
Type Acceptance Report

TAR 0/21B/5 – Revision 1

Schempp-Hirth Discus Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Schempp-Hirth Discus Series based on validation of EASA Type Certificate number A.049. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.177, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.0/21B/5 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

2. ICAO Type Certificate Details

Manufacturer:	Schempp-Hirth Flugzeugbau GmbH
Type Certificate:	A.049
Issued by:	European Aviation Safety Agency
Model(s):	Discus-2a, Discus-2b, Discus-2c
MCTOW	525 kg [1157 lb.] 565 kg [1245 lb.] – Discus-2c with 18m Wing Span
Max. No. of Seats:	1
Noise Standard:	Not Applicable

3. Type Acceptance Details

The application for New Zealand type acceptance was from the NZ agent, Jason Shields Sailplane Services dated 18 October 1999. Two examples of the Discus-2b had been imported in 1998, serial numbers 8 and 14 registered ZK-GKS and ZK-GYZ respectively. These were flown on special category experimental airworthiness certificates using a Provisional Flight Manual dated July 1998, pending completion of the German type certification process. The TCDS does not address serial number applicability. The first aircraft were pre-certification examples and up to serial number 12 require Modification Bulletin No. 360-21 to bring them up to type certificated standard. Subsequent to the completion of flight testing the manufacturer decided to add a small spring in the airbrake control system, and this is a small modification which must also be carried out. The LBA issues an Export Certificate of Airworthiness to certify eligibility under the Type Certificate. The First-of-Type example of the Discus-2a was ZK-GIL, serial number 41.

Type Acceptance Certificate No.0/05 was granted on 8 November 1999 to the Schempp-Hirth Discus 2a and 2b based on validation of EASA Type Certificate A.049. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

This report was raised to Revision 1 to include the Discus-2c version. The application was from Sailplane Services Limited dated 2 September 2007, and type acceptance was granted on 3 October 2007. The first-of-type example was serial number 1 registered ZK-GRM.

The Discus-2 is a development of the successful Discus 15m standard class competition sailplane. (Optional wing tip extensions are available.) Changes include a revised airfoil section and wing plan, swept back and upturned wing tips and a strengthened fuselage. The all-composite wing is a glass/carbonfibre/foam sandwich with carbonfibre rovings spar caps. Turbulator tape is used for boundary layer control. The two versions (2a and 2b) available differ only in the fuselage size. The version 2b has a standard size fuselage while the version 2a has a smaller fuselage available only on request which is only suitable for individuals up to 170 cm in height. It has slightly less drag for optimised performance in competition use. The Discus-2c is the current production model and is available in 15 or 18 metre wingspan. A new optional 15m winglet is also available under Mod Bulletin 360-36.

From the maintenance manual it is apparent that Discus-2 aircraft serial number 1 through 4 had different capacity wing integral water ballast tanks, while up to serial number 8 the horizontal tailplane had a slightly different construction layup. The other difference for aircraft up to serial number 12 is the means of canopy locking, detachment and jettisoning. All these differences are addressed in Modification Bulletin 360-21.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents, or were already held by the CAA:

(1) ICAO Type certificate:

- EASA Type Certificate Data Sheet no. A.049 at Issue 1 dated 16 September 2005
 - Model Discus-2a approved 14 July 1999
 - Model Discus-2b approved 14 July 1999
 - Model Discus-2c approved 16 September 2005

Musterzulassungsschein Nr.: 360 – Discus-2a – date of Issue 14 July 1999
 Type Certificate Data Sheet No. 360 – Discus-2a – Issue 1, July 14, 1999
 Musterzulassungsschein Nr.: 360 – Discus-2b – date of Issue 14 July 1999
 Type Certificate Data Sheet No. 360 – Discus-2b – Issue 1, July 14, 1999
 (LBA type certificate superseded by EASA type certificate.)

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Discus a/b was the Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR-22), effective on December 15, 1982 (Change 3 of the English original version); with voluntary compliance with JAR-22 effective on June 27, 1989 (Change 4 of the English Original Issue), including JAR22.375 of Amendment 22/90/1; plus the additional requirements related to CFP structural substantiation issued January 1981. For the Discus-2 this was updated to JAR-22 at Change 4 including Amendment 22/90/1; the GRP Standards for Structural Substantiation were at the issue dated July 1991; and compliance was shown with fin water-ballast systems (LBA Reference I4-I413/89), Seat and Restraint Systems (Draft NPA 22 D-46) and Head Rests (Draft NPA 22 D-64). This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as JAR 22 is the basic standard for sailplanes called up in Advisory Circular 21-1. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23. The Discus is approved for VFR-flying in daytime, and cloud flying.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Discus-2c: Jar 22.207(c) Stall Warning – In the aft c.g. condition the stall warning occurs at a speed higher than $1.1 V_{si}$, but this was accepted because IAS values drop quickly to lower values and give the pilot very good information about the impending stall.

(iv) *Airworthiness Limitations:*

See Maintenance Manual

(3) Environmental Certification:

Not Applicable

(4) Certification Compliance Listing:

Nachweisliste (MZ) [Compliance Checklist] TC Nr.360 Type: Discus 2a/2b

Nachweisliste (MZ) [Compliance Checklist] TC Nr.360 Type: Discus-2c

(5) Flight Manual: Flight Manual for Sailplanes Model Discus-2a and Discus-2b – Issued October 1998 and LBA Approved 23 June 1999 – Revision 1 calls up MB 360-21 (applicable s/n 1 thru 12) – CAA Accepted as AIR 2674

LBA-Approved Flight Manual for the Sailplane Discus-2c – Issued January 2005 – CAA Accepted as AIR 3014

(6) Operating Data for Aircraft, Engine and Propeller:

(i) *Maintenance Manual:*

Maintenance Manual for Sailplanes Discus 2a/2b – Issue October 1998
(Revision 1 is required if Modification Bulletin No. 360-21 is embodied)

Repair Manual for Sailplanes Discus 2a/2b – Issue October 1998

Maintenance Manual for Sailplane Model Discus-2c – Issue January 2005
(Includes Repair Instructions for “Discus-2c”)

(ii) *Current service Information:*

Summary of Schempp-Hirth Technical Notes and LBA Airworthiness Directives

Summary of Schempp-Hirth Modification Bulletins

(iii) *Illustrated Parts Catalogue:*

Not Applicable – None issued.

(7) Agreement from manufacturer to supply updates of data in (5), and (6):

Discus-2a: Agreement to Supply Letter from Schempp-Hirth dated 13 Sept. 1999

Discus-2b: Agreement to Supply Letter from Schempp-Hirth dated 13 Oct. 1999

Discus-2c: CAA 2171 from Schempp-Hirth Head of Technical Office – 21.09.2007

5. Additional New Zealand Requirements

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance certificate.

Civil Aviation Rules Part 26

Subpart B – Additional Airworthiness Requirements

Appendix B – All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – Agricultural Aircraft only

Compliance with the following additional NZ operating requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 91

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	JAR 22.1307 - Fitted as Std – See Maintenance Manual §7.1
91.507	Pax Information Signs - Smoking, safety belts fastened	Not Applicable – Single-seat glider
91.509	Minimum Instruments and Equipment	Not Applicable – Powered aircraft only
91.511	Night VFR Instruments and Equipment	Not Applicable – Certificated for Day VFR flight only
91.513	VFR Communication Equipment	<i>Operational requirement – compliance as applicable</i>
91.517	IFR Instruments and Equipment	Not Applicable – Certificated for Day VFR flight only
91.519	IFR Communication and Navigation Equipment	Not Applicable – Certificated for Day VFR flight only
91.523	Emergency Equipment	N/A – Single-seat glider [Superseded by §104.101(5)]
91.529	ELT - TSO C91a after 1/4/97 (or replacement) Appendix A.15 – Installation Requirements	<i>To be determined on an individual aircraft basis</i> Flight Manual Section 7.13 addresses a suitable location
91.531	Oxygen Indicators - Volume/Pressure/Delivery	Factory oxygen system available – See Flight Manual §7.13
91.533	Oxygen for Non-Pressurised Aircraft For flight >30 min above FL100 – Supplemental for crew	<i>Operational requirement – compliance as applicable</i>
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – compliance as applicable</i>
91.543	Altitude Alerting Device - Turbojet or Turbofan	Not Applicable – Certificated for Day VFR flight only
91.545	Assigned Altitude Indicator	Not Applicable – Certificated for Day VFR flight only
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 104

Subpart C - Equipment and Maintenance Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
104.101	(1) Airspeed Indicator (2) Altimeter (Adjustable for barometric pressure) (3) Magnetic Compass (4) Safety Harness for each seat (5) A First Aid Kit (6) For powered gliders (1) For IMC – (i) A variometer (ii) Turn & Slip/Artificial Horizon (iii) Radio transceiver	Required as Minimum Equipment – See TCDS Section #III.3 Required as Minimum Equipment – See TCDS Section #III.3 Optional Equipment – See MM §7.2(b) [Required for cloud flying] Required as Minimum Equipment – See TCDS Section #III.3 <i>Operational requirement – compliance as applicable N/A</i> Not Applicable } Required for IMC Flight * * All available as Additional Equipment per the MM §7.2(b)

Attachments

The following documents form attachments to this report:

Three-view drawing/Specification sheet Discus-2a and Discus-2b
Copy of EASA Type Certificate Data Sheet Number A.049

Sign off

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David Gill
Team Leader Airworthiness

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Checked – AWE Chris Thomson
Date: 3 October 2007

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
Discus a/b	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
Discus-2a/b	Shields Sailplane Limited	0/21B/5	8 November 1999
Discus-2c	Sailplane Services Limited	8/21B/11	3 October 2007