

MINISTÉRIO DA AERONÁUTICA  
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO  
CENTRO TÉCNICO AEROESPACIAL

TYPE CERTIFICATE DATA SHEET No. EA-9211

Type Certificate Holder:

SOCATA - Groupe AEROSPATIALE  
Boite Postale 930  
65009 - TARBES Cedex  
FRANCE

EA-9211

SOCATA

TB9/TB10  
TB20/TB21

MAY 1993

This data sheet, which is part of Type Certificate nr. EA 9211 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 TB9 Tampico (Normal and Utility Category) approved March 22, 1993**

**Engine:** LYCOMING 0-320-D2A

**Fuel :** 100 minimum octane aviation gasoline

**Engine Limits:** For all operations, 2700 rpm (160 HP)

**Propeller & Propeller Limits** SENSENICH fixed pitch 74.DM6.58.054

Diameter: not over 1,88m, not under 1,83

Static RPM with maximum power under standard sea level conditions

Maximum: 2600 rpm

Minimum: 2400 rpm

Spinner SOCATA TB9.58.013.100

**Airspeed Limits (IAS)**

Never Exceed ( $V_{FE}$ )	165	kt - 306	km/h
Maximum Structural cruising ( $V_{NO}$ )	128.5	kt - 238	km/h
Maneuvering ( $V_A$ )	122	kt - 227	km/h
Flaps Extended ( $V_{PE}$ )	95	kt - 176	km/h

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<b><u>CG Range</u></b>	Normal and Utility Category (+ 0,974m) to (+1,205m) at 970 kgf or less (+ 1,050m) to (+1,205m) at 1.060 kgf Straight line variation between points.
<b><u>Empty Weight CG Range</u></b>	None
<b><u>Maximum Weight</u></b>	Maximum take-off and landing weight, normal and utility category 1,060 kgf.
<b><u>Number of Seats</u></b>	4 (2 at +1,155m, 2 at +2,035m) See Note 5 for rear seat occupancy
<b><u>Maximum Baggage</u></b>	65kgf at + 2,600m
<b><u>Fuel Capacity</u></b>	158 <b>l</b> (two 79 <b>l</b> at +1,705m, 76 <b>l</b> usable) See Note 1 for weight and unusable fuel.
<b><u>Oil Capacity</u></b>	8 <b>l</b> at -0,605m (2 <b>l</b> unusable) See Note 1 for weight.

### **Control Surface Movements**

Stabilator (Angles reference: upper fuselage spar)

Leading edge down	17° ± 1°
Leading edge up	2° ± 1°

Stabilator tab (angles reference: stabilizer chord) with stabilator leading edge full down.

Tab trailing edge minimum up	2.5° ± 0.5°
Tab trailing edge maximum up	17 ° ± 1.5°

Ailerons (Reference: wing chord)

up	15° ± 1.5°
down	15° ± 1.5°

Rudder (Reference: fin chord)

Right and Left	25° ± 2°
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Flaps (Reference: wing chord)

Full flaps	25.5°
	+0.5°
	-1°

**II- MODEL TB10 Tobago (Normal and Utility Category) approved March 22, 1993**  
**Similar to TB9 but with a 180 HP engine and increased fuel capacity**

**Engine:** LYCOMING 0-360-A1AD

**Fuel :** 100 minimum octane aviation gasoline

**Engine Limits:** For all operations, 2700 rpm (180 HP)

**Propeller & Propeller Limits**

HARTZELL constant speed  
 HC-C2YK-1BF/F-7666A-2

Diameter: not over 1,88m, not under 1,83m

Pitch setting at 0,75R: Low 11°30'  
 High 31°

Spinner SOCATA TB10.58.018.104

HARTZELL Hydraulic governor F4-4A  
 or F4-4AZ or F4-18

**Airspeed Limits (IAS)**

Never Exceed ( $V_{FE}$ )	165	kt - 306	km/h
Maximum Structural cruising ( $V_{NO}$ )	128.5	kt - 238	km/h
Maneuvering ( $V_A$ )	122	kt - 227	km/h
Flaps Extended ( $V_{PE}$ )	95	kt - 176	km/h

**CG Range**

**Normal Category**

(+ 0,949m) to (+1,205m) at 970 kgf or less  
 (+ 1,010m) to (+1,205m) at 1.070 kgf  
 (+ 1,144m) to (+1,205m) at 1.150 kgf  
 Straight line variation between points.

**Utility Category**

(+ 0,949m) to (+1,205m) at 970 kgf or less  
 (+ 0,974m) to (+1,205m) at 1.020 kgf  
 (+ 1,035m) to (+1,205m) at 1.070 kgf  
 Straight line variation between points.

**Empty Weight CG Range**

None

**Maximum Weight****Normal Category**

Take-off and Landing: 1.150 kgf

**Utility Category**

Take-off and Landing: 1,070 kgf.

**Number of Seats**4 (2 at +1,155m, 2 at +2,035m)  
See Note 5 for rear seat occupancy**Maximum Baggage**

65kgf at + 2,600m

**Fuel Capacity**210 l (two 105 l at +1,075m; 102 l usable)  
See Note 1 for weight and unusable fuel.**Oil Capacity**7.5 l at -0,605m (2 l unusable)  
See Note 1 for weight.**Control Surface Movements**

Stabilator (Angles reference: upper fuselage spar)

Leading edge down  $17^{\circ} \pm 1^{\circ}$ Leading edge up  $2^{\circ} \pm 1^{\circ}$ 

Stabilator tab (angles reference: stabilizer chord) with stabilator leading edge full down.

Tab trailing edge minimum up  $2.5^{\circ} \pm 0.5^{\circ}$ Tab trailing edge maximum up  $17^{\circ} \pm 1.5^{\circ}$ 

Ailerons (Reference: wing chord)

up  $15^{\circ} \pm 1.5^{\circ}$ down  $15^{\circ} \pm 1.5^{\circ}$ 

Rudder (Reference: fin chord)

Right and Left  $25^{\circ} \pm 2^{\circ}$ 

Flaps (Reference: wing chord)

Full flaps  $25.5^{\circ} + 0.5^{\circ}$  $-1^{\circ}$

**III-MODEL TB20 Trinidad (Normal Category) approved March 22, 1993**  
**Similar to TB10 but with retractable landing gear, 250 HP**  
**engine and increased fuel capacity**

**Engine:** LYCOMING IO-540-C4D5D

**Fuel :** 100 minimum octane aviation gasoline

**Engine Limits:** For all operations, 2575 rpm (250 HP)

**Propeller & Propeller Limits**

HARTZELL Constant Speed  
 HC-C2YK-1BF/F8477-4

Diameter: not over 2,03m, not under 1,98m

Pitch setting at 0,75R: Low 14°  
 High 31°

Spinner SOCATA TB10.58.018.100 or  
 TB10.58.018.104

Woodward hydraulic governor:  
 C210761 or H210681 or E210681

**Airspeed Limits (IAS)**

Never Exceed ( $V_{NE}$ )		187 kts - 347 km/h
Maximum Structural Cruising ( $V_{NO}$ )		150 kts - 278 km/h
Maneuvering ( $V_A$ )		129 kts - 240 km/h
Flaps Extended ( $V_{FE}$ )	Take-off	129 kts - 240 km/h
	Landing	103 kts - 191 km/h
Gear extended ( $V_{LE}$ )		139 kts - 258 km/h
Gear operating ( $V_{LO}$ )		129 kts - 239 km/h

**CG Range**

(+ 0,913m) to (+1,205m) at 1000kgf or less  
 (+ 0,949m) to (+1,205m) at 1.250 kgf  
 (+ 1,071m) to (+1,205m) at 1.400 kgf  
 Straight line variation between points.

**Empty Weight CG Range** None

**Maximum Weight** Take-off and landing: 1400 kgf

**Number of Seats** 4 (2 at +1,155m, 2 at +2,035m)  
 See Note 5 for rear seat occupancy

**Maximum Baggage**

65kgf at + 2,600m

**Fuel Capacity**

336 l (two 168 l at +1,705m, 163 l usable)  
See Note 1 for weight and unusable fuel.

**Oil Capacity**

12,6 l at -0,600m (3,7 l unusable)  
See Note 1 for weight.

**Control Surface Movements**

Stabilator (Angles references: upper fuselage spar)

Leading edge down  $16^{\circ} \pm 1^{\circ}$ Leading edge up  $3^{\circ} \pm 1^{\circ}$ 

Stabilator tab (Angles reference: stabilizer chord) with stabilator leading edge full down.

Tab trailing edge minimum up  $0^{\circ} \pm 0.5^{\circ}$ Tab trailing edge maximum up  $15^{\circ} \pm 1.5^{\circ}$ 

Ailerons (Reference: wing chord)

up  $15^{\circ} \pm 1.5^{\circ}$ down  $15^{\circ} \pm 1.5^{\circ}$ 

Rudder (Reference: fin chord)

Right and Left  $25^{\circ} \pm 2^{\circ}$ 

Rudder tab (Reference: rudder chord)

Left turn  $10^{\circ} \pm 2^{\circ}$ Right turn  $25^{\circ} \pm 2^{\circ}$ 

Flaps (Reference: wing chord)

Full flaps  $40^{\circ}$   
 $+0.5^{\circ}$   
 $-1^{\circ}$

**IV- MODEL TB21 Trinidad TC (Normal Category) approved March 22, 1993**  
**Similar to TB20 but with a turbocharged engine**

**Engine:** LYCOMING TI0-540-AB1AD

**Fuel :** 100 minimum octane aviation gasoline

**Engine Limits:** For all operations, 2575 rpm (250 HP)

Maximum allowable manifold pressure  
 38.0 inHg from sea level to 17000ft  
 34.0 inHg at 20000ft  
 26.0 inHg at 26000ft  
 Straight Line variation between points

**Propeller & Propeller Limits**

HARTZELL constant speed  
 HC-C2YK-1BF/F8477-4

Diameter: not over 2,03m, not under 1,98m

Pitch setting at 0,75R: Low 14°  
 High 31°

Spinner SOCATA TB10.58.018.100 or  
 TB10.58.018.104

WOODWARD hydraulic governor:  
 E210681 or M210681 or C210761

**Airspeed Limits (IAS)**

Never Exceed ( $V_{NE}$ )	187 kts - 347 km/h
Maximum Structural Cruising ( $V_{NO}$ )	150 kts - 278 km/h
Maneuvering ( $V_A$ )	129 kts - 240 km/h
Flaps Extended ( $V_{FE}$ ) Take-off	129 kts - 240 km/h
Landing	103 kts - 191 km/h
Gear extended ( $V_{LE}$ )	139 kts - 258 km/h
Gear operating ( $V_{LO}$ )	129 kts - 239 km/h

**CG Range** (+ 0,913m) to (+1,205m) at 1,000 kgf or less  
 (+ 0,949m) to (+1,205m) at 1,250 kgf  
 (+ 1,071m) to (+1,205m) at 1,400 kgf

**Empty Weight CG Range** None

**Maximum Weight** Take-off and landing: 1400 kgf

**Number of Seats**

4 (2 at +1,155m, 2 at +2,035m)  
See Note 5 for rear seat occupancy

**Maximum Baggage**

65kgf at + 2,600m

**Fuel Capacity**

336 l (two 168 l at +1,705m, 163 l usable)  
See Note 1 for weight and unusable fuel.

**Oil Capacity**

12,6 l at -0,600m (6,8 l unusable)

**Control Surface Movements**

Stabilator (Angles references: upper fuselage spar)

Leading edge down  $16^{\circ} \pm 1^{\circ}$   
Leading edge up  $3^{\circ} \pm 1^{\circ}$

Stabilator tab (Angles reference: stabilizer chord) with stabilator leading edge full down.

Tab trailing edge minimum up  $0^{\circ} \pm 0.5^{\circ}$   
Tab trailing edge maximum up  $15^{\circ} \pm 1.5^{\circ}$

Ailerons (Reference: wing chord)

up  $15^{\circ} \pm 1.5^{\circ}$   
down  $15^{\circ} \pm 1.5^{\circ}$

Rudder (Reference: fin chord)

Right and Left  $25^{\circ} \pm 2^{\circ}$

Rudder tab (Reference: rudder chord)

Left turn  $10^{\circ} \pm 2^{\circ}$   
Right turn  $25^{\circ} \pm 2^{\circ}$

Flaps (Reference: wing chord)

Full flaps  $40^{\circ}$   
 $+0.5^{\circ}$   
 $-1^{\circ}$



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

Type Certification under technical general conditions of RBHA 23, equivalent Brazilian Airworthiness Requirements of FAR Part 23  
Date of application: July 2, 1990  
Brazilian Special requirements set forth in CTA Report H.10-1150/-1151/-1152/-1153-2 or its latest approved revision.

**TB9 and TB10**

- FAR Part 23 amendments 23-1 thru 23-16 (Normal and Utility Categories);
- RBHA 36 corresponding to FAR 36 amendments 36-1 thru 36-11 for TB 10 and 36-13 for TB9.

**TB20 and TB21**

- FAR Part 23 amendment 23-1 thru 23-16 (Normal Category)
- Technical Complementary Condition: paragraph 23.1581, amendment 21.
- Technical Special Condition: The landing gear being held up by hydraulic pressure only, requirements 23.143 and 23.729 are modified as follows:
  - a) airspeed "1.6 VS1" is replaced by "VNO" in 23.729(a);
  - b) condition 23.143 concerning landing gear extension is checked up to VNO.
- RBHA 36 corresponding to FAR 36 amendments 36-1 through 36-11.

**IMPORT REQUIREMENTS:**

A Brazilian Airworthiness Certificate may be issued on the basis of the DGAC Export Certificate of Airworthiness, signed by a DGAC representative, containing the following statement: "The airplane covered by this Certificate has been examined and found to conform to the Brazilian approved type design under Type Certificate nr. EA-9211, and to be in condition for safe operation".

**SERIAL Nos. ELIGIBLE:** Serial number 948 and subsequents for all models and for TB20 also from S/N 823 through 849 and S/N 888.

**DATUM:** Front face of firewall

**LEVELING MEANS:** Upper fuselage spar horizontal  
(Maintenance Manual Subchapter 15 of chapter II)

**MINIMUM CREW:** One pilot for all flights.

**FLIGHT LOAD FACTORS:**

TB9 and TB10

Normal category

Flaps up : +3,8g; -1,5g  
Flaps extended: +2,0g; 0g

Utility Category:

Flaps up : +4,4g; -1,8g  
Flaps extended: +2,0g; 0g

TB20 and TB21

Normal Category

Flaps up : +3,8g; -1,5g  
Flaps extended: +2,0g; 0g

**EQUIPMENT:** The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification basis) must be installed in the aircraft for certification. Approved equipment is listed as follows:

TB9 and TB10

Required and Standard Equipment List of Report NAV nr. 232/89-RJ "TB9 and TB10 Aircraft Equipment List - 28 volts Electrical Power", issue nr. 1, dated November, 1989 or later version.

TB20

Required and Standard Equipment List of Report NAV nr. 92/89-RJ "TB20 Aircraft Equipment List", issue nr. 2, dated November, 1990 or later version.

TB21

Required and Standard Equipment List of Report NAV nr. 124/89-RJ "TB21 Aircraft Equipment List", issue nr. 2, dated November, 1990 or later version.

In addition, the following equipments are required:

TB9

- (a) Fuel quantity indicators in liters
- (b) Flap switch lever P/N TB10.762.101-00
- (c) An ammeter
- (d) Aileron-Rudder controls interconnection option nr. 597
- (e) Pilot's Operating Handbook BRAZIL P/N Z00.DUDFMODEE3C1BZ approved on November 16, 1992; edition 3 of September 30, 1989 Revision 1 of December 31, 1991 or any later version approved by DGAC on behalf of CTA.

TB10

- (a) Fuel quantity indicators in liters
- (b) Flap switch lever P/N TB10.762.101-00
- (c) An ammeter
- (d) Aileron-rudder controls interconnection option nr. 597
- (e) A vacuum failure warning option nr. 631 for airplanes equipped for IFR
- (f) Pilot's Operating Handbook BRAZIL P/N (TBD)

TB20 and TB21

- (a) Fuel quantity indicators in liters
- (b) An ammeter
- (c) A vacuum failure warning option nr. 631 for IFR equipped airplanes.
- (d) TB20 Pilot's Operating Handbook BRAZIL P/N Z00.DWDFMOOEEZC2BZ approved November 16, 1992; edition 2 of June 30, 1988 with Revision 2 of September 30, 1992 or any later version approved by DGAC on behalf of CTA
- (e) TB21 Pilot's Operating Handbook BRAZIL P/N (TBD).

**NOTES**

NOTE 1 - Current weight and balance report including list of equipment included in certificated empty weight and loading instructions must be provided for each aircraft at the time of original certification.

**Model TB9 and TB10**

The certificated empty weight and corresponding center of gravity location must include unusable fuel of 4.3 kg at (+1,705m) and full oil of 7kg at (-0,605m).

**Model TB20 and TB21**

The certificated empty weight and corresponding center of gravity location must include unusable fuel of 6.5 kg at (+1,705m) and full oil of 11kg at (-0,600m). For TB21 it also must include the necessary ballast, up to 3kg, located on frame nr. 9, depending on the optional equipments.

NOTE 2 - All placards listed in Section 8 of Report H.10-1150/-1151/-1152/-1153-2 specific to each model must be installed in their appropriate location. All placards and markings for passenger information under normal or emergency operation of doors, normal ground operation of cargo doors, maximum loads in cargo and baggage compartment and servicing operations must be presented in portuguese or bilingual.

**NOTE 3 - SERVICE LIFE LIMITS**

Information with respect to service life limited parts is contained in the applicable manufacturer's maintenance manual section III.3 §2 "Service Life Limited components". The following components are life limited and must be replaced as indicated.

These limitations may not be increased without CTA approval

**MODEL TB9**

COMPONENT	PART NUMBER	SERVICE LIFE (Flight hours)
L.H. wing structure	TB09.11.000.000	14.600
L.H. wing structure or	TB09.11.006.000	14.600
L.H. wing structure or	TB09.11.000.002	14.600
R.H. wing structure	TB09.11.000.001	14.600
R.H. wing structure or	TB09.11.006.001	14.600
R.H. wing structure or	TB09.11.000.003	14.600
Aircraft from S/N 400 except S/N 413		
Wing FWD attachment RWD half fitting L.H.	TB10.21.031.113	9.000
Wing FWD attachment FWD half fitting L.H.	TB10.21.031.115	9.000
Wing FWD attachment RWD half fitting R.H.	TB10.21.031.114	9.000
Wing FWD attachment FWD half fitting R.H.	TB10.21.031.116	9.000

COMPONENT	PART NUMBER	SERVICE LIFE (Flight hours)
Former 1 support angle (FWD-L.H.)	TB10.21.021.118	9.000
or	TB10.21.021.124	9.000
Former 1 support angle (RWD-L.H.)	TB10.21.021.120	9.000
or	TB10.21.021.126	9.000
Former 1 support angle (FWD-R.H.)	TB10.21.021.119	9.000
or	TB10.21.021.125	9.000
Former 1 support angle (RWD-R.H.)	TB10.21.021.121	9.000
or	TB10.21.021.127	9.000

**MODEL TB10**

COMPONENT	PART NUMBER	SERVICE LIFE (Flight Hours)
L.H. wing structure	TB10.11.000.000	14.600
L.H. wing structure	TB10.11.006.000	14.600
L.H. wing structure	TB10.11.009.000	14.600
R.H. wing structure	TB10.11.000.001	14.600
R.H. wing structure	TB10.11.006.001	14.600
R.H. wing structure	TB10.11.009.001	14.600

**Model TB20**

COMPONENT	PART NUMBER	SERVICE LIFE (Flight Hours)
L.H. wing structure	TB20.11.000.000	10.000
R.H. wing structure	TB20.11.000.001	10.000

**Model TB21**

COMPONENT	PART NUMBER	SERVICE LIFE (Flight Hours)
L.H. wing structure	TB20.11.000.000	9.000
R.H. wing structure	TB20.11.000.001	9.000

**NOTE 4** - Information essential for the proper maintenance of the airplane is contained in the SOCATA Maintenance Manual.

**NOTE 5 - Model TB9**

Rear seat may be fitted out with three seats:

- a) The rear seat is equipped with three separate safety belts in accordance with SOCATA option nr. 502;
- b) The total weight on the rear seats is under 175 kg;
- c) Weight and CG position are within limits;
- d) 3 seats at + 2,035m.

**Model TB10**

Rear seat may be fitted out with three seats:

- a) The rear seat is equipped with three separate safety belts in accordance with SOCATA option nr. 502;
- b) The total weight on the rear seats is under 206 kg;
- c) Weight and CG position are within limits;
- d) 3 seats at + 2,035m.

**Model TB20**

Rear seat may be fitted out with three seats:

- a) The rear seat is equipped with three separate safety belts in accordance with SOCATA option nr. 502;
- b) The total weight on the rear seats is under 231 kg;
- c) Weight and CG position are within limits;
- d) 3 seats at +2,035m

**Model TB21**

Rear seat may be fitted out with three seats:

- a) The rear seat is equipped with three separate safety belts in accordance with SOCATA option nr. 502;
- b) The total weight on the rear seats is under 231 kg;
- c) Weight and CG position are within limits;
- d) 3 seats at + 2,035m.

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