CIVIL AVIATION AUTHORITY

AIRWORTHINESS APPROVAL NOTE NO. 13055

APPLICANT: Squadron Leader D W Bridson

AIRCRAFT TYPE: Scheibe SF 24A Motorspatz 1

REGISTRATION: G-BBKR

CONSTRUCTOR'S NO. 4018

Scheibe SF 24A Motorspatz
(Self Launching Motor Glider)
Investigation associated with recommending
a UK Certificate of Airworthiness in the Special Category

1. BACKGROUND.

This aircraft was constructed in 1962 and was on the German register as D-KECA. Sqd.Ldr. Bridson who is resident in Germany has purchased the aircraft and wishes to fly it in Germany, but since he is not of German nationality it was removed from the German register on 3rd May 1973. He has therefore made an application for it to be placed on the UK Register and for a UK Certificate of Airworthiness.

The SF 24A is a single seat high-wing self-launching powered glider, powered by a Zinc Brandl ZB 300S engine, which is a twin cylinder two stroke developing 23.5 max. BHP. In 1966 an SF 24B Registration No. G-ASPY was certificated in the UK, the only basic difference between the "A" and the "B" being that the latter has a heavier engine, the Hirth 560A/B "Solo" which develops 26 max BHP and is a four cylinder two stroke. In view of this the SF 24A has been designated Prototype (Modified).

2. DESIGN INVESTIGATION

In 1969 the Redhill definition of Self Launching Motor Gliders was agreed and part of this design investigation is therefore aimed at determining how the SF 24A complies with this definition, for the purposes of certification.

2.1 German Certification.

The SF 24A is approved by LBA Type Certificate Data Sheet No. L.581 as a Powered Glider and can be assumed as complying with LBA Information Sheet No. 10.05 - Regulations for Testing and approval of Powered Gliders.

In the approval documents the design manoeuvre maximum load factors are given as +4.0 and -2.0 but at the time of this

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~~Surveyor-in-Charge~~
~~Radio Surveyor~~
A & C Section
~~Aircraft Projects Department~~
~~Licensing Section~~
~~Flight Manuals Section~~
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For the Civil Aviation Authority

Date .....

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aircraft being certificated an Ultimate Factor of 2.0 was used, hence if the now current Factor of 1.5 is considered the maximum load factors become +5.3 and -2.65 which conform with the LBA current "Normal" category factors and accomodate the BCAR Section E "Cloud Flying" load factors.

The principal basic details and dimensions associated with German certification of the SF 24A are:-

Airframe

Span	= 14.06 M
Length	= 6.25 M
Height	= 1.35 M
Wing Area	= 11.80 M^2
Wing Root Chord	= 1.025 M
Wing Tip Chord	= 0.475 M

Weight

• Empty	= 235 kg
• Max AUW	= 345 kg

CG

19.7 to 29.8 cm aft of datum.
Datum is wing leading edge at Rib 2.

Speeds

• Never Exceed	= 160 Km/Hr
• Rough Air	= 140 "
• Air Tow	= 140 "
• Wing Launch	= 100 "
• Spoilers max.	= 100 "
• Rec.Lift Off	= 65 "
• Rec.Climb	= 75 "

Engine (ZINK BRANDLE ZB.300.S)

• Max	= 6000 r.p.m for 4 minutes
• Max.continuous	= 5600 r.p.m.
• Rec.Climb	= 4900 to 5100 r.p.m.

Prop

Hoffman Hoco G.2137 B.80.L

Fuel

Max. Capacity 16 litres
Reserve 2½ litres

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Misc. Limitations

- No aerobatics
- No spinning
- Weak link load 550-600 Kg
- Propeller must be removed for aero tow.

2.2 UK Certification

A table showing how the SF 24A compares with the "Redhill 1969 Definition" of a Self Launching Motor Glider is given below:-

Redhill 1969 Definition		SF 24
Max. AUW	750 Kg	345 Kg
Max. Take-off distance to 15.m	600 M	362 M
Climb to 300 M	4 min	3 min
Max. Stall	75 Km/hr	65 Km/hr
Min. Glide Ratio	20:1	20:1
Glide Ratio with Spoilers	8:1	8:1
Min. Span	14 M	14.06 M
Max. Seats	2	1
Max. Power Loading	1 BHP/20 lb	0.625 BHP/20 lb.
Max. Fuel	6 gallon	3.52 gallon

This shows compliance with the definition, hence the SF 24A can be defined as a Self Launching Motor Glider.

As one might expect, all the placards on this aircraft are in German and all the instruments calibrated in metric units. It has been agreed that metric calibrated instruments are acceptable but all placards must be in English. In addition, a placard must be displayed stating:-

"The aircraft must not be operated in conditions such that engine failure would be likely to be dangerous".

The pitot head is mounted on the fin of this aircraft, hence in the propeller slipstream. It has been established, however, that the effect of slipstream upon the ASI readings is small enough to be acceptable for the role envisaged.

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A 12 V starter/generator is fitted together with an 18 AH battery. It would seem, however, that the heavy duty cable has no short circuit protection, but it has been agreed that owing to the complexity of providing a self-protecting electrical system it will suffice to sheath the heavy duty cable in PVC so as to minimise the risk.

3. MANUALS

The Flight Manual applicable to this aircraft is the SF 24A Manual issued by Scheibe - Ref. Flughandbuch 1961 up to and including Amendment 6.

4. DESIGN APPROVAL

Having regard to the evidence presented by the applicant, it is agreed that the design of this aircraft is of a standard such that a recommendation can be made for the issue of a Certificate of Airworthiness in the Special Category, subject to the following conditions:-

(i) The aircraft is operated in accordance with the procedures and limitations contained in the Manual defined in Part 3 of this AAN.

(ii) The following must be placarded in view of the pilot:-

"The aircraft must not be operated in conditions such that engine failure would be likely to be dangerous".

(iii) The weights, speeds, engine limitations and miscellaneous limitations, marked with an asterisk (*) in Part 2.1 of this AAN must be included in the cockpit placarding, which must be in English.

(iv) The main electrical supply lead from battery to ground power socket and then to Regulator must be sheathed in a suitable PVC tube.

5. INSPECTION OF AIRCRAFT

This aircraft was inspected at KAMP LINTFORT, Germany on 26th September 1973. From the associated available data it was established that following removal from the German Register the aircraft was stored at Kamp Lintfort until 15th July 1973 when the work for annual C of A renewal was undertaken by Westdeutsche Luftwerburg, 433 Mulheim/Ruhr, Flughafen (Ref. Approval LBA II - A67.) and an entry made in the German Log book by LBA Inspector 735, declaring

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the aircraft eligible for C of A renewal, expiring 15th July 1974.

In view of this and the fact that an inspection of the aircraft revealed no visible deterioration since the entry in the log book, it is recommended that a Certificate of Airworthiness in the Special Category be issued for this aircraft.

E. H. Smith E H SMITH

For the Civil Aviation Authority

Date 2nd October 1973