AIRWORTHINESS APPROVAL NOTE NO: 26986

APPLICANT:	Cyclone Airsports		
AIRCRAFT TYPE:	Cyclone AX2000		
REGISTRATION NO:	G-MZJR	CONSTRUCTOR'S NO:	7385
DESIGN ORGANISATION:	Cyclone Airsports		
CERTIFICATE CATEGORY:	Permit to Fly		
MODIFICATION NO:	AX-174		
MODIFICATION TITLE:	Approval of the Cyclone AX2000 and Approval for a Permit to Fly at 450 kg MTWA		

1. Introduction

The Cyclone AX2000 is a development of the Cyclone AX-3 and is described in AAN 25727 (Rotax variants) and AAN 26502 (HKS variants).

The AX2000 has been stressed to a maximum take-off weight of 450 kg, but the initial approval permitted a maximum take-off weight of 390 kg. Since this approval, the applicant has shown compliance with BCAR Paper No. S901 Issue 3, and following a change in pilot license legislation, this aircraft is now approved by this AAN to operate at a MTWA of 450 kg.

The Cyclone AX2000 is defined in TADS No BM 53 Issue 7 or later issue.

2. Description

The Cyclone AX2000 is of conventional layout. It has a high keel tube running the length of the airframe to which are mounted all the major components (i.e. the engine, the wings and the empennage). It is identical in layout to the Cyclone AX3 and has a tricycle undercarriage arrangement. It is powered by either a Rotax 582, Rotax 503 or HKS 700E V3 engine.

It has a side by side seating layout with a single centrally mounted stick and two sets of rudder pedals. The aircraft is fitted with a non-structural cockpit fairing and has forward hinged removable doors. There are two fuel tanks providing a maximum capacity of 62 litres. The main fuselage beam is of steel tube wire-braced construction in accordance with Modification No AX-74, approved by AAN 25599. The main undercarriage legs are composite.

The aeroplane is generally constructed of 6261 T6 and 7075 T6 Aluminium alloy covered (on both the wings and fuselage) by "ULTRALAM" man-made fabric. This (155 gsm) material consists of a polyester substrate with a PVF film covering and is produced by GTS Flexible Materials Ltd., Bracknell.

The two spar, double-surface wing has the profile formed by battens, rather than ribs. There is an anti-balance/trim tab fitted to the aircraft. It has no flaps.

Aerotowing of Class 1 and Class 2 hang gliders is permitted (see AAN 25727 Issue 2) and is carried out by adding tug pillars to the lower surface of each wing (attached to the rear spar). The tow line is in the form of a vee-cable from each tow pillar to the main towline to the glider. Aerotowing is not permitted with the Rotax 503-powered variant.

Weighing Report for AX2000 G-MZJR is provided in Section 3 of applicant's submission for Modification AX-174, and shows that the normal loaded weight is less than 450 kg. The CG range is unchanged.

3. Certification Basis

The certification basis for the AX2000 is BCAR Section S Issue 1 dated April 1995 plus BCAR Paper No. S901 Issue 3. The certification basis for the Aerotowing modification is BCAR Section S Paper No S885 Issue 1 dated 28 Sept 1995 (Aerotowing of hang gliders) Supplement 5.

4. Compliance with Requirements

The applicant has submitted a Compliance Checklist, Section 1 of Modification AX-174. AANs 25727 and 26502 detail compliance with the nominated certification bases appropriate at the time. The applicant has shown compliance with the differences between BCAR Paper S901 Issue 3 and with the certification bases appropriate at the time of original approval. BCAR Paper No S901 Issue 3 additionally introduces spin requirements (see paragraph 5 below). The CAA have examined this manufacturer's submission and is satisfied that the AX2000 complies with the requirements.

The Aerotowing variant was found to comply with the requirements of BCAR Section S Paper No S885 Issue 1 dated 28 Sept 1995 (Aerotowing of hang gliders) Supplement 5.

5. Flight Test

See AANs 25727 and 26502 for details on flight test. BCAR Paper No.S901 Issue 3 introduces requirements in S221 for spin recovery. This requirement is addressed by applicant's flight test report (Ref: ftr/ax2/spin/29399), Section 2 of Modification submission AX-174. Trials covered a representative range of weight and CG positions. It is noted that the configuration tested was fitted with a slotted centre-section (intended to increase up-elevator authority, power off), but that this is unlikely to change the spin recovery characteristics.

CAA flight test has been carried out. FTR 10807P refers. The handling was acceptable to CAA.

6. Owner's Manual

Cyclone AX2000 Owners Manual Issue 3 contains the information required by BCAR Section S from both the Pilot's Handbook and the Maintenance Manual. This owner's manual also contains the aerotowing supplement, and covers the Rotax 582, 503 and HKS 700-powered variants.

The change sheet required by AAN 26502 (limiting the maximum take-off weight to 390 kg and the maximum fuel to 50 litres) is not required.

A new change sheet shall be inserted in the front of the Owner's Handbook stating the following:

> *"This aircraft has been shown to comply with British Civil Airworthiness Requirements (BCAR) Section S plus BCAR Paper No S901 Issue 3. Consequently, operations are permitted up to a maximum weight of 450 kg, and fuel quantity is unrestricted within the constraints of maximum fuel capacity and maximum weight. This aircraft, however, is not within the definition of a microlight aeroplane as set out in the Air Navigation (No 2) Order 1995, CAP 393 as amended to 1/99 March 1999, Article 118, and is therefore not a microlight aeroplane.*
>
> *When the revised microlight definition (450 kg, unlimited fuel) is promulgated in the Air Navigation Order, this Change sheet may be removed."*

7. Noise

Noise certification standards described in BCAR Section N Issue 5 are applicable to all microlights registered in the UK after 1 Apr 84. As this aircraft is neither a microlight aeroplane nor a Type-Certificated aircraft, there are no mandatory noise requirements. However, voluntary compliance can be accepted and a noise certificate issued on that basis. Accordingly Noise Type Certificate No. 141M has been issued to this type. Issue 9 is current at the time of drafting this AAN and is valid at a weight of 450 kg.

8. Limitations

As detailed in CAA TADS BM 53 Issue 7.

9. Maintenance

Cyclone AX2000 Owners Manual Issue 3 Section 2 contains the information required by BCAR Section S.

10. Approval

The Cyclone AX2000 aeroplane is type-approved at 450 kg MTWA (TADS BM 53 Issue 7 refers). This aircraft, G-MZJR, and any aircraft conforming to the type design is eligible for the issue of a Permit to Fly provided that it is operated in accordance with the Owner's Manual referred to in Paragraph 6 and maintained to the provisions of this manual.

R J Hardy
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For the Civil Aviation Authority

Date 28 June 1999