

	<b>Standard Modification</b> Issue 1	Mod No. SM 11985
		Page: Page 1 of 3
		Compiled: A Draper
		Approved: F Donaldson

**TITLE : Gross weight increase to 430kg.**  
**Lift strut and Area 1 Flaps & Aileron upgrade.**

**APPLICABILITY : RANS S6 ESD & ESD-XL**  
**Mod Type : Retro-fit**

### 1. Introduction

In order to enable the Rans S6 ESD and ESD-XL aircraft to be cleared for a maximum gross weight of 430kg (subject to satisfactory flight test results) and a maximum empty weight increase to 243kg (Rotax 503 engine fitted) the standard RANS build 'Area 1' control surfaces and current S6-ES kit standard lift struts must be fitted. The correct ailerons and flaps can be identified by their constant chord, rather than tapered, measuring approximately 180mm. The correct front lift struts are identified by their chord dimension of 80mm. The correct rear struts are identified by the presence of a 'turbulator' ridge running span-wise at the thickest part each side of the section.

If retrofitting an early S6 ESD-XL with fixed flaps, it will also be necessary to install the flap mechanism not originally fitted to these aircraft so that the flaps can be operated. The S6 ESD model must be modified to increase the maximum flap deflection. To qualify for the gross weight increase, the flap deflection on both the ESD and ESD-XL versions must be between 40° and 43°.

### 2. Parts List

2.1 Procure the following parts.

The retrofit kit contains all the necessary parts and hardware to fit, including detailed instructions. Re-use of some existing hardware is required, therefore inspect to ensure removed hardware is satisfactory.

Qty	Part No.	Description	Source
1	Upgraded front and rear lift struts and Area 1 flaps and ailerons kit	Gross weight upgrade kit	Sport Air Ltd

### 3. Action

Note: All modification work requires checking and certification by a LAA inspector, including duplicate control inspections.

3.1 Install new lift struts according to the instructions provided with the retrofit parts. For strut installation, the wings need supporting and the incidence re-set.

3.2 Jury strut installations differ from aircraft to aircraft and may not fit the new wide chord front lift strut therefore trial fitting before drilling the jury strut attachment on the front strut will be necessary. Instructions are provided with the retrofit parts.

	<b>Standard Modification</b> Issue 1	Mod No. SM 11985
		Page: Page 2 of 3
		Compiled: A Draper
		Approved: F Donaldson

- 3.3 Build and install the ailerons according to the instructions provided with the retrofit parts.
- 3.4 Build and install the flaps according to the instructions provided with the retrofit parts.
- 3.5 Install the flap operating system (ESD-XL models) according to the instructions provided with the retrofit parts.
- 3.6 Make the necessary alterations to the flap control system, according to the instructions provided with the retrofit parts, to result in flap deflection of between 40° and 43°.

#### 4. Weight and Balance

- 4.1 Re-weigh the aircraft and raise a new weight and balance record\*. Maximum empty weight is 243kg. Calculate examples of maximum forward and maximum aft CG cases, not forgetting the zero fuel case to check that CG limits are not exceeded. If a worst case loading example results in the CG being beyond the limit, ballast may be required to alter the empty CG position.

#### 5. Limitations and Placards

- 5.1 The aircraft must be operated in compliance with the following operating limitations, which shall be displayed in the cockpit by means of placards or instrument markings:

##### 5.2 Aerobatic Limitations

The aeroplane is permitted to fly only for non-aerobatic operation. In this context, non aerobatic operation includes:

- i) any manoeuvre necessary for normal flying.
- ii) intentional stalls from level flight.
- iii) steep turns in which the angle of bank does not exceed 60 degrees.  
Intentional spinning is prohibited.

##### 5.3 Loading Limitations

Maximum Total Weight Authorised: 430 Kg  
 CG Range: Aft limit 71.0 inches aft of datum. Forward limit 62.5" aft of datum at gross weights up to 295 Kg, forward limit 66.0" aft of datum at a gross weight of 430 kg, with linear variation between 295 Kg and 430 Kg.  
 Datum Point is: rear face of the propeller.

##### 5.4 Engine Limitations

Maximum engine RPM: 6800  
 Maximum continuous engine rpm: 6500

	<b>Standard Modification</b> Issue 1	Mod No. SM 11985
		Page: Page 3 of 3
		Compiled: A Draper
		Approved: F Donaldson

## 5.5 Airspeed Limitations

Maximum indicated airspeed: 110 mph

Maximum indicated airspeed, flaps extended: 65 mph.

## 5.6 Other Limitations

- i) Re-compile mandatory Microlight cockpit weight placard (available from LAA).
- ii) Install placarding that includes the wording below.

**OCCUPANT WARNING:**  
**THIS AIRCRAFT HAS NOT BEEN CERTIFICATED**  
**TO AN INTERNATIONAL REQUIREMENT.**  
**THE AIRCRAFT SHALL BE FLOWN BY DAY**  
**AND UNDER VISUAL FLIGHT RULES ONLY.**  
**SMOKING IN THE AIRCRAFT IS PROHIBITED.**

## 6 Special Inspections and Flight Test

6.1 Advise LAA Engineering once modification is complete and request Permit Flight Release Certificate (PFRC) to authorise flight test. Copy of weight and balance results and worksheets\*, signed by the inspector, required by LAA at this stage. Include details of new or amended placards installed. If the Certificate of Validity has expired a full annual inspection of the aircraft must be carried out and the Permit Renewal Application, signed by the inspector, submitted.

6.2A Permit Maintenance Release (PMR) is also required from your inspector. Form LAA/MOD1\* Standard Mod Authority, is used for this.

Note: \* The LAA/MOD1 Standard Mod Authority form, blank worksheets (LAA/WS) and weight and balance forms (LAA/WB) are available from the LAA web site [www.laa.co.uk](http://www.laa.co.uk)

6.3 With valid PFRC and PMR, conduct flight test and complete Flight Test Schedule LAA/FT-NEW (supplied with PFRC).

Note: The aircraft may only be flown for the purposes of flight testing until the amended Permit to Fly and Operating Limitations sheets have been issued.

6.4 Following flight test, submit the flight test report to LAA Engineering and send also the original Permit to Fly and Operating Limitations sheets for amendment.

## 7 Certification

7.1 Make appropriate logbook entry noting duplicate control inspections certified by LAA inspector.