TYPE-CERTIFICATE
DATA SHEET

NO. EASA.A.054

for
Stemme S10

Type Certificate Holder
Stemme GmbH
Flugplatzstrasse F2 Nr. 7
15344 Strausberg
Germany

Variants:
- Stemme S10
- Stemme S10-V
- Stemme S10-VT
- Stemme S12
Table of Content

Table of Content ............................................................................................................... 2

Section A: Stemme S10 ........................................................................................................ 3

A.I. General ............................................................................................................................ 3
A.II. Certification Basis .......................................................................................................... 4
A.III. Technical Characteristics and Operational Limitations .................................................. 4
A.IV. Operating and Service Instructions ................................................................................ 6
A.V. Notes ............................................................................................................................... 7

Section B: Stemme S10-V .................................................................................................... 8

B.I. General ............................................................................................................................ 8
B.II. Certification Basis ........................................................................................................... 8
B.III. Technical Characteristics and Operational Limitations .................................................. 9
B.IV. Operating and Service Instructions ................................................................................ 11
B.V. Notes ............................................................................................................................... 12

Section C: Stemme S10-VT ................................................................................................ 13

C.I. General ............................................................................................................................ 13
C.II. Certification Basis .......................................................................................................... 13
C.III. Technical Characteristics and Operational Limitations .................................................. 14
C.IV. Operating and Service Instructions ................................................................................ 16
C.V. Notes ............................................................................................................................... 16

Section D: Stemme S12 ....................................................................................................... 17

D.I. General ............................................................................................................................ 17
D.II. Certification Basis .......................................................................................................... 17
D.III. Technical Characteristics and Operational Limitations .................................................. 18
D.IV. Operating and Service Instructions ................................................................................ 20
D.V. Notes ............................................................................................................................... 20

Administrative section ......................................................................................................... 21
Section A: Stemme S10

A.I. General

1. Data Sheet No.: EASA.A.054
2. a) Type: Stemme S10
   b) Variant: Stemme S10
3. Airworthiness Category: Powered Sailplane, JAR 22 - Utility
4. Type Certificate Holder:
   Stemme GmbH
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Germany
   Stemme GmbH & Co. KG
   Gustav-Meyer-Allee 25
   1000 Berlin 65
   Stemme GmbH & Co. KG
   Gustav-Meyer-Allee 25
   13355 Berlin
   Stemme GmbH & Co. KG
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Stemme AG
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Stemme AG
   Flugplatzstrasse F2 Nr. 6-7
   15344 Strausberg
   Stemme GmbH
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
5. Manufacturer:
6. Certification Application Date: 30. May 1985
7. Type Certification Date: 31. December 1990
8. This TCDS replaces LBA TCDS No. 846
A.II. Certification Basis


2. Airworthiness Requirements: Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989 (Change 4 of the English Original Issue)


4. Special Conditions: None

5. Exemptions: None

6. Equivalent Safety Findings: None

7. Environmental Standards: ICAO Annex 16, Volume I (for more details see EASA TCDSN A.054)

A.III. Technical Characteristics and Operational Limitations


2. Description: Selflaunching, twin-seat, all composite construction powered sailplane, with the engine mounted in the center fuselage, propeller shaft system and fully foldable, jointed propeller, 3-piece wing, double panel Schempp-Hirth type airbrakes on the upper wing surface, optional winglets (see V.8). Re-tractable main landing gear with brake, T-tail (fixed horiz. stabilizer with elevator) fin and rudder.
3. Equipment:

Min. Equipment:
- 1 Air speed indicator (up to 300 km/h)
- 1 Altimeter
- 1 Magnetic compass
- 1 RPM indicator
- 1 Oil pressure indicator
- 1 Oil temperature indicator
- 1 Cylinder head temperature indicator
- 1 Engine hour meter
- 2 Fuel quantity indicator
- 2 Stall warning indicators
- 2 4-Point harness (symmetrical)
- 2 Automatic or manual parachute
  or
- 2 Back cushion (thickness approx. 10 cm / 3.94 in. when compressed), when flying without parachute

Additional Equipment refer to Flight and Operating Manual

4. Dimensions:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span</td>
<td>23.0 m</td>
</tr>
<tr>
<td>Wing area</td>
<td>18.74 m²</td>
</tr>
<tr>
<td>Length</td>
<td>8.42 m</td>
</tr>
</tbody>
</table>

5. Engine

Limbach L 2400 EB1 AD
EASA Type Certificate Data Sheet No. EASA.E.084

Remark:
Former name of the engine: L 2400 EB1.D. See also Service Bulletin no.17 of company Limbach.

5.1 Engine Limits:

- Maximum Power RPM: 3400 rpm
- Maximum Continuous Power RPM: 3000 rpm

6. Propellers:

Stemme 10AP-N
Annex 1 to the TCDS EASA.A.054, No P.504

6.1 Propeller diameter: 1610 mm +/- 2 mm

7. Fluids and Fluid capacities:

- Wing tank left: 45.00 l
- Wing tank right: 45.00 l
- Non usable amount of fuel: 1.5 l
- Optional tank capacity 2 x 60 l (see also V.6)

8. Launching Hooks:

None

9. Weak links:

None
10. Air Speeds:
   - Manoeuvring Speed $V_A$ 180 km/h
   - Never Exceed Speed $V_{NE}$ 270 km/h
     - at flap setting -10°, -5°, 0° $V_{FE}$ 270 km/h
     - at flap setting +5°, +10° $V_{FE}$ 180 km/h
     - at flap setting L (+16°) $V_{FE}$ 140 km/h
   - Maximum permitted speeds
     - in rough air $V_{RA}$ 180 km/h
     - max gear operating speed $V_{LO}$ 140 km/h

11. Operational Capability:
   - Approved for VFR-Day.
   - VFR Night limited to the vicinity (range of glide ratio) of active airfields approved for night flight operations (see V.9)

12. Maximum Masses:
   - Max. Mass 850 kg
   - Max. Mass of Non-Lifting Parts 570 kg

13. Centre of Gravity Range:
   - Datum: Inner wing leading edge, where upper side of fuselage boom placed at slope 1000 : 84
     - Forward Limit 254 mm aft of datum point
     - Rearward Limit 420 mm aft of datum point

14. Seating Capacity:
   - 2

15. Lifetime limitations:
   - Refer to Maintenance Manual

16. Deflection of control surfaces:
   - Refer to Maintenance Manual

A.IV. Operating and Service Instructions

3. Operating and Maintenance Manual for the engine Limbach L 2400 and series.
A.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. For issuance of the Certificate of Airworthiness pertinent to an individual aircraft the Noise Protection Requirements effective on the day of application are applicable.
4. Only to the s/n 10-3 to 10-10 differing operational limits as well as data are defined by Stemme company in modification bulletins LBA-approved, belonging to the individual s/n.
5. The type certification is valid for the s/n: 10-3 up to 10-10 and starting with 10-12.
6. The optional equipment with 2 x 60 l tanks ex works is allowed according to the modification bulletin Stemme A30-92-077, LBA-approved.
7. Conversion from the model Stemme S10 into the model Stemme S10-V is allowed according to the Stemme Service Bulletin A31-10-010, LBA-approved.
8. The optional equipment with winglets is allowed according to the Service Bulletin Stemme A31-10-023, LBA-approved.
9. VFR Night limited to the vicinity (range of glide ratio) of active airfields approved for night flight operations is allowed when the powered sailplane is equipped for this operation according to national rules and Service Bulletin Stemme A31-10-044 LBA-approved and A31-10-072 EASA-approved.
Section B: Stemme S10-V

B.I. General

1. Data Sheet No.: EASA.A.054

2. a) Type: Stemme S10
   b) Variant: Stemme S10-V

3. Airworthiness Category: Powered Sailplane, JAR 22 - Utility

4. Type Certificate Holder:
   Stemme GmbH
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Germany

5. Manufacturer:
   Stemme GmbH & Co. KG
   Gustav-Meyer-Allee 25
   13355 Berlin

   Stemme GmbH & Co. KG
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg

   Stemme AG
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg

   Stemme AG
   Flugplatzstrasse F2 Nr. 6-7
   15344 Strausberg

   Stemme GmbH
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg

6. Certification Application Date: 03. February 1992

7. Type Certification Date: 16. September 1994

8. This TCDS replaces LBA TCDS No. 846

B.II. Certification Basis


2. Airworthiness Requirements: Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989 (Change 4 of the English Original Issue)
3. Requirements elected to comply:

Preliminary Standard for the Substantiation of Indirect Drive Shafts in Power Plants of Powered Sailplanes (JAR 22) (with modifications for S10), dated 05.08.1988.
NPA 22E-XX (Proposed Amendment to JAR 22 for Variable Pitch Propellers), Issue March 25, 1993.
JAR-22.375 from amendment 22/90/1 (Winglets)

4. Special Conditions:
None

5. Exemptions:
None

6. Equivalent Safety Findings:
None

7. Environmental Standards:
ICAO Annex 16, Volume I (for more details see EASA TCDSN A.054)

B.III. Technical Characteristics and Operational Limitations

1. Type Design Definition:

Document Record No. A08-10-000, am-index 02.a, dated October 17th, 1994 (record of the documents defining Type Stemme S10), LBA approved.

in addition:
Document Record No. A08-10-039, am-index 03.c, dated Sept. 21, 1994 (supplement for Model S 10-V), LBA approved.
Record of Service Bulletins and Airworthiness Directives, Doc.No. P150-981002 in the actual revision.

2. Description:

Selflaunching, twin-seat, all composite construction powered sailplane, with the engine mounted in the center fuselage, propeller shaft system and fully foldable, jointed variable pitch propeller CFRP, 3-piece wing, double panel Schempp-Hirth type airbrakes on the upper wing surface, optional winglets (see V.6).
Retractable main landing gear with brake, T-tail (fixed horiz. stabilizer with elevator) fin and rudder.
3. Equipment:
   Min. Equipment:
   1. Air speed indicator (up to 300 km/h)
   2. Altimeter
   3. Magnetic compass
   4. RPM indicator
   5. Oil pressure indicator
   6. Oil temperature indicator
   7. Cylinder head temperature indicator
   8. Engine hour meter
   9. Fuel quantity indicator
   10. Stall warning indicator
   11. Indicator for Takeoff (low pitch) propeller position
   12. 4-Point harness (symmetrical)
   13. Automatic or manual parachute
   or
   14. Back cushion (thickness approx. 10 cm / 3.94 in. when compressed), when flying without parachute
   Additional Equipment refer to Flight and Operating Manual

4. Dimensions:
   Span: 23.0 m
   Wing area: 18.74 m²
   Length: 8.42 m

5. Engine
   Limbach L 2400 EB1 AD
   EASA Type Certificate Data Sheet EASA.E.084
   Remark:
   Former name of the engine: L 2400 EB1.D. See also Service Bulletin no.17 of company Limbach.

5.1 Engine Limits:
   Maximum Power RPM: 3400 rpm
   Maximum Continuous Power RPM: 3000 rpm

6. Propellers:
   Stemme 10AP-F
   Annex 1 to the TCDS EASA.A.054, No P.504
   Stemme 10AP-V
   Annex 1 to the TCDS EASA.A.054, No P.504

6.1 Propeller diameter:
   Both Propellers 1630 mm +/- 3 mm

7. Fluids and Fluid capacities:
   Wing tank left: 45.00 l
   Wing tank right: 45.00 l
   Non-usable amount of fuel: 1.5 l
   Optional tank capacity 2 x 60 l (see also V. 5)

8. Launching Hooks:
   None

9. Weak links:
   None
10. **Air Speeds:**

- **Manoeuvring Speed** \( V_A \) 180 km/h  
- **Never Exceed Speed** \( V_{NE} \) 270 km/h  
  - at flap setting -10°, -5°, 0° \( V_{FE} \) 270 km/h  
  - at flap setting +5°, +10° \( V_{FE} \) 180 km/h  
  - at flap setting L (+16°) \( V_{FE} \) 140 km/h  

**Maximum permitted speeds**
- in rough air \( V_{RA} \) 180 km/h  
- max gear operating speed \( V_{LO} \) 140 km/h  

11. **Operational Capability:**

- Approved for VFR-Day.  
- VFR Night limited to the vicinity (range of glide ratio) of active airfields approved for night flight operations (see V.8)  

12. **Maximum Masses:**

- Max. Mass 850 kg  
- Max. Mass of Non-Lifting Parts 570 kg  

13. **Centre of Gravity Range:**

- **Datum:** Inner wing leading edge, where upper side of fuselage boom placed at slope 1000 : 84  
- **Forward Limit** 254 mm aft of datum point  
- **Rearward Limit** 420 mm aft of datum point  

14. **Seating Capacity:**

- 2  

15. **Lifetime limitations:**

- Refer to Maintenance Manual  

16. **Deflection of control surfaces:**

- Refer to Maintenance Manual  

**B.IV. Operating and Service Instructions**

1. Flight manual for the powered sailplane type STEMME S10-V, Issue Sep. 6, 1994, LBA –approved, or later approved revisions.  
3. Operating and Maintenance Manual for the engine Limbach L 2400 and series.  
5. Small Repair Manual (Document A35-10-SMR), revision 02.a dated October 13th 1997, or later approved revisions.
B.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. For issuance of the Certificate of Airworthiness pertinent to an individual aircraft the Noise Protection Requirements effective on the day of application are applicable.
4. The Variant Certification is effective from Serial No. 14-001 onwards.
5. The optional equipment with 2 x 60 l tanks ex works is allowed according to the modification bulletin Stemme A30-92-077, LBA-approved.
6. The optional equipment with winglets is allowed according to the Service Bulletin Stemme A31-10-023, LBA-approved.
7. The optional equipment of the variant Stemme S10-V with the „Fixed Pitch Propeller“ Stemme 10AP-F is allowed according to the Service Bulletin Stemme A31-10-067, EASA-approved.
8. VFR Night limited to the vicinity (range of glide ratio) of active airfields approved for night flight operations is allowed when the powered sailplane is equipped for this operation according to national rules and Service Bulletin Stemme A31-10-044 LBA-approved and A31-10-072 EASA-approved.
Section C: Stemme S10-VT
C.I. General

1. Data Sheet No.: EASA.A.054
2. a) Type: Stemme S10
   b) Variant: Stemme S10-VT
3. Airworthiness Category: Powered Sailplane, JAR 22 - Utility
4. Type Certificate Holder: Stemme GmbH
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Germany
5. Manufacturer: Stemme GmbH & Co. KG
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Stemme AG
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
   Stemme AG
   Flugplatzstrasse F2 Nr. 6-7
   15344 Strausberg
   Stemme GmbH
   Flugplatzstrasse F2 Nr. 7
   15344 Strausberg
7. Type Certification Date: 15. August 1997
8. This TCDS replaces LBA TCDS No. 846

C.II. Certification Basis

2. Airworthiness Requirements: Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective on June 27, 1989 (Change 4 of the English Original Issue)
   Preliminary Standard for the Substantiation of Indirect Drive Shafts in Power Plants of Powered Sailplanes (JAR 22) (with modifications for S10), dated 05.08.1988.
4. Special Conditions: None
5. Exemptions: None
6. Equivalent Safety Findings: None
7. Environmental Standards: ICAO Annex 16, Volume I (for more details see EASA TCDSN A.054)

C.III. Technical Characteristics and Operational Limitations

   in addition:
   Record of Service Bulletins and Airworthiness Directives, Doc.No. P150-981003 in the actual revision.

2. Description: Selflaunching, twin-seat, all composite construction powered sailplane, with the liquid cooled, turbocharged engine mounted in the center fuselage, propeller shaft system and fully foldable, jointed variable pitch propeller CFRP, 3-piece wing, double panel Schempp-Hirth type airbrakes on the upper wing surface, optional winglets (see V.6). Retractable main landing gear with brake, T-tail (fixed horiz. stabilizer with elevator) fin and rudder.

3. Equipment: Min. Equipment:
   1. Air speed indicator (up to 300 km/h)
   1. Altimeter
   1. Magnetic compass
   1. RPM indicator
   1. Oil pressure indicator
   1. Oil temperature indicator
   1. Cylinder head temperature indicator
   1. Engine hour meter
   2. Fuel quantity indicator
   Stallwarning indicator
   1. Indicator for Takeoff (low pitch) propeller position
   2. 4-Point harness (symmetrical)
   2. Automatic or manual parachute
   or
   2. Back cushion (thickness approx. 10 cm / 3.94 in. when compressed), when flying without parachute

   Additional Equipment refer to Flight and Operating Manual

4. Dimensions:

   Span 23.0 m
   Flügellänge
   Wing area 18.74 m²
   Flügelfläche
   Length 8.42 m
   Länge
5. Engine

Rotax 914 F2/S1
LBA-Engine Type Certificate Data Sheet No. 5006, dated: Aug. 14th 1997

Remark:
Rotax 914 F2 modified for the use in the Stemme S10-VT

5.1 Engine Limits:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Power RPM</td>
<td>5800 rpm</td>
</tr>
<tr>
<td>Maximum Continuous Power RPM</td>
<td>5500 rpm</td>
</tr>
</tbody>
</table>

6. Propellers:

Stemme 11AP-V
Annex 1 to the TCDS EASA.A.054, No P.504

6.1 Propeller diameter:

1630 mm +/- 3 mm

7. Fluids and Fluid capacities:

<table>
<thead>
<tr>
<th>Component</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing tank left</td>
<td>45.00 l</td>
</tr>
<tr>
<td>Wing tank right</td>
<td>45.00 l</td>
</tr>
<tr>
<td>Non-useable amount of fuel</td>
<td>1.5 l</td>
</tr>
</tbody>
</table>

Optional tank capacity 2 x 60 l (see also V. 5)

8. Launching Hooks:

None

9. Weak links:

None

10. Air Speeds:

<table>
<thead>
<tr>
<th>Speed Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manoeuvring Speed ( V_A )</td>
<td>180 km/h</td>
</tr>
<tr>
<td>Never Exceed Speed ( V_{NE} )</td>
<td>270 km/h</td>
</tr>
<tr>
<td>at flap setting (-10^\circ,\ -5^\circ,\ 0^\circ) ( V_{FE} )</td>
<td>270 km/h</td>
</tr>
<tr>
<td>at flap setting (+5^\circ,\ +10^\circ) ( V_{FE} )</td>
<td>180 km/h</td>
</tr>
<tr>
<td>at flap setting ( L (+16^\circ)) ( V_{FE} )</td>
<td>140 km/h</td>
</tr>
</tbody>
</table>

Maximum permitted speeds:
- in rough air \( V_{RA} \) 180 km/h
- max gear operating speed \( V_{LO} \) 140 km/h

11. Operational Capability:

Approved for VFR-Day.
VFR Night limited to the vicinity (range of glide ratio) of active airfields approved for night flight operations (see V.7)

12. Maximum Masses:

<table>
<thead>
<tr>
<th>Mass Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Mass</td>
<td>850 kg</td>
</tr>
<tr>
<td>Max. Mass of Non-Lifting Parts</td>
<td>570 kg</td>
</tr>
</tbody>
</table>

13. Centre of Gravity Range:

Datum: Inner wing leading edge, where upper side of fuselage boom placed at slope 1000 : 84

<table>
<thead>
<tr>
<th>Limit Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Limit</td>
<td>254 mm aft of datum point</td>
</tr>
<tr>
<td>Rearward Limit</td>
<td>420 mm aft of datum point</td>
</tr>
</tbody>
</table>

14. Seating Capacity:

2

15. Lifetime limitations:

Refer to Maintenance Manual

16. Deflection of control surfaces:

Refer to Maintenance Manual
C.IV. Operating and Service Instructions


3. Operating and Maintenance Manual for the engine see Maintenance Manual for the Powered Sailplane STEMME S10-VT section E.


C.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. For issuance of the Certificate of Airworthiness pertinent to an individual aircraft the Noise Protection Requirements effective on the day of application are applicable.

4. The Variant Certification is effective from Serial No. 11-002 onwards.

5. The optional equipment with 2 x 60 l tanks ex works is allowed according to the modification bulletin Stemme A30-92-077, LBA-approved.

6. The optional equipment with winglets is allowed according to the Service Bulletin Stemme A31-10-023, LBA-approved.

7. VFR Night limited to the vicinity (range of glide ratio) of active airfields approved for night flight operations is allowed when the powered sailplane is equipped for this operation according to national rules and Service Bulletin Stemme A31-10-044 LBA-approved and A31-10-072 EASA-approved.

8. The engine ROTAX 914 F2/S1 (STEMME P/N 11AM-M) is a modification on base of a ROTAX 914 F2 or ROTAX 914 F2-01 in accordance with the Technical Specification Doc-No: A26-11AM-M. This modification is a necessary customization of the basic engine for the use within model STEMME S10-VT. Modified engines on base of a ROTAX 914 F2 may only be used for model STEMME S10-VT.
**Section D: Stemme S12**

### D.I. General

1. **Data Sheet No.:** EASA.A.054
2. **a) Type:** Stemme S10
   **b) Variant:** Stemme S12
3. **Airworthiness Category:** Powered Sailplane, JAR 22 - Utility
4. **Type Certificate Holder:**
   - Stemme GmbH
     Flugplatzstrasse F2 Nr. 7
     15344 Strausberg
     Germany
5. **Manufacturer:**
   - Stemme AG
     Flugplatzstrasse F2 Nr. 7
     15344 Strausberg
   - Stemme AG
     Flugplatzstrasse F2 Nr. 6-7
     15344 Strausberg
   - Stemme GmbH
     Flugplatzstrasse F2 Nr. 7
     15344 Strausberg
6. **Certification Application Date:** 6. December 2013
7. **Type Certification Date**

### D.II. Certification Basis

1. **Certification Basis:** Defined in CRI A-1, Dec. 2013, with Amendments
2. **Airworthiness Requirements:** CS-22 (initial Version) 14. November 2003
3. **Requirements elected to comply:** Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fibre Reinforced Plastics, Issue July. 1991
4. **Special Conditions:**
   - EASA SC A.22.1-01 Increased mass up to 900 kg
   - Preliminary Standards for the Substantiation of Indirect Drive Shafts in Powered Plants of Powered Sailplanes (JAR22) (with modification for S10), dated 05.08.1988.
   - CRI F-01 Autopilot Installations on Board of Powered Sailplanes. Use of a “non TSO” 2-axis auto pilot system (as an option).
5. **Exemptions:** None
6. **Equivalent Safety Findings:** CS-VLA 725 Limit drop tests
CS-VLA 726 Ground load dynamic tests
CS-VLA 727 Reserve energy absorption
CS-VLA 1309 Equipment, systems, installations

7. Environmental Standards:
   ICAO Annex 16, Volume I (for more details see EASA TCDSN A.054)

D.III. Technical Characteristics and Operational Limitations

1. Type Design Definition:
   Document Record No. L150-912.005 Rev.00
   In addition:
   Record of Service Bulletins and Airworthiness Directives, Doc.No. P150-981004 in the actual revision.

2. Description:
   Self-launching, twin-seat, all composite construction powered sailplane, with a liquid cooled, turbo-charged engine mounted in the center fuselage, propeller shaft system and fully foldable, jointed variable pitch propeller CFRP, 5-piece wing, double panel Scheppe-Hirth type airbrakes on the upper wing surface, retractable main landing gear with brake, T-tail (fixed horiz. stabilizer with elevator) fin and rudder.

3. Equipment:
   Min. Equipment:
   1 Air speed indicator (up to 300 km/h)
   1 Altimeter
   1 Magnetic compass
   1 RPM indicator*
   1 Oil pressure indicator*
   1 Oil temperature indicator*
   1 Cylinder head temperature indicator*
   1 Engine hour meter
   2 Fuel quantity indicator*
   1 Indicator for Takeoff (low pitch) propeller position
   1 Indicator for the trim position
   1 Indicator for Low fuel
   1 Alternator warning light
   1 Outside air temperature gauge, if flown with waterballast in the fin*
   2 4-Point harness (symmetrical)
   2 Automatic or manual parachute
   or
   2 Back cushion (thickness approx. 10 cm / 3.94 in. when compressed), when flying without parachute

   * These instruments can be included in the digital engine monitoring GARMIN G3X Touch system (see Note 7).

   Additional Equipment refer to Flight and Operating Manual

4. Dimensions:
   Span
   Spanweite
   25.0 / 21.7 / 21.4 m
   Wing area
   Flügelfläche
   19.95 / 18.6 / 18.5 m²
   Length
   Länge
   8.42 m
5. Engine

Engine Rotax 914 F2/S1 (P/N 11AM-M) according to Technical Specification Doc-No: A26-11AM-M Rev 08.a*

Clutch (P/N: 12AK) according to Assembly drawing Doc.-No.: A12-12AK Rev 01.a* and Parts List Doc.-No.: A21-12AK Rev 01.a*

Drive System (P/N: 11AS) according to Assembly Drawing Doc.-No.: A12-11AS Rev 03.a* and Parts List Doc.-No.: A21-11AS Rev 02.a*

Propeller Gear (P/N: 11AG) according to Technical Specification Doc.-No.: A26-11AG Rev 11.a*  

* or later approved revisions.

5.1 Engine Limits:

Maximum Power RPM 5800 rpm  
Maximum Continuous Power RPM 5500 rpm

6. Propellers:

Stemme 11AP-V  
Annex 1 to the TCDS EASA.A.054, No P.504

6.1 Propeller diameter: 1630 mm +/- 3 mm

7. Fluids and Fluid capacities:

Wing tank left: 60.00 l  
Wing tank right: 60.00 l  
Non-usable amount of fuel: 0.52 l

8. Launching Hooks: None

9. Weak links: None

10. Air Speeds:

Manoeuvring Speed $V_A$ 180 km/h  
Never Exceed Speed $V_{NE}$ 270 km/h  
- at flap setting -10°, -5°, 0° $V_{FE}$ 270 km/h  
- at flap setting +5°, +10° $V_{FE}$ 180 km/h  
- at flap setting L (+16°) $V_{FE}$ 140 km/h  

Maximum permitted speeds  
- in rough air $V_{RA}$ 180 km/h  
- max gear operating speed $V_{LO}$ 140 km/h


12. Maximum Masses:

Max. Mass 900 kg  
Max. Mass of Non-Lifting Parts 610 kg
13. Centre of Gravity Range:
   Datum: Inner wing leading edge, where upper side of fuselage boom placed at slope 1000 : 54
   Forward Limit 265 mm aft of datum point
   Rearward Limit 420 mm aft of datum point

14. Seating Capacity: 2
15. Lifetime limitations: Refer to Maintenance Manual

D.IV. Operating and Service Instructions

1. Flight manual for the powered sailplane Stemme S12, Edition L400-912810 Rev.00; 01/2016, EASA-approved, or later approved revisions.
5. Small Repair Manual (Document P520-901502), issue April 2017, or later approved revisions.

D.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. For issuance of the Certificate of Airworthiness pertinent to an individual aircraft the Noise Protection Requirements effective on the day of application are applicable.
4. The Variant Certification is effective from Serial No. 12-002 onwards.
5. Optional use of a non ETSO 2 axis autopilot (Dynon) is included into the certification of the Stemme S12, all wing spans (25 m, 21.7 m and 21.4 m).
6. The engine ROTAX 914 F2/S1 (STEMME P/N 11AM-M) is a modification on base of a ROTAX 914 F2 or ROTAX 914 F2-01 in accordance with the Technical Specification Doc-No: A26-11AM-M. This modification is a necessary customization of the basic engine for the use within model STEMME S12.
   For the use within the model STEMME S12 the modification must be based on a ROTAX 914 F2-01.
7. Optional use of a non ETSO 2 axis autopilot and digital engine monitoring (GARMIN G3X) is included into the certification of the Stemme S12, all wing spans (25 m, 21.7 m and 21.4 m).
Administrative section

I. Acronyms

N/A

II. Type Certificate Holder Record

Stemme AG
Flugplatzstrasse F2 Nr. 6-7
15344 Strausberg
Germany

Stemme GmbH
Flugplatzstrasse F2 Nr. 6-7
15344 Strausberg
Germany

III. Change Record

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>16 September 2005</td>
<td>Initial Issue</td>
</tr>
<tr>
<td>02</td>
<td>19 December 2014</td>
<td>Change of name of TC-Holder</td>
</tr>
<tr>
<td>03</td>
<td>14 March 2016</td>
<td>Certification of Variant Stemme S12; Section D added Editorial changes</td>
</tr>
<tr>
<td>04</td>
<td>20 October 2017</td>
<td>Changes to referenced manuals for Stemme S10 series</td>
</tr>
<tr>
<td>05</td>
<td>12 February 2019</td>
<td>Approval of 21.7 m wingspan for Stemme S10 variant Stemme S12; additional manufacturer address; editorial changes; Engine TCDS references (LBA-&gt;EASA)</td>
</tr>
<tr>
<td>06</td>
<td>17 May 2019</td>
<td>Approval of GARMIN G3X Touch System for Stemme S10 variant Stemme S12, editorial changes chapter C and D</td>
</tr>
<tr>
<td>07</td>
<td>28 June 2024</td>
<td>Change of TCH and manufacturer name; editorial changes; Introduction of a new Annex 1 to type certificate.A.054 Data Sheet for &quot;Stemme Propeller&quot; (P.504) as part of the aircraft TC.</td>
</tr>
</tbody>
</table>
ANNEX 1 TO TYPE-CERTIFICATE EASA.A.054

Data Sheet No. P.504

for STEMME PROPELLER
10 AP-N
10 AP-V
11AP-V
10AP-F

Type Certificate Holder
Stemme GmbH
Flugplatzstrasse F2 Nr. 7
15344 STRAUSBERG
Germany

For Variant: 10 AP-N
10 AP-V
11 AP-V
10 AP-F
I. General

Note: All Applications were made to LBA before EASA has been established.

<table>
<thead>
<tr>
<th>Variant</th>
<th>10AP-N</th>
<th>10AP-V</th>
<th>11AP-V</th>
<th>10AP-F</th>
</tr>
</thead>
</table>

5. EASA Certification Date

<table>
<thead>
<tr>
<th>Variant</th>
<th>10AP-N</th>
<th>10AP-V</th>
<th>11AP-V</th>
<th>10AP-F</th>
</tr>
</thead>
</table>

Note: The individual propeller variants have been certified as part of the Powered Sailplane Stemme S10 variants. This TCDS replaces: LBA TDS No 32.100/1 (10AP-N), LBA TDS No 32.100/2 (10AP-V), LBA TDS No 32.100/3 (11AP-V), LBA TDS No 32.100/4 (10AP-F).

II. Certification Basis

1. Reference Date for determining the applicable airworthiness requirements

<table>
<thead>
<tr>
<th>Variant</th>
<th>10AP-N</th>
<th>10AP-V</th>
<th>11AP-V</th>
<th>10AP-F</th>
</tr>
</thead>
</table>

2. EASA Certification Basis

2.1. Airworthiness Standards

10AP-N: Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22) Subpart J, effective on June 27, 1989 (Change 4 of the English Original Issue)

Note:
Initial airworthiness standard was JAR 22, Subpart J, effective 13.09.82 (Change 2 of the English Original Issue) including Amendment 22/84/1.
2.2. Special Conditions (SC)

None

2.3. Equivalent Safety Findings (ESF)

None

2.4. Deviations

None

2.5. Elect To Comply (EtC)


III. Technical Characteristics

1. Design Definition

10AP-N: “Normalpropeller”
Assembly Drawing Doc.-No.: A12-10AP-N Rev 30a[1]
Parts List Doc.-No.: A20-10AP-N Rev 14a[1]

10AP-V: “Verstellpropeller”
Assembly Drawing Doc.-No.: P304-10AP-V Rev 20[1]

11AP-V: “Verstellpropeller”
Assembly Drawing Doc.-No.: P304-10AP-V Rev 20[1]

10AP-F: “Fix-Pitch Faltpropeller”
Assembly Drawing Doc.-No.: A12-10AP-F-01 Rev 01b[1]
Assembly Drawing Doc.-No.: A12-10AP-F-02 Rev 03a[1]
Parts List Doc.-No.: A21-10AP-F Rev 03b[1]

[1] or later approved revisions

2. Description

10AP-N: 2-blade-jointed fix-pitch propeller; the propeller blades are foldable, Hub and blade suspension made of aluminum; blades in FRP construction.

10AP-V: 2-blade-jointed variable-pitch propeller with take-off and cruise position, the propeller blades are foldable, Mechanical pitch control by electrical heated thermo-expansion actuators and spring forced return mechanism, Hub and blade suspension are made by aluminum, blades in FRP construction.

11AP-V: 2-blade-jointed variable-pitch propeller with take-off and cruise position, the propeller blades are foldable, Mechanical pitch control by electrical heated thermo-expansion actuators and spring forced return mechanism, Hub and blade suspension are made by aluminum, blades in FRP construction.

10AP-F: 2-blade-jointed fix-pitch propeller; the propeller blades are foldable, Hub and blade suspension made of aluminum; blades in FRP construction.
3. Equipment

n.a.

4. Dimensions

Diameter:

<table>
<thead>
<tr>
<th>Variant</th>
<th>Operating Position</th>
<th>Folded Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>10AP-N</td>
<td>1610 ±2mm</td>
<td>760 mm</td>
</tr>
<tr>
<td>10AP-V</td>
<td>1630 ±3mm</td>
<td>750 mm</td>
</tr>
<tr>
<td>11AP-V</td>
<td>1630 ±3mm</td>
<td>750 mm</td>
</tr>
<tr>
<td>10AP-F</td>
<td>1630 ±3mm</td>
<td>750 mm</td>
</tr>
</tbody>
</table>

5. Weight

<table>
<thead>
<tr>
<th>Variant</th>
<th>10AP-N</th>
<th>10AP-V</th>
<th>11AP-V</th>
<th>10AP-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>appr. 5,2 kg</td>
<td>appr. 8,6 kg</td>
<td>appr. 9,5 kg</td>
<td>appr. 4,8 kg</td>
</tr>
</tbody>
</table>

6. Hub/Blade-Combinations

<table>
<thead>
<tr>
<th>Variant</th>
<th>Hub (P/N)</th>
<th>Blade (P/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10AP-N</td>
<td>10AP-N03</td>
<td>10AP-NB</td>
</tr>
<tr>
<td>10AP-V</td>
<td>10AP-V01</td>
<td>10AP-VB</td>
</tr>
<tr>
<td>11AP-V</td>
<td>10AP-V01</td>
<td>11AP-VB[2]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or 012101[2]</td>
</tr>
<tr>
<td>10AP-F</td>
<td>10AP-F01</td>
<td>10AP-VB</td>
</tr>
</tbody>
</table>

[2] The usage in the propeller is allowed only in set of equal Part Numbers.

7. Control System

n.a.

8. Adaptation to Engine

Hubs designed for installation on the propeller flange of the Stemme propeller gear box (6 bolts M8x100-10.9 on a circular pitch of 86 mm).

9. Direction of Rotation

in flight direction: Counterclockwise
IV. Operating Limitations

<table>
<thead>
<tr>
<th>Variant</th>
<th>Maximum Take-Off Power and Speed</th>
<th>Maximum Continuous Power and Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[kW] [1/min]</td>
<td>[kW] [1/min]</td>
</tr>
<tr>
<td>10AP-N</td>
<td>69 2900</td>
<td>62 2550</td>
</tr>
<tr>
<td>10AP-V</td>
<td>69 2900</td>
<td>62 2550</td>
</tr>
<tr>
<td>11AP-V</td>
<td>85 2900</td>
<td>74 2550</td>
</tr>
<tr>
<td>10AP-F</td>
<td>69 2900</td>
<td>62 2550</td>
</tr>
</tbody>
</table>

V. Operating and Service Instructions

10AP-N: (Maintenance Instructions are included in the associated Aircraft Maintenance Manual)
Wartungshandbuch „Stemme S10“ Dok.-Nr.: A40-10-020 Rev 19 (EASA Deutsch) [3]
Prüfprogramm “Normalpropeller 10AP-N” Doc.-No. D40-10AP-N Rev 02.b (German) [3]

10AP-V: (Maintenance Instructions are included in the associated Aircraft Maintenance Manual)
Wartungshandbuch „Stemme S10-V“ Dok.-Nr.: A40-10-120 Rev 21 (EASA Deutsch) [3]
Maintenance Manual “Stemme S10-V” Doc.-No.: A40-10-121 Rev 21 (EASA English) [3]
Prüfprogramm Verstellpropeller 10AP-V Doc.-No: P901-900141 Rev 01 (German & English) [3]

11AP-V:
Component Maintenance Manual “Propeller 11AP-V” Doc.-No.: P500-912860 Rev 01 (English) [3]
Component Overhaul Manual “Propeller 11AP-V” Doc.-No.: P500-912861 Rev 00 (English) [3]

10AP-F:
Wartungsanweisung „Propeller 10AP-F für Baureihe S10-V“ Dok.-Nr.: A35-10-067 Rev 01a (Deutsch) [3]
Maintenance Instruction “Propeller 10AP-F for model S10-V” Doc.-No.: A35-10-067E Rev 01.a (English) [3]
Prüfprogramm “Festpropeller für Baureihe S10-V“ Doc.-No. D40-10AP-F Rev 01.a (German) [3]

[3] or later approved revisions
VI. Notes

1. The Stemme propellers are designed and certified for use in Stemme Aircrafts only.

2. The suitability of the propeller for usage in a specific powered sailplane/engine-combination has been demonstrated in the type certification of the powered sailplane. The following combinations are approved:

<table>
<thead>
<tr>
<th>Stemme Gearbox (gear ratio) / Engine Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>10AP-N</td>
</tr>
<tr>
<td>10AG (1,18 : 1) / Limbach L2400 EB1.AD</td>
</tr>
<tr>
<td>10AG(V) (1,25 : 1) / Limbach L2000 EB1.AD[^4]</td>
</tr>
<tr>
<td>10AP-V</td>
</tr>
<tr>
<td>10AG (1,18 : 1) / Limbach L2400 EB1.AD</td>
</tr>
<tr>
<td>11AP-V</td>
</tr>
<tr>
<td>11AG (1 : 1,09)/ ROTAX 914 F2/S1</td>
</tr>
<tr>
<td>10AP-F</td>
</tr>
<tr>
<td>10AG (1,18 : 1) / Limbach L2400 EB1.AD</td>
</tr>
</tbody>
</table>

[^4] This combination is only approved for Stemme S10 S/N 10-V02.

3. The maximum permitted lifetime of the propeller or its subparts according to the aircraft associated Maintenance Manual chapter 4.

4. Propeller / Propeller Blade designation system

<table>
<thead>
<tr>
<th>Propeller</th>
<th>Propeller Blade</th>
</tr>
</thead>
<tbody>
<tr>
<td>10AP-N</td>
<td>10AP-N / R / Z / MMYY</td>
</tr>
<tr>
<td>10AP-V</td>
<td>10AP-V / Z / MMYY</td>
</tr>
<tr>
<td>11AP-VB</td>
<td>11AP-V / Z / MMYY</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>10AP-F</td>
<td>10AP-F / Z / MMYY</td>
</tr>
</tbody>
</table>

B sequential number within one Production Order Number
C sequential serial number (starting with S/N 0015)
R Revision of the associated Assembly Drawing (2 digits)
Z Production Order Number (4 or 5 digits)
MM Month of production
YY Year of Production

-END-