
TYPE-CERTIFICATE DATA SHEET

UK.TC.A.00074

for

Ventus bT

Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH

Krebenstraße 25

73230 Kirchheim/Teck

Germany

Model(s): Ventus bT
Ventus cM
Ventus cT
Ventus-2cM
Ventus-2cT
Ventus-2cFES

Issue: 2

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Section 1 Ventus bT**I. General****1. Type / Variant / Model**

- a) Type: Ventus bT
 b) Variant or Model: Ventus bT

2. Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

3. Airworthiness Category

Powered Sailplane, LFSM - Utility

4. Manufacturer

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

5. Type Certification Date

09-Jan-1984 (by LBA)

II. Certification Basis**1. Certification Basis**

Defined by LBA Confirmation letter with certification standards, dated 08 December 1980

2. Airworthiness Requirements

Airworthiness Requirements for Sailplanes and Powered Sailplanes (LFSM), Issue October 1975

3. Requirements elected to comply

Interpretation for Sailplanes with Wing Flaps, dated December 2, 1975

Preliminary Directions for the Stress Analysis of Components for Sailplanes and Powered Sailplanes build from Glass Fibre and Carbon Fibre Reinforced Plastics, Issue of January 1981

Preliminary Interpretation of LFSM and JAR-22 for Sailplanes with Auxiliary Power Plant (simple, non-self launching powered sailplanes), dated January 08, 1982

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR-22), Issue June 29, 1989, (Change 4 of the English Original Issue), including amendment 22/90/1 dated February 12, 1991 (see Note 12)

4. Special Conditions

None

5. Exemptions

None

6. Equivalent Safety Findings

None

7. Environmental Standards

None

III. Technical Characteristic and Operating Limitations**1. Type Design Definition**

LBA-approved List of Drawings for Powered Sailplane Model "Ventus bT"

- issue November 1983

- issue January 1984 including Modification Bulletin No. 825-1

2. Description

Single-seat, mid-wing powered sailplane, CFRP/GFRP fibre construction, 2-piece wing with tip extensions (or optional winglets – see Note 12), wing flaps and trailing edge airbrakes as combination of spoilers and flaps. Integral Wing Water Tanks. GFRP fuselage, retractable undercarriage with wheel brake, T-tail (fixed horiz. stabilizer with elevator, fin and rudder) retractable power plant with folding propeller, fuel tank in fuselage (removable)

3. Equipment

Min. Equipment:

1 Air speed indicator (up to 300 km/h)

1 Altimeter

1 Magnetic compass

1 Fuel quantity indicator

1 Rear view mirror

1 4-Point harness (symmetrical)

1 Automatic or manual parachute

or

1 Back cushion, when flying without parachute

Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions

Span 15.0 m and 16.6 m

Wing area 9.51 m² and 9.97 m²

Length 6.56 m

5. Engines

Engine Designation 1: Engine 1: OE/WE-2R-306/82

LBA-Data Sheet No: OE/WE-2R-306

For Engine 1 the following propellers are approved:

Propeller 1: OE-FL 4.79/82

Propeller 2: OE-FL 4.79/83

Engine Designation 2: Engine 2: SOLO Type 2350

LBA-Data Sheet No: 4603

For Engine 2 the following propellers are approved:

Propeller 3: OE-FL 5.83/83

Propeller 4: OE-FL 5.83/83 a5

(See also Notes 3 and 7)

5.1 Engine Limits

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Engine 1:	Maximum continuous Power:	9.31 kW
	At	5000 min ⁻¹
	Maximum RPM	5500min ⁻¹
Engine 2:	Maximum continuous Power:	15.3 kW
	At	5500min ⁻¹
	Maximum RPM	5800min ⁻¹

6. Propellers

Propeller 1:	OE-FL 4.79/82 LBA-Datasheet OE-FL./82 Propeller diameter: 790 mm ± 0
Propeller 2:	OE-FL 4.79/83 LBA-Datasheet OE-FL./83 Propeller diameter: 790 mm ± 0 See Note 8
Propeller 3:	OE-FL 5.83/83 LBA-Datasheet OE-FL./83 Propeller diameter: 830 mm ± 0
Propeller 4:	OE-FL 5.83/83 a5, v92 LBA-Datasheet OE-FL./83 Propeller diameter: 830 mm ± 0

7. Fluids and Fluid Capacities

Fuselage Tank	14.0 l
Non-usable amount of fuel	1.0 l
Technical Note 825-5 See Note 6:	
Aluminium Tank	16.0 l
Non-usable amount of fuel	1.0 l

8. Weak Links

Ultimate Strength:

- for winch and aero-tow launching max. 650 daN

9. Launching Hooks

1. Special Tow Hook „S 72“, LBA Datasheet No. 60.230/3
2. Nose tow hook “E 72”, LBA Datasheet No. 60.230/1
3. Nose tow hook “E 75”, LBA Datasheet No. 60.230/1
4. Nose tow hook “E 85”, LBA Datasheet No. 60.230/1
5. Safety hook „Europa G 88“, LBA Datasheet No. 60.230/2

Remark: Tow hook 2 to 5 optional

Remark: Tow hook 4 to 5 optional (See Note 11)

10. Air Speeds

Manoeuvring Speed	V _A	190 km/h
Never Exceed Speed	V _{NE}	250 km/h
Maximum permitted speeds:		
with flaps at	-1, -2, S	250 km/h
with flaps at	+2, +1, 0	160 km/h
with flaps at	L	160 km/h
Rough Air Speed	V _{RA}	190 km/h
Max. Aerotow Speed	V _T	180 km/h

Max. Winch-launch Speed	V_W	150 km/h
Max. Engine extended Speed	V_{max}	160 km/h
Max. Engine operating Speed	V_{max}	130 km/h
Max. Gear Operating Speed	V_{Lo}	250 km/h

11. Operational Capability

Approved for VFR-Day.

Suitable for cloud flying in accordance with the directions given in the Flight Manual.

Suitable for restricted aerobatic manoeuvres in accordance with the directions given in the Flight Manual

12. Maximum Masses:

15.0 m Wingspan

Max. Mass:	430kg
Max. Mass of Non-Lifting Parts	270kg

Configuration Power Plant and Fuel Tank removed (see Note 4)

Max. Mass:	500kg
Max. Mass of Non-Lifting Parts	270kg

16.6 m Wingspan

Max. Mass:	430kg
Max. Mass of Non-Lifting Parts	270kg

13. Centre of Gravity Range

Datum: Most inner wing leading edge

Levelling means: Wedge 100 : 4.4 on slope of rear top fuselage to be horizontal

Forward Limit: 200 mm aft of datum point

Rearward Limit: 340 mm aft of datum point

14. Seating Capacity

1

15. Lifetime limitations

Refer to Maintenance Manual

16. Deflection of control surfaces

Refer to Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual for the powered sailplane Ventus bT, issued October 1983, LBA approved
Flight Manual for the powered sailplane Ventus bT, issued October 1983, LBA approved. Including LBA-approved Revision 1 of April 1984 (see also Note 10)
Flight Manual for the powered sailplane Ventus bT, issued October 1983, LBA approved. Including LBA-approved Revision 1 of April 1984 and revised pages as per Technical Note 825-7 (see also Note 8)
Flight Manual for the powered sailplane Ventus bT, issued October 1983, LBA approved Including LBA-approved Revision 1 of April 1984 and revised pages as per Technical Note 825-2 (see also Note 9)
Flight Manual for the powered sailplane Ventus bT, issued October 1983, LBA approved. Including LBA-approved Revision 1 of April 1984 and revised pages as per Technical Note 825-9 (see also Note 10)
2. Maintenance Manual for the powered sailplane Ventus bT, issued October 1983
Maintenance Manual for the powered sailplane Ventus bT, issued October 1983 including revision no. 1 of April 1984 (See Note 7)
3. Repair Manual for the CFRP/GFRP powered sailplane model Ventus bT
4. Manual for engine model OE/WE-2R-306/82, issued November 2nd, 1982, LBA-approved

5. Manual for engine SOLO Type 2350, latest issue, LBA-approved
6. LBA-approved Manual for the folding propeller type OE-FL .82, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH.
LBA-approved Manual for the folding propeller type OE-FL .83, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH
Repair Manual for the folding propeller type OE-FL .83, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH
7. Operating Instructions for the TOST release, latest approved version

V. Notes

1. Manufacturing is confined to industrial production
2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface
3. Engine 1 in combination with propellers shown:
Engine 1 according to Engine Data Sheet No. OE/WE-2R-306
Propeller 1: Propeller Data Sheet No. OE/FL .82
Propeller 2: Propeller Data Sheet No. OE/FL .83
Propeller 2: use is optional
4. Approved for operations with the power plant temporarily removed or inoperative in accordance with the instructions given in the Flight Manual.
5. The conversion of the sailplane model Ventus b/16.6 into a powered sailplane model “Ventus bT” is permissible in compliance with the LBA-approved Schempp-Hirth Flugzeugbau GmbH. Modification Bulletin No. 349-13. This conversion is to be carried out by the manufacturer only.
6. The installation of an aluminium fuel tank (option) is permissible in compliance with the LBA approved Schempp-Hirth Flugzeugbau GmbH Technical Note 825-5
7. The installation of an engine type “SOLO 2350”, manufactured by Messers. SOLO-Kleinmotoren GmbH, combined with folding propeller type “OE-FL 5.83/83”, manufactured by. Messrs. Ingrid Oehler TB GmbH, is permissible in accordance with the LBA-approved Schempp-Hirth Modification Bulletin 825-1

Engine 1 in combination with propellers shown:

Engine type “SOLO 2350” modified in compliance with the LBA-approved SOLO Technical Note No. 4603-1, Issue of June 1984

Propeller 1 and 2: Propeller Data Sheet No. OE-FL .83

Propeller 2: features blade of different lengths ($d_{min}/d = 92\%$) on a prop hub complying with the SOLO Technical Note 4603-1

Propeller 2: Use is optional – see also Note 8

The data of the basic model are applicable except of the changes under:

(III) (10) Airspeed limits (IAS): km/h kt mph

Maximum Speed “power on”: 160 86 99

8. Replacing the Standard folding propeller model „OE-FL 5.83/83“ by a folding propeller featuring radially asymmetrical blade positions and blades of different lengths is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-7
9. The installation of an engine control unit model “TB 02” is permissible according to the LBA approved Schempp-Hirth Technical Note No. 825-2, provided the aircraft conforms with Modification Bulletin No. 825-1
10. The installation of an exhaust collector with integrated after-muffler as per SOLO Technical Note No. 4603-3 is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-9, provided the aircraft conforms with Modification Bulletin No. 825-1

11. The installation of a TOST nose tow release mechanism model “E 85” and/or the installation of a TOST safety tow release mechanism model “EUROPA G 88” is permissible according to the LBA approved Schempp-Hirth Technical Note No. 825-12
12. The use of swept-up wing tips (“mini-winglets”) or “Masak”-winglets is permissible – for 15 m span - according to the LBA-approved Schempp-Hirth Technical Note No. 825-11

Section 2 Ventus cM**I. General****1. Type / Variant / Model**

- c) Type: Ventus bT
 d) Variant or Model: Ventus cM

2. Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

3. Airworthiness Category

Powered Sailplane, JAR 22 - Utility

4. Manufacturer

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

5. Type Certification Date

07-Mar-1990 (by LBA)

II. Certification Basis**1. Certification Basis**

Defined by LBA Confirmation letter with certification standards, dated 06 January 1988

2. Airworthiness Requirements

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989 (Change 4 of the English original version)

3. Requirements elected to comply

Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued May 1986

Additional requirements for the installation of a water ballast system in the vertical tail tank. LBA-Letter: I 4 – I 413/89 dated October 25th, 1989

LBA-Note II-12-602.4/50-33/83 dated April 7. 1983, concerning "Technical Minimum Requirements for Power Plant Instruments with Digital Display, to be used exclusively in Powered Sailplanes" in conjunction with NPA 22 G-45 of April 1988, with supplements to JAR 22.1549 ("Power Plant Instruments") dated October 17, 1989

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR-22), Issue June 29, 1989, (Change 4 of the English Original Issue), including amendment 22/90/1 dated February 12, 1991 (see Note 10)

4. Special Conditions

None

5. Exemptions

None

6. Equivalent Safety Findings

None

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7. Environmental Standards

ICAO Annex 16

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

Drawing list Ventus cM

- dated May 1989, LBA-approved
- dated June 1992 (Rev. 1) including TN 825-13 and MB 825-23

2. Description

Single-seat, mid-wing powered sailplane, CFRP/GFRP/Aramid fibre construction, 2-piece wing with tip extensions (or optional winglets – see Note 6), wing flaps, double-section Schempp-Hirth type airbrakes on upper surface, water tanks in wings (and on request in the fin), retractable undercarriage with wheel brake, T-tail (fixed horiz. stabilizer with elevator, fin and rudder) retractable power plant with swing-hinged propeller, fixed and removable fuel tank in fuselage. Optional installation of an additional flexible fuel tank into starboard wing (see Note 5)

3. Equipment

Min. Equipment:

- 1 Air speed indicator (up to 300 km/h)
- 1 Altimeter
- 1 Magnetic compass
- 1 Power Plant Control Unit
- 1 Outside Air temperature
- 1 Rear view mirror
- 1 4-Point harness (symmetrical)
- 1 Automatic or manual parachute

or

- 1 Back cushion

Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions

Span	15.0 m and 17.60 m
Wing area	10.15 m ²
Wing area (with 15m wing span)	9.51 m ²
Length	6.58 m

Span 15 m permitted only with power plant removed

5. Engines

Engine Designation: SOLO 2350 C

LBA-Data Sheet No: 4603

5.1 Engine Limits

Maximum continuous Power:	20.0 kW
At	6100 min ⁻¹
Maximum RPM	6500min ⁻¹

6. Propellers

Propeller Designation: KS 132-2-S (swing-hinged propeller)

Data Sheet No.: 32.110/15

Diameter: 1320 mm ± 0

7. Fluids and Fluid Capacities

Upper fuel tank (removable) 12.5 l

Concerning the upper fuel tank and the tank in the starboard wing see also Note 5

Lower fuel tank (fixed) 15.0 l

Flexible wing fuel tank (fixed) 15.5 l

Non-usable amount of fuel 1.5 l

See Note 7:

Lower fixed fuel tank in conjunction with larger main Wheel (size 5.00 x 5): 13.5 l

Non-usable amount of fuel 0.5 l

8. Weak Links

Ultimate Strength:

- for winch and aero-tow launching max. 650 daN

9. Launching Hooks

1. Safety hook „Europa G 88“, LBA Datasheet No. 60.230/2
2. Safety hook „Europa G 73“, LBA Datasheet No. 60.230/2
3. Nose tow hook “E 85”, LBA Datasheet No. 60.230/1
4. Nose tow hook “E 75”, LBA Datasheet No. 60.230/1

Remark: Tow hook 2, 3 and 5 optional

10. Air SpeedsManoeuvring Speed V_A 180 km/hNever Exceed Speed V_{NE} 270 km/h

Maximum permitted speeds:

with flaps at -1, -2, 270 km/h

with flaps at +2, +1, 0 160 km/h

with flaps at L 160 km/h

Rough Air Speed V_{RA} 180 km/hMax. Aerotow Speed V_T 180 km/hMax. Winch-launch Speed V_W 150 km/hMax. Engine extended Speed V_{max} 160 km/hMax. Speed for extending/retracting powerplant V_{POmax} 110 km/hMax. Gear Operating Speed V_{LO} 180 km/h**11. Operational Capability**

Approved for VFR-Day.

Suitable for cloud flying in accordance with the directions given in the Flight Manual.

Suitable for restricted aerobatic manoeuvres in accordance with the directions given in the Flight Manual

12. Maximum Masses:

Max. Mass: 430kg

Max. Mass of Non-Lifting Parts 300kg

Configuration Power Plant removed (see Note 3)

Max. Mass: 500kg

Max. Mass of Non-Lifting Parts 255kg

13. Centre of Gravity Range

Datum: Most inner wing leading edge

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Levelling means: Wedge 100 : 4.4 on slope of rear top fuselage to be horizontal
 Forward Limit: 215 mm aft of datum point
 Rearward Limit: 325 mm aft of datum point

14. Seating Capacity

1

15. Lifetime limitations

Refer to Maintenance Manual

16. Deflection of control surfaces

Refer to Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual for the powered sailplane Ventus cM, issued March 1989, LBA approved
2. Maintenance Manual for the powered sailplane Ventus cM, issued June 1989
3. Repair Manual for the powered sailplane model Ventus cM
4. LBA-approved Engine Manual for the SOLO Engine type 2350 C, the latest applicable issue, by Messrs. SOLO Kleinmotoren GmbH
5. Service Instruction for the SOLO Engine type 2350 C, the latest applicable issue, by Messrs. SOLO Kleinmotoren GmbH
6. Operating Manual for the "GFRP-"swing-hinged" propeller model "KS 132-2", latest applicable issue.
7. Operating Instructions for the TOST release, latest approved version

V. Notes

1. Manufacturing is confined to industrial production
2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface
3. Approved for operations with the power plant temporarily removed or inoperative in accordance with the instructions given in the Flight Manual
4. Converting a sailplane model "Ventus c" having a fuselage version "b" into a powered sailplane model "Ventus cM" is permissible in compliance with the LBA-approved Schempp-Hirth Modification Bulletin No. 349-13. This conversion, however, is to be accomplished by the manufacturer only.
5. The installing an additional flexible fuel tank into the starboard wing of the "Ventus cM" is permissible in compliance with the LBA-approved Schempp-Hirth Modification Bulletin No. 825-22 (operating the "Ventus cM" with its upper fuselage tank removed is permissible).
6. The use of swept-up wing Tips („mini-winglets“) or „Masak“-winglets is permissible – for 15 m span – according to the LBA-approved Schempp-Hirth Technical Note No. 825-11.
7. The use of a larger main wheel, size 5.00 x 5, the installation of which results in a reduces capacity of the lower fixed fuel tank, is permissible according to the LBA-approved Schempp-Hirth Modification Bulletin No. 825-24.

Section 3 Ventus cT**I. General****1. Type / Variant / Model**

- | | |
|----------------------|-----------|
| a) Type: | Ventus bT |
| b) Variant or Model: | Ventus cT |

2. Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

3. Airworthiness Category

Powered Sailplane, JAR 22 - Utility

4. Manufacturer

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

5. Type Certification Date

18-Dec-1987 (by LBA)

II. Certification Basis**1. Certification Basis**

Defined by LBA Confirmation letter with certification standards, dated 08 Dec 1980

2. Airworthiness Requirements

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on December 15th, 1982 with "Orange Papers"

- a) Amendment 22/84/1 of Dec. 14. 1984
- b) Amendment 22/85/1 of Dec. 12, 1985
- c) Amendment 22/86/1 of Oct. 22, 1986 without Appendix H

3. Requirements elected to comply

Preliminary Directions for the Stress Analysis of Components for Sailplanes and Powered Sailplanes build from Glass Fibre and Carbon Fibre Reinforced Plastics, Issue of May 1986

Preliminary Interpretation of LFSM and JAR-22 for Sailplanes with Auxiliary Power Plant (simple, non-self-launching powered sailplanes), dated January 08, 1982

Additional requirements when using a water ballast fin tank. LBA-Letter: I 3 – I33/85, dated July 3, 1985.

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27th, 1989(Change 4 of the English Original Issue) including - Amendment 22/90/1 of Feb. 12. 1991 (see Note 11)

4. Special Conditions

None

5. Exemptions

None

6. Equivalent Safety Findings

None

7. Environmental Standards

None

III. Technical Characteristic and Operating Limitations**1. Type Design Definition**

LBA-approved List of Drawings for Powered Sailplane Model "Ventus cT"

- issue September 1987

- issue June 1992 Rev. 1, including Modification Bulletin No. 825-14 and 825-23

2. Description

Single-seat, mid-wing powered sailplane, CFRP/GFRP fibre construction, 2-piece wing with tip extensions (or optional winglets – see Note 11), camber changing flaps double-section Schempp-Hirth-type airbrakes on upper wing surface, integral water ballast tanks in the wing (and, as an option, in the fin – see Note 4). GFRP fuselage (or, on request, manufactured from hybrid fibre composite materials – see Note 8), retractable undercarriage with wheel brake, T-tail (fixed horiz. stabilizer with elevator, fin and rudder) retractable power plant with folding propeller, removable and/or fixed aluminium fuel tank in fuselage (see Note 12).

3. Equipment

Min. Equipment:

1 Air speed indicator (up to 300 km/h)

1 Altimeter

1 Magnetic compass

1 RPM indicator

1 fuel quantity indicator

1 Rear view mirror

1 4-Point harness (symmetrical)

1 Automatic or manual parachute

or

1 Back cushion, when flying without parachute

Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions

Span 15.0 m/ 16.6m/ 17.6 m

Wing area 9.51 m² /9.96 m² /10.15 m²

Length 6.58 m

Span 15 m permitted only with power plant removed

5. Engines

Engine Designation: SOLO 2350

LBA-Data Sheet No: 4603

Note: SOLO engine model 2350 modified according to LBA-approved Technical Note 4603-1 of June 1984 by Messrs. SOLO-Kleinmotoren GmbH

For the engine the following propellers are approved:

Propeller 1: OE-FL 5.83/83

Propeller 2: OE-FL 5.83/83 a5, v92

5.1 Engine Limits

Maximum continuous Power: 15.3 kW

At 5500 min-1

Maximum RPM 5800min-1

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6. Propellers

Propeller 1:
 Propeller Designation: OE-FL 5.83/83
 LBA-Data Sheet No.: OE-FL . /83
 Diameter: 830 mm \pm 0

Propeller 2:
 Propeller Designation: OE-FL 5.88/83 a5, v92
 Data Sheet No: OE-FL . /83
 Diameter: 880 mm \pm 0 mm

- 1.) Propeller Data Sheet No. OE-FL . /83
- 2.) Propeller features blades of different length ($d_{min}/d = 92\%$) and a modified propeller hub according to LBA-approved Technical Note 4603-2 by Messrs. SOLO Kleinmotoren GmbH.

7. Fluids and Fluid Capacities

Upper removable fuel tank (in fuselage)	16.0 l
Non-usable amount of fuel	1.0 l

See Note 12

Upper removable fuel tank (in fuselage)	16.0 l
Lower fuel tank (fixed)	15.0 l
Non-usable amount of fuel	1.5 l

8. Weak Links

Ultimate Strength:

- for winch and aero-tow launching max. 650 daN

9. Launching Hooks

1. Safety hook „Europa G 72“, LBA Datasheet No. 60.230/2
2. Safety hook „Europa G 73“, LBA Datasheet No. 60.230/2
3. Nose tow hook “E 72”, LBA Datasheet No. 60.230/1
4. Nose tow hook “E 75”, LBA Datasheet No. 60.230/1
5. Special Tow Hook „S 72“, LBA Datasheet No. 60.230/3
6. Nose tow hook “E 85”, LBA Datasheet No. 60.230/1
7. Safety hook „Europa G 88“, LBA Datasheet No. 60.230/2

Remark: Tow hook 2, 3, 4, 6 and 7 optional

For tow hook 5 see also Note 6

For tow hook 6 to 7 see also Note 10

10. Air Speeds

Manoeuvring Speed	V_A	180 km/h
Never Exceed Speed	V_{NE}	270 km/h

Maximum permitted speeds:

with flaps at	-1, -2,	270 km/h
with flaps at	L, +2, +1, 0	160 km/h

Rough Air Speed	V_{RA}	180 km/h
Max. Aerotow Speed	V_T	180 km/h
Max. Winch-launch Speed	V_W	150 km/h
Max. Engine extended Speed	V_{max}	160 km/h
Max. Power on Speed	V_{NE}	160 km/h
Max. Gear Operating Speed	V_{LO}	180 km/h

11. Operational Capability

Approved for VFR-Day.

Suitable for cloud flying in accordance with the directions given in the Flight Manual.

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Suitable for restricted aerobatic manoeuvres in accordance with the directions given in the Flight Manual

12. Maximum Masses:

Max. Mass: 430kg
 Max. Mass of Non-Lifting Parts 280kg

Configuration Power Plant and Fuel Tank removed (see Note 3)

Max. Mass: 500kg
 Max. Mass of Non-Lifting Parts 255kg

Configuration 16.6m Wingspan

Max. Mass: 430kg
 Max. Mass of Non-Lifting Parts 270kg

13. Centre of Gravity Range

Datum: Most inner wing leading edge

Levelling means: Wedge 100 : 4.4 on slope of rear top fuselage to be horizontal

Forward Limit: 200 mm aft of datum point

Rearward Limit: 325 mm aft of datum point

14. Seating Capacity

1

15. Lifetime limitations

Refer to Maintenance Manual

16. Deflection of control surfaces

Refer to Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual for the powered sailplane Ventus cT, issued June 1987, LBA approved
2. Maintenance Manual for the powered sailplane Ventus cT, issued June 1987
3. Repair Manual for the CFRP/GFRP powered sailplane model Ventus cT
4. Manual for engine SOLO Type 2350, latest issue, LBA-approved
5. LBA-approved Manual for the folding propeller type OE-FL ./.83, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH.
6. Repair Manual for the folding propeller type OE-FL ./.83, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH.
7. Operating Instructions for the TOST release, latest approved version

V. Notes

1. Manufacturing is confined to industrial production
2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface
3. Approved for operations with the power plant temporarily removed or inoperative in accordance with the instructions given in the Flight Manual

4. The conversion of the sailplane model Ventus C into a powered sailplane model "Ventus cT" is permissible in compliance with the LBA-approved Schempp-Hirth Flugzeugbau GmbH. Modification Bulletin No. 349-13. This conversion is to be carried out by the manufacturer only.
5. The installation of a fin water tank is permissible in accordance with the LBA-approved Schempp-Hirth Modification Bulletin No. 825-10.
6. Up to S/N 99:
Using a folding propeller model OE-FL 5.83/83 is permissible in accordance with the LBA-approved Schempp-Hirth Modification Bulletin No. 825-14.
The installation of a special c/g tow release mechanism model "S 72" is permissible in accordance with the LBA-approved Schempp-Hirth Modification Bulletin No. 825-15.
7. Serial numbers 66, 70 through 90 and 108, all in compliance with the Modification Bulletin No. 825-8, must be redesignated to variant "Ventus cT" according to the LBA-approved Schempp-Hirth Technical Note No. 825-8.
For serial number 66, 70 through 82, 86 and 108 the following restrictions apply: C.III.11 Weight with power plant and fuel tank removed : Wing span 16.6 m and 17.6 m – maximum weight: 430 kg.
8. Using a fuselage manufactured from hybrid fibre composite materials (option) is permissible in accordance with the LBA-approved Schempp-Hirth Modification Bulletin No. 825-13.
9. The installation of an exhaust collector with integrated after-muffler as per SOLO Technical Note No. 4603-3 is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-9.
10. The installation of a TOST nose tow release mechanism model "E 85" and/or the installation of a TOST safety tow release mechanism model "EUROPA G 88" is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-12.
11. The use of swept-up wing tips ("mini-winglets") or "Masak"-winglets is permissible – for 15 m span - according to the LBA-approved Schempp-Hirth Technical Note No. 825-11.
12. Using either only the lower fixed fuel tank or the upper removable and the lower fixed fuel tank is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-14.

Section 4 Ventus-2cM**I. General****1. Type / Variant / Model**

- | | |
|----------------------|--|
| a) Type: | Ventus bT |
| b) Variant or Model: | Ventus-2cM |
| c) Sales name: | Ventus-2c(x)M S/N 137 and on, see Note 7 |

2. Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH
 Kребenstraße 25
 73230 Kirchheim/Teck
 Germany

3. Airworthiness Category

Powered Sailplane, JAR 22 – Utility
 capable for self-launching

4. Manufacturer

Schempp-Hirth Flugzeugbau GmbH
 Kребenstraße 25
 73230 Kirchheim/Teck
 Germany

5. Type Certification Date

12-March-1997 (by LBA)

II. Certification Basis**1. Certification Basis**

Defined by LBA Confirmation letter with certification standards, dated 17. December 1996

2. Airworthiness Requirements

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989
 (Change 4 of the English original version) with Amendment 22/90/1

3. Requirements elected to comply

Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued July 1991.

Additional requirements for the installation of a water ballast system in the vertical fin (for compensating the nose heavy moment of the water ballast in the wing tanks). (LBA-Letter: I 4 – I 413/89 dated October 25th, 1989)

Draft NPA 22 D-46 dates April 7, 1994 relating to JAR 22.785 (e)(f) "Seats and Restraint System"

Draft NPA 22 D-64 dates April 12, 1994 relating to JAR 22.788 "Head Rests"

Provisional standards for the additional substantiation of a protection against fire in powered sailplane fuselages featuring an engine firmly installed behind the cockpit.

LBA-reference: I 4 421 – Fire Protection -94, dated September 13, 1994

4. Special Conditions

None

5. Exemptions

JAR 22.207(a) (for engine idling)

Further requirements relating to idling speed:

JAR 22.201 (f)(5)(ii) in conjunction with JAR 22.153, JAR 22.173 (b), JAR 22.175 (e)

6. Equivalent Safety Findings

JAR 22.51 in conjunction with Change 5 of JAR 22.51 – Take off

JAR 22.207 - Stall warning

JAR 22.1093 (a) – Induction system icing protection

7. Environmental Standards

ICAO Annex 16

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

LBA Drawing list Ventus-2cM

- dated May 1996, LBA-approved

- dated September 1998 (Rev. 1) see Note 6

- dated May 2003 (Rev. 2) see Note 7

- dated January 2013 (Rev.3) see Note 9

2. Description

Single-seat, mid-wing powered sailplane, CFRP/GFRP/Aramid fibre construction, 4-piece 18 m wing, outer wing panel for 15 m wing span (with winglets) available on request, chamber changing-flaps, double-section Schempp-Hirth type airbrakes on upper surface of inboard wing panels, water tanks in inboard wing panels and (on request) in the fin, water ballast tank in 18 m outboard wing panels refer to Note 7 retractable main wheel (with brake), fixed or (on request) steerable tail wheel, T-tail (fixed horiz. stabilizer with elevator, fin and rudder) Engine (with retractable prop featuring folding blades) either firmly installed in fuselage or (see Note 6) pivoting inside the fuselage together with propeller pylon (with fixed blade prop). Fixed fuel tank in fuselage, optional flexible fuel tank in inboard wing panel(s).

3. Equipment

Min. Equipment:

1 Air speed indicator (up to 300 km/h)

1 Altimeter

1 Magnetic compass

1 Engine Control Unit featuring:

- RPM indicator
- Coolant liquid temperature indicator
- Fuel quantity indicator
- Engine hour meter
- Water pump warning light, see Note 6

1 Rear view mirror

1 4-Point harness (symmetrical)

1 Automatic or manual parachute

or

1 Back cushion

Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions

Span 18 m/ 15 m

Wing area 11 m² / 9.67 m²

Length 6.78 m

5. Engines

Engine Designation 1: Engine 1: SOLO 2489

TCDS No.: UK.TC.A.00074

Date: 26 September 2023

AW-DAW-TP-004

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LBA-Data Sheet No: 4613

For Engine 1 the following propellers are approved:

Propeller Designation: KS-F2-1A/158-R 108

Engine Designation 2: Engine 2: SOLO Type 2625 01

Data Sheet No: EASA.E.218

For Engine 2 the following propellers are approved:

Propeller Designation: KS-1G-152-R 122

5.1 Engine Limits

Engine 1:	Maximum continuous Power:	30 kW
	At	5900 min ⁻¹
	Maximum RPM	6500min ⁻¹
Engine 2:	Maximum continuous Power:	37 kW
	At	6200min ⁻¹
	Maximum RPM	6800min ⁻¹

6. Propellers

Propeller 1:
 Propeller Designation: KS-F2-1A/158-R 108
 LBA-Data Sheet No.: 32.110/19
 Diameter: 1580 mm ± 5

Propeller 2:
 Propeller Designation: KS-1G-152-R 122
 Data Sheet No: 32.110/18
 Diameter: 1580 mm ± 5

7. Fluids and Fluid Capacities

Fixed Fuselage Tank	12.5 l
Tank in stbd. Wing (Option)	14.0 l
Tank in port wing (Option)	14.0 l
Non-usable amount of fuel	1.5 l

8. Weak Links

Ultimate Strength:

- for winch and aero-tow launching max. 680 daN

See Note 7

- for winch and aero-tow launching max. 735 daN

9. Launching Hooks

1. Safety hook "Europa G 88", LBA Datasheet No. 60.230/2
2. Nose tow hook "E 85", LBA Datasheet No. 60.230/1

Remark: Tow hook 1 and/or 2 optional

10. Air Speeds

Manoeuvring Speed	V _A	180 km/h
Never Exceed Speed	V _{NE}	270 km/h

Maximum permitted speeds:

with flaps at	-1, -2, S, S1,	270 km/h
with flaps at	L, +2, +1, 0	160 km/h

Rough Air Speed	V _{RA}	180 km/h
Max. Aerotow Speed	V _T	180 km/h

TCDS No.: UK.TC.A.00074

Date: 26 September 2023

AW-DAW-TP-004

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Max. Winch-launch Speed	V_W	150 km/h
Max. Gear Operating Speed	V_{LO}	180 km/h
Max. Engine extended Speed	V_{max}	160 km/h
For extending/retracting the powerplant	V_{POmax}	120 km/h
	V_{POmin}	90 km/h
See Note 7:		
Manoeuvring Speed	V_A	200 km/h
Never Exceed Speed	V_{NE}	285 km/h
Maximum permitted speeds: with flaps at	-1, -2, S, S1,	285 km/

11. Operational Capability

VFR-Day.

12. Maximum Masses:

Power Plant installed (wing span 18m)

Max. Mass:	500kg
Max. Mass of Non-Lifting Parts	330kg

Power Plant removed (wing span 15m)

Max. Mass:	525kg
Max. Mass of Non-Lifting Parts	330kg

Power Plant removed (wing span 18m)

Max. Mass:	500kg
Max. Mass of Non-Lifting Parts	330kg

Power Plant installed (wing span 18m) (See Note 5)

Max. Mass:	525kg
Max. Mass of Non-Lifting Parts	330kg

Power Plant removed (wing span 18m) (See Note 5)

Max. Mass:	525kg
Max. Mass of Non-Lifting Parts	330kg

Power Plant installed (wing span 18m) (See Note 7)

Max. Mass:	565kg
Max. Mass of Non-Lifting Parts	340kg

Power Plant removed (wing span 18m) (See Note 7)

Max. Mass:	565kg
Max. Mass of Non-Lifting Parts	340kg

Power Plant removed (wing span 15m) (See Note 7)

Max. Mass of Non-Lifting Parts	340kg
--------------------------------	-------

Power Plant installed (wing span 18m) (See Note 8)

Max. Mass:	600kg
Max. Mass for self-launch	585kg
Max. Mass of Non-Lifting Parts	340kg

13. Centre of Gravity Range

Datum:	Most inner wing leading edge
Levelling means:	Wedge 100 : 4.4 on slope of rear top fuselage to be horizontal
Forward Limit:	290 mm aft of datum point
Rearward Limit:	380 mm aft of datum point

Operation with power plant removed:

Forward Limit:	250 mm aft of datum point
Forward Limit (See Note 9):	250 mm aft of datum point
Rearward Limit:	380 mm aft of datum point

14. Seating Capacity

1

15. Lifetime limitations

Refer to Maintenance Manual

16. Deflection of control surfaces

Refer to Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual for the powered sailplane Ventus-2cM, issued May 1996, LBA approved.
Flight Manual for the powered sailplane Ventus-2cM, issued November 2003, LBA approved (see Note 7).
2. Maintenance Manual for the powered sailplane Ventus-2cM, issued June 1996 Manual for the powered sailplane Ventus cT, issued June 1987
Maintenance Manual for the powered sailplane Ventus-2cM, issued November 2003, LBA approved (see Note 7).
3. Repair Manual for the GFRP/CFRP powered sailplane model "Ventus-2cM" issued June 1996
Repair Manual for the GFRP/CFRP powered sailplane model "Ventus-2cM" issued November 2003, (see Note 7).
4. LBA-approved Engine Manual for the SOLO Engine type 2489, the latest applicable issue, by Messrs. SOLO Kleinmotoren GmbH
5. Spare parts list for the SOLO Engine type 2489, issue of July 1996.
6. Operation and installation manual No. P4 for Two-Blade Folding Propellers KS-F2-()()/()-(), latest applicable issue.
7. Mounting and Testing Instructions for Flexible Fuel Tanks (in wing panels) dated January 10, 1994 (if installed)
8. Operating Instructions for the TOST release, latest approved version
9. Manual for SOLO engine type 2625 01, valid as appropriate (see Note 6)
10. Service Instructions for SOLO engine 2625, valid as appropriate (see Note 6)
11. Operation and Installation Manual No. P3 for the two-blade composite propellers with fixed pitch
KS 1 G ()()
KS 1 C ()()
valid issue as appropriate (see Note 6)

V. Notes

1. Manufacturing is confined to industrial production
2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface
3. Approved for operations with the power plant temporarily removed or inoperative in accordance with the instructions given in the Flight Manual

4. Revised pages of the flight manual, revision 1, issued October 1996, are to be used for S/N 1 and 2 pursuant to the LBA-approved Schempp-Hirth Modification Bulletin No. 825-25.
5. The increase of the maximum permitted all-up mass for S/N 3 and up with 18 m wing span is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-19.
6. Installation a SOLO engine type 2625 01 with Technoflug propeller KS-1G-152-R122 is permissible according to the LBA-approved Schempp-Hirth Modification Bulletin No. 825-27.
7. Employing a new horizontal tailplane and the use of modified 18 m outboard wing panels, the increase of the maximum permitted all-up mass and the mass of the non-load carrying parts for S/N 137 and up is permissible according to the LBA-approved Schempp-Hirth Modification Bulletin No. 825-44.
8. The increase of the maximum permitted all-up mass for 18 m wing span for S/N 137 and up is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-37/2.
9. Employing the engine control unit MCU II and the further improvements, listed in MB 825-50 is permissible for S/N 246 and up, and optional for all Ventus-2cM of MB 825-44, according to the Schempp-Hirth Modification Bulletin No. 825-50.

Section 5 Ventus-2cT**I. General****1. Type / Variant / Model**

- | | |
|----------------------|---|
| a) Type: | Ventus bT |
| b) Variant or Model: | Ventus-2cT |
| c) Sales name: | Ventus-2c(x)T S/N 108 and on, see Note 6
Ventus-2cxaT S/N 108 and on, see Note 8 |

2. Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH
Krebenstraße 25
73230 Kirchheim/Teck
Germany

3. Airworthiness Category

Powered Sailplane, JAR 22 – Utility
Not capable for self-launching

4. Manufacturer

Schempp-Hirth Flugzeugbau GmbH
Krebenstraße 25
73230 Kirchheim/Teck
Germany

5. Type Certification Date

27-Nov-1996 (by LBA)

II. Certification Basis**1. Certification Basis**

Defined by LBA Confirmation letter with certification standards, dated September 05, 1996

2. Airworthiness Requirements

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989
(Change 4 of the English original version) with Amendment 22/90/1

3. Requirements elected to comply

JAR 22, Appendix I of Amendment 22/91/1 for non-self launching sailplanes

Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued July 1991.

Additional requirements for the installation of a water ballast system in the vertical fin (for compensating the nose heavy moment of the water ballast in the wing tanks). (LBA-Letter: I 4 – I 413/89 dated October 25th, 1989)

Draft NPA 22 D-46 dates April 7, 1994 relating to JAR 22.785 (e)(f) "Seats and Restraint System"

Draft NPA 22 D-64 dates April 12, 1994 relating to JAR 22.788 "Head Rests"

4. Special Conditions

None

5. Exemptions

See Note 6:

JAR 22.207(a) (for power plant extended with ignition off), further requirements relating 'to power plant extended with ignition off':

JAR 22.201 (f)(5)(ii) in conjunction with JAR 22.153, JAR 22.203

6. Equivalent Safety Findings

JAR 22.207 - Stall warning

JAR 22.902 (b) - information about power plant retraction position

JAR 22.971 - fuel tank sump

JAR 22.1093 (a) – Induction system icing protection

7. Environmental Standards

None

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

LBA-approved List of Drawings for Powered Sailplane

Model "Ventus-2cT"

- issue June 1996

- issue November 2003 (Revision 1) see Note 6

- issue July 2022 see Note 8

2. Description

The powered sailplane model "Ventus-2cT" is the non-self-launching variant of the sailplane model "Ventus-2c".

Single-seat, mid-wing powered sailplane, CFRP/GFRP/Aramid fibre construction, 4-piece 18 m wing, outer wing panel for 15 m wing span (with winglets) available on request, chamber changing-flaps, double-section Schempp-Hirth type airbrakes on upper surface of inboard wing panels, water tanks in inboard wing panels and (on request) in the fin, water ballast tank in 18 m outboard wing panels refer to Note 6, retractable main wheel (with brake), T-tail (fixed horiz. stabilizer with elevator, fin and rudder), retractable power plant with folding propeller, removable and/or fixed fuel tank in fuselage.

3. Equipment

Min. Equipment:

1 Air speed indicator (up to 300 km/h)

1 Altimeter

1 Magnetic compass

1 Fuel quantity indicator

1 Rear view mirror

1 Outside air temperature indicator with sensor (when flying with water ballast)

1 4-Point harness (symmetrical)

1 Automatic or manual parachute

or

1 Back cushion, when flying without parachute

Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions

Span 18 m/ 15 m

Wing area 11 m² / 9.67 m²

Length 6.78 m

Length (see Note 8) 6.63 m

5. Engines

Engine Designation: SOLO 2350

LBA-Data Sheet No: 4603

For the engine the following propellers are approved:

TCDS No.: UK.TC.A.00074

Date: 26 September 2023

AW-DAW-TP-004

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Propeller 1: OE-FL 5.83/83 a5, v92

5.1 Engine Limits

Maximum continuous Power: 15.3 kW
 At 5500 min⁻¹
 Maximum RPM 5800min⁻¹

6. Propellers

Propeller Designation: OE-FL 5.88/83 a5, v92
 Data Sheet No.: OE-FL . /39
 Diameter: 830 mm ± 0

Note: Propeller features blades of different lengths ($d_{min}/d = 92\%$) and a modified propeller hub according to LBA-approved Technical Note 4603-2 by Messrs. SOLO Kleinmotoren GmbH.

7. Fluids and Fluid Capacities

Upper removable tank (in fuselage)	12.5 l
Lower fixed tank (in fuselage) (optional)	13.5 l
Non-usable amount of fuel	1.0 l

See Note 6

Lower fixed tank (in fuselage)	13.5 l
Non-usable amount of fuel	0.5 l

See Note 8

Lower fixed tank (in fuselage)	8.3 l
Non-usable amount of fuel	0.5 l

8. Weak Links

Ultimate Strength:

- for winch and aero-tow launching max.	680 daN
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See Note 6

- for winch and aero-tow launching max.	735 daN
---	---------

See Note 7

- for winch and aero-tow launching max.	765 daN
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9. Launching Hooks

- Safety hook "Europa G 88", LBA Datasheet No. 60.230/2
- Nose tow hook "E 85", LBA Datasheet No. 60.230/1

Remark: Tow hook 1 and/or 2 optional

10. Air Speeds

Manoeuvring Speed	V_A	180 km/h
Never Exceed Speed	V_{NE}	270 km/h

Maximum permitted speeds:

with flaps at	-1, -2, S, S1,	270 km/h
with flaps at	L, +2, +1, 0	160 km/h

Rough Air Speed	V_{RA}	180 km/h
Max. Aerotow Speed	V_T	180 km/h
Max. Winch-launch Speed	V_W	150 km/h

Max. Gear Operating Speed	V_{LO}	180 km/h
Max. Engine extended Speed	V_{max}	160 km/h

TCDS No.: UK.TC.A.00074

Date: 26 September 2023

AW-DAW-TP-004

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For extending/retracting the powerplant	V_{POmax}	120 km/h
See Note 6:	V_{POmin}	90 km/h
Manoeuvring Speed	V_A	200 km/h
Never Exceed Speed	V_{NE}	285 km/h
Maximum permitted speeds:		
with flaps at	-1, -2, S, S1,	285 km/h
with flaps at	L, +2, +1, 0	200 km/h
Rough Air Speed	V_{RA}	200 km/h
Max. Engine extended Speed	V_{max2}	180 km/h
Max. Speed with ignition on	V_{max1}	150 km/h

11. Operational Capability

Approved for VFR-flying in daytime.

12. Maximum Masses:

Wing span 15m	
Max. Mass:	525kg
Max. Mass of Non-Lifting Parts	300kg
Wing span 15m (see Note 6)	
Max. Mass of Non-Lifting Parts	310kg
Wing span 18m	
Max. Mass:	500kg
Max. Mass of Non-Lifting Parts	300kg
Wing span 18m (See Note 5)	
Max. Mass:	525kg
Max. Mass of Non-Lifting Parts	300kg
Wing span 18m (See Note 6)	
Max. Mass:	565kg
Max. Mass of Non-Lifting Parts	310kg
Wing span 18m (See Note 7)	
Max. Mass:	600kg
Max. Mass of Non-Lifting Parts	310kg

13. Centre of Gravity Range

Datum:	Most inner wing leading edge
Levelling means:	Wedge 100 : 4.4 on slope of rear top fuselage to be horizontal Wedge 100 : 3.0 on slope of rear top fuselage to be horizontal, see Note 8
Forward Limit:	250 mm aft of datum point
See Note 6:	
Forward Limit:	260 mm aft of datum point
Rearward Limit:	380 mm aft of datum point

14. Seating Capacity

1

TCDS No.: UK.TC.A.00074

Date: 26 September 2023

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15. Lifetime limitations

Refer to Maintenance Manual

16. Deflection of control surfaces

Refer to Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual for the powered sailplane Ventus-2cT, issued June 1996, LBA approved.
Flight Manual for the powered sailplane Ventus-2cT, issued November 2003, LBA approved (see Note 6).
Flight Manual for the powered sailplane Ventus-2cxaT, issued July 2022, LBA approved (see Note 8)
2. Maintenance Manual for the powered sailplane Ventus-2cT, issued June 1996
Maintenance Manual for the powered sailplane Ventus-2cT, issued November 2003, LBA approved(see Note 6).
Maintenance Manual for the powered sailplane Ventus-2cxaT, issued July 2022, LBA approved (see Note 8).
3. Repair Manual for the GFRP/CFRP powered sailplane model "Ventus-2cT" issued June 1996.
Repair Manual for the GFRP/CFRP powered sailplane model "Ventus-2cT" issued November 2003, (see Note 6).
Repair Manual for the GFRP/CFRP powered sailplane model "Ventus-2cxaT", issued July 2022 (see Note 8).
4. LBA-approved Engine Manual for the SOLO Engine type 2350, the latest applicable issue, by Messrs. SOLO Kleinmotoren GmbH.
5. LBA-approved Manual for the folding propeller type OE-FL ./83, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH.
6. Repair Manual for the folding propeller type OE-FL ./83, the latest applicable issue, by Messrs. Ingrid Oehler TB GmbH.
7. Operating Instructions for the TOST release, latest approved version

V. Notes

1. Manufacturing is confined to industrial production
2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface
3. Approved for operations with the power plant temporarily removed or inoperative in accordance with the instructions given in the Flight Manual
4. Revised pages of the flight manual, revision 1, issued October 1996, are to be used for S/N 1 through 7 pursuant to the LBA-approved Schempp-Hirth Modification Bulletin No. 825-25.
5. The increase of the maximum permitted all-up mass for S/N 8 and up with 18 m wing span is permissible according to the LBA-approved Schempp-Hirth Technical Note No. 825-19.
6. Employing a new horizontal tailplane and the use of modified 18 m outboard wing panels, the increase of the maximum permitted all-up mass and the mass of the non-load carrying parts for S/N 108 and up is permissible according to the LBA-approved Schempp-Hirth Modification Bulletin No. 825-44.
7. The increase of the maximum permitted all-up mass for 18 m wing span for S/N 108 and up is permissible according to the EASA-approved Schempp-Hirth Technical Note No. 825-37.
8. The optional use of a smaller fuselage for S/N 108 and on, when in compliance with MB 825-44 together with TN 825-37, is permissible according to the EASA-approved Schempp-Hirth Modification Bulletin No.825-52.

Section 6 Ventus-2cFES**I. General****1. Type / Variant / Model**

- a) Type: Ventus bT
 b) Variant or Model: Ventus-2cFES

2. Type Certificate Holder

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

3. Airworthiness Category

Powered Sailplane, JAR 22 – Utility
 Not capable for self-launching

4. Manufacturer

Schempp-Hirth Flugzeugbau GmbH
 Kребенstraße 25
 73230 Kirchheim/Teck
 Germany

II. Certification Basis**1. Reference Date for determining the applicable requirements**

01 February 2018

2. Airworthiness Requirements

Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989 (Change 4 of the English original version) with Amendment 22/90/1

3. Requirements elected to comply

JAR 22, Appendix I of Amendment 22/91/1 for non-self launching sailplanes

Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued July 1991.

Additional requirements for the installation of a water ballast system in the vertical fin (for compensating the nose heavy moment of the water ballast in the wing tanks). (LBA-Letter: I 4 – I 413/89 dated October 25th, 1989)

Draft NPA 22 D-46 dates April 7, 1994 relating to JAR 22.785 (e)(f) "Seats and Restraint System"

Draft NPA 22 D-64 dates April 12, 1994 relating to JAR 22.788 "Head Rests"

4. Special Conditions

SC E-01, Electrical Engine for powered sailplanes

SC-22-2014-01, Installation of electric propulsion units in powered sailplanes

5. Exemptions

None

6. Equivalent Safety Findings

JAR 22.207 (c) - Stall warning

7. Environmental Standards

See TCDSN UK.TC.A.00074

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

List of Drawings for Powered Sailplane
Ventus-2cFES
- issue February 2023

2. Description

The electrically powered sailplane model "Ventus-2cFES" is the non-self-launching variant of the sailplane model "Ventus-2c".

Single-seat, mid-wing powered sailplane, CFRP/GFRP/Aramid fiber construction, 4-piece 18 m wing, chamber changing-flaps, double-section Schempp-Hirth type airbrakes on upper surface of inboard wing panels, water tanks in inboard and outboard wing panels and (on request) in the fin, retractable main wheel (with brake), T-tail (fixed horiz. stabilizer with elevator, fin and rudder), electric power plant with 2-blade propeller in fuselage nose, removable batteries in compartment in fuselage cone.

3. Equipment

Min. Equipment:

- 1 Air speed indicator (up to 300 km/h)
 - 1 Altimeter
 - 1 Magnetic compass
 - 1 Power plant instrument (FCU)
 - 1 Stall warning system (SWS)
 - 1 Outside air temperature indicator with sensor (when flying with water ballast)
 - 1 4-Point harness (symmetrical)
 - 1 Automatic or manual parachute
 - or
 - 1 Back cushion, when flying without parachute
- Additional Equipment refer to Flight and Maintenance Manual

4. Dimensions

Span	18 m
Wing area	11 m ²
Length	6.63 m

5. Engines

Engine Designation:	FES-VEN-M100
Type Certificate:	N/A Accepted as part of the aircraft

5.1 Engine Limits

Maximum continuous RPM:	See propeller
Maximum overspeed RPM:	See propeller
Maximum permissible motor temperature, continuous operation:	70°C
Maximum permissible motor temperature, short time operation:	90°C
Maximum permissible controller temperature, continuous operation:	70°C
Maximum permissible controller temperature, short time operation:	90°C

6. Propellers

Propeller Designation: FES-VEN-P1-102
 Type certificate: N/A Accepted as part of the aircraft
 Diameter: 1.02m
 Sense of rotation: Clockwise, looking at direction of flight

Maximum permissible rotational speed, continuous operation 4300 RPM
 Maximum permissible rotational speed, short-time operation: 4500RPM

7. Battery Model

2 x FES GEN2 14S 40 Ah

7.1 Engine Limits

Battery capacity: 2 x 2.1 kWh
 Non-usable battery capacity: N/A
 Max. battery discharge temperature, continuous operation: 45°C
 Max. battery discharge temperature, short time operation: 55°C
 Max. battery temperature with engine stopped: 75°C
 Min. permissible cell voltage: 2.8V

8. Weak Links

Ultimate Strength:

- for winch and aero-tow launching max. 765 daN

9. Launching Hooks

1. Safety hook "Europa G 88", LBA Datasheet No. 60.230/2
2. Nose tow hook "E 85", LBA Datasheet No. 60.230/1

Remark: Tow hook 1 and/or 2 optional

10. Air Speeds

Manoeuvring Speed	V_A	200 km/h
Never Exceed Speed	V_{NE}	285 km/h

Maximum permitted speeds:

with flaps at	-1, -2, S, S1,	285 km/h
with flaps at	L, +2, +1, 0	200 km/h

Rough Air Speed	V_{RA}	200 km/h
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Maximum speed for starting the motor and maximum speed with rotating propeller	V_{PO}	160 km/h
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11. Operational Capability

Approved for VFR-flying in daytime.

12. Maximum Masses:

Max. Mass:	600kg
Max. Mass of Non-Lifting Parts	310kg

13. Centre of Gravity Range

Datum: Most inner wing leading edge
 Levelling means: Wedge 100 : 3 on slope of rear top fuselage to be horizontal
 Forward Limit: 260 mm aft of datum point

Rearward Limit: 380 mm aft of datum point

14. Seating Capacity

1

15. Lifetime limitations

Refer to Flight Manual

16. Deflection of control surfaces

Refer to Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual for the Electric Powered Sailplane Ventus-2cFES, issued August 2022
2. Maintenance Manual for the Electric Powered Sailplane Ventus-2cFES, issued August 2022
3. Operating Instructions for the TOST release, latest approved version

V. Notes

1. Manufacturing is confined to industrial production
2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface
3. Approved for operations with FES-batteries and/or propeller blades temporarily removed in accordance with the instructions given in the Flight Manual

Section 7 Administration**I. Acronyms and Abbreviations**

Acronym / Abbreviation	Definition
AFRP	Aramid Fibre Reinforced Plastic
CFRP	Carbon Fibre Reinforced Plastic
GFRP	Glass Fibre Reinforced Plastic
CS	Certification Specification
CAA	Civil Aviation Authority
EASA	European Union Aviation Safety Agency
FES	Front Electric Sustainer
g	Load Factor
JAA	Joint Aviation Authorities
JAR	Joint Aviation Requirements
kg	Kilogram
L	Litres
LBA	Luftfahrt-Bundesamt
min	Minute
RPM	Revolutions per minute
TC	Type Certificate
TCDS	Type Certificate Data Sheet
TCH	Type Certificate Holder
VFR	Visual Flight Rules

II. Type Certificate Holder Record

TCH Record	Period
Schempp-Hirth Flugzeugbau GmbH Krebenstraße 25 73230 Kirchheim/Teck Germany	Present. No changes.

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
1	13 Apr 2023	Initial issue of UK CAA TCDS. All technical detail taken from EASA.A.301 Issue 03 including: Introduction of MB 825-52 for model Ventus 2cT Section 5, Note 8 use of a smaller fuselage	Issue 1 13 Apr 2023
2	26 Sep 2023	Introduction of new model Ventus-2cFES	Issue 2 26 Sep 2023

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