

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

G19CE Revision 0 Schempp-Hirth Flugzeugbau GmbH Duo Discus T April 26, 2005

TYPE CERTIFICATE DATA SHEET NO. G19CE

This data sheet, which is part of Type Certificate No. G19CE prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder: Schempp-Hirth Flugzeugbau GmbH
 Kребenstrasse 25
 D-73230 Kirchheim/Teck
 Germany

I. Model "Duo Discus T" Glider, Utility Category (Non-Self Launching), approved February 9, 2005

Engine: (1) Solo 2350 D
 German Type Certificate Data Sheet No. 4603, Issue 5, dated December 18, 2001

Fuel: Two-stroke mixture, unleaded automotive gasoline
 Min. RON 95 or AVGAS 100 LL

Oil (lubrication) Fuel/oil mixture, mixing proportion for "CASTROL Super TT": 30:1 (3.3%)

Engine Limits: Take off power: 29.5 BHP (22 kW) at 6500 rpm
 Max. Continuous Power: 29.5 BHP (22 kW) at 6500 rpm

Propeller Technoflug Leichtflugzeugbau GmbH
 Model: OE-FL 5.110/83 av
 Data Sheet No. OE-FL ./83, Edition 7, dated December 7, 2001
 Diameter: 43.31 in (1100 mm) + .08 in (2mm) / - 1.57 in (40 mm)
 No further diameter reduction permitted
 Reduction ratio: 1:1.56

Airspeed Limits (IAS):

V _{NE} Speed Limit versus Altitude	[knots]	[mph]	[km/h]
0 - 2000 m (6562 ft)	135	155	250
3000 m (9843 ft)	130	150	241
4000 m (13123 ft)	124	142	229
5000 m (16404 ft)	117	135	217
6000 m (19685 ft)	111	127	205
7000 m (22966 ft)	105	121	194
8000 m (26247 ft)	99	114	183
9000 m (29528 ft)	93	107	172
10000 m (32808 ft)	87	101	162

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Airspeed Limits (IAS) cont'd:

	[knots]	[mph]	[km/h]
V _{RA} (Rough Air Speed)	97	112	180
V _A (Maneuvering Speed)	97	112	180
V _T (Aerotow)	97	112	180
V _W (Winch Launch)	81	93	150
V _{LO} (Landing Gear Operating Speed)	97	112	180
V _{MAX1} (Max Speed w/ Power Plant Extended, Ignition ON)	67	78	125
V _{MAX2} (Max Speed w/ Power Plant Extended, Ignition OFF)	86	99	160
V _{POMAX} (Power Plant Ext/Ret Speed)	59	68	110
V _{POMIN} (Power Plant Ext/Ret Speed)	49	56	90

C.G. Range

Max. Forward C.G: 1.77 in. (45 mm) aft of datum
 Max. Aft C.G: 9.84 in. (250 mm) aft of datum

Datum

Wing leading edge at wing root rib

Leveling Means

Upper edge of a wedge 100:4.5 slope to be horizontal when placed on rear top of fuselage.

Maximum Weights

With or without water ballast:
 Max. Take-Off: 1543 lb (700 kg)
 Max. Landing: 1543 lb (700 kg)

 Max. weight of all non-lifting parts: 1080 lb (490 kg)

Minimum Crew

One with operation performed in front seat only

No. of Seats

Two:
 Front seat: moment arm 55.12 in (1400 mm) forward of datum
 Rear seat: moment arm 11.42 in (290 mm) forward of datum

Maximum Baggage

An enclosed baggage compartment is not provided

Fuel Capacity

4.28 U.S. Gallons (16.2 Liters)
 Usable: 4.23 U.S. Gallons (16.0 Liter)
 Moment arm: 20.47 in (520 mm) aft of datum

Water Capacity

Both wing tanks: 52.84 U.S. Gallons (198 Liters)
 Moment arm: 2.56 in (65 mm) aft of datum
 Fin tank (optional): 2.91 U.S. Gallons (11 Liters)
 Moment arm: 209.45 in (5320 mm) aft of datum

Control Surface Movements

Aileron:
 Up 2.80 ± 0.20 in. (71 ± 5 mm)
 Down 1.42 ± 0.20 in. (36 ± 5 mm)
 Measured 6.93 in. (176 mm) from hinge axis

Control Surface Movements, cont'd

Elevator:

Up/down: 2.05 ± 0.16 in. (52 ± 4 mm)
 Measured 6.69 in. (170 mm) from hinge axis

Rudder:

To either side: 7.48 ± 0.79 in. (190 ± 20 mm)
 Measured 16.14 in. (410 mm) from hinge axis.

Weak Link for Towing

1543 to 2006 lb (700 to 910 daN)

Serial Nos. Eligible

Prematurely imported Duo Discus T sailplane (prior to issuance of U.S. type certificate) serial number 21 is eligible for a U.S. Standard Airworthiness Certificate if Solo Kleinmotoren GmbH Service Bulletin No. 4603-11, dated April 15, 2002, has been complied with and all requirements of this TCDS are satisfied.

No other restrictions are imposed on remaining serial numbers. This includes serial numbers 41, 45, 55, 64, 72, 76, and 94 which were exported prior to issuance of the U.S. type certificate.

Certification Basis

The regulations (unless otherwise stated) are Title 14 of the Code of Federal Regulations (14CFR):

- 1) FAR 21.17(b), Amendment 21-70, effective January 31, 1992; FAR 21.29, Amendment 21-68, effective September 10, 1990
- 2) JAR22 Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes, Change 5 of the English Original Issue, dated October 28, 1995, including additional Amendments 22/90/1, 22/91/1, 22/92/1, and 22/94/1.
- 3) JAR 22.785(e)(f), Seat and Restraint System, Change 6, dated 26 September, 2000.
- 4) JAR 22.788, Head Rests, Change 6, dated 26 September, 2000
- 5) Equivalent Level of Safety number ACE-05-02 to JAR 22.1093, Change 5 - Induction System Icing Protection.
- 6) LBA Standards for Structural Substantiation of Sailplanes and Powered Sailplane Parts Consisting of Glass or Carbon Fibre Reinforced Plastics, dated July 1991.
- 7) Additional requirements for the installation of a water ballast system into the fin (for compensating the nose-heavy moment due to seat loading and water ballast in wing tanks). LBA Reference: I4 - I 413/89 dated October 25, 1989.
- 8) Date of Application for FAA Type Certificate: September 27, 2002.
- 9) Luftfahrt Bundesamt (LBA), German CAA, issued Type Certificate No. 890/PS, Issue 2, dated November 11, 2004

Import Requirements

A U.S. Standard Airworthiness Certificate may be issued on the basis of a Certificate of Airworthiness for Export signed by a representative of the LBA containing the following statement:

"The glider covered by this certificate has been examined, tested, and found to comply with the type design approved under FAA Type Certificate G19CE and determined to be in a condition for safe operation."

Import Requirements, cont'd

Modifications pre-dating the issuance of this Type Certificate which are not included in any of the above paragraphs of this TCDS, and modifications dated after the issuance of this Type Certificate not covered by note(s) contained in the Service Information paragraph of this TCDS must be assumed not approved under this Type Certificate.

The U.S. airworthiness certification basis for aircraft type certificated under 14CFR 21.29 and exported by the country of manufacture is paragraph 21.183(c).

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the glider for certification. In addition, the following items of equipment are required:

1. Basic equipment and instruments:

Day VFR:

- (2) Airspeed Indicator with range up to 162 kts (186 mph, 300 km/h)
- (2) Altimeter
- (1) Outside Air Temperature Indicator with Sensor (when flying with water ballast, red line at 35.6 °F (2 °C)
- (1) Magnetic Compass
- (2) Engine Control Unit featuring
 - RPM indicator
 - Engine hour meter
- (1) Fuel Quantity Indicator
- (1) Rear View Mirror
- (2) Four-piece Safety Harness (symmetrical)
- (2) Automatic or Manual Parachutes or
- (2) Back Cushion (thickness approx. 3.15 in (8 cm) when compressed)

2. LBA-approved Flight Manual for Duo Discus-T issued May 2000 and LBA approved December 21, 2001

Service Information

"Service bulletins, structural repair manuals, vendor manuals, aircraft flight manuals, and overhaul and maintenance manuals, which contain a statement that the document is LBA approved, are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only."

Available Documents for the Schempp-Hirth Flugzeugbau GmbH model Duo Discus T:

1. Flight Manual for powered sailplane model Duo Discus T, issued May 2000, LBA approved December 21, 2001 or later approved revision.
2. Instructions for Continued Airworthiness (Maintenance Manual and Repair Instructions) for Duo Discus T, dated June 2000 or later LBA approved revision.
3. "Airworthiness Limitations Section for Duo Discus T" dated July 2003 and LBA approved August 01, 2003.
4. a. Operating Instructions for the TOST safety tow release mechanism, model "EUROPA G 88", Issued February 1989, LBA approved
- b. Operating Instructions for the TOST nose tow release mechanism, model "E 85", Issued March 1989, LBA approved (optional installation)
5. Operating Manual for the SOLO engine, model "2350 D", latest applicable issue by Messrs. Solo Kleinmotoren GmbH
6. a. Operating Manual for the folding propeller, type "OE-FL .5.110/83, latest applicable issue by Messrs. Ingrid Oehler TB GmbH
- b. Repair Manual for the folding propeller, type "OE-FL .5.110/83, latest applicable issue by Messrs. Ingrid Oehler TB GmbH

NOTES

- NOTE 1. Current weight and balance data including list of equipment included in the certificated empty weight and loading instructions, when necessary, must be provided for each glider at the time of original certification and at all times thereafter.
- NOTE 2. The placards listed in the flight manual must be displayed. A complete listing of placards is in the Instructions for Continued Airworthiness Manual (Maintenance Manual).
- The following placards must be displayed in clear view of the pilot:
1. "THE MARKINGS AND PLACARDS INSTALLED IN THIS GLIDER CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS GLIDER IN THE UTILITY CATEGORY. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH ARE CONTAINED IN THE GLIDER FLIGHT AND MAINTENANCE MANUALS."
 2. "Aerotow permitted from the forward hook only".
 3. "Vne vs Altitude" placard must be located near the Airspeed indicator.
- NOTE 3. Airworthiness Limitations are specified in the LIMITATION section of the Flight Manual, in the Instructions for Continued Airworthiness (Maintenance Manual), and in the "Airworthiness Limitations Section for powered sailplane model Duo Discus T", edition dated July 2003, LBA-approved August 1, 2003. These documents are FAA-approved. These LIMITATIONS specify mandatory replacement times and operating limitations and may not be changed without FAA approval.
- NOTE 4. The following operations are prohibited:
- Night flying
 - Aerobatic maneuvers
 - Cloud flying
 - Flying into known icing conditions
 - Aerotowing using the C.G. hook
 - Winch launching using the nose hook
- NOTE 5. Operating the Duo Discus T with its power plant temporarily removed or inoperative is permissible in accordance with the directions stated in the Flight Manual.
- NOTE 6. Major structural repairs must be accomplished at FAA certificated repair stations rated for composite aircraft structure work, in accordance with Schempp-Hirth Flugzeugbau GmbH repair methods approved by FAA.
- NOTE 7. Information essential for the proper operation, maintenance and inspection of the glider is contained in the model Duo Discus T Flight Manual and Maintenance Manual and in the "Airworthiness Limitations Section.

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