Light Aircraft Association	**Standard Modification** Issue 1	Mod No. SM15703 Page : 1 of 6 Compiled : B J Syson Approved : J Viner

TITLE : Light Flight Ignitech Rotax ignition modules

APPLICABILITY : **Carburetted Rotax 91x series engines**
Mod Type : **At build or retro-fit**

1. INTRODUCTION

The Ignitech ignition modules are replacements for the Rotax ignition modules. Unlike the Rotax originals they are not mounted on the engine, but on the airframe behind the firewall.

This Standard Modification covers the fitting of a pair of Ignitech ignition modules supplied by Light Flight, using Light Flight fitting accessories: a cage for mounting the modules, and a firewall closure plate for passing the Ignitech looms through the firewall.

Supplier details:
LIGHT FLIGHT
DRIFFIELD HOUSE
FIVEHEAD
TAUNTON
TA3 6PX
www.lightflight.co.uk

Extract from Rotax engine type 912 and 914 series Illustrated Parts Catalogue showing parts for which Ignitech replacements are available:

					Parts per Engine						
FIG. & ITEM NO.	STATUS	PART NO.	INDENT	Description	912 A	912 F	912 S	912 UL	912 ULS	914 F	914 UL
19	n.a. N	965359 965446	.1	SMD-ELECTRONIC MODULE (4p+single con.)	2	2		2		2	2
20	n.a. N	966724 965440	.1	SMD-ELECTRONIC MODULE (6p+4p+single con.)			2f		2f		
20	n.a. N	966728 965442	.1	SMD-ELECTRONIC MODULE (6p+6p+single con.)						2m	2m
20	n.a. N	966729 965444	.1	SMD-ELECTRONIC MODULE (6p+6p+single con.)	2o	2o	2o	2o	2o		

1.1. LAA 'ACCEPTANCE IN PRINCIPLE' OF INSTALLATION

As the Ignitech ignition modules are not mounted on the engine, but on the airframe behind the firewall, the details of each installation are potentially different. Therefore

- the modules' location,
- how the modules are mounted to the airframe, and
- the location of the firewall breach for the wiring looms

must be accepted prior to installation by LAA Engineering.

Before using this Standard Modification, correspond with LAA Engineering and obtain an 'acceptance in principle' email, containing the following wording:

> ***"This email is for use with LAA Standard Modification 15703 issue 1, and signifies LAA acceptance in principle of the proposed Ignitech module installation details below for G-[XXXX] only."***

1.2. NOTES FOR INSPECTORS

This is an unusual Standard Modification in that the details of the installation are not well defined. This is necessary because the modules are mounted behind the firewall, not on the engine. Therefore, the installation will differ for every type of aircraft, and may differ between different examples of the same type.

To fill this gap, LAA Engineering provide an 'acceptance in principle' email of the proposed installation. However, it is the LAA Inspector's role to ensure that:

- The actual installation is as accepted in principle by LAA Engineering.
- The installation complies with the Requirements of this Standard Modification.
- The installation is in accordance with the manufacturer's installation instructions.
- The installation is to a satisfactory standard and in accordance with standard (light) aircraft engineering practice.
- The installation does not adversely affect operation - normal or emergency - of the aircraft.

If there is a conflict between the LAA 'acceptance in principle' email, the requirements of this Standard Modification, or the manufacturer's installation instructions, contact LAA Engineering for a resolution.

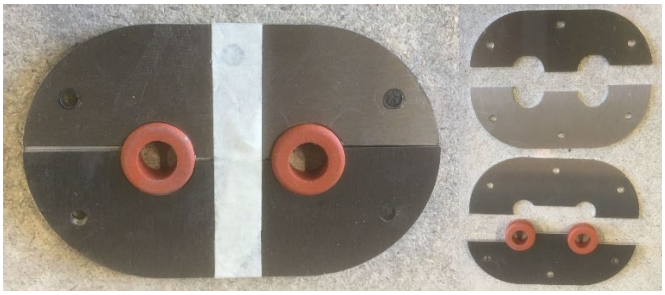
1.3. IMAGES OF PARTS

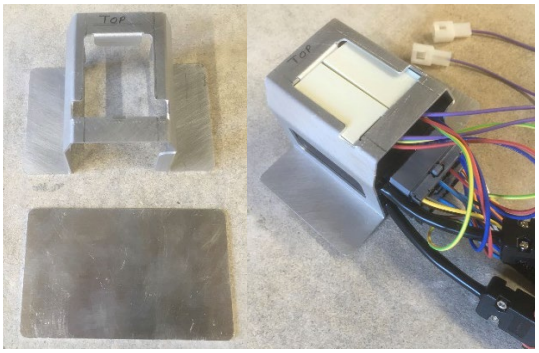

LF-Sparker-DC-CDI-P2

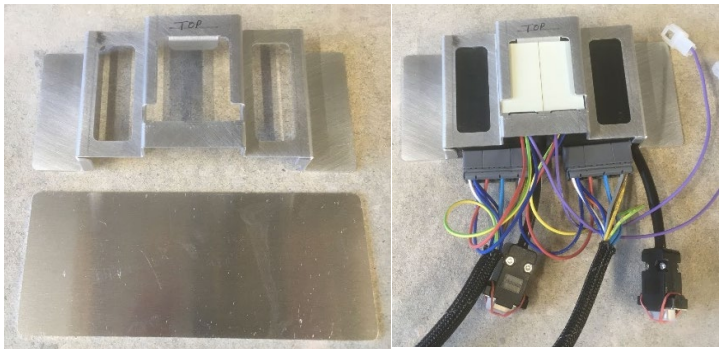

LF-4+1s-FRNC-x


LF-6+6-FRNC-x


LF-6+4+1-FRNC-x


LF-CP-SS1


LF-MOUNT-PB1


LF-MOUNT-SS1

2. PARTS LIST

Quantity	Part no.	**Description**	**Source**
1	Version 2.x	Light Flight fitting instructions and wiring diagram ○ 6+6, 6+4+1 or 6+1 plugs to match engine	Light Flight
2	LF-Sparker-DC-CDI-P2	Ignitech Rotax 912 ignition module	Light Flight
2	LF-6+6-FRNC-x or LF-6+4+1-FRNC-x or LF-4+1s-FRNC-x	Ignitech FRNC ignition loom ○ x is length in mm ○ FRNC-sheathed cable option only, not PVC-sheathed ○ 6+6, 6+4+1 or 6+1 plugs to match engine	Light Flight
1*	LF-M-SIDE1 or LF-M-PB1	Light Flight folded sheet aluminium module mount/cage ○ 'side-by-side' or 'piggy-back' options available	Light Flight
1*	LF-CP-SS1	Light Flight twin-layer** stainless-steel*** firewall closure plates with high temperature silicone grommets	Light Flight
As req'd	LF-FF-SIDE or LF-FF-PB or 970J (LAS)	3mm Carbolane paper (Fiberfrax) ○ Required between modules and firewall if modules mounted on uninsulated metal firewall ○ Light Flight pads to match 'side-by-side' or 'piggy-back' mount	Light Flight LAS Aerospace
As req'd	-	Envirograf Silicone Fireproof Sealant or similar fireproof sealant with a rated fire protection temperature of minimum 1100°C / 2000°F ○ As required to fully seal firewall	Envirograf Light Flight etc.

* This Standard Modification normally requires the Light Flight module cage and firewall closure plates be used. If alternatives need to be used this normally requires further assessment and therefore becomes a prototype modification. However, simple alternatives to the Light Flight hardware may be accepted in the LAA 'acceptance in principle' email.

** Light Flight also provide single layer closure plates. Use of these is not acceptable under this Standard Modification.

*** Light Flight also provide aluminium closure plates. Use of these is only acceptable for use on a Microlight aeroplane that has an aluminium firewall.

3. REQUIREMENTS

3.1. MODULE LOCATION

- The modules' location must be within the terms of the 'acceptance in principle' email from LAA Engineering.
- The modules must be located outside of the engine compartment. This means aft of the firewall in a conventional 'tractor' aircraft.
- The modules' location must remain relatively cool, and allow for some free air cooling of the modules. The modules must not be enclosed, or wrapped.
- The modules' location must remain dry. It is recommended that the modules are not oriented plug end up, so that moisture cannot collect inside the modules.
- The modules' location must not interfere with operation - normal or emergency - of the aircraft, including entry and exit of the occupants. They must not be located where they could pose a significant injury risk in an accident.

3.2. MODULE ATTACHMENT

- The modules' means of attachment must be within the terms of the 'acceptance in principle' email from LAA Engineering.
- If the modules are mounted on an uninsulated metal firewall, the modules must be insulated from the firewall using 3mm Carbolane paper (Fiberfrax).
- The module cage must be attached securely and rigidly to the airframe. Load test to minimum ten times the modules' gross weight (6 kg / 13 lb) in all directions.

3.3. LOOMS THROUGH FIREWALL - LOCATION AND SEALING

- The location of the breach of the firewall for the Ignitech looms must be within the terms of the 'acceptance in principle' email from LAA Engineering.
- Only fireproof fasteners, such as (stainless) steel fasteners, may be used on the firewall. Aluminium fasteners are not fireproof and must not be used.
- The firewall must be satisfactorily sealed against fumes, liquids and fire. If sealant is required, fireproof sealant with a rated fire protection temperature of 1100°C / 2000°F minimum must be used.

3.4. WIRING

- The FRNC-sheathed cable wiring loom option must be fitted, not PVC-sheathed. Unlike PVC, Flame Retardant Non-Corrosive cables do not produce large quantities of hazardous smoke if they burn.
- The modules must only be powered by the aircraft's 12V supply when the starter is engaged.
- The 12V supply wiring must be suitably protected by fuses or circuit breakers.
- The looms must be suitably supported and protected against abrasion. Ensure that relative movement of the engine is accounted for.

4. WEIGHT AND BALANCE

Normally the net weight change with an Ignitech installation is negligible (less than 1 lb or 1/2 kg), and the effect on balance insignificant. However, if a particular installation may have a significant effect on weight or balance, the aircraft's weight and balance must be revised.

5. TESTING

Comprehensive ground testing is required in conjunction with your LAA Inspector. Ensure that the engine starts satisfactorily, and runs from idle to wide-open-throttle satisfactorily on each ignition. Mag drops should be reasonably small, and equal, at all engine speeds.

Ensure that the appropriate safety precautions are taken for high power ground running, including suitable location and restraining of the aircraft.

6. APPROVAL

Before the modified aircraft may be flown an LAA Inspector must check that the installation meets the requirements of this Standard Modification. Logbook entries must be made (airframe and engine), making reference to Standard Modification 15703 issue 1, and the Inspector must sign a Permit Maintenance Release (PMR) in the airframe logbook.

To enable the revised design standard of the aircraft to be recorded, a MOD1 Standard Modification Incorporation form (available from the LAA web site) must be completed and submitted to LAA Engineering. **The form must include** the name of the LAA engineer who provided the 'acceptance in principle' email, and the date of the email.

Approved:	J Viner Deputy Chief Engineer	Signed:		Dated:	14/06/2021

Note: please let us have feedback at engineering@laa.uk.com as to how you find the Ignitech ignition modules; whether that be good/bad, reliable/unreliable, easy/poor starting etc.