

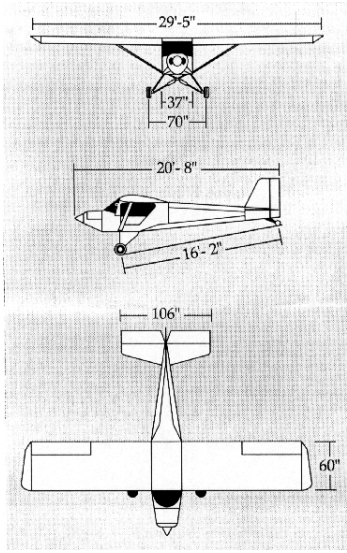
# PILOTS OPERATING MANUAL

## MURPHY MAVERICK

This manual is intended as a guide only. Amateur built aircraft vary a great deal in their construction standard, equipment and handling. If you intend to fly any aircraft with which you are unfamiliar *you must undertake a thorough checkout with a suitably qualified pilot.*

This manual refers specifically to the Murphy Maverick cabin monoplane, with tailwheel undercarriage and powered by the Rotax 503 2 cycle ultralight engine. All information is given assuming a factory standard Maverick with no modifications. European models usually carry the wing extension option, and the specifications in the text refer to an aircraft so equipped, whereas the plan views below refer to the standard wing.

KIT No.



## SECTION 1

### 1 General.

<i>Description</i> .....	2 seat, conventional 3-axis ultralight. High wing, strut braced.
<i>Span</i> .....	9.88 m.
<i>Height</i> .....	2 m.
<i>Length</i> .....	6.30 m.
<i>Airfoil</i> .....	Modified 4415
<i>Dihedral</i> .....	1 degree
<i>Conventional Ailerons, rudder and elevator. No flaps.</i>	
<i>Landing gear</i> .....	inverted V with shock cord suspension. Steerable tail tailwheel.
<i>Track</i> .....	2 m 13 cms.
<i>Engine</i> .....	Rotax 503 twin carb. 53 h.p. dual ignition 2 stroke.
<i>Fuel</i> .....	Unleaded or super mo-gas.
<i>Oil</i> .....	Pre-mix good quality 2 stroke oil 50:1 ratio.
<i>Propeller</i> .....	3-blade ground adjustable.

The Rotax 503 uses a gear reduction, with a number of possible ratio's. Thus a variety of propellers can be fitted. Refer to manufacturers documentation.

### 2 Limitations.

$V_{ne}$ .....	120 m.p.h. Never exceed.
$V_{no}$ .....	90 m.p.h. Max. cruising-only in calm air.
$V_a$ .....	75 m.p.h. Max. manoeuvring speed. No full or abrupt control deflections above this speed.
<i>Gross weight</i> .....	386kg.
<i>Empty weight:</i>	
<i>with options</i> .....	190kg.
<i>without options</i> .....	153k
<i>Useful load</i> .....	200kg.
<i>Fuel capacity:</i>	
<i>standard tank</i> .....	23 litres.
<i>wing tank</i> .....	50 litres.
<i>Ultimate G-loading</i> .....	+6,-4 @ 390kg.

#### Centre of gravity calculations

The empty centre of gravity is determined with all options and equipment onboard, by placing the aircraft in a level flying attitude, and determining the weight on each wheel. The distance from the main wheel axle (same station as the leading edge which is the DATUM point) to the centre of the tail wheel (90° to the main axle), is measured.

Having obtained these three weights and the moment (main axle to tail wheel -distance 'D') the following formula is used:

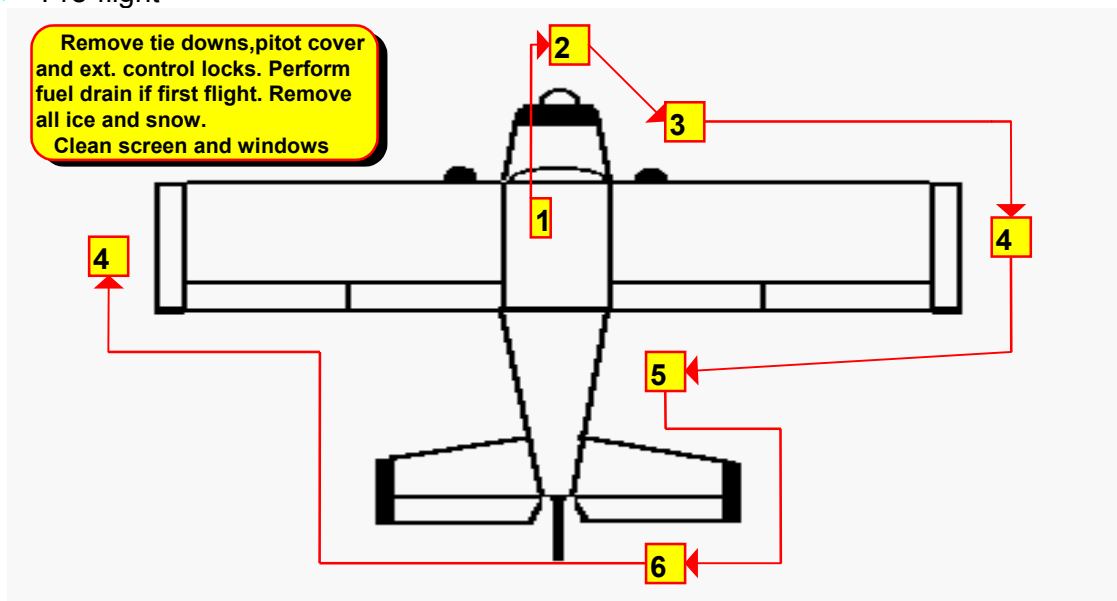
$$\frac{\text{Tail wheel weight X moment(distance 'D')}}{\text{Total weight}} = \text{EMPTY C.of G}$$

C of G limits.....12 to 19 inches aft of datum.

## SECTION 2

### 1 Normal procedures.

#### Pre-flight



#### 1. INTERNAL

- a) Ignition switches off/keys out.
- b) Check fuel quantity gauges. (Master on if electric - **Switch off after** ).
- c) Fuel taps **ON**.
- d) Req. documents on board.
- e) Loose articles stowed.

#### 2. ENGINE/NOSE

- a) Remove cowling top.
  - i) Plug caps.....Secure
  - ii) Air filter.....Clean/secure.
  - iii) No obvious leaks.
  - iv) All fittings.....Secure.
  - v) Refit cowling.
- b) Exhaust.....Secure/cracks.
- c) Gear box.....Secure/leaks.
- d) Propeller/spinner.....Secure/cracking/leading edge damage.

- e) Intakes.....Clear.
- f) Cowlings.....Secure.

### 3. UNDERCARRAGE

- a) Shock cords.....Secure.
- b) Struts.....Secure/condition.
- c) Brake lines.....Secure.
- d) Brakes.....Free/condition.
- e) Tyres.....Inflation/creep/tread.

### 4.WING

- a) Strut.....Secure/damage.
- b) Aileron.....Full & free/ fabric/hinges/linkage.
- c) Fabric/leading edge/tip.....Condition.
- d) Fuel tank.....Visual check/cap secure/breather clear.
- e) Pitot head.....Clear.

### 5.FUSELAGE

- a) Skin.....Condition.
- b) Aerials.....Secure.
- c) Door latch & hinges.....Operative.
- d) Windows.....Clean.

### 6.TAIL AREA

- a) Fabric.....Condition.
- b) Cables/turnbuckles.....Secure.
- c) Elevator.....Full & free/cable linkage/hinges.
- d) Rudder.....Full & free/cable linkage/hinges.
- e) Tail wheel.....Free/sponge linkage secure/main skid O.K.

#### ➡ Before Start.

- a) Seat and harness.....Adjust/secure.
- b) Hatches.....Closed & locked.
- c) Fuel tap.....**ON**.
- d) Mag./starter.....Insert key.
- e) Circuit breakers/fuses.....Check.
- f) Instruments.....Set/undamaged.
- g) Radio etc.....**OFF**.
- h) Cabin air/heat.....**OFF**.
- i) Master switch.....**ON**.
- j) Primer.....As required.
- k) Brakes.....**ON**.
- l) Controls.....**UP** elevator.
- m) Lookout, call "CLEAR PROP."
- n) START ENGINE.

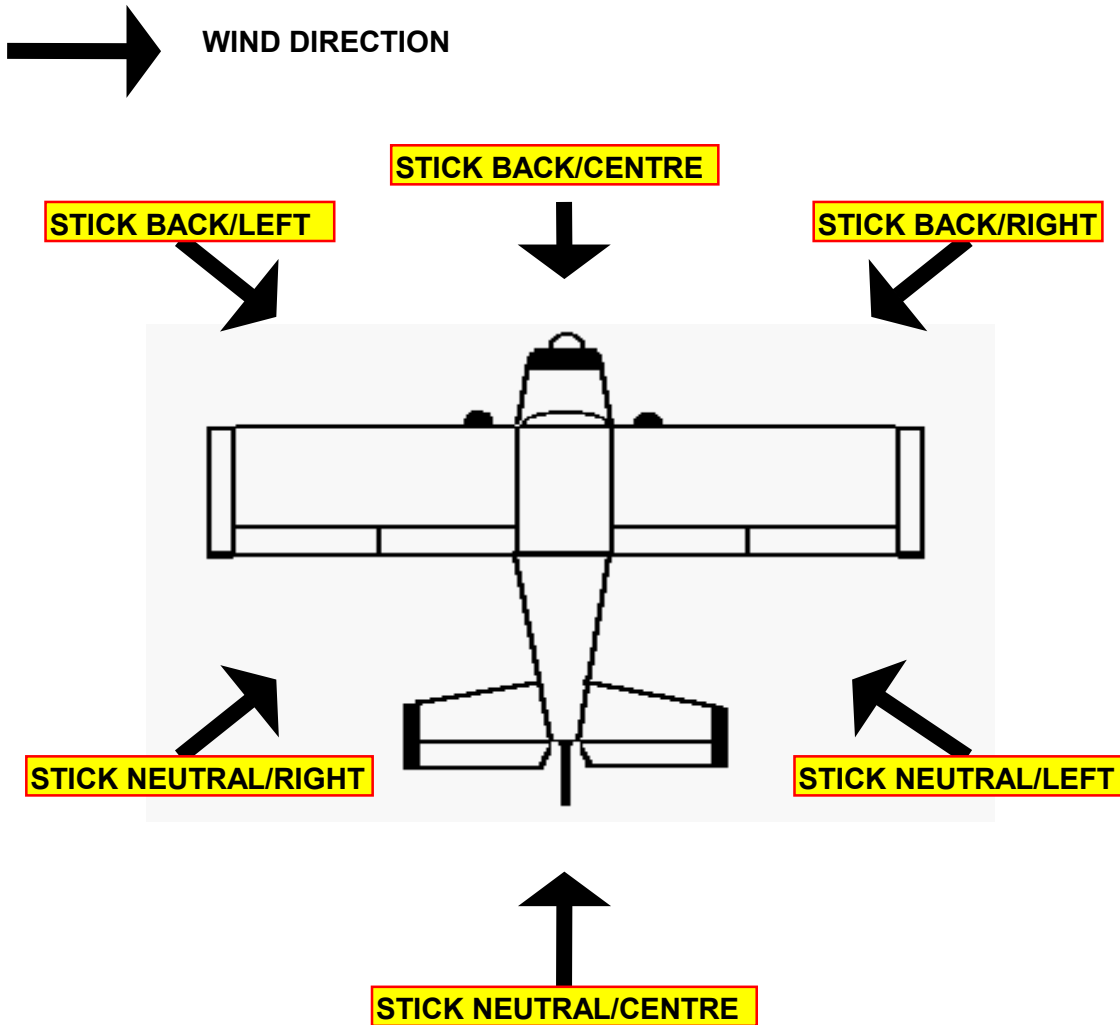
#### ➡ After Start.

- a) R.P.M. .... Set to min. vibration approx. 3000.
- b) Radio.....**ON** and tuned.
- c) G.P.S. ....Set.

➡ Taxi.

- a) Pre-flight and taxi obtained.
- b) Set altimeter.
- c) Brakes..... Check.
- d) Steering..... Check.

*CONTROL STICK POSITION DURING TAXI IN STRONG WIND.*



➡ Power Checks.

- a) Position.....Into wind & clear all round.
- b) Brakes.....**ON**.
- c) Cylinder temp.....Normal.
- d) R.P.M.....4000.
- e) **MAGNETOS CHECK**  
 Left    ⇨    Right    ⇨    Both: Max. drop 75 r.p.m. Reset to idle.

➡ Vital Actions.

- a) Trim.....Set for take off.
- b) Controls.....Full & free.
- c) Fuel.....**ON** & sufficient.
- d) Instruments.....Set.
- e) Hatches.....Closed.
- f) Harness's.....Secure.
- g) Lookout.....Clear to proceed.

➔ Take off.

Apply throttle gently. Move stick forward immediately to lift tail. Aircraft will swing gently to left. Allow aircraft to fly itself off.  
Cross wind - aileron up into wind, roll on one wheel till speed gained.

\_\_\_\_\_ after take off \_\_\_\_\_

- a) Positive rate of climb.
- b) Temps. and R.P.M. normal.

➔ Landing Checks.

- a) Brakes .....**OFF**.
- b) Fuel.....**ON/SUFF.**
- c) Hatches & Harnesses.....Secure.
- d) Instruments.....Set.

**ROTATE ..... 30 kts.**  
**CLIMB:**  
**BEST ANGLE ..... 40 kts.**  
**BEST RATE (to 4000ft)..... 50 kts.**  
**CRUISE (5800 rpm)..... 60 kts.**  
**APR. & LAND** *initial final thresh*  
**normal**        50        40        35 kts.  
**glide**         50        40        35 kts.  
**MAX. CROSS WIND @ 90°... 15kts.**  
**STALL ,no power....25kts.**

Cross wind landing - wing down technique, slip into wind, ground into wind wheel first and follow through with into wind aileron UP. Use brakes to keep straight.

➔ Shut Down.

- a) Position.....Into wind.
- b) Brakes .....**ON**.
- c) R.P.M.....3000.
- d) Fuel.....**OFF**.
- e) Radio & electrics.....**OFF**.
- f) Throttle.....Close.
- g) Ignition switches.....**OFF**.
- h) Master.....**OFF**.

**ENGINE FAILURE**

<i>ON TAKE OFF:</i>	<i>IN FLIGHT:</i>
1/ Lower nose-45kts.	1/ Airspeed.....45kts.
2/ Land straight ahead.	2/ Select landing area.
<b>DO NOT TURN BACK!</b>	If height sufficient:
3/ Fuel.....OFF.	3/ investigate failure:
4/Electrics.....OFF.	Fuel/ign. switches...ON
<b>HATCHES RELEASED-HARNESSTIGHT- FUEL &amp; ELECTRICS OFF. KEEP FLYING THE PLANE</b>	

This is a very light aircraft. After shut down :

- ➔ Insert control locks.
- ➔ Chock wheels.
- ➔ Tie aircraft down.

**EMERGENCY**

<b>Engine fire on start:</b> 1/ 3000 r.p.m. for 1 min.➔SHUT DOWN <b>IF FIRE CONTINUES:</b> 1/ Throttle.....CLOSE. 2/ Fuel.....OFF. 3/ Ign. switches.....OFF. 4/ Master.....OFF. <b>EVACUATE AIRCRAFT</b>	<b>Engine fire in flight:</b> 1/ Fuel.....OFF. 2/ Cabin air/heat.....Closed. <b>When engine stops:</b> 3/ Ign. switches.....OFF. 4/ Airspeed-increase to find incombustible mixture.	<b>Electrical fire in flight:</b> 1/ Master.....OFF 2/ Cabin air/heat.....closed 3/ Fire ext.....Activate 4/ Ventilate cabin.
---	---	---



