



## **TYPE CERTIFICATE DATA SHEET Nº EB-2018T01**

Type Certificate Holder:

**AIRSHIP DO BRASIL INDÚSTRIA E SERVIÇOS AÉREOS  
ESPECIALIZADOS LTDA.**

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EB-2018T01-02  
Sheet 01

AIRSHIP DO BRASIL  
138S  
ADB-3-3

22 December 2022

This data sheet, which is part of Type Certificate No. 2008T01, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

### **I – Model 138S (Normal Category), approved 13 March 2018.**

<b>ENVELOPE</b>	Volume: 3 908 m <sup>3</sup> (138 000 cu.ft). Maximum Pressure: 71.03 mm.H <sub>2</sub> O (2.8 in.H <sub>2</sub> O). Minimum Pressure: 27.90 mm.H <sub>2</sub> O (1.1 in.H <sub>2</sub> O).
<b>LIFTING GAS</b>	Helium gas. The airship is to be inflated with laboratory grade (99.9% purity) Helium gas only.
<b>ENGINE</b>	One Textron Lycoming – AVCO Corporation IO-540-K2A5. (ANAC TC 8209)
<b>FUEL</b>	100 LL minimum grade Aviation Gasoline.
<b>ENGINE LIMITS*</b>	Maximum continuous: 2 700 r.p.m. Takeoff: 2 700 r.p.m. Maximum cylinder head temperature: 246°C (475°F). Maximum inlet oil temperature: 118°C (245°F) *See NOTE 4.
<b>OIL</b>	MIL-L-22851 grade SAE 40 or better @ operation at -1 to 32°C (30°-90°F). MIL-L-22851 grade SAE 40 or better @ operation at -1 to 21°C (0°-70°F).
<b>PROPELLER</b>	Hartzell HC-E3YR-7LF/FLC-8468G-8Q. (ANAC TC 8712).
<b>PROPELLER LIMITS</b>	300 HP @ 2 700 r.p.m. Diameter limited at 1.98m (78 in).
<b>AIRSPEED LIMITS</b>	Maximum Operating Limit Speed: 54 m.p.h IAS. Design Speed for Max. Gust Intensity: 40 m.p.h EAS.

<b>C.G. RANGE</b>	See approved Flight Manual
<b>DATUM</b>	Theoretical bow of the envelope. The theoretical bow is 0,508 m (20 in.) aft of the nose mooring probe. All station measurements are shown in inches. Car datum is airship station 16,74 m (659.0 in).
<b>MAXIMUM WEIGHT</b>	Maximum airship takeoff and landing weight: 4 034 kgf (8 900 lbf). Maximum car weight: 2 429 kgf (5 356 lbf). Maximum static heaviness: 181.4 kgf (400 lbf). Maximum static lightness: 90.7 kgf (200 lbf).
<b>MINIMUM CREW</b>	One pilot
<b>MAXIMUM OCCUPANTS</b>	Six 2 @ car station 1.02 m (40.0 in). 2 @ car station 2.43 m (95.0 in). 2 @ car station 3.15 m (124.0 in).
<b>FUEL CAPACITY</b>	401 l (106 gal) (usable fuel: 378.5 l (100.0 gal))
<b>OIL CAPACITY</b>	Maximum: 11.36 l (12 qts). Minimum: 8.5 l (9 qts).
<b>MAXIMUM OPERATING ALTITUDE</b>	2 743 m (9 000 ft).
<b>SERIAL NUMBER ELIGIBLE</b>	001 and 002

**II – Model ADB-3-3 (Normal Category), approved 22 December 2022.**

<b>ENVELOPE</b>	Volume: 3 908 m <sup>3</sup> (138 000 cu.ft). Maximum Pressure: 71.03 mm.H <sub>2</sub> O (2.8 in.H <sub>2</sub> O). Minimum Pressure: 27.90 mm.H <sub>2</sub> O (1.1 in.H <sub>2</sub> O).
<b>LIFTING GAS</b>	Helium gas. The airship is to be inflated with laboratory grade (99.9% purity) Helium gas only.
<b>ENGINE</b>	One Textron Lycoming – AVCO Corporation IO-540-K2A5. (ANAC TC 8209)
<b>FUEL</b>	100 LL minimum grade Aviation Gasoline.
<b>ENGINE LIMITS*</b>	Maximum continuous: 2 700 r.p.m. Takeoff: 2 700 r.p.m. Maximum cylinder head temperature: 260°C (500°F). Maximum inlet oil temperature: 118°C (245°F) *See NOTE 4.

PROPELLER	Hartzell HC-E3YR-7LF/FLC-8468G-8Q. (ANAC TC 8712).		
PROPELLER LIMITS	300 HP @ 2 700 r.p.m. Diameter limited at 1.98m (78 in).		
AIRSPEED LIMITS	Maximum Operating Limit Speed:	47 KIAS (54 m.p.h IAS)	
	Design Speed for Max. Gust Intensity:	40 m.p.h EAS.	
C.G. RANGE	Max forward airship C.G. - 5.5 m (215.5 in) car station @ 4 034 kg (8 900 lbf) Max aft airship C.G. – 6.2 m (245.3 in) car station @ 3 025.5 kg (6 670 lbf) or lighter. Straight line variance between points.		
DATUM	Theoretical bow of the envelope. The theoretical bow is 0.508 m (20 in.) aft of the nose mooring probe. All station measurements are shown in inches. Car datum is airship station 16.74 m (659.0 in).		
MAXIMUM WEIGHT	Maximum airship takeoff and landing weight:	4 034 kgf (8 900 lbf).	
	Maximum car weight:	2 429 kgf (5 356 lbf).	
	Maximum static heaviness:	181.4 kgf (400 lbf).	
	Maximum static lightness:	90.7 kgf (200 lbf).	
MINIMUM CREW	One pilot		
MAXIMUM OCCUPANTS	Six 2 @ car station 1.02 m (40.0 in). 2 @ car station 2.43 m (95.0 in). 2 @ car station 3.15 m (124.0 in).		
FUEL CAPACITY	401 l (106 gal) (usable fuel: 373 l (98.5 gal))		
OIL CAPACITY	Maximum: 11.36 l (12 qts). Minimum: 8.5 l (9 qts).		
MAXIMUM OPERATING ALTITUDE	2 743 m (9 000 ft).		
SERIAL NUMBER ELIGIBLE	001.		

**DATA PERTINENT TO ALL MODELS:****CERTIFICATION BASIS**

For the 138S Brazilian Certificate 2018T01 based on:

Section 21.17(b) of RBAC 21 amendment 02.

Compliance has been shown utilizing the provisions of Advisory Circular 21.17-1 dated September 30, 1987, section 5. The Airworthiness requirements met under this provision are the Airship Design Criteria (ADC), FAA-P-8110-2, dated November 2, 1987, as amended by FAA letter dated January 10, 1989. Application for original type certificate dated February 10, 1989.

For the ADB-3-3 Brazilian Certificate 2018T01 based on:

Section 21.17(b) of RBAC 21 amendment 02.

Compliance has been shown utilizing the provisions of Advisory Circular 21.17-1 dated September 30, 1987, section 5. The Airworthiness requirements met under this provision are the Airship Design Criteria (ADC), FAA-P-8110-2, dated November 2, 1987, as amended by Change 2 dated 06 February 1995, plus:

- Special Conditions:

None.

- ELOS:

- PR-01 - Fuel quantity indication system (RBAC 21.17(b)/ ADC FAA-P-8110-2 CHG 2 6.16(b)), ANAC Ordinance N° 10.086, de 19 de dezembro de 2022.

- PR-02 - Powerplant Cooling Test (RBAC 21.17(b)/ ADC FAA-P-8110-2 CHG 2 5.41(e)(1)(ii) e (iv)), ANAC Ordinance N° 10.089, de 20 de dezembro de 2022.

- Exemption:

None:

**EQUIPMENT**

The basic required equipment as prescribed in the applicable airworthiness regulation (see Certification Basis) must be installed in the aircraft for certification.

In addition to the above required equipment, the following equipment is also required:

ANAC approved Airship Flight Manual, P/N 1070003, original issue, dated July 20, 1990 **or later approved revision**.

SAIC Ground Handling Manual, P/N 1070002, original issue, dated July 20, 1990 **or later approved revision** is to be made available to the operator's flight and ground crews.

**NOTES:**

**NOTE 1**     Weight and balance.

Current weight and balance report together with list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original certification. The certification empty weight must include unusable fuel:

For 138S – 16.3 kgf (36.0 lbf) at car station 174.0.

For ADB-3-3 – 20.2 kgf (44.53 lbf) at car station 174.0

**NOTE 2** Markings and placards.

The placards specified in the ANAC approved Airship Flight Manual, P/N 1070003, original issue, dated July 20, 1990. (or later revision) must be displayed:

**NOTE 3** Continued Airworthiness

Maintenance and Inspection of this Airship must be carried out according to SAIC Maintenance Manual P/N 1070004, original issue (or later revision).

**NOTE 4** AVCO LYCOMING Engine Data Sheet EM-8209 provides information on the fuel pressure limitations.

**CHANGE RECORD**

Revision	Application Date	Changes	TC issue/reissue
01	18/05/2018	Change the TC holder	24 May 2018
02	05/06/2018	Included the model ADB-3-3 and corrected some typos in the 138S model	22 December 2022

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This TCDS is available at ANAC website:

<https://sistemas.anac.gov.br/certificacao/Produtos/EspecificacaoOrgE.asp>

SEI: 8055100