Move to ON position, observe ready (RDY) light illuminates.

3. Depress ON-OFF Switch - STB Annunciator illuminates. Rotate turn knob to the left and observe left rudder pedal moves forward. Repeat same thing to right. Center turn knob.

4. Set D.G. and place bug under lubber line (if installed). Push turn knob to engage HDG mode. Observe HDG annunciator. Move HDG bug left and right - observe left rudder pedal moves forward then right rudder moves forward (motion will be relatively slow).

5. Overpower Test - Overpower rudder servo using rudder pedals left and right. Overpower action should be smooth with no noise or jerky feel. If unusual sounds or excessive play is detected, have the servo installation inspected prior to flight.

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DATE: OCT 29 2001

6. Radio Check –

   A. Turn on NAV Radio, with valid NAV signal, engage NAV Mode and move VOR OBS so that VOR needle moves left and right - rudder pedals should follow the direction of needle movement, i.e., left pedal forward with left needle; right pedal forward with right needle.

   B. Select REV Mode - the rudder pedals should move in opposite direction of the NAV needle.

   C. Select APR Mode - the rudder pedals should again follow radio needle movement and with more authority than produced by NAV Mode.

7. Depress ON-OFF Switch - note that rudder servos releases. Move rudder left and right to confirm free action, with no control restriction or binding. If the optional disconnect switch is installed it may be used to effect the disconnect for this check.

IN-FLIGHT PROCEDURES

1. Check - RDY light on.

2. Trim aircraft for existing flight condition. Maintain Yaw Trim during all Autopilot operations.

3. Center turn-knob - depress ON-OFF Switch.

4. Set turn knob to level or turning flight, as desired.

5. Set HDG bug to desired heading (if installed) and depress knob to engage heading mode, select headings as desired.

VOR TRACKING AND VOR - LOC APPROACH

1. Tune NAV receiver and select radial.

2. Maneuver aircraft to selected radial (or localizer) within ±1 needle width and within 10° of the course heading.

3. Engage NAV Mode for VOR tracking.

4. Engage APR Mode for VOR or LOC approach.

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To track the localizer front course outbound to the procedure turn area, maneuver to the localizer center and, when on the outbound heading, select REV Mode. To track the localizer back course inbound, maneuver to the localizer back course center and, when on the inbound heading, select REV Mode.

Approach Mode may be used to track VOR radials cross country if desired. Use of APR Mode for cross country tracking may result in some course scalloping if the VOR signal is weak or otherwise "noisy". In areas of poor signal quality NAV Mode may provide more accurate tracking even with reduced gain.

EMERGENCY OPERATING PROCEDURES

In the event of an autopilot malfunction, or any time the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then disconnect the autopilot. Do not reengage the autopilot until the problem has been identified and corrected.

1. Autopilot may be disconnected by:
   a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel (if installed).
   b. Depressing the "ON-OFF" Switch on the autopilot programmer unit.
   c. Moving autopilot master switch to "OFF" position.
   d. Pulling the autopilot circuit breaker.

2. Altitude loss during a malfunction and recovery.
   a. The following altitude losses and bank angles were recorded after a malfunction with a 3 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Climb	55°/-60'
Cruise	50°/-200'
Descent	55°/-340'

   b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

Configuration	Bank Angle/Altitude Loss
Maneuvering	25°/-60'
Approach (coupled or uncoupled)	15°/-80'

   The above values are the worst case for this aircraft.

WEIGHT AND BALANCE

See Section I, Items 3 and 4 for weight and balance limitations.

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DATE: OCT 29 2001