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

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Section A: Stemme S10

A.I. General

1.	Data Sheet No.:	EASA.A.054
2.	a) Type: b) Variant:	Stemme S10 Stemme S10
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 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
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

1.	Certification Basis:	Defined by LBA letter I 3-846/85, dated 12. June 1985
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 Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fibre Reinforced Plastics, Issue Jan. 1981 Preliminary Standards for the Substantiation of the Electrical System of Powered Sailplanes, Issue Feb. 1, 1990. Standards for the Substantiation of the Electrical System of Powered Sailplanes, Issue September 15, 1992. 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. 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)

A.III. Technical Characteristics and Operational Limitations

1.	Type Design Definition:	Records of the documents defining Type Stemme S 10: dated Okt. 27, 1990, LBA approved, with supplement dated Dec.13, 1991, LBA approved. Document Record STEMME S10, doc. no. A08-10-000, am.-index 02.a, dated Okt. 17, 1994, LBA approved Record of Service Bulletins and Airworthiness Directives, Doc.No. P150-981001 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 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 Stallwarning indicator 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: Abmessungen:	Span 23.0 m Spannweite Wing area 18.74 m² Flügelfläche Length 8.42 m Länge
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: Schwerpunktsbereich:	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

1. Flight manual for the powered sailplane type STEMME S10, Issue Oct. 1, 1990, LBA –approved, or later approved revisions.
2. Maintenance Manual for the Powered Sailplane STEMME S10, Issue Oct. 1, 1990, or later approved revisions.
3. Operating and Maintenance Manual for the engine Limbach L 2400 and series.
4. Small Repair Manual (Document A35-10-SMR), Revision 02.a dated October 13th 1997, or later approved revisions.

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: b) Variant:	Stemme S10 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

1.	Certification Basis:	Defined by LBA letter I 414-846/7/94, dated 21. July 1994
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:	Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fibre Reinforced Plastics, Issue July. 1991 Preliminary Standards for the Substantiation of the Electrical System of Powered Sailplanes, Issue Feb. 1, 1990. Standards for the Substantiation of the Electrical System of Powered Sailplanes, Issue September 15, 1992. 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. Document Record No. A08-10-239, am.-index 02.a, dated Sept. 29, 2003: variant S 10-V with Fix-Pitch Propeller 10AP-F, 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) 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: Abmessungen:	Span Spannweite Wing area Flügelfläche Length Länge	23.0 m 18.74 m² 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 Maximum Continuous Power RPM	3400 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: Wing tank right: Non-usable amount of fuel: Optional tank capacity 2 x 60 l (see also V. 5)	45.00 l 45.00 l 1.5 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
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: Schwerpunktsbereich:	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.
2. Maintenance Manual for the Powered Sailplane STEMME S10-V, Edition Sep. 6, 1994, or later approved revisions.
3. Operating and Maintenance Manual for the engine Limbach L 2400 and series.
4. Stemme Maintenance Instruction Doc-No: A35-10-067 for Fix Pitch Propeller 10AP-F, actual revision.
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: b) Variant:	Stemme S10 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
6.	Certification Application Date:	16. August 1996
7.	Type Certification Date:	15. August 1997
8.	This TCDS replaces LBA TCDS	No. 846

C.II. Certification Basis

1.	Certification Basis:	Defined by LBA letter I 413-846/97, dated 14. April 1997
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:	Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fibre Reinforced Plastics, Issue July. 1991 Standards for the Substantiation of the Electrical System of Powered Sailplanes, Issue September 15, 1992. 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)

C.III. Technical Characteristics and Operational Limitations

1.	Type Design Definition:	Document Record No. A08-11-0, am-index 04.a, dated January 39th, 1998 (Part 2: record of the documents defining Type Stemme S10-VT), LBA approved. 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: Abmessungen:	Span (Spannweite) 23.0 m Wing area (Flügelfläche) 18.74 m² Length (Länge) 8.42 m

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:	Maximum Power RPM Maximum Continuous Power RPM		5800 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: Wing tank right: Non-usable amount of fuel: Optional tank capacity 2 x 60 l (see also V. 5)		45.00 l 45.00 l 1.5 l
8.	Launching Hooks:	None		
9.	Weak links:	None		
10.	Air Speeds:	Manoeuvring Speed Never Exceed Speed - at flap setting -10°, -5°, 0° - at flap setting +5°, +10° - at flap setting L (+16°) Maximum permitted speeds - in rough air - max gear operating speed	V_A V_{NE} V_{FE} V_{FE} V_{FE} V_{RA} V_{LO}	180 km/h 270 km/h 270 km/h 180 km/h 140 km/h 180 km/h 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:	Max. Mass Max. Mass of Non-Lifting Parts		850 kg 570 kg
13.	Centre of Gravity Range: Schwerpunktsbereich:	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		

C.IV. Operating and Service Instructions

1. Flight manual for the powered sailplane type STEMME S10-VT, Issue August. 1st, 1997, LBA – approved, or later approved revisions.
2. Maintenance Manual for the Powered Sailplane STEMME S10-VT, Issue January. 01, 1998, or later approved revisions.
3. Operating and Maintenance Manual for the engine see Maintenance Manual for the Powered Sailplane STEMME S10-VT section E.
4. Component Maintenance Manual “Propeller 11AP-V” Doc.-No. P500-912860 Rev 01 dated Jul 03, 2023, or later approved revisions.
5. Small Repair Manual (Document A35-10-SMR), revision 02.a dated October 13th, 1997, or later approved revisions.

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: b) Variant:	Stemme S10 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	14. March 2016

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 Standards for the Substantiation of the Electrical System of Powered Sailplanes, Issue September 15, 1992.
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 Schempp-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:
Abmessungen:

Span Spannweite	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 Maximum Continuous Power RPM		5800 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: Wing tank right: Non-usable amount of fuel:		60.00 l 60.00 l 0.52 l
8.	Launching Hooks:	None		
9.	Weak links:	None		
10.	Air Speeds:	Manoeuvring Speed Never Exceed Speed - at flap setting -10°, -5°, 0° - at flap setting +5°, +10° - at flap setting L (+16°) Maximum permitted speeds - in rough air - max gear operating speed	V_A V_{NE} V_{FE} V_{FE} V_{FE} V_{RA} V_{LO}	180 km/h 270 km/h 270 km/h 180 km/h 140 km/h 180 km/h 140 km/h
11.	Operational Capability:	Approved for VFR-Day.		
12.	Maximum Masses:	Max. Mass Max. Mass of Non-Lifting Parts		900 kg 610 kg

13.	Centre of Gravity Range: Schwerpunktsbereich:	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
16.	Deflection of control surfaces:	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.
2. Maintenance Manual Powered Sailplane, Stemme S12, Edition L500-912820 Rev.00; 01/2016, EASA –approved, or later approved revisions.
3. Operating and Maintenance Manual for the engine see Maintenance Manual for the Powered Sailplane, STEMME S12 section 3.
4. Component Maintenance Manual “Propeller 11AP-V” Doc.-No. P500-912860 Rev 01 dated Jul 03, 2023, 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

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

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.

Variant	10AP-N	10AP-V	11AP-V	10AP-F
Date of Application	30. May 1985	03 February 1992	16 August 1996	23 January 2001

5. EASA Certification Date

Variant	10AP-N	10AP-V	11AP-V	10AP-F
Certification Date	31 December 1990	16 September 1994	15 August 1997	11. November 2003

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

Variant	10AP-N	10AP-V	11AP-V	10AP-F
Reference Date	12 June 1985	21 July 1994	14 April 1997	13 February 2003

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.

10AP-V: 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, 15 Mar 1982, Rev. 15 December 1982 (Change 3 of the English Original Issue) including Amendment 22/84/1.

11AP-V: EASA Certification Specifications for Sailplanes and Powered Sailplanes CS-22, Subpart J, Amendment 1, 24 September 2008 (effective 1 October 2008)

Note:
Initial airworthiness standard was JAR 22, Subpart J, 27 June 1989 (Change 4 of the English Original Issue) including Amendment 22/84/1.

10AP-F: Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22) Subpart J, effective on June 27, 1989 (Change 4 of the English Original Issue) including Amendment 22/84/1.

Note: First applications were made to LBA-Germany before EASA was established. The applicable airworthiness standards were established in accordance with the rule in Germany at the time of application.

2.2. Special Conditions (SC)

None

2.3. Equivalent Safety Findings (ESF)

None

2.4. Deviations

None

2.5. Elect To Comply (EtC)

10AP-N: Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fiber Reinforced Plastics, Issue 1991

10AP-V: NPA 22E-XX (amendment to JAR 22 for Variable Pitch Propeller)
issue: 25 Mar 1993;
Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fiber Reinforced Plastics, Issue 1991

11AP-V: NPA 22E-XX (amendment to JAR 22 for Variable Pitch Propeller)
issue: 25 Mar 1993;
Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fiber Reinforced Plastics, Issue 1991

10AP-F: Standards for Structural Substantiation of Sailplane and Powered Sailplane Components Consisting of Glass or Carbon Fiber Reinforced Plastics, Issue 1991

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]
Parts List Doc.-No.: P307-10AP-V Rev 20[1]

11AP-V: "Verstellpropeller"
Assembly Drawing Doc.-No.: P304-10AP-V Rev 20[1]
Parts List Doc.-No.: P307-11AP-V Rev 20[1]

10AP-F: "Fix-Pitch Faltpropller"
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:

	Operating Position	Folded Position
10AP-N	1610 ±2mm	760 mm
10AP-V	1630 ±3mm	750 mm
11AP-V	1630 ±3mm	750 mm
10AP-F	1630 ±3mm	750 mm

5. Weight

Variant	10AP-N	10AP-V	11AP-V	10AP-F
Weight	appr. 5,2 kg	appr. 8,6 kg	appr. 9,5 kg	appr. 4,8 kg

6. Hub/Blade-Combinations

	Hub (P/N)	Blade (P/N)
10AP-N	10AP-N03	10AP-NB
10AP-V	10AP-V01	10AP-VB
11AP-V	10AP-V01	11AP-VB[2] or 012101[2]
10AP-F	10AP-F01	10AP-VB

[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

Variant	Maximum Take-Off Power and Speed		Maximum Continuous Power and Speed	
	[kW]	[1/min]	[kW]	[1/min]
10AP-N	69	2900	62	2550
10AP-V	69	2900	62	2550
11AP-V	85	2900	74	2550
10AP-F	69	2900	62	2550

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]
Maintenance Manual “Stemme S10” Doc.-No.: A40-10-021 Rev 19 (EASA English) [3]
Maintenance Manual “Stemme S10” Doc.-No.: A40-10-022 Rev 19 (FAA English) [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]
Maintenance Manual “Stemme S10-V” Doc.-No.: A40-10-122 Rev 21 (FAA 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:

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

   [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

	Propeller	Propeller Blade
10AP-N	10AP-N / R / Z /MMYY	10AP-NB / R / Z / MMYY
10AP-V	10AP-V / Z / MMYY	10AP-VB/ Z / B
11AP-VB	11AP-V / Z / MMYY	11AP-VB / Z / B
		012101 / C
10AP-F	10AP-F / Z / MMYY	10AP-VB / Z / MMYY

   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-