

## HGFA'S PHASE 3 – 11 Weightshift Pilot Training Syllabus.

### UNIT 2

#### Phase 9 Maintenance

##### *Objectives*

The student will be able to maintain the aircraft to manufacturer's specifications.

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<b>Venue / Lesson Type:</b>	Briefing Room, Tie Down Area / Theory lecture-discussion, Practical Sessions
<b>Lesson Duration</b>	Approx 4 – 6 hours / 2 – 3 Sessions
<b>Equipment:</b>	White board, Aircraft
<b>Other Materials:</b>	HGFA Operations Manual, Maintenance documentation

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- Periodic Inspection Requirements
- Inspection Criteria
- Aircraft Log Books
- Defect Reports
- Maintenance Release
- Special Servicing
- Directives
- Repairs
- Modifications
- Unusual Occurrence
- Basic Engineering
- Locking Procedures
- Aircraft Documentation

##### References:

HGFA Operations Manual  
 Manufacturers Handbook  
 Microlight Pilot's Handbook – Brian Cosgrove  
 Aircraft Log Book  
 Maintenance Documentation

## Phase 9 Maintenance

Maintenance is a very important requirement for all microlight pilots and owners. It therefore follows that the owner/pilot familiarise themselves with what is required of them in regards to maintenance, modifications, repairs and have a basic understanding of the engineering of their aircraft. Below you will find a number of excerpts from the HGFA Operations Manual, AirBorne's Pilot Handbook and Rotax's Owner's Manual that assists in addressing these important requirements.

### 9.6 Weightshift Microlight Maintenance Standards.

The registration of weightshift microlights is only valid as long as all necessary Maintenance, Modification and Service requirements are fulfilled.

These requirements include

- a) Maintenance of aircraft as per either:
  - (i) the manufacturers Maintenance Schedule, or
  - (ii) the Maintenance Schedule included in this manual, adjusted as necessary, to suit the particular weightshift microlight.

(This is only to be used in the absence of a manufacturers Maintenance Schedule or where it is generally more detailed than the Manufacturers Maintenance Schedule).

- b) Modification as detailed in any relevant Airworthiness Directives.
  - a) Modification to approved details, obtained from the manufacturer.
  - b) Repairs necessary to replace minor damage, wear or ageing.
  - c) Servicing, replacement and overhaul, inspection and checking in compliance with the Maintenance Schedule.

***Where a weightshift microlight is used for training operations, any maintenance requiring component removal or replacement must be conducted by the aircraft manufacturer or the manufacturer's accredited service agent.***

## Periodic Inspection Requirements

### 9.7 Periodic Inspections

After each five years of service, all HGFA registered weightshift microlights must undergo an airworthiness inspection conducted in accordance with HGFA inspection guidelines.

Weightshift microlights operated in accordance with this Manual shall be maintained in accordance with the Manufacturers Manual. Where no Manufacturers Manual exists the aircraft shall be maintained to the Schedules contained in this Manual.

**NOTE: The following Maintenance Schedules are generalised for use with varying construction details.**

Cross out items not applicable to this aircraft and insert in the spaces provided, additional items suitable for checking in this aircraft.

#### Code:

1. Oil lube, clean and service.
2. Check as directed.
3. Check for insecurity, crack, wear and faulty operation.
4. Remove, inspect and replace if necessary.
5. Recommend replacement or overhaul.

*Final responsibility for a microlight's airworthiness and operation is to be provided by the pilot's signature on the weightshift microlight log book.*

#### Log Book

When maintenance is performed the appropriate square on the Maintenance Schedule should be checked off and a log book entry made.

#### 9.7.1 Notes on Periodic Inspections of Weightshift Microlights.

##### 9.7.1.1 Engine Power

- Spark plugs should be the type recommended by the manufacturer of the engine.

- Adjusting the carburettor is a specialised job and can have a large effect on the power being developed.
- Altitude can also affect the power available. When moving to a field with a different elevation it may be necessary to retune the carburettor.

### 9.7.1.3. Airframe Tubing

#### a) Installation and Removal

When removing tubing do not bend or force tubes. When installing do not distort tubing from its original shape.

#### b) Inspection

Inspect tubing for cracks, damage from abrasion, elongated holes or distortion in tube surface. Never attempt to repair tubing, always replace with new part. Inspect tubing for corrosion in an out. If corrosion is present it must be carefully removed with sandpaper, or be replaced with a new part.

#### c) Replacement

Aluminium tube comes in many different sizes and grades. It is recommended that only manufacturer supplied tubing be used. Technical assistance of this nature may be obtained from most manufacturers should there be any difficulty in obtaining replacement tubing.

### 9.7.1.4. Bolts

#### a) Installation and Removal

- After tightening, all bolts should have at least 2 threads showing.
- All self-locking nuts should not be installed more than 2 times.
- If grip length is too long, washers may be added. No more than 3 washers should be used.
- A washer should always be installed under the nut.
- Be sure not to over-torque bolts when installing.
- Check assembly instructions for correct bolt placement.

#### b) Inspection

- Check bolts for worn shanks, bad threads or corrosion.

### 9.7.1.5 Sails

#### a) Installation and Removal

When installing or removing the sail make sure there are no sharp edges or burrs that will tear the sail. See the Assembly and Parts Manual for complete instructions.

**b) Inspection**

- i) Check for tears in the sail cloth or any loose or unravelled seams.
- ii) Check all inspection zippers to see if they function smoothly and close completely.
- iii) Inspect Velcro strips or inboard panels for wear or frayed edges.
- iv) Check undersurface support tabs.

Sail may be repaired with appropriate sail tape or a sewn on patch. Keep the sail clean of oil and dirt by washing the sail with soap and water. Keep the sail covered when not in use.

**CONTINUED EXPOSURE TO SUN DRAMATICALLY SHORTENS THE LIFE OF SAILS – possibly to as little as six months.**

Put your trike back into the hanger when practicable.

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**PILOT HANDBOOK – EDGE SERIES MICROLIGHTS**

## 10.5 Maintenance Schedules

Airborne microlights have been designed to permit easy inspection, and operators should have no difficulty in assessing problems or recognising damage if visual checks are carried out correctly.

General care should include:

Washing down the tube work with warm water and a light detergent followed by rinsing with fresh water.

Fabric sponged with warm water and a mild detergent and rinsed with fresh water.

The pod and wheel spats washed and polished using commercially obtainable shampoos and polishes.

Treat all exposed metal components (including the engine) on the trike base (only) with a dewatering compound such as WD40 or CRC spray. This guards against corrosion and makes cleaning much easier.

Lubricate the throttle cables regularly using a light machine oil.

The cockpit area should have all litter removed to minimise corrosion and to safeguard the propeller.

Apart from the consequences of heavy landing, or of exceeding flight limitations, the major factors requiring attention are corrosion and fatigue.

There are no inherent fatigue problems with the Airborne microlights, but excessive loads and vibration can weaken the structure. Regular inspection for hair-line cracks in areas under high stress, such as bolt holes, tube junctions, etc is recommended.

Many components can be replaced with ease, and for difficult repairs consult your Airborne Agent or the Airborne Factory.

The registration of microlights is only valid provided that all Maintenance, Modification and Service requirements are fulfilled.

These requirements include:

- (a) Maintenance of aircraft as per the Maintenance Schedule in this handbook.
- (b) Modification as detailed in any relevant Roadworthiness Directives.