

	Standard Modification Issue 1	Mod No. SM12305
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		Compiled : A Draper
		Approved : F Donaldson

TITLE : Soft Start Module for Rotax Engines.

APPLICABILITY: Rotax 900 series engines as detailed in Soft Start Module instructions and the ConAir Sports web site.

Mod Type : **Retro-fit**

1. Introduction

The Rotax 900 series engines have a dual magneto ignition system whose ignition timing is controlled by electronics. At an engine speed below 1200 rpm, the ignition timing is retarded by about 10 degrees from the normal ignition timing advance angle to aid starting. However, if during starting the engine rpm exceeds 1200 rpm, even momentarily, the ignition advances instantaneously and this can cause the engine to stop suddenly.

ConAir Sports Ltd has developed an electronic device that, when integrated to the ignition system of the engine, delays for 3 seconds the signal that causes the switch over to the normal ignition timing advance after the 1200 rpm threshold speed has been exceeded. This short delay allows the engine rpm to build to a speed that enables the engine to continue running smoothly when the normal ignition timing advance is re-established. The Soft Start Module is designed not to affect any part of the ignition system once the starter switch has been released.

2. Parts List

The Soft Start Module is supplied with all the necessary parts and hardware required for a satisfactory installation.

Qty	Part No.	Description	Source
1	SSM	Soft Start Module	ConAir Sports Ltd

3. Action

3.1 Read fully the installation instructions provided with the Soft Start Module.

3.2 Prior to the installation of the Soft Start Module (SSM), it is important to establish that the maximum temperature that it will be exposed to does not exceed its maximum allowable temperature of 80°C. To do this, attach one of the temperature sensitive labels supplied with the SSM kit to the face of the ignition module onto which the SSM will later be installed.

3.3 With the engine cowlings in place and the aircraft suitably restrained from moving, start the engine and, when engine temperatures allow, run the engine at 4000rpm or faster for at least 2 minutes unless detrimental to so. Reduce rpm to normal idle speed for a further 2 minutes minimum before shutting down. To account for an under-cowl temperature rise after engine stop, leave the engine cowlings in place for 15 minutes before removing them to check the maximum temperature recorded by the temperature sensitive label.

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- 3.4** If the maximum temperature recorded has not exceeded 80°C, re-cowl the engine and conduct a flight that includes a 5 minute climb at best climb speed, V_Y and at maximum continuous power. Do not allow engine to exceed limits.
- 3.5** After the flight, check again the maximum temperature recorded by the temperature sensitive label. If the recorded temperature has not exceeded 80°C, the SSM may be installed for a flight test. If the recorded temperature has exceeded 80°C, the SSM must not be fitted. Contact ConAir Sports Ltd for advice on how to proceed.
- 3.6** After installing the SSM according to the instructions provided, attach a new temperature sensitive label to the module case for monitoring purposes.

4. Flight Test and Special Inspections

- 4.1** Before the modified aircraft may be flown, a suitable LAA inspector must check the work and, if satisfied, make an appropriate logbook entry, including the modification number SM12305 and sign a Permit Maintenance Release (PMR).
- 4.2** Conduct a flight including a 5 minute continuous climb at best rate of climb speed, V_Y and at maximum continuous power. Do not allow engine to exceed limits.
- 4.3** Following the flight, check the temperature sensitive strip on the SSM case. If the recorded temperature has exceeded 80°C, contact ConAir Sports Ltd for advice on how to proceed.

5. Certification

If the temperature recorded on the temperature sensitive label attached to the SSM case has not exceeded 80°C, a suitable LAA inspector must make an appropriate logbook entry noting the maximum temperature shown on it, again including the modification number SM12305. Leave the temperature recording label in place for future monitoring of maximum temperature exposure to the SSM.