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EASA.A.377

Description:	A.377 MS880 and Rallye 100 series
Language:	English
TCDS:	EASA.A.377
Product type:	Aircraft (CS-25, CS-22, CS-23, CS-VLA, CS-LSA)
Manufacturer/TC Holder:	SOCATA

European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

EASA.A.377

MS 880 and Rallye 100 Series

Type Certificate Holder:

SOCATA
65921 Tarbes Cedex 9
France

For models: MS 880 B and its variants: MS 880B-D, MS 881, MS 885, MS 886, MS 883, MS 887, MS 884

Rallye 100 S and its variants: Rallye 100 S-D, Rallye 100 ST, Rallye 100 ST-D, Rallye 110 ST

Rallye 150 T and its variants: Rallye 150 T-D, Rallye 150 ST, Rallye 150 ST-D, Rallye 150 SV, Rallye 150 SVS

Rallye 180 T and its variants: Rallye 180 T-D, Rallye 180 TS

Issue 01: 12 October 2010

CONTENT

ADMINISTRATIVE SECTION

I. Acronyms
II. Type Certificate Holder Record
III. Change Record

SECTION A: MODEL MS 880 TYPE DESIGN

A.I. General

1. Data Sheet No.:	EASA.A.377 - Issue 01 Date : 12 October 2010
2. a) Type:	MS 880
b) Model:	MS 880 B
c) Variant:	MS 880 B-D, MS 881, MS 885, MS 886, MS 883, MS 887, MS 884
3. Airworthiness Category:	MS 880 B, MS 880 B-D: Utility Category MS 881, MS 885, MS 886, MS 883, MS 887, MS 884: Normal and Utility Categories (see Section E, Note 2)
4. Type Certificate Holder:	SOCATA 65921 TARBES Cedex 9 FRANCE
5. Manufacturer:	SOCATA 65921 TARBES Cedex 9 FRANCE
6. Certification Application Date:	November 1960
7. National Certifying Authority	D.G.A.C. (Direction Générale de l'Aviation Civile)
8. National Authority Type Certificate Date:	MS 880 B: 26-October-1961 MS 880 B-D: 22-June-1976 MS 885: 04-December-1961 MS 881: 06-June-1963 MS 886: 15-July-1964 MS 883: 30-April-1969 MS 887: 31-May-1972 MS 884: 26-September-1972
9. National Authority Type Certificate:	DGAC-France Type Certificate No.13 The present EASA Type Certificate replaces DGAC-France Type Certificate No.13

A.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements:	November 1960
2. Airworthiness Requirements:	French Norme AIR 2052 - Ed. Novembre 1959
3. Special Conditions:	None

4. Exemptions: None
5. Deviations: None
6. Equivalent Safety Findings: None
7. Requirements elected to comply: None
8. Environmental Standards: CS 36 (ICAO Annex 16, volume I, as applicable)
9. (Reserved) Additional National Requirements: None
10. (Reserved) /

A.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: MS 880 Airplane main drawing No. 880-00.0.001
MS 881 Airplane main drawing No. 881-00.0.001
MS 885 Airplane main drawing No. 885-00.0.001
MS 886 Airplane main drawing No. 886-00.0.001
MS 883 Airplane main drawing No. 883-00.0.001
MS 887 Airplane main drawing No. 887-00.0.001
MS 884 Airplane main drawing No. 884-00.0.001

2. Description: Single-engine, all-metal, three or four seats, low-wing airplane, conventional tail, fixed tricycle landing gear.

3. Equipment: The basic required equipment as prescribed in the applicable airworthiness requirements (see certification basis) must be installed in the aircraft for airworthiness certification.
The applicable DGAC/EASA approved Flight Manual is required for all operations. Included within the Flight Manual (if necessary) is information in the form of supplements, which cover installation of optional systems and equipment that are required for safe operation of the aircraft.

4. Dimensions:

	MS 880, 885, 881, 883 and 884	MS 886	MS 887
4.1.1 Span for large wing tips	9.740 m (31.95 ft)		
for small wing tips	9.600 m (31.50 ft)		
4.1.2 Length	6.950 m (22.80 ft)	7.000 m (22.97 ft)	7.160 m (23.49 ft)
4.1.3 Height	2.600 m (8.53 ft)		
4.1.4 Wing area	12.28 m2 (132.18 sq.ft)		

5. Engine:

5.1.1 Model:

MS 880: Continental (or Rolls Royce) O.200A

MS 885: Continental (or Rolls Royce) O.300A or B or C or D

MS 881: Potez 4E20 or 4E20A or 4E20B

MS 886: Lycoming O.320.E

MS 883: Lycoming O.235.C2A

MS 887: Lycoming O.235.F2A

MS 884: Franklin 4A.235.B3

5.1.2 Type Certificate: /

5.1.3 Limitations:

- Continental (or Rolls Royce) O.200A:
  All operations: 2750 RPM (74,6 kW - 100 HP) (see Note 1)
- Continental (or Rolls Royce) O.300A or B or C or D:
  All operations: 2700 RPM (108.1 kW - 145 HP)
- Potez 4E20:
  All operations: 2750 RPM (77 kW - 105 CV)
- Lycoming O.320.E:
  All operations: 2700 RPM (111.9 kW – 150 HP)
- Lycoming O.235.C2A:
  All operations: 2800 RPM (85.8 kW – 115 HP)
- Lycoming O.235.F2A:
  All operations: 2800 RPM (93.2 kW – 125 HP)
- Franklin 4A.235.B3:
  All operations: 2800 RPM (93.2 kW – 125 HP)

6. Load factors:

Utility Category, Flaps up: + 4.4
- 1.8

Normal Category, Flaps up: + 3.8
- 1.5

7. Propeller:

7.1. MS 880

7.1.1 Model:

MS 880 B and MS 880 B-D:
McCauley: lA 105 SCM 7146 or
McCauley: lA 101 DCM 6948

MS 880 B only:
Evra: 90.55.C3

7.1.2 Type Certificate: /

7.1.3 Number of blades: 2

7.1.4 Diameter:

1.81 m (71.26 in.)
1.75 m (68.90 in.)
1.80 m (70.90 in.)

} Respectively for propeller models here above

7.1.5	Sense of Rotation:	/
7.1.6	Minimum Static RPM at sea level:	2500 RPM * (*) (see Note 2) 2500 RPM Respectively for propeller models here above 2400 RPM

7.2. MS 885

7.2.1	Model:	McCauley 1C 172 MDM 7652 to 7658 (see Note 3) or McCauley 1C 172 EM 7652 to 7658 (see Note 4)
7.2.2	Type Certificate:	/
7.2.3	Number of blades:	2
7.2.4	Diameter:	1.93 m (75.98 in.)
7.2.5	Sense of Rotation:	/
7.2.6	Minimum Static RPM at sea level:	2350 to 2200 RPM

7.3. MS 881

7.3.1	Model:	Ratier 2446, pitch: 3.5 or Ratier FH 110, pitch: 4
7.3.2	Type Certificate:	/
7.3.3	Number of blades:	2
7.3.4	Diameter:	1.85 m (72.83 in.)
7.3.5	Sense of Rotation:	/
7.3.6	Minimum Static RPM at sea level:	2575 RPM Respectively for propeller models here above 2550 RPM

7.4. MS 886

7.4.1	Model:	MacCauley 1C 172 MGM 7650 to 7658
7.4.2	Type Certificate:	/
7.4.3	Number of blades:	2
7.4.4	Diameter:	1.93 m (75.98 in.)
7.4.5	Sense of Rotation:	/
7.4.6	Minimum Static RPM at sea level:	2450 to 2250 RPM

7.5. MS 883

7.5.1	Model:	Sensenich 76.AK.S6.2.44
7.5.2	Type Certificate:	/
7.5.3	Number of blades:	2
7.5.4	Diameter:	1.88 m (74 in.)
7.5.5	Sense of Rotation:	/
7.5.6	Minimum Static RPM at sea level:	2400 RPM (see Note 5)

7.6. MS 887

7.6.1	Model:	MacCauley lA 135 KCM 7147
7.6.2	Type Certificate:	/
7.6.3	Number of blades:	2
7.6.4	Diameter:	1.80 m (70.87 in.)
7.6.5	Sense of Rotation:	/
7.6.6	Minimum Static RPM at sea level:	2510 RPM (see Note 6)

7.7. MS 884

7.7.1	Model:	Sensenich M72 CCS 0.54
7.7.2	Type Certificate:	/
7.7.3	Number of blades:	2
7.7.4	Diameter:	1.83 m (72.05 in.)
7.7.5	Sense of Rotation:	/
7.7.6	Minimum Static RPM at sea level:	2425 RPM

8. Fluids:

8.1 Fuel:

- Continental O.200, Continental O.300, Lycoming O.320.E and O.235.C2A engines:
  80/87 minimum aviation grade gasoline or AVGAS 100 LL
- Potez 4E20 engines:
  100 minimum aviation grade gasoline
- Lycoming O.235.F2A and Franklin 4A.235.B3 engines:
  100/130 minimum aviation grade gasoline or AVGAS 100 LL

8.2 Oil:
- Continental O.200 and Continental O.300 engines:
  SAE 20 for OAT < 5℃,
  SAE 40 for OAT > 5℃
- Potez 4E20 engines:
  SAE 40 for OAT < 5 ℃,
  SAE 50 for OAT > 5℃
- Franklin 4A.235.B3 engines:
  SAE 20-30 for OAT < 5 ℃
  SAE 40-50 for OAT > 5℃
- For other engines: see Note 7

8.3 Coolant: Not Applicable

9. Fluid capacities:

9.1 Fuel: 2 structural wing tanks

Aircraft	MS 880	MS 885/881/886 And MS 880 (see Note 9)	MS 880/884/887	MS 885/881/886/ 883/884/887 And MS 880 (see Note 9)
Gauge type	Sight tube gauges (see Note 11)		Electrical gauges	
Capacity				
Total:				
Both tanks.....	104 litres (27.47 US Gal)	180 litres (47.55 US Gal)	105 litres (27.74 US Gal)	184 litres (48.61 US Gal)
Each tank.....	52 litres (13.74 US Gal)	90 litres (23.76 US Gal)	52.5 litres (13.87 US Gal)	92 litres (24.30 US Gal)
Total usable:				
Both tanks.....	102 litres (26.95 US Gal)	178 litres (47.02 US Gal)	96 litres (25.36 US Gal)	170 litres (44.91 US Gal)
Each tank.....	51 litres (13.47 US Gal)	89 litres (23.51 US Gal)	48 litres (12.68 US Gal)	85 litres (22.45 US Gal)
Unusable:	4.2 litres (1.11 US Gal)			

9.2 Oil:

9.2.1 Maximum capacity:

MS 880/881:
- 4.7 litres (4.97 qts)
  or 5.7 litres (6.02 qts) (see Note 13)

MS 885/886:
- 8 litres (8.45 qts)

MS 883/887:
- 5.7 litres (6.02 qts)

MS 884
- 7 litres (7.40 qts)

9.2.2 Usable capacity: Refer to Airplane Flight Manual

9.3 Coolant system capacity: Not Applicable

10. Air Speeds: (Indicated Airspeeds) (see Section E, Note 4)

10.1.1 Normal Category

V_{NE} (Never Exceed speed):	250 km/h (135 KIAS)
V_d (Design diving speed):	280 km/h (151 KIAS)
V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
V_A (Maneuvering speed):	193 km/h (104 KIAS)
V_{FE} (Maximum Flap Extended):	140 km/h (76 KIAS)

10.1.2 Utility Category

V_{NE} (Never Exceed speed):	270 km/h (146 KIAS)
V_d (Design diving speed):	300 km/h (162 KIAS)
V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
V_A (Maneuvering speed):	193 km/h (104 KIAS)
V_{FE} (Maximum Flap Extended):	140 km/h (76 KIAS)

11. Maximum Operating Altitude: Refer to Airplane Flight Manual

12. Allweather Operations Capability: Day & night VFR
Flight in icing conditions is prohibited

13. Maximum Weights: (see Note 12)

Aircraft	MS 880	MS 881	MS 883	MS 885, 886, 884	MS 887
Normal Category					
Maximum Takeoff	/	800 kg (1764 lbs)	825 kg (1819 lbs)	850 kg (1874 lbs)	840 kg (1852 lbs)
Maximum Landing	/	800 kg (1764 lbs)	825 kg (1819 lbs)	850 kg (1874 lbs)	840 kg (1852 lbs)
Utility Category					
Maximum Takeoff	770 kg (1698 lbs) for all variants				
Maximum Landing	770 kg (1698 lbs) for all variants				
Maneuvers	770 kg (1698 lbs) for all variants				

14. Centre of Gravity Range:

Aircraft	MS 880		MS 881			MS 885, 886		
			/	**	***	/	**	***
Weight:	< 610 kg (1345 lbs)	= 770 kg (1698 lbs)	< 610 kg (1345 lbs)	= 770 kg (1698 lbs)	= 800 kg (1764 lbs)	< 680 kg (1499 lbs)	= 770 kg (1698 lbs)	= 850 kg (1874 lbs)
Forward Limit:								
- Aft of datum	0.17 m (6.69 in.)	0.20 m (7.87 in.)	0.17 m (6.69 in.)	0.20 m (7.87 in.)	0.21 m (8.27 in.)	0.17 m (6.69 in.)	0.18 m (7.07 in.)	0.19 m (7.48 in.)
- From engine firewall	0.826 m (32.52 in.)	0.858 m (33.78 in.)	0.826 m (32.52 in.)	0.858 m (33.78 in.)	0.865 m (34.06 in.)	0.826 m (32.52 in.)	0.839 m (33.03 in.)	0.852 m (33.54 in.)
	*		*			*		
Aft limit:								
- Aft of datum	0.39 m (15.35 in.)							
- From engine firewall	1.047 m (41.22 in.)							

(*) Straight line variation between points given.
(**) Maximum weight in Utility Category
(***) Maximum weight in Normal Category

Aircraft	MS 883			MS 887			MS 884		
	/	**	***	/	**	***	/	**	***
Weight:	< 680 kg (1499 lbs)	= 770 kg (1698 lbs)	= 825 kg (1819 lbs)	< 625 kg (1378 lbs)	= 770 kg (1852 lbs)	= 840 kg (1819 lbs)	< 625 kg (1378 lbs)	= 770 kg (1698 lbs)	= 850 kg (1874 lbs)
Forward Limit:									
- Aft of datum	0.17 m (6.69 in.)	0.18 m (7.07 in.)	0.19 m (7.48 in.)	0.16 m (6.30 in.)	0.18 m (7.07 in.)	0.19 m (7.48 in.)	0.16 m (6.30 in.)	0.18 m (7.07 in.)	0.19 m (7.48 in.)
- From engine firewall	0.826 m (32.52 in.)	0.839 m (33.03 in.)	0.852 m (33.54 in.)	0.813 m (32.01 in.)	0.839 m (33.03 in.)	0.852 m (33.54 in.)	0.813 m (32.01 in.)	0.839 m (33.03 in.)	0.852 m (33.54 in.)
	*			*					
Aft limit:									
- Aft of datum	0.39 m (15.35 in.)								
- From engine firewall	1.047 m (41.22 in.)								

(*) Straight line variation between points given.
(**) Maximum weight in Utility Category
(***) Maximum weight in Normal Category

14.1.1 Fuel: Aft of datum: at Station + 0.41 m (16.14 in.)
From firewall: at Station + 1.067 m (41.01 in.)

14.1.2 Oil in the sump: MS 880B/880B-D/881/883/844:
Aft of datum: at Station - 1.21 m (47.64 in.)
From firewall: at Station - 0.544 m (21.42 in.)

MS 885/886:
Aft of datum: at Station - 1.15 m (45.28 in.)
From firewall: at Station - 0.493 m (19.41 in.)

MS 887:
Aft of datum: at Station - 1.25 m (49.21 in.)
From firewall: at Station - 0.593 m (23.35 in.)

15. Datum: Wing leading edge of reference chord located at 0.657 m (25.86 in.) aft of engine firewall

Reference chord length: 1.30 m (51.18 in.)

16. Control surface deflections:

Elevator:	Up	25° ± 1°
	Down	30° ± 1°
Elevator tab:	Up (see Note 10)	30° ± 1°
	Down	28° ± 1°
Rudder relative to fin:	Right	30° + 0° - 2°
	Left	30° + 0° - 2°
Ailerons relative to wing:	Up	17°30 ± 1°
	Down	13°30 ± 1°
Flaps relative to wing:	Up	0°
	Down	30° ± 1°

17. Levelling Means: Upper spar of horizontal frame (canopy rail)

18. Minimum Flight Crew: 1 (Pilot)
Aft of datum: at Station + 0.29 m (11.42 in.)
From firewall: at Station + 0.947 m (37.28 in.)

19. Maximum Passenger Seating Capacity: 3 (see Note 7)
One at front R.H. Station,
One or two (with 2 seat belts) at rear Station

Aft of datum: Front seats: at + 0.29 m (11.42 in.)
Rear seat: at + 1.12 m (44.09 in.)

From firewall: Front seats: at + 0.947 m (37.28 in.)
Rear seat: at + 1.777 m (69.96 in.)

20. Baggage/Cargo Compartments:

MS 880:	100 kg (220 lbs) (see Note 8) or 110 kg (242 lbs)
MS 881:	110 kg (242.51 lbs)
MS 883:	115 kg (253.53 lbs)
MS 885, 886:	110 kg (242.51 lbs)
MS 887, 884:	154 kg (339.51 lbs)

Aft of datum: at + 1 to 1.12 m (39.37 to 44.09 in.)

From firewall: at + 1.657 to 1.777 m (65.24 to 69.96 in.)

21. Wheels and Tyres:

21.1.1 Nose landing gear:
Wheel: Morane Saulnier
Tire: 330 x 130
Pressure: 1.4 bars (20.31 psi)

21.1.2 Main landing gear:
Track: 2000 mm (78.74in.)

	MS 880, 881, 883, 885 and 886	MS 884 and 887		
Wheels:	Morane Saulnier	Cleveland		
Tires: Dimensions :	420 x 150	6.00-6.6 PR	15x6.006.4 PR	
Brand :	/	/	Dunlop	Goodyear
Pressure:	1.5 bars (21.76 psi)	1.5 bars (21.76 psi)	1.5 bars (21.76 psi)	1.8 bars (26.11 psi)

22. Serial Numbers Eligible: List available at SOCATA

A.IV. Operating and Service Instructions

1. Flight Manual:
   DGAC/EASA approved Pilot's Operating Handbook (POH) original issue or later revision.

2. Technical Manual:
   SOCATA Maintenance Manual at revision 10 or later revision

3. Repair Manual:
   SOCATA Repair Manual at revision 10 or later revision

4. Manual for Operation:
   N/A

5. Spare Parts Catalogue:
   SOCATA Spare Parts Catalogue at revision 12 or later revision

6. Table of Dimensions, Limits and Clearances:
   N/A

7. Instruments and aggregates:
   N/A

A.V. Notes

1) For MS 880B:
   - Maximum normal operation power: 2700 RPM given by French decree dated April 3rd, 1980.
   - Specific limitation for operation in Germany: the MS 880B-D is limited for maximum continuous operation to 2650 RPM and during takeoff.

2) Maximum static RPM at sea level: 2550 RPM. Do not go beyond 2650 RPM in continuous operation.

3) Continental O.300A or B

4) Continental O.300C or D

5) Do not operate above 2600 RPM

6) Do not continuously operate between 2025 and 2325 RPM.

7)

below	- 12° C	SAE 20		SAE 20 W 30
from	- 12°C to + 21°C	SAE 30		SAE 40 or 20 W 30
from	- 1°C to + 32°C	SAE 40	or	SAE 40
above	+ 15°C	SAE 50		SAE 40 or SAE 50
		Monograde oils		Multigrades oils

8) All variants:
   - The rear seat can be occupied by two people provided that the aircraft is equipped with a 4th seat belt and that total passengers weight on the rear seat is below the maximum authorised weight on that seat.
   - Passenger(s) are allowed on the rear seat if the front passenger seat is already occupied, preferably by the passenger with the highest weight.

   For MS 880:
   - Max. weight on rear seat: 110 kg (242 lbs) [or 100 kg (220 lbs) if aircraft equipped with large fuel tanks]

9) For aircraft equipped with large fuel tanks.

10) 20° ± 1° for aircraft equipped with Mod n°23 a nd for MS 883/887.
    Elevator automatic tab: automaticity ratio: 100 % for MS 885/886.

11) Indications of sight tube gauges are valid only when the aircraft is in a level flight attitude.

12) The aircraft empty weight must include unusable fuel quantity:
- MS 880: Aircraft equipped with large fuel tanks: 500 kg (1102 lbs)
- Aircraft not equipped with large fuel tanks: 495 kg (1091 lbs)
- MS 883/885/886: 540 kg (1190 lbs)
- MS 881/884: 525 kg (1157 lbs)
- MS 887: 518 kg (1142 lbs)

13) If specification CES 1108 engine installed.

SECTION B: MODEL RALLYE 100 TYPE DESIGN

B.I. General

1. Data Sheet No.:	EASA.A.377 - Issue 01 Date : 12 October 2010
2. a) Type:	RALLYE 100
b) Model:	RALLYE 100 S
c) Variant:	RALLYE 100 S-D, 100 ST, 100 ST-D, 110 ST
3. Airworthiness Category:	RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D: Utility Category RALLYE 110 ST: Normal and Utility Categories (see Section E, Note 2)
4. Type Certificate Holder:	SOCATA 65921 TARBES Cedex 9 FRANCE
5. Manufacturer:	SOCATA 65921 TARBES Cedex 9 FRANCE
6. Certification Application Date:	February 1973
7. National Certifying Authority	D.G.A.C. (Direction Générale de l'Aviation Civile)
8. National Authority Type Certificate Date:	RALLYE 100 S: 06-April-1973 RALLYE 100 ST: 04-October-1974 RALLYE 100 S-D and 100 ST-D: 22-June-1976 RALLYE 110 ST: 17-January-1979
9. National Authority Type Certificate:	DGAC-France Type Certificate No.13 The present EASA Type Certificate replaces DGAC-France Type Certificate No.13

B.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements:	RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D: February 1973 RALLYE 110 ST: October 1978
2. Airworthiness Requirements:	French Norme AIR 2052 - Ed. Novembre 1959
3…Special Conditions:	None
4. Exemptions:	None
5. Deviations:	None
6. Equivalent Safety Findings:	None

7. Requirements elected to comply: None
8. Environmental Standards: CS 36 (ICAO Annex 16, volume I, as applicable)
9. (Reserved) Additional National Requirements: None
10. (Reserved) /

B.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Rallye 100 S Airplane main drawing No. 880-00.0.002
   Rallye 100 ST Airplane main drawing No. 880-00.0.022
   Rallye 110 ST Airplane main drawing No. 887-00.0.004
2. Description: Single-engine, all-metal, two or four seats, low-wing airplane, conventional tail, fixed tricycle landing gear.
3. Equipment: The basic required equipment as prescribed in the applicable airworthiness requirements (see certification basis) must be installed in the aircraft for airworthiness certification.
   The applicable DGAC/EASA approved Flight Manual is required for all operations. Included within the Flight Manual (if necessary) is information in the form of supplements, which cover installation of optional systems and equipment that are required for safe operation of the aircraft.
4. Dimensions:

	RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D	RALLYE 110 ST
4.1.1 Span for large wing tips	9.740 m (31.95 ft)	
for small wing tips	9.600 m (31.50 ft)	
4.1.2 Length	7.045 m (23.11 ft)	7.240 m (23.75 ft)
4.1.3 Height	2.800 m (9.19 ft)	
4.1.4 Wing area	12.28 m^2 (132.08 sq.ft)	

5. Engine:
   5.1.1 Model: RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D:
   Continental (or Rolls Royce) O.200A
   RALLYE 110 ST:
   Lycoming O.235.L2A
   5.1.2 Type Certificate: /

5.1.3 Limitations:
- Continental (or Rolls Royce) O.200A (see Note 1):
  All operations: 2750 RPM (74.6 kW - 100 HP)
- Lycoming O.235.L2A:
  All operations: 2600 RPM (83 kW – 112 HP)

6. Load factors:

Utility Category,	Flaps up:	+ 4.4
		- 1.8
Normal Category,	Flaps up:	+ 3.8
		- 1.5

7. Propeller:

7.1. RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D

7.1.1	Model:	McCauley: lA 105 SCM 7146 or McCauley: lA 101 DCM 6948 or McCauley: 1A 101 DCM 6946, only for Rallye 100 ST equipped with Thielman exhaust pipe
7.1.2	Type Certificate:	/
7.1.3	Number of blades:	2
7.1.4	Diameter:	1.81 m (71.26 in.) 1.75 m (68.90 in.) 1.75 m (68.90 in.) } Respectively for propeller models here above
7.1.5	Sense of Rotation:	/
7.1.6	Minimum Static RPM at sea level:	2500 RPM * 2500 RPM 2500 RPM (*) (see Note 2) } Respectively for propeller models here above

7.2. RALLYE 110 ST

7.2.1	Model:	McCauley 1A 103 TCM 6958 or 1A 103 TCM 6958 M1
7.2.2	Type Certificate:	/
7.2.3	Number of blades:	2
7.2.4	Diameter:	1.75 m (68.90 in.)
7.2.5	Sense of Rotation:	/
7.2.6	Minimum Static RPM at sea level:	2300 RPM

8. Fluids:

8.1 Fuel:

- Continental (or Rolls Royce) O.200A:
  80/87 minimum aviation grade gasoline or AVGAS 100 LL
- Lycoming O.235.L2A:
  91/96 minimum aviation grade gasoline or AVGAS 100 LL

8.2 Oil:

- Continental (or Rolls Royce) O.200A:
  SAE 20 for OAT < 5 ℃,
  SAE 40 for OAT > 5℃
- Lycoming O.235.L2A:
  SAE 40 for OAT < 5 ℃,
  SAE 50 for OAT > 5℃

8.3 Coolant: Not Applicable

9. Fluid capacities:

9.1 Fuel: 2 structural wing tanks

Total capacity:

105 litres (27.74 US Gal)
Each tank: 52.5 litres (13.87 US Gal)

Total usable capacity:

96 litres (25.36 US Gal)
Each tank: 48 litres (12.68 US Gal)

9.2 Oil:

9.2.1 Maximum capacity:

RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D:
- 4.7 litres (4.97 qts)
  or 5.7 litres (6.02 qts) (see Note 6)

RALLYE 110 ST:
- 5.7 litres (6.02 qts)

9.2.2 Usable capacity: Refer to Airplane Flight Manual

9.3 Coolant system capacity: Not Applicable

10. Air Speeds: (Indicated Airspeeds) (see Section E, Note 4)

10.1.1 Normal Category (for Rallye 110 ST only)

V_{NE} (Never Exceed speed):	250 km/h (135 KIAS)
V_d (Design diving speed):	280 km/h (151 KIAS)
V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
V_A (Maneuvering speed):	193 km/h (104 KIAS)
V_{FE} (Maximum Flap Extended):	140 km/h (76 KIAS)

10.1.2 Utility Category

V_{NE} (Never Exceed speed):	270 km/h (146 KIAS)
V_d (Design diving speed):	300 km/h (162 KIAS)
V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
V_A (Maneuvering speed):	193 km/h (104 KIAS)
V_{FE} (Maximum Flap Extended):	140 km/h (76 KIAS)

11. Maximum Operating Altitude: Refer to Airplane Flight Manual

12. Allweather Operations Capability: Day & night VFR
Flight in icing conditions is prohibited

13. Maximum Weights: (see Note 5)

Aircraft	RALLYE 100 S, 100 S-D	RALLYE 100 ST, 100 ST-D	RALLYE 110 ST
Normal Category			
Maximum Takeoff	/	/	770 kg (1698 lbs)
Maximum Landing	/	/	770 kg (1698 lbs)
Utility Category			
Maximum Takeoff	750 kg (1653 lbs)	770 kg (1698 lbs)	770 (1698 lbs)
Maximum Landing	750 kg (1653 lbs)	770 kg (1698 lbs)	770 (1698 lbs)
Maneuvers	750 kg (1653 lbs)	770 (1698 lbs) or 750 kg (1653 lbs) (Spinning)	770 (1698 lbs) or 750 kg (1653 lbs) (Spinning)

14. Centre of Gravity Range:

Aircraft	All variants	RALLYE 100 S and 100 S-D	RALLYE 100 ST and 100 ST-D	RALLYE 110 ST
Utility category with Spinning authorised				
Weight	< 610 kg (1345 lbs)	= 750 kg (1693 lbs)		
Forward Limit:				
- Aft of datum	0.17 m (6.69 in.)	0.20 m (7.87 in.)		
- From engine firewall	0.826 m (32.52 in.)	0.855 m (33.66 in.)		
Aft limit:				
- Aft of datum	/	0.29 m (11.42 in.)		0.25 m (9.84 in.)
- From engine firewall	/	0.943 m (37.13 in.)		0.904 m (35.59 in.)

Aircraft	All variants	RALLYE 100 S and 100 S-D	RALLYE 100 ST and 100 ST-D	RALLYE 110 ST
Utility category with Spinning forbidden:				
Weight	< 610 kg (1345 lbs)	/	= 770 kg (1698 lbs)	
Forward Limit:				
- Aft of datum	0.17 m (6.69 in.)	/	0.21 m (8.27 in.)	
- From engine firewall	0.826 m (32.52 in.)	/	0.865 m (33.06 in.)	
Aft limit:				
- Aft of datum	/		0.39 m (15.35 in.)	
- From engine firewall	/		1.047 m (41.22 in)	
Normal category:				
Weight	< 610 kg (1345 lbs)	/	= 770 kg (1698 lbs)	
Forward Limit:				
- Aft of datum	0.17 m (6.69 in.)	/	0.21 m (8.27 in.)	
- From engine firewall	0.826 m (32.52 in.)	/	0.865 m (33.06 in.)	
Aft limit:				
- Aft of datum	/		0.39 m (15.35 in.)	
- From engine firewall	/		1.047 m (41.22 in)	
Straight line variation between points given.				

14.1.1 Fuel: Aft of datum: at Station + 0.41 m (16.14 in.)
From firewall: at Station + 1.067 m (41.01 in.)

14.1.2 Oil in the sump: RALLYE 100 S/100 S-D:
Aft of datum: at Station - 1.21 m (47.64 in.)
From firewall: at Station - 0.544 m (21.42 in.)
RALLYE 110 ST:
Aft of datum: at Station - 1.20 m (47.24 in.)
From firewall: at Station - 0.543 m (21.38 in.)

15. Datum: Wing leading edge of reference chord located at 0.657 m (25.86 in.) aft of engine firewall
Reference chord length: 1.30 m (51.18 in.)

16. Control surface deflections:

RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D:

Elevator:	Up	30° ± 1°
	Down	25° ± 1°

RALLYE 110 ST:

Elevator:	Up	22° ± 1°
	Down	20° ± 1°

All:

Elevator tab:	Up (see Note 4)	30° ± 1°
	Down	28° ± 1°
Rudder relative to fin:	Right	30° + 0° - 2°
	Left	30° + 0° - 2°
Ailerons relative to wing:	Up	17°30 ± 1°
	Down	13°30 ± 1°
Flaps relative to wing:	Up	0°
	Down	30° ± 1°

17. Levelling Means: Upper spar of horizontal frame (canopy rail)

18. Minimum Flight Crew: 1 (Pilot)

Aft of datum: at Station + 0.29 m (11.42 in.)

From firewall: at Station + 0.947 m (37.28 in.)

19. Maximum Passenger Seating Capacity:

1 for RALLYE 100 S and S-D:
One at front R.H. Station,

2 for RALLYE 100 ST, 100 ST-D and RALLYE 110 ST:
One at front R.H. Station,
One at rear Station or two (with 2 seat belts) (see Note 3)
No passenger allowed on the rear seat in spinning configuration (see Note 3)

Aft of datum:
Front seats: at + 0.29 m (11.42 in.)
Rear seat: at + 1.12 m (44.09 in.)

From firewall:
Front seats: at + 0.947 m (37.28 in.)
Rear seat: at + 1.777 m (69.96 in.)

20. Baggage/Cargo Compartments:

RALLYE 100 S and 100 S-D:	20 kg (44 lbs)
RALLYE 100 ST and 100 ST-D:	110 kg (242 lbs)
RALLYE 110 ST:	100 kg (220 lbs)

No baggage/cargo allowed in spinning configuration for RALLYE 100 ST, 100 ST-D and RALLYE 110 ST (see Note 3)

Aft of datum: at + 1 to 1.12 m (39.37 to 44.09 in.)
From firewall: at + 1.657 to 1.777 m (65.24 to 69.96 in.)

21. Wheels and Tyres:

21.1.1	Nose landing gear:	Wheel:	Morane Saulnier
		Tire:	330 x 130
		Pressure:	1.4 bars (20.31 psi)
21.1.2	Main landing gear:	Track:	2000 mm (78.74 in.)
		Wheels:	Cleveland
		Tires:	6.00-6.6 PR
		or	15x6.006.4 PR (Dunlop or Goodyear tires)
		Pressure:	1.5 bars (21.76 psi) for Cleveland and Dunlop tires 1.8 bars (26.11 psi) for Goodyear tires

22. Serial Numbers Eligible: List available at SOCATA

B.IV. Operating and Service Instructions

1. Flight Manual:
   DGAC/EASA approved Pilot's Operating Handbook (POH) original issue or later revision.

2. Technical Manual:
   SOCATA Maintenance Manual at revision 10 or later revision

3. Repair Manual:
   SOCATA Repair Manual at revision 10 or later revision

4. Manual for Operation:
   N/A

5. Spare Parts Catalogue:
   SOCATA Spare Parts Catalogue at revision 12 or later revision

6. Table of Dimensions, Limits and Clearances:
   N/A

7. Instruments and aggregates:
   N/A

B.V. Notes

1) Maximum normal operation power: 2700 RPM given by French decree dated April 3rd, 1980.
   Specific limitation for operation in Germany:
   The RALLYE 100 S-D and 100 ST-D are limited for maximum continuous operation to 2650 RPM and during takeoff.

2) Maximum static RPM at sea level: 2550 RPM. Do not go beyond 2650 RPM in continuous operation.

3) For RALLYE 100 ST, 100 ST-D and RALLYE 110 ST:
   - The rear seat can be occupied by two people provided that the aircraft is equipped with a 4th seat belt and that the total passengers weight on the rear seat is below the maximum authorised weight on that seat.
     Passenger(s) allowed on the rear seat if the front passenger seat is already occupied, preferably by the passenger with the highest weight.
   - In spinning configuration, remove pads on rear seat and no baggage allowed.

4) 20° ± 1° for aircraft equipped with Mod n° 23.

5) Aircraft empty weight must include unusable fuel quantity:
   - RALLYE 100 S, 100 S-D, 100 ST, 100 ST-D: 495 kg (1091 lbs)
   - RALLYE 110 ST: 520 kg (1146 lbs)

6) If specification CES 1108 engine installed.

SECTION C: MODEL RALLYE 150 TYPE DESIGN

C.I. General

1.	Data Sheet No.:	EASA.A.377 - Issue 01 Date : 12 October 2010
2.	a) Type:	RALLYE 150
	b) Model:	RALLYE 150 T
	c) Variant:	RALLYE 150 T-D, 150 ST, 150 ST-D, 150 SV, 150 SVS
3.	Airworthiness Category:	RALLYE 150 ST, 150 ST-D, 150 SV and 150 SVS: Normal and Utility Categories RALLYE 150 T and 150 T-D: Utility Category (see Section E, Note 2)
4.	Type Certificate Holder:	SOCATA 65921 TARBES Cedex 9 FRANCE
5.	Manufacturer:	SOCATA 65921 TARBES Cedex 9 FRANCE
6.	Certification Application Date:	September 1974
7.	National Certifying Authority	D.G.A.C. (Direction Générale de l'Aviation Civile)
8.	National Authority Type Certificate Date:	RALLYE 150 T: 26-November-1974 RALLYE 150 ST: 20-March-1975 RALLYE 150 T-D and 150 ST-D: 22-June-1976 RALLYE 150 SV and 150 SVS: 06-February-1979
9.	National Authority Type Certificate:	DGAC-France Type Certificate No.13 The present EASA Type Certificate replaces DGAC-France Type Certificate No.13

C.II. EASA Certification Basis

1.	Reference Date for determining the applicable requirements:	September 1974
2.	Airworthiness Requirements:	French Norme AIR 2052 - Ed. Novembre 1959
3.	Special Conditions:	None
4.	Exemptions:	None
5.	Deviations:	None

6. Equivalent Safety Findings: None

7. Requirements elected to comply: None

8. Environmental Standards: CS 36 (ICAO Annex 16, volume I, as applicable)

9. Additional National Requirements: None

10. (Reserved) /

C.III. Technical Characteristics and Operational Limitations

1. Type Design Definition:
Rallye 150 T Airplane main drawing No. 886-00.0.002
Rallye 150 ST Airplane main drawing No. 886-00.0.006
Rallye 150 SV Airplane main drawing No. 886-00.0.018
Rallye 150 SVS Airplane main drawing No. 886-00.0.024

2. Description: Single-engine, all-metal, three or four seats, low-wing airplane, conventional tail, fixed tricycle landing gear.

3. Equipment: The basic required equipment as prescribed in the applicable airworthiness requirements (see certification basis) must be installed in the aircraft for airworthiness certification.
The applicable DGAC/EASA approved Flight Manual is required for all operations. Included within the Flight Manual (if necessary) is information in the form of supplements, which cover installation of optional systems and equipment that are required for safe operation of the aircraft.

4. Dimensions:

Span	9.740 m (31.95 ft) for large wing tips,
	9.600 m (31.50 ft) for small wing tips
Length	7.240 m (23.75 ft)
Height	2.800 m (9.19 ft)
Wing area	12.28 m^2 (132.08 sq.ft)

5. Engine:

5.1.1 Model:
- RALLYE 150 T, 150 T-D, 150 ST and 150 ST-D: Lycoming O.320.E
- RALLYE 150 SV and 150 SVS: Lycoming O.320.D2A

5.1.2 Type Certificate: /

5.1.3 Limitations: (see Note 1)

- Lycoming O.320.E:
  All operations: 2700 RPM (111.9 kW – 150 HP)
- Lycoming O.320.D2A:
  All operations: 2600 RPM (115 kW – 155 HP)
  for RALLYE 150 SV
  All operations: 2500 RPM (112 kW – 150 HP)
  for RALLYE 150 SVS

6. Load factors:

Utility Category,	Flaps up:	+ 4.4
		- 1.8
Normal Category,	Flaps up:	+ 3.8
		- 1.5

7. Propeller:

7.1. RALLYE 150 T, 150 T-D, 150 ST and 150 ST-D:

7.1.1	Model:	McCauley 1C 172 MGM 7650 to 7658 or Sensenich 74 DM6 054 to 6056
7.1.2	Type Certificate:	/
7.1.3	Number of blades:	2
7.1.4	Diameter:	1.93 m (75.98 in.) 1.88 m (74 in.) } Respectively for propeller models here above
7.1.5	Sense of Rotation:	/
7.1.6	Minimum Static RPM at sea level:	2450 to 2250 RPM

7.2. RALLYE 150 SV and 150 SVS:

7.2.1	Model:	Sensenich 74 DM6 – 061
7.2.2	Type Certificate:	/
7.2.3	Number of blades:	2
7.2.4	Diameter:	1.88 m (74 in.)
7.2.5	Sense of Rotation:	/
7.2.6	Minimum Static RPM at sea level:	2300 RPM

8. Fluids:

8.1 Fuel: 80/87 minimum aviation grade gasoline or AVGAS 100 LL

8.2 Oil:
- Lycoming O.320.E:
  See Note 2
- Lycoming O.320.D2A:
  SAE40 < 5°C, SAE50 > 5°C

8.3 Coolant: Not Applicable

9. Fluid capacities:

9.1 Fuel: 2 structural wing tanks

Total capacity:

RALLYE 150 ST and 150 ST-D:
105 litres (27.74 US Gal) or 184 litres (48.61 US Gal)
Each tank: respectively 52.5 litres (13.87 US Gal) or 92 litres (24.30 US Gal)

RALLYE 150 T, 150 T-D, 150 SV and 150 SVS:
184 litres (48.61 US Gal)
Each tank: 92 litres (24.30 US Gal)

Total usable capacity:

RALLYE 150 ST and 150 ST-D:
96 litres (25.36 US Gal) or 170 litres (44.91 US Gal)
Each tank: respectively 48 litres (12.68 US Gal) or 85 litres (22.45 US Gal)

RALLYE 150 T, 150 T-D, 150 SV and 150 SVS:
170 litres (44.91 US Gal)
Each tank: 85 litres (22.45 US Gal)

9.2 Oil: Maximum capacity: 7.5 litres (7.93 qts)

Usable capacity: Refer to Airplane Flight Manual

9.3 Coolant system capacity: Not Applicable

10. Air Speeds: (Indicated Airspeeds) (see Section E, Note 4)

10.1.1 Normal Category	V_{NE} (Never Exceed speed):	250 km/h (135 KIAS)
	V_d (Design diving speed):	280 km/h (151 KIAS)
	V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
	V_A (Maneuvering speed):	193 km/h (104 KIAS)
	V_{FE} (Maximum Flap Extended):	160 km/h (86 KIAS)

10.1.2 Utility Category

V_{NE} (Never Exceed speed):	270 km/h (146 KIAS)
V_d (Design diving speed):	300 km/h (162 KIAS)
V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
V_A (Maneuvering speed):	193 km/h (104 KIAS)
or for RALLYE 150 T and T-D	210 km/h (113 KIAS)
V_{FE} (Maximum Flap Extended):	160 km/h (86 KIAS)

11. Maximum Operating Altitude: Refer to Airplane Flight Manual

12. Allweather Operations Capability: Day & night VFR
Flight in icing conditions is prohibited

13. Maximum Weights: (see Note 5)

Aircraft	RALLYE 150 ST, 150 ST-D, RALLYE 150 SV, 150 SVS	RALLYE 150 T & 150 T-D
Normal Category		
Maximum Takeoff	870 kg (1918 lbs)	/
Maximum Landing	870 kg (1918 lbs)	/
Utility Category		
Maneuvers	770 kg (1698 lbs) (Spinning)	950 kg (2094 lbs)

14. Centre of Gravity Range:

Aircraft	RALLYE 150 ST and 150 ST-D	RALLYE 150 SV and 150 SVS	RALLYE 150 T and 150 T-D
Utility category: Spinning authorised			
Weight	= 770 kg (1698 lbs)	= 770 kg (1698 lbs)	/
Forward Limit:			
- Aft of datum	0.17 m (6.69 in.)	0.17 m (6.69 in.)	/
- From engine firewall	0.829 m (32.64 in.)	0.829 m (32.64 in.)	/
	*	*	/
Aft limit:			
- Aft of datum	0.24 m (9.45 in.) 0.891 m (35.08 in.)		/ /

Aircraft	RALLYE 150 ST and 150 ST-D		RALLYE 150 SV and 150 SVS		RALLYE 150 T and 150 T-D	
Normal and Utility categories: Spinning prohibited						
Weight	< 745 kg (1642 lbs)	= 870 kg (1918 lbs)	< 745 kg (1642 lbs)	= 870 kg (1918 lbs)	< 745 kg (1642 lbs)	= 950 kg (2094 lbs)
Forward Limit:						
- Aft of datum	0.16 m (6.30 in.)	0.23 m (9.05 in.)	0.16 m (6.30 in.)	0.23 m (9.05 in.)	0.16 m (6.30 in.)	0.27 m (10.63 in.)
- From engine firewall	0.813 m (32.01 in.)	0.885 m (34.84 in.)	0.813 m (32.01 in.)	0.885 m (34.84 in.)	0.813 m (32.01 in.)	0.924 m (36.38 in.)
	*		*		*	
Aft limit:						
- Aft of datum	0.39 m (15.35 in.)					
- From engine firewall	1.047 m (41.22 in.)					

(*) Straight line variation between points given.

14.1.1 Fuel:
Aft of datum: at Station + 0.41 m (16.14 in.)
From firewall: at Station + 1.067 m (41.01 in.)

14.1.2 Oil in the sump:
RALLYE 150 ST, 150 ST-D, 150 T, 150 T-D:
Aft of datum: at Station - 1.15 m (45.26 in.)
From firewall: at Station - 0.493 m (19.41 in.)
RALLYE 150 SV, 150 SVS:
Aft of datum: at Station - 1.20 m (47.24 in.)
From firewall: at Station - 0.543 m (21.38 in.)

15. Datum:
Wing leading edge of reference chord located at 0.657 m (25.86 in.) aft of engine firewall
Reference chord length: 1.30 m (51.18 in.)

16. Control surface deflections:
All RALLYE 150, except variants 150 ST, 150 ST-D, 150 SV and 150 SVS:
Elevator: Up 25° ± 1°
Down 30° ± 1°
RALLYE 150 ST, 150 ST-D, 150 SV and 150 SVS:
Elevator: Up 22° ± 1°
Down 20° ± 1°
All:
Elevator tab: Up 30° ± 1°
(see Note 4)
Down 28° ± 1°

Rudder relative to fin:	Right	30° + 0° - 2°
	Left	30° + 0° - 2°
Ailerons relative to wing:	Up	17°30 ± 1°
	Down	13°30 ± 1°
Flaps relative to wing:	Up	0°
	Down	30° ± 1°

17. Levelling Means: Upper spar of horizontal frame (canopy rail)

18. Minimum Flight Crew: 1 (Pilot)

Aft of datum: at Station + 0.29 m (11.42 in.)
From firewall: at Station + 0.947 m (37.28 in.)

19. Maximum Passenger Seating Capacity: 3 (see Note 3)
One at front R.H. Station,
One at rear Station or two (with 2 seat belts)

Aft of datum:
Front seats: at + 0.29 m (11.42 in.)
Rear seat: at + 1.12 m (44.09 in.)
From firewall:
Front seats: at + 0.947 m (37.28 in.)
Rear seat: at + 1.777 m (69.96 in.)

20. Baggage/Cargo Compartments: RALLYE 150 ST, 150 ST-D, 150 SV and 150 SVS: 130 kg (287 lbs)

RALLYE 150 T and 150 ST-D: 140 kg (309 lbs)
No baggage/cargo allowed in spinning configuration for RALLYE 150 ST, 150 ST-D, 150 SV and 150 SVS (see Note 3)

Aft of datum: at + 1 to 1.12 m (39.37 to 44.09 in.)
From firewall: at + 1.657 to 1.777 m (65.24 to 69.96 in.)

21. Wheels and Tyres:

21.1.1 Nose landing gear:

Wheel:	Morane Saulnier
Tire:	RALLYE 150 ST, 150 ST-D, 150 T and 150 T-D: 330 x 130 RALLYE 150 SV and 150 SVS: 5.00-4 6 PR
Pressure:	1.4 bars (20.31 psi)

21.1.2 Main landing gear: Track: 2000 mm (78.74 in.)

	<u>All</u>			<u>RALLYE 150 T only</u>	
Wheels:	Cleveland				
Tires: Dimensions :	6.00-6.6 PR	15x6.006.4 PR		15x6.000.4 PR	
Brand :	/	Dunlop	Goodyear	Dunlop	Goodyear
Pressure:	1.5 bars (21.76 psi)	1.5 bars (21.76 psi)	1.8 bars (26.11 psi)	1.8 bars (26.11 psi)	2.1 bars (30.46 psi)

22. Serial Numbers Eligible: List available at SOCATA

C.IV. Operating and Service Instructions

1. Flight Manual:
   DGAC/EASA approved Pilot's Operating Handbook (POH) original issue or later revision.

2. Technical Manual:
   SOCATA Maintenance Manual at revision 10 or later revision

3. Repair Manual:
   SOCATA Repair Manual at revision 10 or later revision

4. Manual for Operation:
   N/A

5. Spare Parts Catalogue:
   SOCATA Spare Parts Catalogue at revision 12 or later revision

6. Table of Dimensions, Limits and Clearances:
   N/A

7. Instruments and aggregates:
   N/A

C.V. Notes

1) The RALLYE 150 SV and 150 SVS have been deliberately limited respectively to 2600 RPM and 2500 RPM by the manufacturer.
   Specific limitation for operation in Germany:
   The RALLYE 150 T-D and 150 ST-D are limited for maximum continuous operation to 2600 RPM and during takeoff.

2)

below	- 12°C	SAE 20		SAE 20 W 30
from	- 12°C to + 21°C	SAE 30		SAE 40 or 20 W 30
from	- 1°C to + 32°C	SAE 40	or	SAE 40
above	+ 15°C	SAE 50		SAE 40 or SAE 50
		Monograde oils		Multigrades oils

3) - The rear seat can be occupied by two people provided that the aircraft is equipped with a 4th seat belt and that the total passengers weight on the rear seat is below the maximum authorised weight on that seat.
Passenger(s) are allowed on the rear seat if the front passenger seat is already occupied, preferably by the passenger with the highest weight.
For RALLYE 150 ST, 150 ST-D, 150 SV and 150 SVS:
- In spinning configuration, remove pads on rear seat and no baggage allowed.

4) 20° ± 1° for aircraft equipped with Mod n° 23.
Elevator automatic tab: automaticity ratio: 100 % for RALLYE 150 T, 150 T-D, 150 ST and 150 ST-D.

5) The aircraft empty weight must include unusable fuel quantity:
- RALLYE 150 T and 150 T-D: 535 kg (1179 lbs)
- RALLYE 150 ST and 150 ST-D: 525 kg (1157 lbs)
- RALLYE 150 SV and 150 SVS: 540 kg (1190 lbs)

SECTION D: MODEL RALLYE 180 TYPE DESIGN

D.I. General

1. Data Sheet No.:	EASA.A.377 - Issue 01 Date : 12 October 2010
2. a) Type:	RALLYE 180
b) Model:	RALLYE 180 T
c) Variant:	RALLYE 180 T-D, 180 TS
3. Airworthiness Category:	Utility Category (see Section E, Note 2)
4. Type Certificate Holder:	SOCATA 65921 TARBES Cedex 9 FRANCE
5. Manufacturer:	SOCATA 65921 TARBES Cedex 9 FRANCE
6. Certification Application Date:	January 1977
7. National Certifying Authority	D.G.A.C. (Direction Générale de l'Aviation Civile)
8. National Authority Type Certificate Date:	RALLYE 180 T: 15-September-1977 RALLYE 180 T-D: 25-October-1977 RALLYE 180 TS: 12-December-1978
9. National Authority Type Certificate:	DGAC-France Type Certificate No.13 The present EASA Type Certificate replaces DGAC-France Type Certificate No.13

D.II. EASA Certification Basis

1. Reference Date for determining the applicable requirements:	January 1977 October 1978 for RALLYE 180 TS
2. Airworthiness Requirements:	French Norme AIR 2052 - Ed. Novembre 1959
3…Special Conditions:	None
4. Exemptions:	None
5. Deviations:	None
6. Equivalent Safety Findings:	None
7. Requirements elected to comply:	None

8. Environmental Standards: CS 36 (ICAO Annex 16, volume I, as applicable)
9. Additional National Requirements: None
10. (Reserved) /

D.III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Rallye 180 T Airplane main drawing No. 886-00.0.015
   Rallye 180 TS Airplane main drawing No. 886-00.0.025
2. Description: Single-engine, all-metal, four seats, low-wing airplane, conventional tail, fixed tricycle landing gear.
3. Equipment: The basic required equipment as prescribed in the applicable airworthiness requirements (see certification basis) must be installed in the aircraft for airworthiness certification.
   The applicable DGAC/EASA approved Flight Manual is required for all operations. Included within the Flight Manual (if necessary) is information in the form of supplements, which cover installation of optional systems and equipment that are required for safe operation of the aircraft.
4. Dimensions:

Span	9.740 m (31.95 ft) for large wing tips,
	9.600 m (31.50 ft) for small wing tips
Length	7.240 m (23.75 ft)
Height	2.800 m (9.19 ft)
Wing area	12.28 m^2 (132.08 sq.ft)

5. Engine:
   - 5.1.1 Model: Lycoming O.360.A
   - 5.1.2 Type Certificate: /
   - 5.1.3 Limitations:
     - RALLYE 180 T (see Note 1):
       All operations: 2700 RPM (135 kW – 180 HP) (see Note 7)
     - RALLYE 180 TS:
       All operations: 2500 RPM (123 kW – 165 HP)
6. Load factors:

Utility Category,	Flaps up:	+ 4.4
		- 1.8
Normal Category,	Flaps up:	+ 3.8
		- 1.5

7. Propeller:

7.1 Model:	Sensenich 74 EM8 054
7.2 Type Certificate:	/
7.3 Number of blades:	2
7.4 Diameter:	1.93 m (75.98 in.)
7.5 Sense of Rotation:	/
7.6 Minimum Static RPM at sea level:	2300 RPM (see Note 2)

8. Fluids:

8.1 Fuel:	91/96 minimum aviation grade gasoline or AVGAS 100 LL
8.2 Oil:	See Note 3
8.3 Coolant:	Not Applicable

9. Fluid capacities:

9.1 Fuel:	2 structural wing tanks Total capacity: 184 litres (48.61 US Gal) Each tank: 92 litres (24.30 US Gal) Total usable capacity: 170 litres (44.91 US Gal) Each tank: 85 litres (22.45 US Gal)
9.2 Oil:	Maximum capacity: 7.5 litres (7.93 qts) Usable capacity: Refer to Airplane Flight Manual
9.3 Coolant system capacity:	Not Applicable

10. Air Speeds: (Indicated Airspeeds) (see Section E, Note 4)

V_{NE} (Never Exceed speed):	270 km/h (146 KIAS)
V_d (Design diving speed):	300 km/h (162 KIAS)
V_{NO} (Maximum structural cruising speed):	200 km/h (108 KIAS)
V_A (Maneuvering speed):	210 km/h (113 KIAS)
V_{FE} (Maximum Flap Extended):	160 km/h (86 KIAS)

11. Maximum Operating Altitude: Refer to Airplane Flight Manual

12. Allweather Operations Capability: Day & night VFR
Flight in icing conditions is prohibited

13. Maximum Weights: (see Note 6)

Maximum Takeoff:	950 kg (2094 lbs)
Maximum Landing:	950 kg (2094 lbs)
Maneuvers:	950 kg (2094 lbs)

14. Centre of Gravity Range:

Forward Limit:

0.16 m (6.30 in.) aft of datum *
0.813 m (32.01 in.) from firewall *

(*) under 745 kg (1642 lbs)

Intermediate limit:

0.27 m (10.63 in.) aft of datum *
0.923 m (36.34 in.) from firewall *

(*) at 950 kg (2094 lbs)

Straight line variation between points given.

Aft Limit:

0.39 m (15.35 in.) aft of datum
1.047 m (41.22 in.) from firewall

14.1.1 Fuel: Aft of datum: at Station + 0.41 m (16.14 in.)
From firewall: at Station + 1.067 m (41.01 in.)

14.1.2 Oil in the sump: Aft of datum: at Station - 1.15 m (45.26 in.)
From firewall: at Station - 0.493 m (19.41 in.)

15. Datum: Wing leading edge of reference chord located at 0.657 m (25.86 in.) aft of engine firewall

Reference chord length: 1.30 m (51.18 in.)

16. Control surface deflections:

Elevator:	Up	25° ± 1°
	Down	30° ± 1°
Elevator tab:	Up	30° ± 1° (see Note 5)
	Down	28° ± 1°
Rudder relative to fin:	Right	30° + 0° - 2°
	Left	30° + 0° - 2°
Ailerons relative to wing:	Up	17°30 ± 1°
	Down	13°30 ± 1°
Flaps relative to wing:	Up	0°
	Down	30° ± 1°

17. Levelling Means: Upper spar of horizontal frame (canopy rail)

18. Minimum Flight Crew: 1 (Pilot)

Aft of datum: at Station + 0.29 m (11.42 in.)

From firewall: at Station + 0.947 m (37.28 in.)

19. Maximum Passenger Seating Capacity: 4 (see Note 4)
One at front R.H. Station,
Two at rear Station

Aft of datum:
Front seats: at + 0.29 m (11.42 in.)
Rear seat: at + 1.12 m (44.09 in.)

From firewall:
Front seats: at + 0.947 m (37.28 in.)
Rear seat: at + 1.777 m (69.96 in.)

20. Baggage/Cargo Compartments: 140 kg (308 lbs)

Aft of datum: at + 1 to 1.12 m (39.37 to 44.09 in.)
From firewall: at + 1.657 to 1.777 m (65.24 to 69.96 in.)

21. Wheels and Tyres:

21.1.1 Nose landing gear:

Wheel:	Morane Saulnier
Tire:	5.00-4 6 PR
Pressure:	1.4 bars (20.31 psi)

21.1.2 Main landing gear:

Track:	2000 mm (78.74 in.)
Wheels:	Cleveland
Tires:	6.00-6.6 PR
or	15x6.006.4 PR (Dunlop or Goodyear tires)
Pressure:	1.5 bars (21.76 psi) for Cleveland and Dunlop tires 1.8 bars (26.11 psi) for Goodyear tires

22. Serial Numbers Eligible: List available at SOCATA

D.IV. Operating and Service Instructions

1. Flight Manual:
   DGAC/EASA approved Pilot's Operating Handbook (POH) original issue or later revision.

2. Technical Manual:
   SOCATA Maintenance Manual at revision 10 or later revision

3. Repair Manual:
   SOCATA Repair Manual at revision 10 or later revision

4. Manual for Operation:
   N/A

5. Spare Parts Catalogue:
   SOCATA Spare Parts Catalogue at revision 12 or later revision

6. Table of Dimensions, Limits and Clearances:
   N/A

7. Instruments and aggregates:
   N/A

D.V. Notes

1) Specific limitation for operation in Germany:
   The RALLYE 180 T-D is limited for maximum continuous operation to 2575 RPM.

2) Do not continuously operate between 2150 and 2350 RPM.

3)

below	- 12°C	SAE 20		SAE 20 W 30
from	- 12°C to + 21°C	SAE 30		SAE 40 or 20 W 30
from	- 1°C to + 32°C	SAE 40	or	SAE 40
above	+ 15°C	SAE 50		SAE 40 or SAE 50
		Monograde oils		Multigrades oils

4) Passenger(s) are allowed on the rear seat if the front passenger seat is already occupied, preferably by the passenger with the highest weight.

5) 20° ± 1° for aircraft equipped with Mod n° 23.
   Elevator automatic tab: automaticity ratio: 100 % for RALLYE 180 T and 180 T-D.

6) The aircraft empty weight must include unusable fuel quantity: 550 kg (1212 lbs).

7) Exhaust pipe Thielmann (opt. 278). Refer to AFM Section 5 "Noise limitation".

SECTION E: GENERAL NOTES

Note 1: Design differences between models:

- MS 881 is identical to MS 880 except for engine and fuel tanks.
- MS 885 is identical to MS 880 except for engine, automatic elevator tab, fuel tanks, miscellaneous equipment.
- MS 886 is identical to MS 885 except for engine.
- MS 883 is identical to MS 880 except for engine, reinforced nose landing gear and miscellaneous equipment.
- MS 884 is identical to MS 880 except for engine and miscellaneous equipment.
- MS 887 is identical to MS 880 except for engine, re-enforced nose landing gear and miscellaneous equipment.
- RALLYE 100 S and 100 S-D are two-seater airplane and are identical to MS 880 except for large rudder, modified elevator deflection, local structural reinforcements and miscellaneous equipment.
- RALLYE 100 ST and 100 ST-D are identical to RALLYE 100 S and 100 S-D plus rear seat.
- RALLYE 150 ST and 150 ST-D are identical to RALLYE 100 ST and 100 ST-D except for engine and elevator tabs (automatic tab on the left side –as for MS 892 (refer to TCDS A.379)- and controlled tab on the right side).
- RALLYE 150 T and 150 T-D are identical to RALLYE 100 ST and 100 ST-D except for engine, heavy airframe and associated wing, landing gear, elevator, elevator tabs (as for RALLYE 150 ST), elevator deflection and fuel tanks.
- RALLYE 150 SV is identical to RALLYE 150 ST except for engine and instrument panel.
- RALLYE 150 SVS is identical to RALLYE 150 SV except for Thielmann round shaped exhaust pipe and miscellaneous equipment (tachometer, engine placards and engine monitoring).
- RALLYE 180 T and 180 T-D are identical to RALLYE 150 T except for engine, battery installed in rear fuselage section (near rear seat) and fuel tanks.
- RALLYE 180 TS is identical to RALLYE 180 T except for Thielmann oval shaped exhaust pipe and miscellaneous equipment (tachometer, engine placards and engine monitoring).
- RALLYE 110 ST is identical to RALLYE 100 ST except for engine, instrument panel, miscellaneous equipment and modified rear surfaces (identical to RALLYE 150 ST) (elevator setting and deflection).

Note 2: (a) Normal Category: all aerobatic maneuvers are **prohibited**, spinning included.

(b) Utility Category:

- The following maneuvers are **authorized** with the following initial speeds (Vi):

  Climb zoom: Vi = 240 km/h (130 kt)
  Lazy heights: Vi = 220 km/h (119 kt)
  High bank turns (60 °): Vi = 175 km/h (94.5 kt)
  for Rallye 150 T and 150 T-D, 180 T and 180 T-D,
  Vi = 170 km/h (92 kt)
  for other models.

  Stalls

- Inverted flight is **prohibited**.
- Spinning is **forbidden <u>except</u>** for the following models and conditions:

RALLYE 100 S and 100 S-D	750 kg max. (1653 lbs)
RALLYE 100 ST and 100 ST-D	750 kg max. (1653 lbs)
RALLYE 150 ST and 150 ST-D	770 kg max. (1698 lbs)
RALLYE 150 SV and 150 SVS	770 kg max. (1698 lbs)
RALLYE 110 ST	750 kg max. (1653 lbs)

  Vi = 100 km/h (54 kt) for all models,

  No passenger or baggage or cargo allowed on the rear seat.

Note 3: Glider or banderole towing is authorized for the following models and associated limitations:

Models:

- MS 885 and MS 886,
- RALLYE 150 ST, 150 ST-D, 150 T, 150 T-D,
- RALLYE 180 T, 180 T-D, 180 T-S,
- RALLYE 150 SV and 150 SVS.

Limitations:

- Maximum Take off weight:
  - 760 kg (1675 lbs) for MS 885, MS 886 and RALLYE 150 models,
  - 780 kg (1719 lbs) for RALLYE 180 models.
- Towed glider maximum takeoff weight:
  - 500 kg (1102 lbs) for MS 885, MS 886, RALLYE 150 models,
  - 650 kg (1433 lbs) for RALLYE 180 models.
- Towed banderole:
  - 100CxS drag (m2/ft2) coefficient must be equal or below:
    120 (1291) for MS 885, MS 886 and RALLYE 150 models,
    180 (1937) for RALLYE 180 models.

- Mandatory propeller configurations:
  - Sensenich 74DM6 056 for RALLYE 150 ST, 150 ST-D, 150 T, 150 T-D
  - Mac Cauley 7652 for MS 885
  - Mac Cauley 7650 or 7652 for MS 886
  - Sensenich 76EM8 054 or 056 for RALLYE 180 models
  - Sensenich 74DM6 061 for RALLYE 150 SV and 150 SVS
- Mandatory engine instrument:
  - Cylinder head thermometer on cylinder No. 3 for MS 885 only.
- Minimum speed with towed glider:
  - Vi = 90 km/h (48.6 kt) for MS 885, MS 886 and RALLYE 150 models
  - Vi = 100-110 km/h (54-59 kt) for RALLYE 180 models
- Towing speed envelope:
  - 90 km/h (48.6 kt) < Vi < 110 km/h (59 kt) (depending on glider limitations) for MS 885, MS 886 and RALLYE 150 models.
  - 100 km/h (54 kt) < Vi < 120 km/h (65 kt) (depending on glider limitations) for RALLYE 180 models.
- Placard to be placed on instruments panel in clear view of the pilot:
  - French placard:

Remorquage planeurs ou banderoles

- Remorquage avec hélices:
  - Sensenich 74DM6 056 (R 150 ST, 150 ST-D, 150 T et 150 T-D)
  - Mac Cauley 7652 (MS 885)
  - Mac Cauley 7650 ou 7652 (MS 886)
  - Sensenich 76EM8 054 ou 056 (R 180 T, 180 T-D et 180 T-S)
  - Sensenich 74DM6 061 (R 150 SV et 150 SVS)
- Masse maximale au décollage: 760 kg (780 kg Rallye 180 T, 180 T-D et 180 TS)
- Vitesse minimale de remorquage: 90 km/h (100-110 km/h Rallye 180 T, 180 T-D et 180 TS)
- Vitesse optimale de montée: 100-105 km/h (volets 0°) (110-115 km/h Rallye 180 T, 180 T-D et 180 TS)
- Masse maximale du planeur remorqué: 500 kg (650 kg Rallye 180 T, 180 T-D et 180 TS)
- 100CxS maximal des banderoles: 120 (180 Rallye 180 T, 180 T-D et 180 TS)

- English placard:

Glider or banderole towing

- Towing with propellers:
  - Sensenich 74DM6 056 (R 150 ST, 150 ST-D, 150 T et 150 T-D)
  - Mac Cauley 7652 (MS 885)
  - Mac Cauley 7650 ou 7652 (MS 886)
  - Sensenich 76EM8 054 ou 056 (R 180 T, 180 T-D et 180 T-S)
  - Sensenich 74DM6 061 (R 150 SV et 150 SVS)
- Maximum takeoff weight: 760 kg (1675 lbs)
  [780 kg (1719 lbs) Rallye 180 T, 180 T-D and 180 TS]
- Minimum towing speed: 90 km/h
  [100-110 km/h (54-59 kt) Rallye 180 T, 180 T-D and 180 TS]
- Optimal climbing speed: 100-105 km/h (54-57 kt) (flaps 0°)
  [110-115 km/h (59-62 kt) Rallye 180 T, 180 T-D, 180 TS]
- Towed glider maximum weight: 500 kg (1102 lbs)
  [650 kg (1433 lbs) Rallye 180 T, 180 T-D and 180 TS]
- Maximum 100CxS for banderoles: 120
  (180 Rallye 180 T, 180 T-D et 180 TS)

Note 4: Lateral wind limit: 35 km/h (20 kts).

ADMINISTRATIVE SECTION

I. Acronyms N/A

II. Type Certificate Holder Record

1961 to 1963 Société MORANE-SAULNIER
5, rue Volta
PUTEAUX (Seine)
FRANCE

1963 to 1979 Société d'Exploitation des Etablissements MORANE-SAULNIER
46, Avenue Kléber
PARIS 16è
FRANCE

1979 to 2000: Société de Construction d'Avions de Tourisme et d'Affaires
"S.O.C.A.T.A." - Groupe AEROSPATIALE
Boîte Postale n°930
65009 TARBES
FRANCE

2000 to 2009: EADS SOCATA
65921 TARBES Cedex 9
FRANCE

Since 2009: SOCATA
65921 TARBES Cedex 9
FRANCE

III. Change Record

Issue	**Date**	**Changes**	**TC Issue No. & Date**
Issue 01	12 October 2010	Transfer from the DGAC TCDS No. 49 issue 13 dated January 1979 to the EASA TCDS format.	12 October 2010