

European Aviation Safety Agency

EASA

**TYPE-CERTIFICATE
DATA SHEET**

LINDSTRAND HS-110 HOT AIR AIRSHIP

-

Hot Air Airship

Type Certificate Holder: **LINDSTRAND HOT AIR BALLOONS LTD**
Maesbury Road
Oswestry
Shropshire
SY10 8ZZ
United Kingdom

Manufacturer: **LINDSTRAND HOT AIR BALLOONS LTD**
Maesbury Road
Oswestry
Shropshire
SY10 8ZZ
United Kingdom

For Variants: Lindstrand HS-110

Issue 2, 23 December 2009
Issue 1, 8 October 2007

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SECTION 1: GENERAL (ALL TYPES AND VARIANTS)

I. General

- | | |
|-------------------------------|---|
| 1. Data Sheet No: EASA.BA.512 | Issue Date: 23 December 2009 |
| 2. Type / Variant or Model | Lindstrand HS-110 |
| 3. Airworthiness Category: | Standard |
| 4. Type Certificate Holder: | LINDSTRAND HOT AIR BALLOONS LTD
Maesbury Road
Oswestry
Shropshire
SY10 8ZZ
United Kingdom |
| 5. Manufacturer: | LINDSTRAND HOT AIR BALLOONS LTD
Maesbury Road
Oswestry
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United Kingdom |
| 6. National approval date: | 16 April 1997 |
| 7. CAA Application date: | 24 August 1995 |
| 8. CAA Recommendation date: | - |
| 9. EASA Certification date: | 8 October 2007 |
| 10. TCDS History: | This EASA TCDS replaces the British TCDS (see II. Certification Basis) issued by the UK CAA |

II. Certification Basis

- | | |
|--|---|
| 1. Reference Date for determining the applicable requirements: | 24 August 1995 |
| 2. UKCAA Type Certificate Data Sheet No.: | BAS 6 |
| 3. UKCAA Type Certification Basis: | BCAR Draft Paper 696 (second draft) Issue 1, dated 27 January 1978 and the relevant parts of BCAR 31 at Issue 1 and Appendix 1 to CAA letter ref: 9/30/1PA. In addition as the envelope is pressurised other than by ram or slipstream air, BCAR Section Q 3-3 3.1(a) gust case has been applied and the tear resistance properties of the envelope was required to be substantiated by full tear tests.

CAA Airworthiness Notice No. 33 Unprotected Starter Circuits

CAA Airworthiness Notice No. 88 Bus Bar Low Voltage Warning |
| 4. Airworthiness Requirements: | Aircraft variants which are certified in accordance with the certification basis given in II. are indicated in III. |
| 5. Special Conditions: | The operation of the airship at night / VMC is possible with Modification L33 embodied. |
| 6. Reversion and Exemptions: | None |
| 7. Equivalent Safety Findings: | None |
| 8. Environmental Standards: | None |

III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Drawing No.: HS-110-A-001 and HS-110-A-002
Envelope Drawing No.: HE-110-A-001 and HE-110-A-002
Gondola Drawing No.: HG-001-A-001
2. Description: Manned hot air airship, configuration '110' and '120' correspond to standard and enhanced lift capability
- 2.1 Envelope
A rotationally symmetric streamlined envelope with rear cruciform empennage which are pressurised by propeller slipstream and a motorised pressurisation fan. Two rip panels are fitted for final deflation and two fabric overpressure valves are fitted to control envelope pressure levels. Rudders are activated by pulling on cords in the gondola. Gondola loads are primarily transferred into the envelope through two catenaries which attach to the upper inside of the envelope. Nose and tail lines are fitted for ground control.
- 2.2 Gondola
A two seater gondola made from tubular stainless steel framework, partially covered with glass reinforced plastic. There is a fixed landing gear with four pneumatic tyres, a pusher engine / propeller powerplant and a double burner envelope heating system.
3. Equipment: 1 off Combined Flytec 3040 flight instrument incorporating:
a. Altimeter
b. Variometer
c. Envelope Temperature
1 off Rotax Flydat combined engine management system
2 off Pressure gauges for burner fuel
2 off Quantity gauge for burner fuel
1 off Quantity of engine fuel
1 off Envelope pressure gauge
Remark: The airspeed indicator may be omitted as V_{max} is lower than V_{NE}
4. Dimensions: Approximate Dimensions:
For HE-110-A-001
Volume: 3 125 m³ 110 358 cu.ft.
Length: 36.5 m 118.1 ft
Diameter: 13.02 m 42.7 ft
Stabiliser Span: 14.8 m 48.5 ft
For HE-110-A-002 configuration '120'
Volume: 3 415 m³ 120 529 cu.ft.
Length: 38.6 m 126.6 ft
5. Power Plant: Engine and propeller are certified in conjunction with the Airship Type Certificate.
- 5.1 Engine
Type Designation: Rotax 582 UL
Maximum Permissible rpm: 6 500
Maximum Continuous rpm: 6 200
- 5.2 Propeller
Type Designation: Arplast DAS 152
Propeller Data: 154 cm diameter four blade fixed pitch

5.3 Burner

Burner Designation: Jetstream Double Airship Burner
 Burner Drawing: HS-001-A-700
 Technical Description: Double Burner with electric ignition system and hydraulic main valve actuation. Burner mounted to pivot sideways allowing gimbal movement for inflation.

6. Fluids:

6.1 Fuels

Propulsion and Pressurisation

Engines: 90 RON petrol (unleaded)
 Tank Capacity: 22 L
 Heater System: Propane. Maximum capacity 160 L (80 kg). See Flight Manual.

6.2 Lubricants

Propulsion Engine: Castrol TTS
 Maximum Capacity: 1.1 L
 Gearbox: SAE 85W-140EP or equivalent
 Gearbox Contents: 0.41 L
 Pressurisation Engine: SAE 10W40
 Maximum Capacity: 0.65 L

6.3 Coolant

Propulsion Engine: 75% water and 25% antifreeze mixture
 Maximum Contents: 2.31 L
 Antifreeze Type: Suitable for aluminium block engine (eg Silkolene Pro Cool)

7. Air Speed:

Maximum measured speed 15.0 knots (27.8 km/hr)

8. Maximum Mass:

For HS-110-A-001 Maximum take-off mass (MTOM) = 900 kg
 For HS-110-A-002 Maximum take off mass (MTOM) = 999 kg

9. Minimum Flight Crew:

1 Pilot

10. Occupants:

Maximum two, one in each seat

11. Payload:

See Flight Manual for payload calculation

12. Life Limit Parts:

See Flight and Maintenance Schedule

13. Lifting Gas:

Hot air
 Maximum continuous envelope temperature: 125°C
 Never exceed envelope temperature: 127°C
 Maximum envelope pressure: 20 mm WG
 Minimum envelope pressure: 3 mm WG

14. Centres of Buoyancy:

For HE-110-A-001 Reference plane perpendicular to the longitudinal axis 16.64 m from the nose.

For 'configuration '120' HE-110-A-002 the distance is 18.24 m from the nose.

15. Maximum Altitude:

Dependent on ambient conditions and payload. See Flight Manual for calculation

