AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EA-8813

Type Certificate Holder:

GULFSTREAM AEROSPACE LP (GALP)
C/o Israel Aircraft Industries, LTD., Department 4199
Ben Gurion International Airport - 70.100
ISRAEL

EA-8813-03
Sheet 01

GULFSTREAM
AEROSPACE LP.

1125 WESTWIND ASTRA
ASTRA SPX
GULFSTREAM G100
GULFSTREAM G150

June 2011

This data sheet, which is part of Type Certificate No. 8813, 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 1125 Westwind Astra (Transport Category), approved 09 December 1988.

ENGINE

Two Honeywell (formerly AlliedSignal and Garrett Turbine Engine Company) TFE 731-3A-200G or TFE 731-3C200G per ANAC Type Certificate Data Sheet EM-8213

FUEL

Conforming to Honeywell Specifications
EMS 53111 (Jet A type), EMS 53112 (Jet A-1 & JP-8 types),
EMS 53116 (JP-5 type) and EMS 53113 (Jet B & JP-4 types) as per Limitations Section of approved AFM.
Two Garrett Turbine Engine Company fuel computers P/N 2101144-5

ENGINE LIMITS

Static thrust at sea level, kg (lb)

Maximum continuous	1 678 (3 700)
Take-off (5 minutes)	1 678 (3 700)

Maximum continuous permissible engine operating speeds for the engine rotors, % RPM (RPM)

LOW Pressure Rotor (N1)	101.5 (21 000)
High Pressure Rotor (N2)	100.0 (29 692)

Maximum Interstate Turbine Temperature, (ITT) ºC:

- Maximum Continuous	885
- Take-off (5 minutes)	907
- During Starting	907

Maximum Oil Inlet Temperature ºC	Up to 9144m.	Above 9144m.
Fan Gearbox	127	140
Fan Gearbox Transient (2 minutes) minutes Maximum	149	149

Maximum Oil Inlet Temperature ºC	Up to 9144m	Above 9144m.
Accessory Gearbox	149	157

Oil Pressure (PSIG)

Normal Operating	38 to 46

ENGINE LIMITS (cont.)

At Idle, Minimum	25
Maximum	55

Maximum bleed and power extraction:
See Garrett Turbine Engine Company Installation Manual IN-8001.

OIL

Conforming to Honeywell Specification EMS 53110 type 2.

AIRSPEED LIMITS (CAS)

	1125 BASIC	*1125 IW
Maximum operating (V_{mo}):7 620 m (225 000 ft).	360 KCAS	
Maximum operating (M_{mo}): 7 620 m (225 000 ft).	0.85 M	
M_{mo} with Autopilot disengaged above 6 858 m (22 500 ft).	0.81 M	
V_{mo} (Max Operating) S.L. to 8 035 m (26 360 ft).		350 KCAS
M_{mo} above 8 035 m (26 360 ft).		0.85 M
M_{mo} With Autopilot disengaged above 7 354 m (24 130 ft).		0.81 M
- V_a (Maneuvering)		
-At 10 659.42 Kg (23500 lb)		
SL to 3 048 m (10000 ft).	233 KCAS	
At 11 277.6 m (37 000 ft).	280 KCAS	
V_a varies linearly from 233 KCAS at 3 048 m (10 000 ft) to 280 KCAS at 11 277.6 m (37 000 ft)		
-At 11181 Kg (24 650 lb)		
SL to 3 048 m (10000 ft).		233 KCAS
At 11 277.6 m (37 000 ft).		280 KCAS
Va varies linearly from 233 KCAS at 3 048 m (10 000 ft) to 280 KCAS at 11 277m (37 000 ft)		
- At 8 164.66 Kg (18 000 lb)		
SL to 6096m (20 000 ft)	204 KCAS	204 KCAS
At 12 496.8 m (41 000 ft)	250 KCAS	250 KCAS
Va varies linearly from 204 KCAS at 6 096 m (2 0000 ft) to 250 KCAS at 12 496.8 m (41 000 ft)		
Above 12 496.8 m (41 000 ft)	0.85 M	0.85 M
- Vfe (Flaps 12º and slats 25º)	250 KCAS	250 KCAS
- Vfe (Flaps 20º and slats 25º)	225 KCAS	225 KCAS
- Vfe (Flaps Landing 40º and slats 25º)	180 KCAS	180 KCAS
- Vsb (Airbrakes Operation) No speed limitation		
- Vle and Vlo (L/G Extension and Operating Speed)	180 KCAS	180 KCAS
- Vmca (Flaps 12º and 20º)	92 KCAS	92 KCAS
- Vmcg (Flaps 12º and 20º)	88 KCAS	88 KCAS
- Tire Limit Ground Speed: KTS (MPH)	182 KTS (210)	182 KTS (210)

*See nota 4

CERTIFICATION BASIS

Based on CAA letter A15/001-1156 dated November 04, 1984 (IAI Report BASIS000/831788) :
- RBHA/14 CFR Part 25, effective 01 February 1965, including Amendments 25-1 Through 25-54.
- RBHA/14 SFAR 27, effective 01 February 1984, including amendments 27- 1 through 27-5.
- RBHA/14 CFR Part 36, effective 01 December 1969, including Amendments 36-1 through 36-12.
- Special conditions for operation up to 1143 m (45 000 ft), per FAA S.C. N° 25-ANM-5.
- Special conditions for flight in turbulent air.
- Exemption from 14 CFR Part 25.1305(d) (3) Rotor Unbalance Indication.
- Compliance with ditching structural provisions of 14 CFR Part 25.80l (b) through (e) and 25.807(d) has been established.

II – Model Astra SPX (Transport Category), Approved 04 February1998.

The Model Astra SPX is a derivative of the Model 1125 Westwind Astra. The changes include: installation of Honeywell (formerlyAlliedSignal) TFE 731-40R-200G engines; installation of winglets and minor structural modifications to the wing; installation of Collins pro-line 4 avionics; and a new Airplane Flight Manual to take credit for the aerodynamic and performance improvements.

III – Model Gulfstream G100 (Transport Category), Approved 04 February1998.

The GULFSTREAM G100 is only a name change from the former ASTRA SPX applicable to aircraft serial number 137 and subsequent. Model GULFSTREAM G100 is identical to model ASTRA SPX except for the model designation.

ENGINE

Two Honeywell Engines (formerly AlliedSignal) TFE 731-40R-200G per ANAC Type Certificate Data Sheet EM-9609

FUEL

Conforming to AlliedSignal Engines Specifications EMS 53111 (Jet A type), EMS 53112 (Jet A-1 & JP-8 types), EMS 53116 (JP-5 type) and EMS 53113 (Jet B & JP-4 types) as per Limitations Section of approved AFM.

ENGINE LIMITS

Static thrust at sea level, Kg/lb		
Maximum continuous	1 928/4 250	
Take-off (5 minutes)	1 928/4 250	
Maximum continuous permissible engine operating speeds for the engine rotors, % RPM (RPM)		
LOW Pressure Rotor (N1)	100.0 (21 000)	
High Pressure Rotor (N2)	101.0 (31 485)	
Maximum Interstase Turbine Temperature, (ITT) ºC:		
- Maximum Continuous	991	
- Take-off (5 minutes)	991	
- Take-off (5 minutes) APR ON	1 013	
- During Starting	991	
Maximum Oil Inlet Temperature ºC	Up to 9 144m	Above 9 144m.
Fan Gearbox	127	140
Fan Gearbox Transient (2 minutes)	149	149
Maximum Oil Inlet Temperature ºC	Up to 9 144m	Above 9 144m.
Accessory Gearbox	149	157
Oil Pressure (PSIG)		
Normal Operating	65 to 80	
At Idle, Minimum	50	
Maximum	100	

ENGINE LIMITS (Cont.)

Maximum bleed and power extraction:
See AlliedSignal Engine Company Installation Manual IM-8010.

OIL

Conforming to AlliedSignal Engines Specification EMS 53110, Type II.

AIRSPEED LIMITS (CAS)

Maximum operating (V_{mo}): SL to 8 412.48 m	350 KCAS
Maximum operating (M_{mo}): above 8 412.48 m	0.87 M
M_{mo} with Autopilot disengaged above 7 3900 m	0.81 M
-V_a (Maneuvering)	
At 11181.05 Kg:	
SL to 3 048 m.	233 KCAS
At 11 278 m	280 KCAS
V_a varies linearly from 233 KCAS at 3 048 m to 280 KCAS at 11 277.6 m	
At 164.66 Kg:	
SL to 6 096 m	204 KCAS
At 12 496.8 m	250 KCAS
V_a varies linearly from 204 KCAS at 6 096m to 250 KCAS at 12 497 m	
Above 12 497 m	0.87 M
-Vfe (Flaps 12º and slats 25º)	250 KCAS
-Vfe (Flaps 20º and slats 25º)	225 KCAS
- Vfe (Flaps Landing 40º and slats 25º)	180 KCAS
- Vsb (Airbrakes Operation) No speed limitation	
- Vle and Vlo (L/G Extension and Operating Speed)	180 KCAS
- Vmca (Flaps 12º and 20º)	100 KCAS
- Vmcg (Flaps 12º and 20º)	100 KCAS
- Tire Limit Ground Speed: KTS (MPH)	182 KTS (210)

CERTIFICATION BASIS

Based on CAAI Issue Paper G-1 dated 12 April 1995 (IAI Report 25W000/950561):
- RBHA/14 CFR Part 25, effective 01 February 1965, including Amendments 25-1 Through 25-54, except for Subpart B, Flight Sections 25.21, thru 25.255 and Subpart E, Powerplant, Sections 25.901 through 25.945, and 25.1011 through 25.1207, where Amendments 25-1 thru 25-80 have been applied. In addition, the following specific regulations including Amendments 25-1 through 25-80 have been applied to the changes or the areas affected by the change per the derivative aircraft policy:

Section	Title
25.305	Strength and deformation
25.307	Proof of structure
25.571	Damage tolerance & fatigue evaluation of structure
25.625	Fitting factors
25.629	Aeroelastic stability requirements
25.961	Fuel system hot weather operation
25.994	Fuel system components
25.997	Fuel strainer or filter
25.1001	Fuel jettisoning system
25.1305	Powerplant instruments
25.1307	Miscellaneous equipment
25.1316	System lightning protection
25.1521	Powerplant limitations
25.1551	Oil quantity indication

CERTIFICATION BASIS (Cont.)

In addition, section 25.729 Amendment 25-75 has been applied in lieu of the equivalent safety finding made for this section on the IAI Model 1125 Astra.

- RBHA/14 SFAR 27, effective 01 February 1984, including amendments 27-1 through 27-5.
- RBHA//14 CFR Part 34, effective 10 Aug.1990, including amendments effective on the date of TC.
- RBHA/14 CFR Part 36, effective 01 December 1969, including Amendments 36-1 through 36-12.
- Special conditions for operation up to 45000 feet, per FAA S.C. N° 25- ANM-5.
- Special condition FAA N° 25-ANM-5 for operation to 45000 feet and for the Automatic Takeoff Thrust Control System (ATTCS). Note: Compliance with section 25.904, as promulgated by Amendment 25-62, was required for the ATTCS in lieu of the Special condition FAA N° 25-ANM-5.
- Special condition FAA N°. 25-ANM-104 for High Intensity Radiated Fields (HIRF)
- Compliance with ditching structural provisions of RBHA/14 CFR Part 25.801(b) through (e) and 25.807(d) has been established.
- Equivalent Safety: RBHA/14 CFR Part 25.813(a) and 25.813(e) Emergency Exit Access, Lavatory Door (Mod 6016).
- Equivalent Safety: RBHA/14 CFR Part 25.1305 Powerplant Instruments for APU (Mod 6425).
- Equivalent Safety: RBHA/14 CFR Part 25.1203(a) Fire Detector in Tail Pipe area of engine.

DATA PERTINENT FOR THE MODELS 1125 IW, ASTRA SPX & G100:

CG RANGE
(Landing gear extended)

Approved center of gravity range is as show in the following table: (Sear extension and retraction moment is negligible.)

1125 Basic	*1125 IW, Astra SPX & G100
5488 Kg (12100 lb) - 39.00% MAC	5488 Kg (12100 lb) - 39.00% MAC
5488 Kg (12100 lb) - 36.40% MAC	5488 Kg (12100 lb) - 36.40% MAC
5851 Kg (12900 lb) - 22.60% MAC	5851 Kg (12900 lb) - 19.60% MAC
7484 Kg (16500 lb) - 22.60% MAC	7484 Kg (16500 lb) - 19.60% MAC
9639 Kg (21250 lb) - 25.00% MAC	11249 Kg (24800 lb) - 25.00% MAC
10727 Kg (23650 lb) - 32.39% MAC	10727 Kg (23650 lb) - 32.97% MAC
10727 Kg (23650 lb) - 39.00% MAC	11249 Kg (24800 lb) - 39.00% MAC

Linear Variation Between Points *See nota 4

DATUM

Fuselage Station 0 is located 2357 mm (92.78 in) forward of AFT airstairs opening frame.

LEVELING MEANS

Longitudinally: Place level on either seat rail at fuselage station 20 parallel to A/C centerline.
Laterally: Place level or seat rails at fuselage station 200 at 90º to A/C centerline.

MEAN AERODYNAMIC CHORD

2191 mm (86.26 in) with leading edge at Fuselage Station 233.94.

MAXIMUM WEIGHT

	1125 Basic	1125 IW, Astra SPX & G100
Takeoff:	10659 Kg (23500 Ib)	11181 kg (24650 lb)
Landing:	9389 Kg (20700 Ib)	9389 kg (20700 lb)
Zero Fruel:	7257 Kg (16000 Ib)	7711 kg (17000 lb)
Ramp:	10727 Kg (23650 Ib)	11249 kg(24800 lb)

MINIMUM CREW

2 (Pilot and Copilot)

MAXIMUM PASSENGERS

Nine (see Note 5)

MAXIMUM BAGGAGE

Central Tank Extension (CTE) STATUS:	Kg/lb	ARM (mm/in)
CTE installed (full or empty)	167.83/ 370	9 093 / 358
CTE not installed	98.95/11008	890 / 350

FUEL CAPACITY

Density: 6.7 lb/ U.S.Gallon	IH wing tank	Central Tank without CTE	Central Tank with CTE	RH wing tank
Total/Usable Fuel (Kg/lb)	878.15/ 1936 (870.90/ 1920)	2203.10/ 4857 (2200.83/ 4852)	2508.37/ 5530 (2506.10/ 5525)	878.15/ 1936 (870.90/ 1920)
Arm mm (in)	6 584.9 (256.1)	7 073.9 (278.5)	7 246.6 (285.3)	6 504.9 (256.1)
Unusable Fuel (Kg/lb)	7.257/16	2.268/5	2.268/5	7.257/16
Arm mm (in)	6007.1 (236.5)	5803.9 (228.5)	5803.9 (228.5)	6007.1 (236.5)

See Note 1 for data on Fuel System.

OIL CAPACITY

(Density: 8 lb / U.S.Gallon)	TOTAL	USABLE	ARM (mm/inches)
2 Engine Reservoirs Total, Kg/lb.	14.51/32	3.63/8	1 0007.6 / 394

See Note 1 for Data on oil System.

MAXIMUM OPERATING ALTITUDE

13716 m (45000 ft).

OTHER OPERATING LIMITATIONS

Aircraft shall be operated according to operating limitations specified in approved flight manual.

CONTROL SURFACE MOVEMENTS

Surface	Travel (at trailing edge)		Tolerance
Aileron	Up	15º	+0º -30'
	Down	15º	+0º -45'
Aileron Trim	Up	5º	±1º
	Down	5º	
Rudder	Left	22º	±30'
	Right	22º	
Rudder Trim Tab	Left	11º 30'	+2º -1º
	Right	11º 30'	
Elevator	Up	22º	±30'
	Down	12º	

CONTROL SURFACE MOVEMENTS (Cont.)

Elevator Gear Tab	Up Down	4° 30' 9º 30'	±30' ±15'
Stabilizer Trim (Leading Edge)	Up Down	1º 12º	±15' ±30'
Airbrakes	Up	20º	±1º
Slats	Down	25	+1º -2º
Flaps	Max Down	40º	+1º -1º. 30'

SERIAL NUMBER ELIGIBLE

Model 1125 Westwind Astra and 1125 IW - S/N 001, 002, 004 and Subs.
Model Astra SPX – S/N 073, 079 thru 145
Model Gulfstream G100 – S/N 137 and Subs.

IMPORT ELIGIBILITY

A Brazilian Airworthiness Certificate may be issued on the basis of a Export Certificate of Airworthiness signed by a representative of a local export Civil Aviation Authority containing the following statement: "The airplane covered by this certificate bas been examined, tested and found to conform to the type design approved under ANAC Type Certificate No. 8813, and to be in condition for safe operation".

REQUIRED EQUIPMENT

The basic required equipment, as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the airplane for certification.
Refer to: IAI Model 1125 Master Equipment List Report Number 25W100/841717.
Model Astra SPX and Gulfstream 100 – Master Equipment List Report No. 25W000/950560.

IV – <u>Model Gulfstream G150 (Transport Category),</u> Approved 30 June 2011.

The "Gulfstream G150" is a derivative model of the former "Gulfstream G100". The changes include:
- A 5.5% increase of maximum takeoff weight
- A 0.3048 m (12 inch) increase in the passenger cabin width
-A 0.4064 m (16 inch) fuselage "Plug" aft of rear pressure bulkhead
- A modified cockpit and nose section with enhanced pilot accommodation and visibility
- COLLINS PROLINE 21 avionics in lieu of the COLLINS PROLINE 4
- Modification of the Engine Electronic Control (EEC) to achieve an increase of up to 6% in thrust
- Systems adaptations associated with the aforementioned modifications

ENGINES

2 Honeywell (formerly Allied Signal) TFE 731-40AR-200G per ANAC Type Certificate Data Sheet EM-9609

FUEL

Conforming to Honeywell Specifications EMS 53111 (Jet A type), EMS 53112 (Jet A-1 & JP-8 types), EMS 53116 (JP-5 type) and EMS 53113 (Jet B & JP-4 types) as per Limitations Section of approved AFM.

OIL

Conforming to Honeywell Specification EMS 53110, Type 2.

ENGINE LIMITS

Static Thrust at Sea Level	Kg (lb)
Maximum Continuous	2 005 (4420)
Take-off (5 minute)	2 005 (4420)
Maximum Continuous Permissible Engine Operating Speeds for the Engine Rotors, %RPM (RPM).	
Low pressure rotor (N1)	100.0 (21000)
High pressure rotor (N2)	100.4 (31611)
Maximum Interstage Turbine Temperature (ITT)	º C
Maximum Continuous	990

ENGINE LIMITS (Cont.)

Take-off (5 minutes)	1 004
Take-off (5 minutes) with APR ON	1 022
During starting	990

Maximum Oil Inlet Temperature, ° C	Up to 9 144m.	Above 9 144m
Fan gearbox	127	140
Fan gearbox transient (2 minutes)	149	149
Accessory gearbox	149	157

Oil Pressure	PSIG
Normal operating	62 to 83
At idle, Minimum	50
Maximum	100

Maximum Bleed and Power Extraction:
See Honeywell Installation Manual IM-8010

AIRSPEED LIMITS:

-V_{mo} (Max operating) S.L. to 2 438.4 m (8 000 ft)	310KCAS
-and increasing linearly from 2 438.4 m (8 000 ft) to 8 918.448 m (29 260 ft) to	330KCAS
- M_{mo} Above 8 918.4 m (29 260 ft)	0.85M
- M_{mo} with Autopilot disengaged and Mach trim inoperative above 7 549.9 m (24 770 ft)	0.78M
- V_a (Manoeuvering)	
- VA varies linearly from 272 KCAS at S.L. to 287 KCAS at 6 096 m (20 000 ft)	
- VA varies linearly from 287 KCAS at 6 096 m (20 000 ft) to 330 KCAS at 8 930.64 m (29 300 ft)	
- Above 8 930.64 m (29 300 ft)	0.85 M
- VFE (Flaps12º and slats 25º)	250 KCAS
- VFE (Flaps 20º and slats 25º)	225 KCAS
- VFE(Flaps Landing 40º and Slats 25º)	180 KCAS
- VSB (Airbrakes Operation) No speed limitation	
- VLE and VLO (L/G Extension & Operating Speed)	180 KCAS
- VMCA(Flaps 12º and 20º)	101 KCAS
- VMCG (Flaps 12º and 20º)	103 KCAS
- Tire limit ground speed: KTS (MPH)	182 KTS (210)

C.G. RANGE

Approved center of gravity range is as shown in the following tables :
(Gear extension and retraction moment change is negligible)
5 987 Kg (13 200 lb) - 37.00 % MAC
6 500 Kg (14 330 lb) - 20.00 % MAC
8 482 Kg (18 700 lb) - 20 00 % MAC
10 750 Kg (23 700 lb) - 24.50 % MAC
11 907 Kg (26 250 lb) - 30.60 % MAC
11 907 Kg (26 250 lb) - 38.00 % MAC
9 979 Kg (22 000 lb) - 38.00 % MAC
9 843 Kg (21 700 lb) - 37.00% MAC
Linear variation between points

DATUM

Fuselage station 0 is located 3 445.5 mm (135.65 in) forward of alignment points 14L / 14R.
Points 14L / 14R are the protruding rivets heads located in FWD fuselage at STA. 135.65, BL ± 36.99, WL 35.00.

MEAN AERODYNAMIC CHORD (MAC)

2191 mm (86.26 in) with leading edge at fuselage station 317.087

LEVELLING MEANS

Longitudinally: Place level on either seat rail at fuselage station 298.3 (FR 30) parallel to A/C centerline.
Laterally Place level on seat rails at fuselage station 298.3 (FR 30) at 90º to A/C centerline

MAXIMUM WEIGHTS

- Ramp Gross Weight	11 907 Kg (26 250 lb)
- Max Takeoff Weight	11 839 Kg (26 100 lb)
- Max Landing Weight	9 843 Kg (21 700 lb)
- Max Zero Fuel Weight	7 938 Kg (17 500 lb)

MINIMUM CREW

2 (Pilot and Copilot)

MAXIMUM PASSENGERS:

Nine (See Note 5)

MAXIMUM BAGGAGE

Kg / lb	ARM (mm/ in)
499 / 1 100	11 481 /452

FUEL CAPACITY

	LH / RH Wing tanks	Collectors	CTS	Fuselage
Total/Usable Fuel Kg (lb)	1 629.304 / 1 621.139 (3 592 / 3 574)	52.61671 / 47.6272 (116 / 105)	597.381/ 596.47 (1317/1315)	2 430.348 / 2 429.441 (5 358 / 5 356)
Arm (mm/in)	8 686.8 / 342	8 503.92 / 334.8	7 889.24 / 310.6	9 860.28 / 388.2
Unusable Fuel (Kg/lb)	8.44 / 18.6	4.99 / 11	0.73 / 1.6	0.82 / 1.8
Arm (mm/in)	8 689.34 / 342.1	8 839.2 / 348	7 891.78 / 310.7	9 865.36 / 388.4

(See Note 1 for data on Fuel System)

OIL CAPACITY

(Density: 8.2 lb/US Gallon)	TOTAL	USABLE	ARM
2 engine systems, Total, Kg / lb	14.52 / 32	3.63 / 8	224.99 / 496

(See Note 1 for data on Oil System)

MAXIMUM OPERATING ALTITUDE

13 716 m (45 000 ft).

OTHER OPERATING LIMITATIONS

Aircraft shall be operated according to operating limitations specified in approved Airplane Flight Manual. See Note 9.

CONTROL SURFACE MOVEMENTS

Surface	Travel (at trailing edge)		Tolerance
Aileron	Up	15º	± 15′
	Down	15º	± 15′
Aileron Trim	Up	5º	+0° -1°
	Down	5º	+0° -1°
Rudder	Left	22º	± 30′
	Right	22º	± 30′
Rudder Trim Tab	Left	11º30′	+2º -1º
	Right	11º30′	+2º -1º
Rudder Gear Tab	Left	7.75º	± 1º
	Right	7.75º	± 1º
Elevator	Nose Up	22º30’	± 30′

CONTROL SURFACE MOVEMENTS (Cont.)

Surface	Travel (at trailing edge)		Tolerance
	Nose Down	12º30’	± 15′
Elevator Gear Tab	Nose Up	3º	± 30′
	Nose Down	18º	± 30′
Stabilizer Trim	Up	1º	± 15′
(Leading edge)	Down	12º	± 30′
Airbrakes	Up	45º	± 15′
Slats	Down	25º	+1-2º
Flaps	Max Down	40º	+1 -1º30′

SERIAL NUMBERS ELIGIBLE

Model Gulfstream G150 S/N 201 and subs.

IMPORT ELIGIBILITY

A Brazilian Airworthiness Certificate may be issued on the basis of a Export Certificate of Airworthiness signed by a representative of a local export Civil Aviation Authority containing the following statement: "The airplane covered by this certificate bas been examined, tested and found to conform to the type design approved under ANAC Type Certificate No. 8813, and to be in condition for safe operation".

CERTIFICATION BASIS

1A. Airworthiness & Environmental Standards for components and areas not affected or not significantly.
Affected by the change:
The certification basis for the unchanged portion of the model G150 is the same as the Model G100 as shown in the relevant G100 section above.

1B. Airworthiness and Environmental Standards for components and areas affected by the change for the basic G150:
RBHA/14 CFR Part 25, effective February 1, 1965, includes amendments 25-1 through 25-108, except for the following paragraphs which are complied with at the identified amendment level:

14 CFR Part 25	SUB-SECTION	14 CFR Part 25 SECTION TITLE	APPLICABLE TO ZONE / SYSTEM	G150 AMDT
101		Performance - General		38
105		Takeoff		0
109		Accelerate-Satop Distance		42
113		Takeoff Distance & Takeoff Run		23
115		Takeoff Distance & Takeoff Run		0
143	f	Control & Maneuver - General		42
149	h	Minimum Control Speed		72
201	c, d	Stall Demonstration		42
203		Stall Characteristics		0
253		High Speed Characteristics		72
305		Strength & Deformation	Aft Fuselage (*), Horizontal Stabilizer, Vertical Tail, Landing Gear	54
305		Strength & Deformation	Wing, Nacelle	77
307		Proof Of Structure	Aft Fuselage, Horizontal Stabilizer, Vertical Tail, Landing Gear, Wing, Nacelle	54

14 CFR Part 25	SUB-SECTION	14 CFR Part 25 SECTION TITLE	APPLICABLE TO ZONE / SYSTEM	G150 AMDT
321		Flight Loads - General	Aft Fuselage, Nacelle, Vertical Tail, Wing	23
333		Flight Envelope	Aft Fuselage, Nacelle, Vertical Tail, Wing	0
335		Design Airspeed	Aft Fuselage, Nacelle, Vertical Tail, Wing	23
341		Gust Loads	Aft Fuselage, Nacelle, Vertical Tail, Wing	0
343		Design Fuel & Oil Loads	Aft Fuselage, Nacelle, Vertical Tail, Horizontal Stabilizer, Wing	18
345		High Lift Devices		46
349		Rolling Conditions	Nacelle, Wing	23
351		Yawing Conditions	Aft Fuselage, Nacelle, Vertical Tail, Horizontal Stabilizer	46
361		Engine Torque		46
363		Side Load On Engine Mount		23
371		Gyroscopic Loads		0
373		Speed Control Devices		0
391		Control Surface Loads- General	Wing, Vertical Tail	0
395		Control System	Wing, Vertical Tail, Flight Controls Sys.	23
397		Control Surface Loads	Wing, Vertical Tail, Horizontal Stabilizer, Flight Control Sys.	38
415		Ground Gust Conditions	Vertical Tail, Horizontal Sabilizer, Flight Controls Sys.	0
427		Unsymetrical Loads	Aft Fuselage, Vertical Tail	23
445		Auxilliary Aerodynamic Surfaces	Winglets	0
459		Special Devices	Slats	0
473		Ground Loads Conditions & Assumptions	Landing Gear, Nacelle, Wing, Aft Fuselage, Vertical Tail, Horizontal Stabilizer	23
479		Level Landing Conditions	Landing Gear, Nacelle, Wing, Aft Fuselage	23
481		Tail Down Landing Conditions	Landing Gear, Nacelle, Wing, Aft Fuselage	0
483		One Wheel Landing Conditions	Aft Fuselage, Land Gear, Nacelle, Wing	0
485		Side Load Conditions	Landing Gear, Nacelle, Wing, Aft Fuselage	0
491		Takeoff Run	Landing Gear, Nacelle, Wing, Aft Fuselage	23
493		Braked Roll Conditions	Aft Fuselage, Landing Gear	46
499		Nose Wheel Yaw	Aft Fuselage, Land Gear	23
561		Emerg. Landing Condition - General	Aft Fuselage, Nacelle	0
693		Joints		46
697		Lift And Drag Devices Controls		46
701		Flap & Slat Interconnection		46

14 CFR Part 25	SUB-SECTION	14 CFR Part 25 SECTION TITLE	APPLICABLE TO ZONE / SYSTEM	G150 AMDT
723		Shock Absorption Tests		46
725		Limit Drop Tests		23
727		Reserve Energy Absorp. Drop Tests		23
731		Wheels		0
733		Tires		48
735		Brakes		48
783	e	Doors		54
855		Cargo Or Baggage Compartment	Aft Fuselage	32
856		Thermal Acoustic Insulation Materials		111
857		Cargo Compt. Classification	Aft Fuselage	32
951		Fuel System - General		38
979		Pressure Fueling System		38
981		Fuel Tank (Ignition Prevention)		(**)
1351		Elect. Systems & Equipt. - General		41
1416		Pneumatic De-Icer Boot System		46
1419		Ice Protection		0
1435		Hydraulic Systems		41

Notes:

(*) Aft fuselage is defined Aft of Station 10824 (frame 43)

(**) GALP elected to comply with 25.981 at amendment 25-102 except for paragraph 25.981 (c)

2. Special Conditions adopted by ANAC:

High Intensity Radiated Fields (HIRF) (applicability to G100 extended to G150) -FAA doc nº 25 - ANM-104

Dynamic test requirements for single place side facing seats -FAA doc n º 25-294-SC (RBHA/14CFR Part 25.562)

Pilot Compartment View (Hydrophobic coating) - (RBHA/14CFR Part 25.773(b))- FAA IP F- 03

3. Equivalent Level of Safety Findings adopted by ANAC :

Emergency Lighting (RBHA/14CFR Part 25. 812 (a) (1), (c), (d), (e)

Ventilation System Failures – Cabin Temperature and Humidity (RBHA/14CFR Part 25. 831 (g)

Cabin Pressurization – High Altitude Take-off and Landing Operations (RBHA/14CFR Part 25. 841 (b)(6)

Fire Detection System within the Turbine Tailpipe Zone (applicability to G100 extended to G150) (RBHA/14CFR Part 25. 1203 (a))

Digital Display Only of Turbine Engine High Pressure Rotor Speed (N2)- (RBHA/14CFR Part 25. 1305 (c3)

Adoption of Draft Harmonized Rules for APU Certification (RBHA/14CFR Part 25;.APPENDIX K

Maneuvering stability and controllability in a mistrim condition (RBHA/14CFR Part 25.255(a))

Exhaust system components separated by fireproof

shields(RBHA/14CFR Part 25. 1121(c))
Emergency Exit Marker, Location Signs (RBHA/ 25.812(a), 25.812(b)(2))

4. Exemptions adopted by ANAC:
Dynamic test requirements for multiple place side facing seats(RBHA/14CFR Part 25. 785 (b))
Uncontrollable High Engine Thrust (RBHA/14CFR Part 25. 901 (c))

5. Compliance with the following optional requirements has been established:
Ditching(RBHA/14CFR Part 25. 801)
Ice Protection(RBHA/14CFR Part 25. 1419)

6. Noise Standards
RBHA 36, which adopts the FAR 36 effective in 01 December 1969, including Amendments 36-1 through 36-26.

7. Fuel Venting and Exhaust Emissions Standards
RBHA 34, which adopts the FAR 34 effective on 10 September 1990, including Amendments 34-1 through 34-3.

REQUIRED EQUIPMENT

The basic required equipment as prescribed in the applicable airworthiness regulation (see certification basis) must be installed in the aircraft for certification.
Model Gulfstream G150 - Master Equipment List Report # 25G000/051724

NOTES:

NOTE 1 (a) 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.
(b) The airplane must be loaded so that the C.G. is within the specified limits at all times.
(c) The weight of fuel and oil systems fluid as defined below must be included in the Empty weight of the airplane.

For 1125 IW, ASTRA SPX & G100 Models

FUEL SYSTEM	**Kg / lb (gal)**	**ARM mm (in)**
Unusable (drainable from tanks drain and lines)	16.33 / 36 (5.3)	5 979.2 (235.4)
Undrainable (trapped in tanks and lines)	10.89 / 24 (3.6)	5 979.2 (235.4)
OIL SYSTEM	**Kg/lb**	**ARM mm (in)**
Unusable Drainable(reservoirs)	20.87/46	10 007.6 (394)
Undrainable (reservoirs) - Total	Negligible	-

For Gulfstream G150 Model

FUEL SYSTEM	**Kg / lb (gal)**	**ARM mm (in)**
Unusable (drainable from tanks drain and lines)	10.30 / 22.7 (3.4)	8732.5 (343.8)
Undrainable (trapped in tanks and lines)	10.16 / 22.4 (3.3)	10012.7 (394.2)
OIL SYSTEM	**Kg / lb**	**ARM mm (in)**

NOTE 1	Unusable drainable (systems) – Total	7.26 / 16	12598.4 (496)
(cont.)	Undrainable (systems) – Total	3.63 / 8	12598.4 (496)

NOTE 2 All required placards listed in the limitations Section of the Airplane Flight Manual must be installed in the appropriate locations.
All markings and placards for passenger information, external markings for emergency, and load limits in cargo/baggage compartments must be presented in Portuguese or bilingual.
For the approved markings and placards translations contact the TC holder or STC holder (as applicable) and/or ANAC at the following address: normas.aeronaves@anac.gov.br .

NOTE 3 Information essential to the proper servicing and maintenance of the aircraft is contained in the Manufacturer's Maintenance Manual Section of the Instructions for Continued Airworthiness Manual marked 25W-1001-11-1 or G100-1001-11-1 for model 1125 Westwind Astra, 1125 IW, and Astra SPX airplanes, and marked G100-1001-11-1 for model Gulfstream 100 airplanes.
Mandatory replacement time, structural inspection intervals and related structural inspection procedures are presents in the approved airworthiness limitations section of the instructions for Continued Airworthiness Manual marked 25W-1001-11-2 for model 1125 Westwind Astra and 1125 IW, marked 25X-1001-11-2 or G100-1001-1-2 for model Astra SPX, and marked G100-1001-1-2 for model Gulfstream 100 airplanes.

For model Gulfstream G150
(a) Information essential to the proper servicing and maintenance of the aircraft is contained in the Aircraft Maintenance Manual AMM P/N G150-1001-3
(b) Mandatory replacement times, structural inspection intervals and related structural inspection procedures and Certification Maintenance Requirements are presented in the approved Airworthiness Limitation Section 05-10- 10 of the AMM.

NOTE 4 Airplane Model 1125 Westwind Astra incorporating MOD 5812 are eligible for maximum takeoff weight of 11 181 Kg (24 650 lb) and must be operated per Approved Airplane Flight Manual Marked 25W-1001-1-IW (Increased Weight).

NOTE 5 Carriage of passengers in aircraft incorporating Mod 6582 or Mod 6546 and Gulfstream G150 is prohibited, unless an approved interior and seating arrangement is installed. The Aircraft is eligible for carriage of up to 9 passengers provided approved seating arrangement and related required passenger provisions are incorporated in accordance with the Basis of Certification.

NOTA 6 The “GULFSTREAM G100” is only a name change from the former “ASTRA SPX” applicable to aircraft S/N 137 and subsequent. Model “GULFSTREAM 100” is identical to model “ASTRA SPX” except for the model designation.
Mod 6680 and Mod 20006 introduce the “GULFSTREAM 100” designation and makes the requisite changes to identification plates according to 1977 –לשת סיטה תונקת"ז (Registration of A/C and Markings) Sec.55 [equivalent to 14 CFR Part 45.11(a) amendments 45-17 and 14 CFR Part 45.13, amendments 45-20].

NOTE 7 Israel Aircraft Industries (IAI) transferred CAAI TC A5IL to Gulfstream Aerospace LP on 26 March 2002. However all documents showing the previous names remain valid.

NOTE 8 Airplane Model 1125 Westwind Astra must be operated per Approved Airplane Flight Manual marked 25W- 1001-1.
Airplane Model 1125 Westwind Astra with Honeywell TFE 731-3C engines installed (MOD 6333), must be operated per Approved Airplane Flight Manual marked 25W-1001-1 Revision 18 or subsequent. Airplane Model Astra SPX (MOD 6340) must be operated per Approved Airplane Flight Manual marked SPX- 1001-1 or G100-1001-1.
Airplane Model Gulfstream 100 (MOD 6680) must be operated per Approved Airplane Flight Manual marked G100-1001-1.
Airplane Model Gulfstream G150 must be operated according to the Approved Airplane Flight Manual marked P/N G150-1001-1.

NOTE 9 Airplane Model Astra SPX incorporating MOD 6541 or MOD 6546 and Gulfstream G150 may be operated without external paint, subject to the limitations and inspections defined in the Airworthiness Limitations Section Temporary Revision ALS-1 dated October 1998 or later approved revision.

NOTE 10 Israel Aircraft Industries LTD. (IAI), located at Ben Gurion International Airport 70100, Israel, is licensed by Gulfstream Aerospace LP to manufacture and obtain Airworthiness Certificates for the Model aircraft listed in this Type Certificate Data Sheet for serial number 146 and subsequent.

NOTE 11 MOD 6680 introduce the "Gulfstream 100" Model designation and make the requisite changes to identification plates and manuals. The "Gulfstream 100" is only a name change from former "Astra SPX".

NOTE 12 Per the approved Type Design, Model G150 complies with the Reduced Vertical Separation Minima (RVSM) technical requirements contained in RBHA 91, Appendix G, Section 2, provided MOD G15-100015 is implemented. However, operational approval to fly in RVSM airspace must still by the ANACA operational branch.

NOTE 13 The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:
1. The Brazilian Airplane Flight Manual (front page).
2. Markings and Placards (see note 2).

NOTE 14 The following FAA Supplemental Type Certificates (STC's) owned by Gulfstream Aerospace Corp., applicable to the Gulfstream G150 model were validated by ANAC without corresponding Brazilian CST document issuance and may be incorporated on Brazilian registered aircraft, provided the modification does not affect compliance with the Brazilian acceptance requirements (see paragraph import eligibility)":

STC NUMBER	DESCRIPTION OF TYPE DESIGN CHANGE	AIRPLANE FLIGHT MANUAL SUPPLEMENT (AFMS)
ST10316SC-D	Installation of an Executive Cabin Interior in accordance with Gulfstream Index List GA322048000. Rev. BN, dated 27 Sep. 2010, or later approved revision.	Doc Nº GA31204M000, Rev. N, dated 19 May 2009, or later FAA approved revision.
ST03713AT	Installation of Enhanced Vision System (EVS) II in accordance with Gulfstream Report G150-GER-0039, "G150 EVS II Master Program Drawing List", dated 26 Mar. 2009 or later approved revision.	Doc Nº 2009-02, Rev. 1, dated 05 May 2010, or later FAA approved revision.
ST04205AT-D	Installation of Aircell® High Speed Internet (AHSI) Air-To-Ground System in accordance with Gulfstream Index List GA313028000, Rev. D, dated 27 Sep. 2010 or later approved revision.	Doc Nº GA31302M000, Rev. -, dated 27 September 2010, or later FAA approved revision.
ST04206AT-D	Installation of Aircell® Swift Broadband System (SBB) in accordance with Gulfstream Index List GA313038000, Rev. E, dated 27 Sep. 2010 or later approved revision.	Doc Nº GA31303M000, Rev. -, dated 27 September 2010, or later FAA approved revision.
ST10312SC-D	Installation of a VHF COMM 3 Antenna in accordance with Gulfstream Index List GA343008000, Rev. B, dated 08 Sep. 2006 or later approved revision.	N/A
ST10313SC-D	Installation of an XM Antenna in accordance with Gulfstream Index List GA346078000, Rev. E, dated 15 May 2007 or later approved revision.	N/A
ST10314SC-D	Installation of an ICG/Iridium Antenna in accordance with Gulfstream Index List GA341038000, Rev. B, dated 11 Aug. 2006 or later approved revision.	N/A
ST10315SC-D	Installation of a Rockwell Collins 3rd VHF Comm System with Datalink in accordance with Gulfstream Index List GA313008000, Rev. R, dated 01 Sep. 2010 or later approved revision.	Doc Nº GA31300M000, Rev. none, dated 12 August 2006, or later FAA approved revision.
ST10317SC-D	Installation of a Rockwell Collins Integrated Flight Information System (IFIS-5000) with Dual File Server Units (FSU-5010) in accordance with Gulfstream Index List GA311208000, Rev. T, dated 27 Sep. 2010 or later approved revision.	Doc Nº GA31120M000, Rev. B, dated 12 October 2006, or later FAA approved revision; or Doc Nº GA31120M001, Rev. -, dated 22 September 2006, or later FAA approved revision.
ST10319SC-D	Installation of Honeywell Laseref V Inertial Reference System (IRS) in accordance with Index List GA313138000, Rev. D, dated 13 Sep. 2006 or later approved revision.	Doc Nº GA31313M000, Rev. none, dated 14 September 2006, or later FAA approved revision.

NOTE 14 (cont.)

STC NUMBER	DESCRIPTION OF TYPE DESIGN CHANGE	AIRPLANE FLIGHT MANUAL SUPPLEMENT (AFMS)
ST10320SC-D	Installation of 115 cubic foot oxygen cylinder in accordance with Index List GA327088000, Rev. C, dated 16 Feb. 2009 or later approved revision.	N/A
ST10321SC-D	Installation of an L3 Communications WX-1000E Stormscope System in accordance with Gulfstream Index List GA312258000, Rev. B, dated 7 Nov. 2006 or later approved revision.	Doc Nº GA31225M000, Rev. none, dated 07 November 2006, or later FAA approved revision.
ST10324SC-D	Installation of second Collins Automatic Direction Finder (ADF) System in accordance with Index List GA312148000, Rev. "A", dated 22 Mar. 2007 or later approved revision.	Doc Nº GA31214M000, Rev. none, dated 22 March 2007, or later FAA approved revision.

HÉLIO TARQUINIO JÚNIOR

General, Manager aeronautical Product Certification