

FLIGHT MANUAL

FOR AIRCRAFT

RALLYE 235C

Manufacturer : SOCATA Groupe AEROSPATIALE
Usine d'OSSUN
Boite Postale n° 38
65001 - TARBES (FRANCE)

Telex : 520 828
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Type Certificate n° 22 dated 7.3.1978

Serial Number 13074 Registration ~~SE-KNL~~
1-TRNO

Sections 2, 3 (Pages 2.01 to 2.05, 3.01 to 3.06,
5.01, 5.15) approved by "DIRECTION GENERALE DE
L'AVIATION CIVILE (D.G.A.C)".

Approval D.G.A.C

*Ce manuel est la
traduction en langue
anglaise du manuel
de vol français approuvé*



14 JAN. 1979

This aircraft must be operated in accordance with
the limitations contained in Section 2 of this
Flight Manual.

THIS DOCUMENT MUST BE KEPT PERMANENTLY ABOARD

THE AIRCRAFT.



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LIST OF AMENDMENTS

EDITION N°	DESCRIPTION	REVISED PAGES		
		N°	DATE	
1	Initial edition		12.1978	
2	-Updating : . Adding : ACOUSTIC LIMITA- TION New approval page Contents Acoustic limitation text Adding : pages 5.01A and 5.01 B	0.1.03 5.01	12.1981	

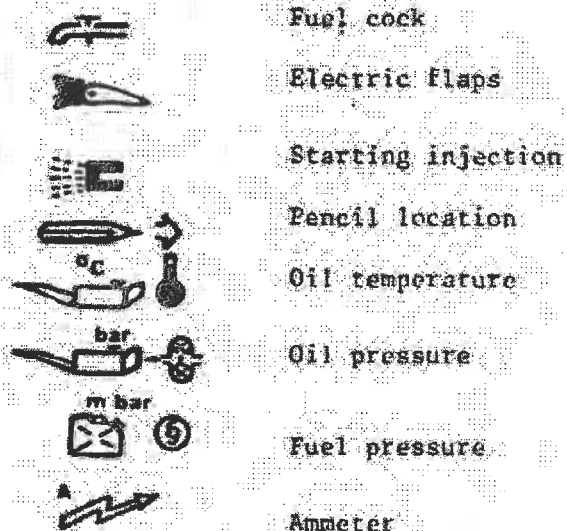
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0.3 - LIST OF SYMBOLS

	Cigar lighter
	Heated pitot tube
	Battery
	Starter
	Instrument panel lighting
	Emergency instrument panel lighting
	Day-night damper
	A.C. Excitation generator
	Navigation lights
	Anti-collision light
	Turn and bank indicator
	Fuel gauge
	Landing light
	Fuel pump

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Fuel cock

Electric flaps

Starting injection

Pencil location

Oil temperature

Oil pressure

Fuel pressure

Ammeter

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0.4 - LIST OF ABBREVIATIONS

A	: Ampere
°C	: Degree celsius (centigrade)
°F	: " FAHRENHEIT
ft	: Foot
Imp. gal	: Imperial gallon
US. gal	: U.S. gallon
HP	: Horse Power
in. Hg	: Inch of mercury
kg	: Kilogramme
km/h	: Kilometer per hour
kt	: Knot (1 nautical mile-1852 m per hour)
l.	: litre
lb	: Pound
M	: Weight
MPH	: Mile per hour (statute mile 1609 m per hour)
m	: Metre
m.bar	: Millibar
m/s	: Metre per second
PA	: Manifold pressure
psi	: Pound per square inch (lb/in ²)
RPM	: Revolution per minute
U.S quart	: 1/4 of US gallon
V	: Volt
VA	: Manoeuvre speed
VC	: Calibrated Airspeed
Vc	: Design cruising speed
Vfe	: Flap extended speed
VI	: Indicated airspeed (I.A.S)
Vne	: Never exceed speed
Vno	: Normal operating limit speed
Vp	: Ground speed
w	: Watt
Zp	: Pressure altitude

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0.6 - TYPICAL ATMOSPHERE

The mass of air surrounding the earth may be characterized in each point by three parameters : pressure, temperature and humidity.

Variation of these parameters as a function of the geometrical altitude (height above selected reference average sea level) defines the atmosphere.

The typical or standard atmosphere given in the table hereafter, is the reference atmosphere. It corresponds approximately to the average of the values measured in temperate zones.

The table hereafter gives the following data as a function of the altitude in m and ft :

- pressure in m.bar (p)
- temperature in CENTIGRADE (°C) and FAHRENHEIT (°F) degrees.
- coefficient by which calibrated airspeed VC should be multiplied to obtain true airspeed ($\frac{1}{\sqrt{\sigma}}$).

Refer to section V. - LEVEL FLIGHT PERFORMANCES, for determining VC speed from indicated airspeed VI (I.A.S)

Z ft	p m.bar	°C	°F	$\frac{1}{\sqrt{\sigma}}$
0	1 013.25	+ 15.00	+ 59.00	1.0000
2.000	942.10	+ 11.00	+ 51.80	1.0294
4.000	875.03	+ 7.07	+ 44.86	1.0612
6.000	811.88	+ 3.11	+ 37.57	1.0938
8.000	752.47	+ 0.86	+ 33.80	1.1280
10.000	696.65	+ 4.80	+ 23.35	1.1638
12.000	644.21	+ 8.80	+ 16.20	1.2012
14.000	595.00	+ 12.70	+ 9.20	1.2405
16.000	549.16	+ 16.68	+ 2.00	1.2815
18.000	505.98	+ 20.66	+ 5.20	1.3247
20.000	465.59	+ 24.63	+ 13.50	1.3700

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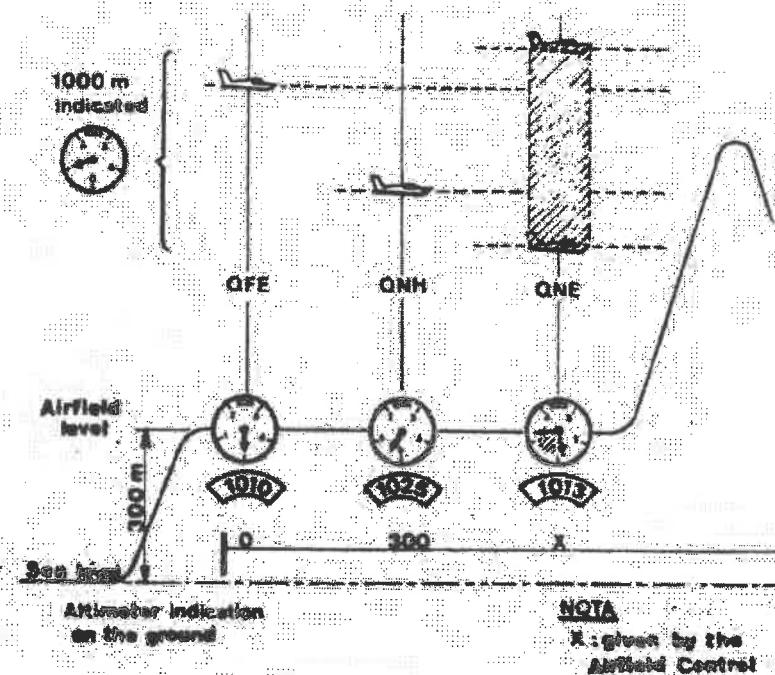
0.5 - USE OF THE ALTIMETER

The altimeter is an instrument which measures the atmospheric pressure (absolute pressure). It is graduated in terms of altitude as compared to the pressure altitude of the typical atmosphere.

Since airfields are located at various altitudes and the atmospheric pressure varies in time for a same location, the altimeter is provided with an adjusting knob for re-setting the pointers.

A window displays the pressure value corresponding to this setting.

Several altitude settings are used.



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Q F E SETTING AT AIRFIELD LEVEL PRESSURE

The indicated height on ground is zero. In local flight, the altimeter indicates continuously the pressure altitude relative to airfield.

Q N H SETTING AT THE PRESSURE CORRESPONDING TO THE READING OF ACTUAL AIRFIELD ALTITUDE.

— (temperature corrections excepted).

The indicated altitude on ground is close to the value given on the map.
In order to obtain the height above ground in flight, the altitude of the local area, given on the map, should be subtracted from the altimeter reading. Since the pressures vary in space, QNH is applicable within a certain area only.
The local Controlling Authorities give the local QNH.

Q N E LOCAL ALTITUDE CORRESPONDING TO THE STANDARD PRESSURE SETTING - 1013,2 mb (29,92 in.Hg).

This altitude value (given by the airfield controller) may be quite different from the actual airfield altitude.
The setting to 1013,2 is used in airfield paths only in the case where the airfield altitude is such that the QFE or QNH setting is not possible. Then, the controller gives the altitude to be read on the altimeter at airfield level. The setting to 1013,2 mb is used for flying at a level conforming to regulations or ATC instruction. It allows vertical separation to be provided, relative to other aircraft, set to the same reference.

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0.7 - CORRESPONDENCE BETWEEN UNITS

Distance

The nautical mile is the average length of the geodesical minute of Earth latitude.

1 NAUTICAL MILE = 1852 meters

Pressures

Units used :

Bar-pieze (pz) - inch of mercury (in.Hg)
pound per square inch (lb/in²-psi)

	bar	pz	in.Hg	lb/in ² psi	kg/cm ²
bar	1	100	29.5	14.5	1.0197
pz	0.01	1	0.295	0.145	0.010197
in.Hg	0.03386	3.386	1	0.49117	0.03453
lb/in ² psi	0.06894	6.894	2.0359	1	0.0703
kg/cm ²	0.098067	98.067	28.958	14.2233	1

Exemple : 1 psi : 6.894 pz

Power

Units used :

Watt (W) French horse power (CV) British horse power (HP)

	W	CV	HP
W	1	0.001359	0.001341
CV	735.49	1	0.9863
HP	745.69	1.01387	1

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Capacities

Units used.

Litre (l) - Imperial gallon (Imp.gal)

US gallon (US gal.) -

	l	Imp.gal	US.gal
l	1	0.219	0.264
Imp.gal	4.546	1	1.201
US. gal	3.785	0.833	1

Angular velocities

Units used

Revolution per minute (RPM).radian per second (rd.s)

1 RPM = 0.1047 rd/s

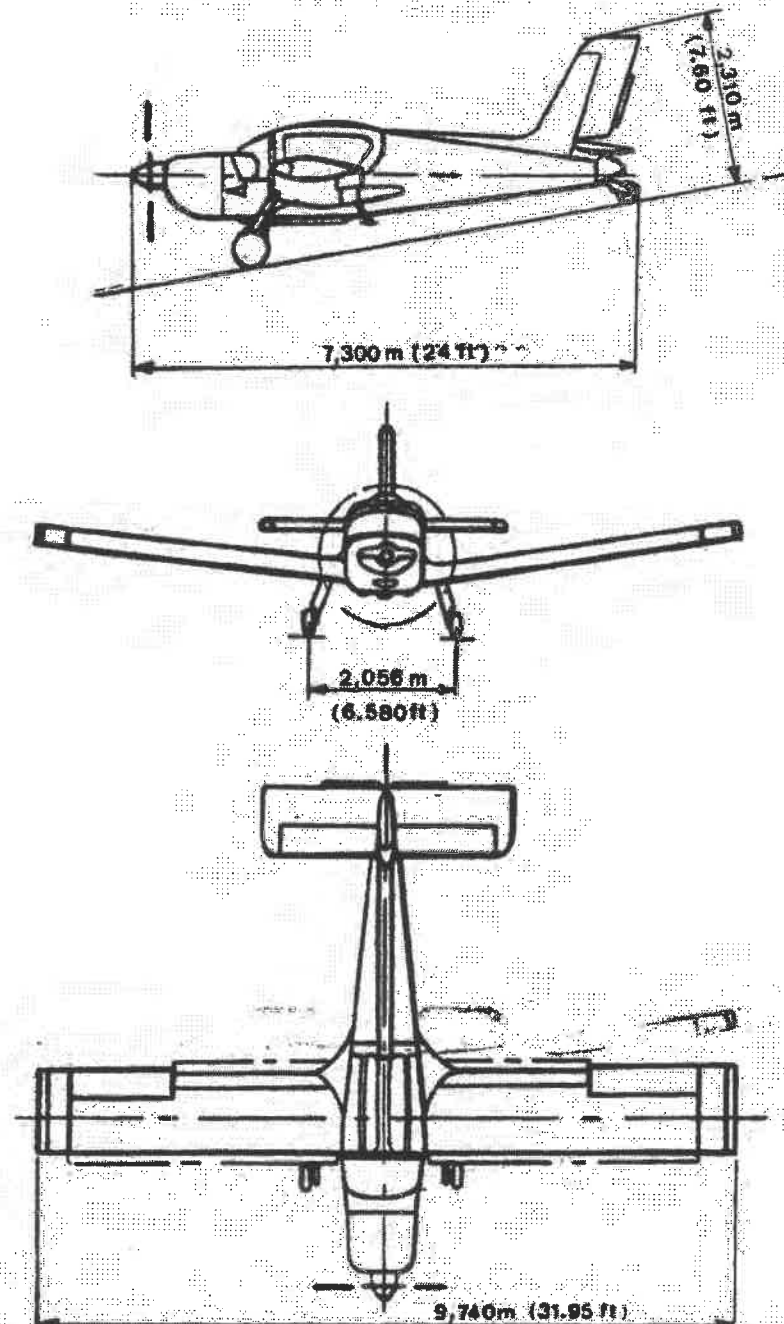
1 rd/s = 9.549 RPM

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SECTION I

DESCRIPTION

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SECTION 1
DESCRIPTION

1.1 - General characteristics

Single engine, low cantilever wing aircraft, entirely made of metal.

1.1.1 - Airframe (Theoretical dimensions)

Overall dimensions :

- Maximum span 9,740 m - 31.95 ft
- Total length 7,300 m - 24 ft
- Total height 2,310 m - 7.60 ft
- Propeller ground clearance, aircraft in line of flight, tires deflated, shock struts retracted.
- HARTZELL propeller : ~0.127 m - 5 in.

Wings :

- Aspect ratio 7.5
- Dihedral 7°
- Wing area 12,28 m² - 132.18 sq.ft
- Aerodynamic chord 1,3 m - 4.26 ft
- Slotted leading edge interconnected over the whole span

Ailerons :

- Slotted type
- Mean span 1.49 m - 4.90 ft
- Unit surface 0.78 m² - 8.36 sq.ft

Wing flaps :

- Recoil and slotted type
- Mean span 2,33 m - 7.64 ft
- Unit surface 1.20 m² - 12.91 sq.ft

Horizontal stabilizer

- Non adjustable stabilizer
 - Span 3.67 m - 12.04 ft
 - Surface 1.65 m² - 17.76 sq.ft

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- Balance horn control surface
 - Surface 1.83 m² - 19.70 sq.ft
- Automatic tab
 - Surface 0.072 m² - 0.77 sq.ft
 - Automaticity 100 %
- Controlled tab
 - Surface 0.072 m² - 0.77 sq.ft
- Vertical stabilizer :
 - Surface of fin 0.88 m² - 9.48 sq.ft
- Balance horn control surface
 - Surface 0.86 m² - 9.26 sq.ft
- Controlled tab
 - Surface 0.072 m² - 0.77 sq.ft

Landing gear :

- Fixed classic type
- Main landing gear track 2.056m- 6.580 ft
- Tires
- Main landing gear 8.006-6PR
- Inflating pressure 1.6 bar-23.20 psi
- Tail landing gear 2.80/2.50-4
- Inflating pressure 3.5 bar - 50.7 psi
- Disk type brakes
- Shock absorbers

Oleopneumatic; telescopic type

- Brakes

Hydraulic, differential type

Fluid : Aeroshell fluid 4-Specif. AIR 3520
BTD 585

1.1.2 - Engine

Make : LYCOMING
Type : O.540-B4-B5
Number of cylinders : 6
Power 235 HP-175 Kw

1.1.3 - Propeller

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Make : HARTZELL
Type : HC.C2YK-1BF/F-8468 A-4
Diameter : Ø maxi : 2.03 m - 80 in.

Variable pitch "Constant speed" type

1.1.4 - Fuel

Aircraft gasoline 80/87 or AVGAS 100 LL

Total capacity (maximum)

254 L. - 67.1 US Gal - 55.9 Imp.Gal -

Minimum usable capacity (warranted)

246 L. - 65 US Gal - 54.1 Imp.gal -

Unusable capacity

4.4 l. - 1.15 US gal. - 0.96 Imp.gal.

1.1.5 - Oil

During the first 50 operating hours :
pure mineral oil
After the first 50 operating hours :
dispersing oil.

Grade :

Above +15°C (59°F)	SAE-50
From -1°C to 32°C (30°F to 89°F)	SAE-40
From -18°C to +21°C (-4°F to 69°F)	SAE-30
Under -12°C (14°F)	SAE-20

Total engine capacity

12.1. - 3.168 US gal. - 2.640 Imp.gal.-

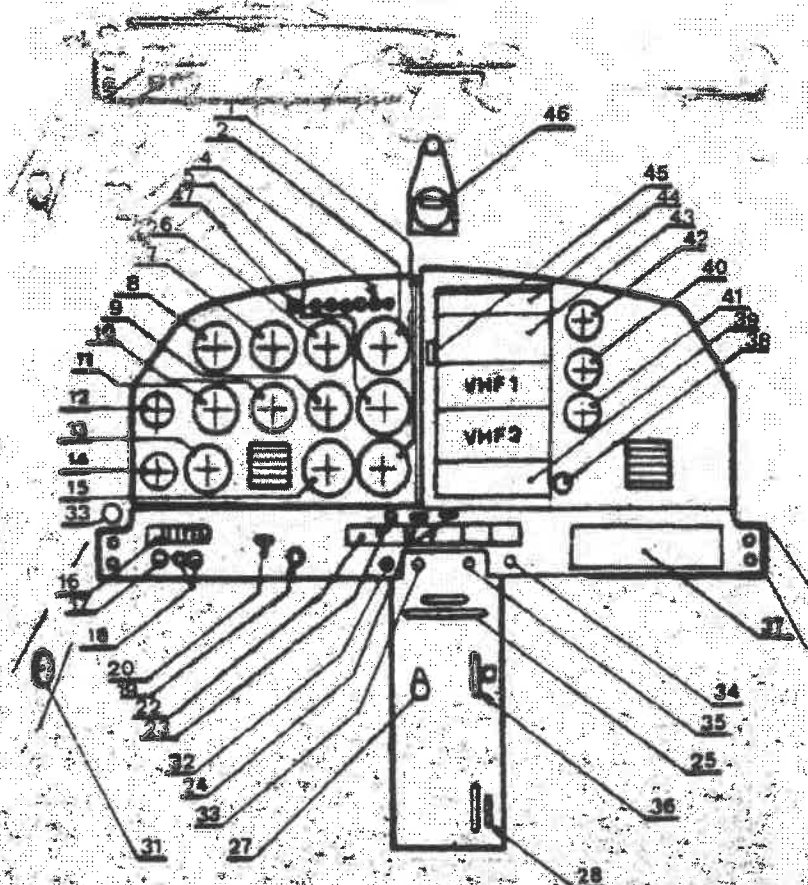
Usable capacity

9.4 l. - 2.481 US.gal. - 2.068 Imp.gal.-

Total system capacity

13.5 l. - 3.564 US.gal.- 2.970 Imp.gal

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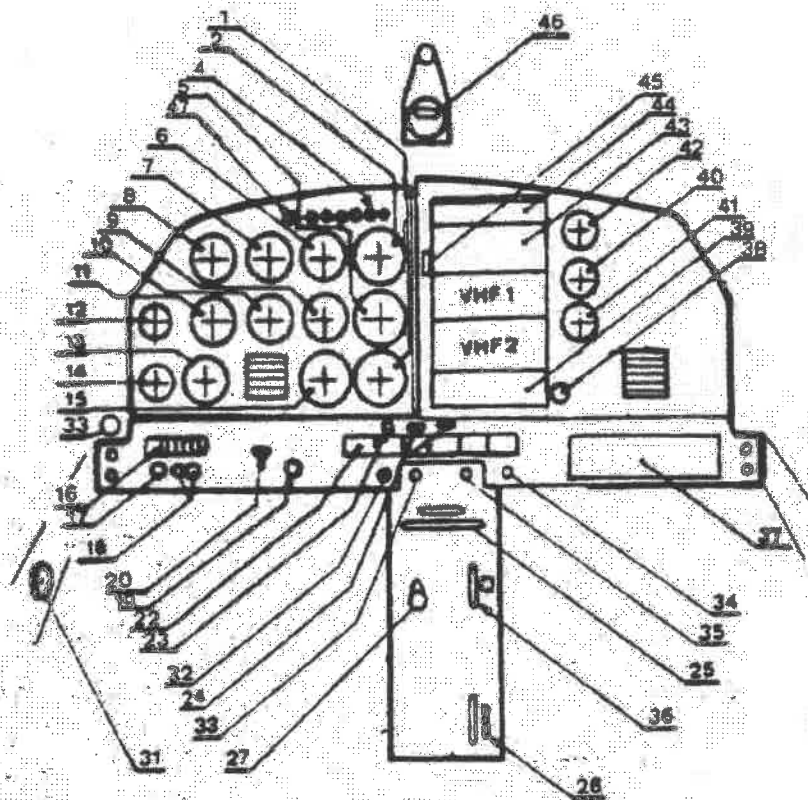
1.2 - Instrument panel

The instrument panel consists of a left hand shock mounted board, a right board, a strip and a central pedestal.
This panel accomodates the following standard or optional instruments.

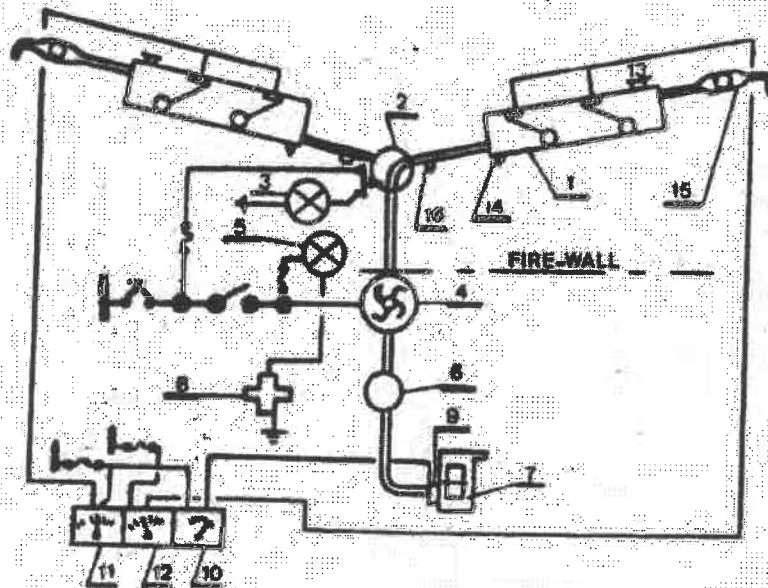
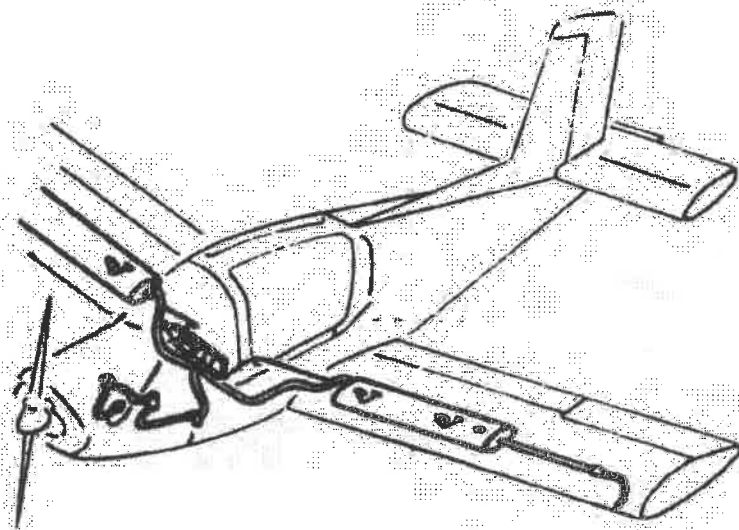
ITEM.

1. Radio compass indicator (optional)
2. VOR.1 indicator (optional) - VOR/ILS
4. Warning lights
5. VOR.2 indicator (optional) - VOR/LOC
6. Altimeter 1 - indicator
7. Artificial horizon indicator (optional)
8. Airspeed indicator
9. Rate of climb indicator
10. Directional indicator (optional)
11. Turn and bank indicator
12. Manifold pressure gauge
13. Tachometer indicator
14. Alternate static pressure
15. Altimeter 2 - indicator (optional)
16. Switches (from LH to RH)
 - Battery
 - Excitation
 - Fuel pump
 - Turn and bank indicator
 - Pitot
 - Anti-collision lights
 - Navigation lights
17. Conventional lighting rheostat (optional)
18. Emergency and radio lighting rheostat (optional)
19. Magneto selector
20. Parking brake handle

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22. JAEGER compound panel (from LH to RH)
 - oil temperature
 - oil pressure
 - fuel pressure
 - LH fuel content indicator
 - RH fuel content indicator
 - Ammeter
23. Pencil-holder
24. Left and right landing lights switches
25. Rudder tab
27. Fuel shut-off cock
28. Air conditioning control
31. Elevator tab
32. Carburettor heating control
33. Throttle control
34. Mixture control
35. Propeller governor control
36. Wing flaps electric control
37. Circuit-breakers assembly (see on sheet 1-10-01)
38. Cigar-lighter
39. Transponder (optional)
40. ALCOR indicator
41. Cylinder head temperature indicator (optional)
42. Thermo carburettor indicator
43. Radio compass (optional)
44. Selector box (optional)
45. Glider release control (optional)
46. Compass
47. Switch for manual starting up of the emergency marker (optional)



1.3 - Fuel system

The fuel is contained within two metal tanks (1) each one located in a wing spar box.

Each tank is connected to a 3 way, 3 position (left, closed, right) cock (2) through a pipe.

This cock is actuated by means of a control on the pedestal.

The contact for the "Fuel cock" red warning light (3) is actuated by a cam integral with the cock control.

This light is energized as soon as the main electrical circuit is on and the cock is closed or in operation.

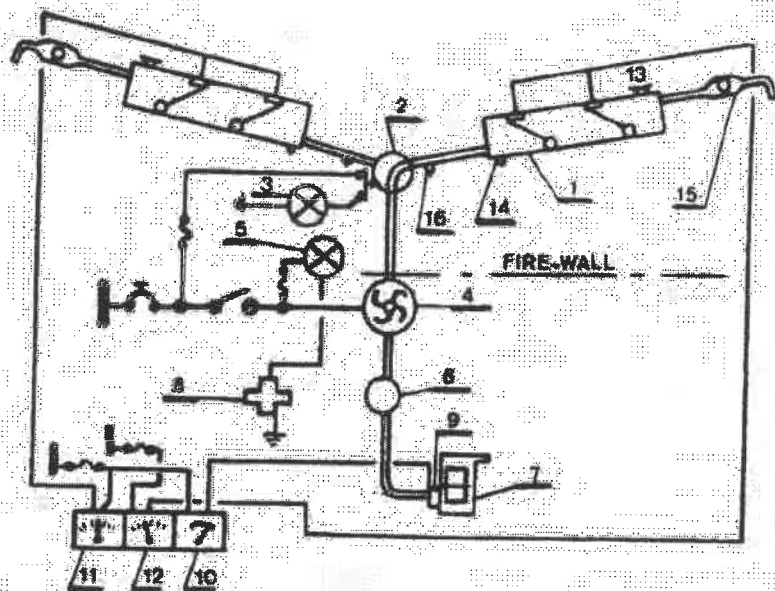
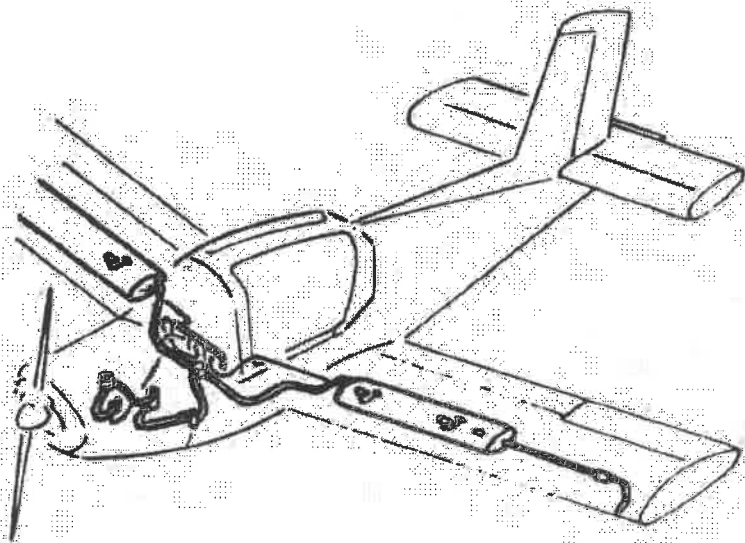
It goes out when the cock is open on left or "right" position.

A pipe, passing through the firewall, feeds the fuel from the cock to the electrical booster pump (4) fitted with a filter. Through a pressure switch (8) a green warning light (5) shows that the booster pump is operating.

From the booster pump, the fuel is fed to the engine-driven pump (6).

An electrical sensor (9), located at carburettor inlet (7), transmits the fuel pressure data to an indicator (10) located on the center of the instrument panel strip.

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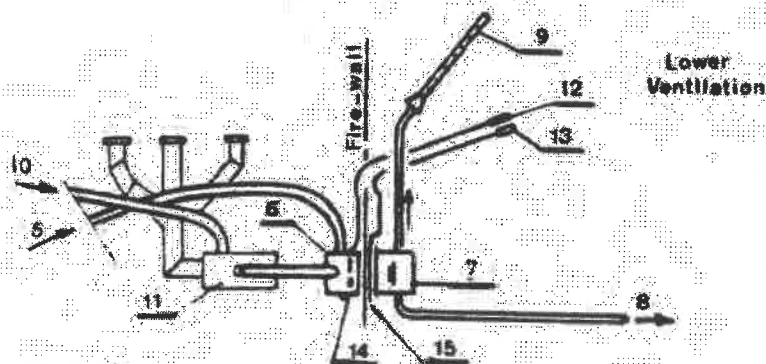
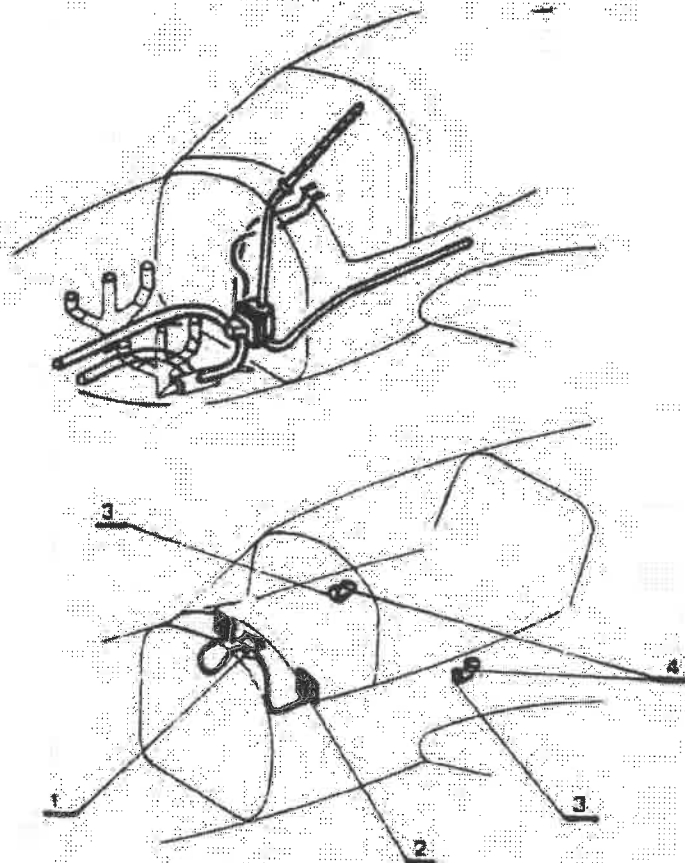


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Each tank is fitted with 2 float-type transmitters which allow the available fuel quantity to be known at all times. Fuel content indicators (11-12) are located on the center of the instrument panel strip. Each tank is provided with a filling neck (13), a bleed and drain block (14) located on the wing lower surface, and a venting device consisting of a tube fitted with a check-valve (15) opening on the wing lower surface.

A cock (16) located between each tank and the fuel shut-off cock (2) is accessible from under the fuselage.

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1.4 - Air conditioning system

- Cool air

The ventilation of the cabin is ensured by an air intake (1) located on the upper part of the cowl, in front of the windshield. Two pipes convey the cool air to individual aerators (2) located on the instrument panel, which are at pilot's and front passenger's disposal. The latter can, on their own will, adjust and guide the air flow.

The rear ventilation is ensured by two air intakes (3) located on LH and RH sides of the fuselage.

Rear passengers, thanks to aerators (4) can, on their own will adjust and guide the air flow.

The lower ventilation is ensured from an air intake (5), by means of a duct conveying cool air to mixture distributor (6) which allows distribution of air to be made at pilot and forward passenger's feet (7) at rear passengers's feet (8) and at the windshield.

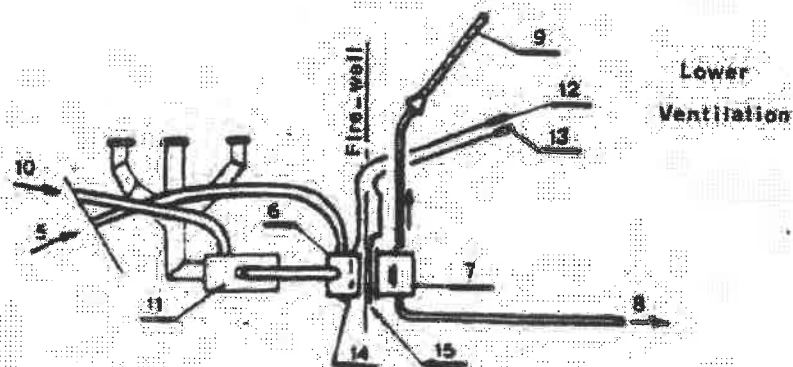
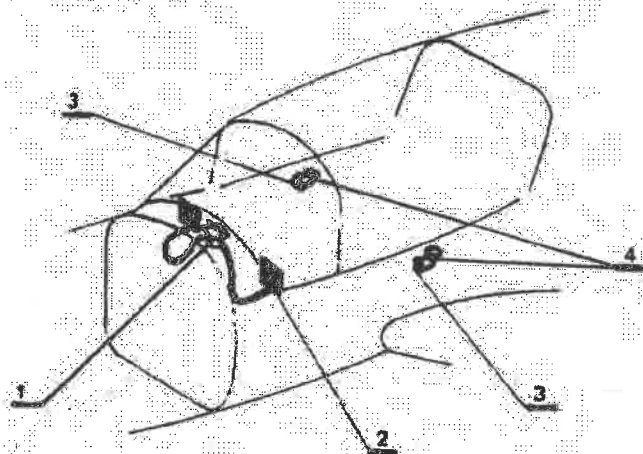
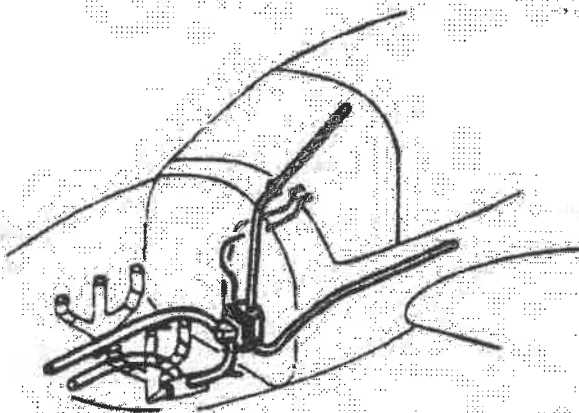
- Hot air

Hot air is picked off at point (10) and heated in the dual wall exchanger manifold (11) and then fed to mixer distributor (6) from where it is distributed in the same way as cool air.

- Air conditioning controls

The control box installed on the instrument panel pedestal is fitted with two levers (12 and 13) each one actuating a sheathed cable. One cable controls mixture flap (14) and the other controls the cabin air inlet flap (15).

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LH lever (12) allows adjusting the air delivery to the cabin.

Heating is maximum when control lever (12) is moved fully downwards (red marking).

Cooling is maximum when control lever (12) is moved fully upwards (blue marking).

The flow is adjusted by ventilation lever (13) whatever the position of lever (12).

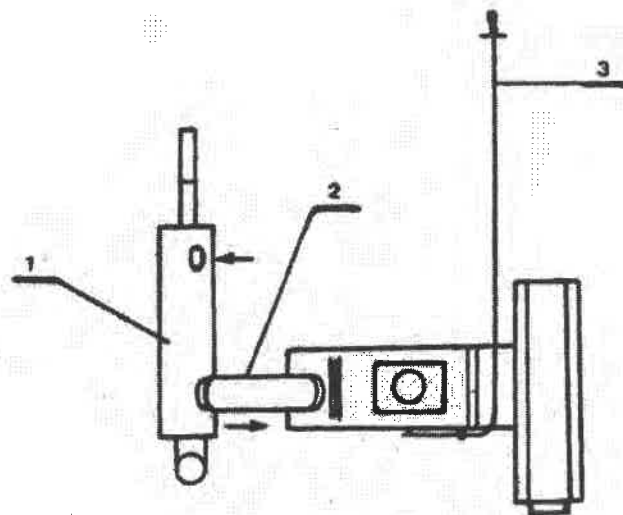
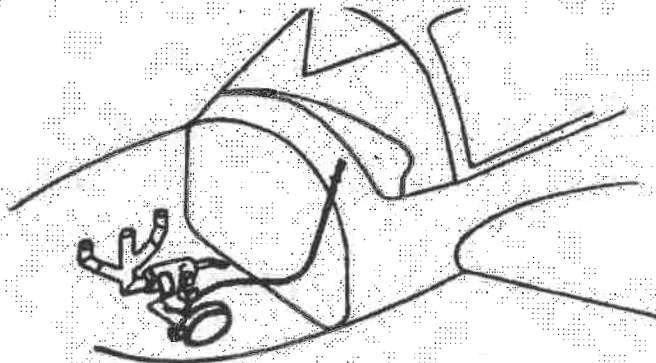
The right hand lever (13) allows adjustment of the flow of the air mixture.

When moved fully upwards, the ventilation is maximum.

Moving the lever downwards, gradually decreases the ventilation which is null when "Shut-off" position is reached.

In case of fire in the engine compartment, the R.H lever shall be moved fully downwards (shut-off) in order to avoid ingress of smoke inside the cabin.

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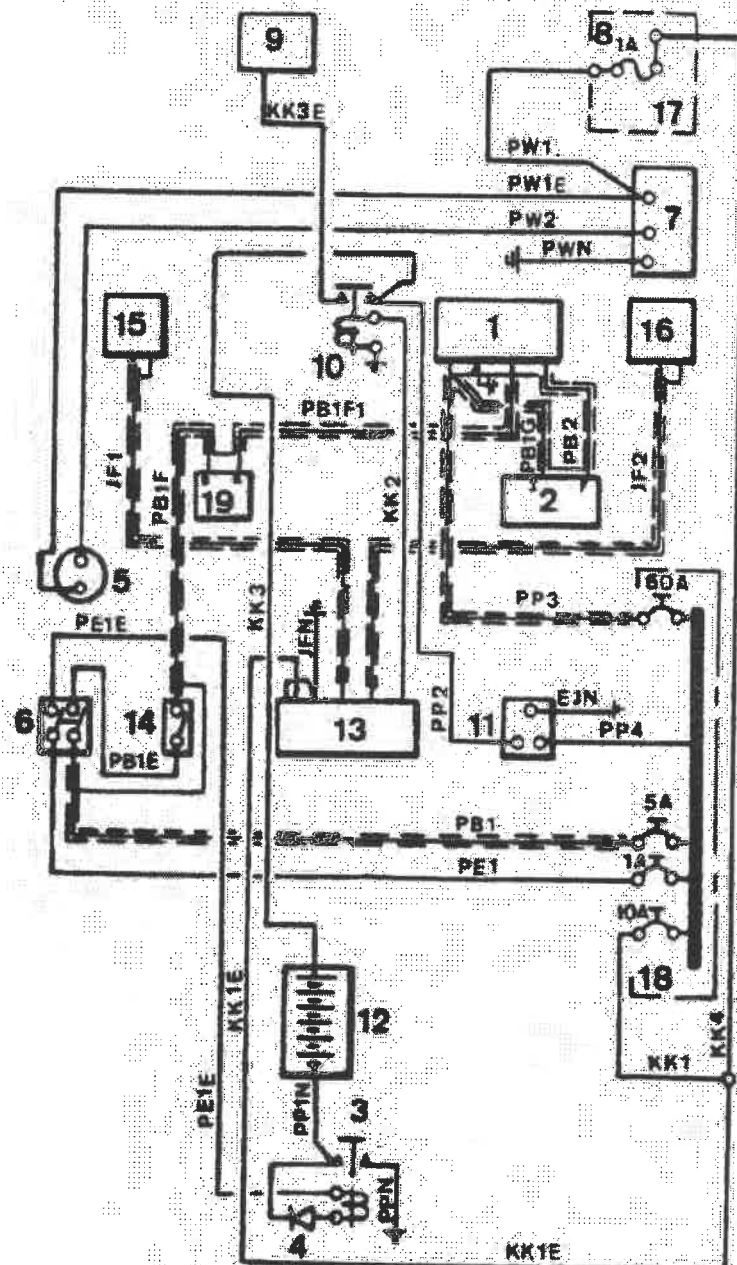
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1.5 - Carburettor heating system

Air admitted through an unfiltered aperture provided in the dual wall of the exchanger manifold (1) is fed to the carburettor through pipe (2).

Hot air flow is adjusted by means of "Carburettor Heating" pull lever (3).

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1.6 - Generation, starting and ignition circuit

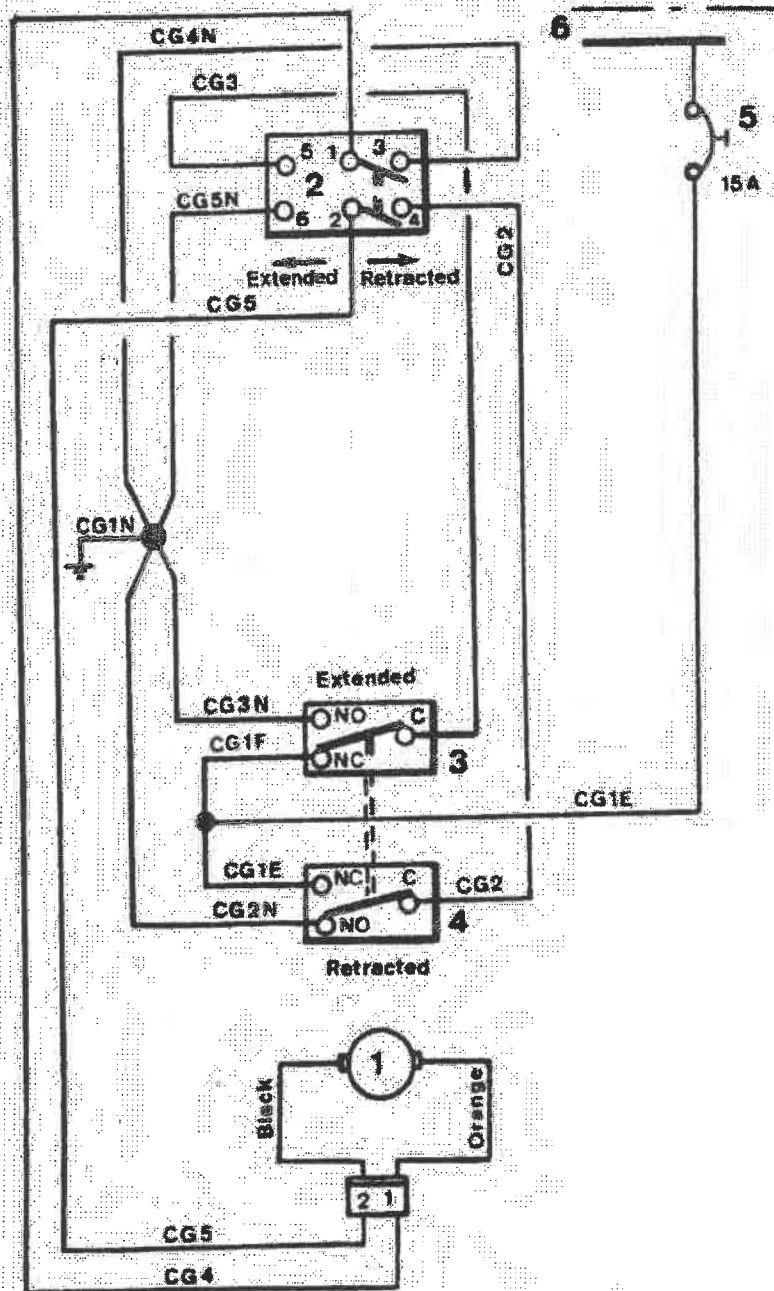
12 V, 55. A current is supplied by an a.c. generator and rectifier unit.

- 1 - A.c. generator
- 2 - Voltage regulator
- 3 - Battery relay
- 4 - Diode
- 5 - Generator warning light
- 6 - Battery switch
- 7 - A.c. generator flow voltage detector
- 8 - 1A Fuse (junction box)
- 9 - Starter
- 10 - Starting relay
- 11 - Ammeter
- 12 - Battery
- 13 - Magneto selector
- 14 - "Generator field" control switch
- 15 - Left magneto
- 16 - Right magneto
- 17 - Junction box
- 18 - Circuit-breakers box
- 19 - Overvoltage relay



- 1 - Booster pump
- 2 - "Booster pump" switch
- 3 - Booster pump warning light
- 4 - Microswitch on fuel shut-off cock
- 5 - Fuel cock warning light
- 6 - Fuel pressure sensor
- 7 - Fuel pressure indicator
- 8 - Wing tip fuel level transmitter
- 9 - Wing root fuel level transmitter
- 10 - 1500 OHM resistor
- 11 - 150 OHM resistor
- 12 - Left level indicator
- 13 - Right level indicator
- 14 - Carburettor temperature sensor
- 15 - Carburettor temperature indicator
- 16 - Oil pressure sensor
- 17 - Oil pressure light
- 18 - Oil pressure indicator
- 19 - Oil temperature sensor
- 20 - Oil temperature indicator
- 21 - Cylinder temperature sensor (optional)
- 22 - Cylinder temperature indicator (optional)
- 23 - Junction box
- 24 - Circuit-breakers box
- 25 - Booster pump warning light pressure switch

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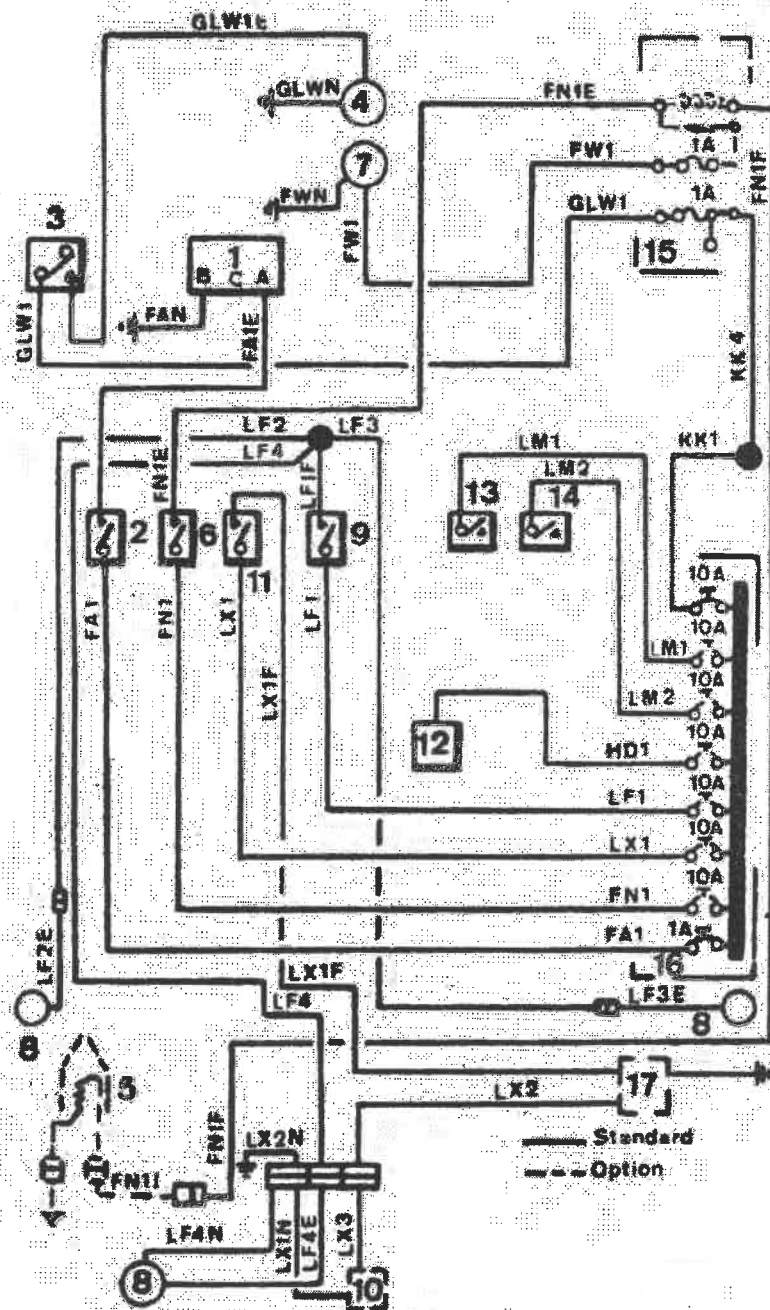


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1.8 - WING FLAPS ELECTRIC CONTROL CIRCUIT

- 1 - Wing flaps actuator
- 2 - Switch
- 3 - End of travel microswitch "extended"
- 4 - End of travel microswitch "retracted"
- 5 - 15.A circuit breaker
- 6 - Circuit breakers box

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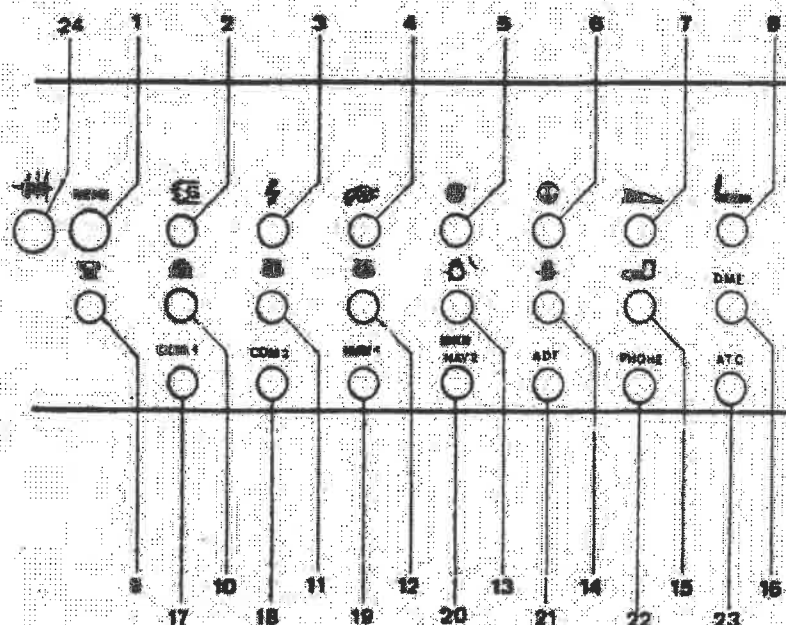


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1.9 - Electrical circuit of various equipment

- 1 - Turn and bank indicator
- 2 - Turn and bank indicator switch
- 3 - Parking brake microswitch
- 4 - Parking brake light
- 5 - Heated ram air inlet (optional)
- 6 - Ram air inlet heating switch
- 7 - Ram air inlet warning light
- 8 - Navigation lights
- 9 - Navigation lights switch
- 10 - Anti-collision lights (optional)
- 11 - Anti-collision lights switch
- 12 - Cigar lighter
- 13 - Left landing light switch
- 14 - Right landing light switch
- 15 - Junction box
- 16 - Circuit breakers box
- 17 - Flashing light power supply (optional)

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OVERVIEW
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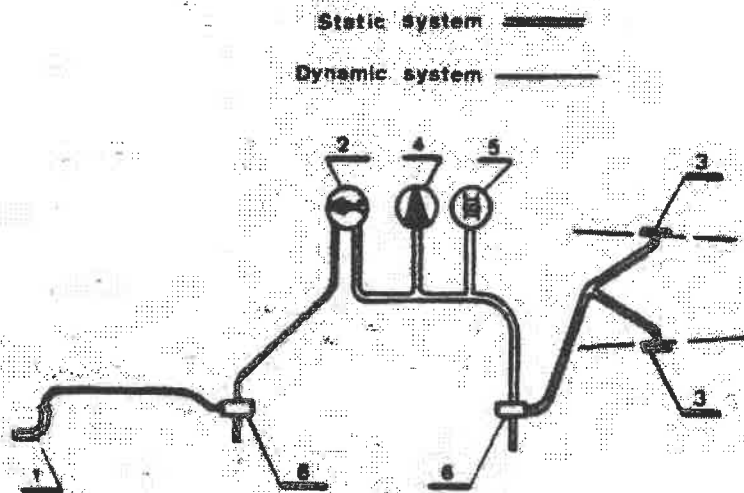
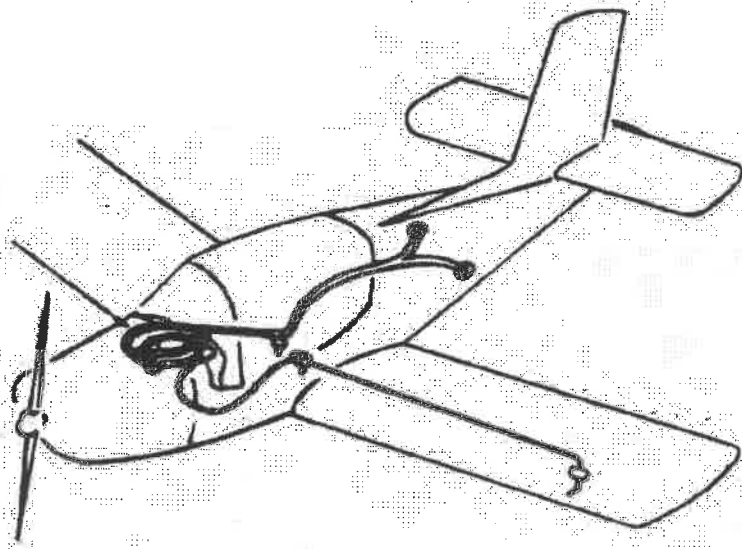
1.10 - Electrical protection system

Electrical protection is ensured by circuit breakers located on the instrument panel, each one being provided for one or several systems.

The list hereunder gives the rating of the circuit-breaker together with the protected circuit (5)

1 - 60. A	circuit-breaker	- Ac generator
2 - 5. A	"	- Excitation
3 - 1. A	"	- Battery relay
4 - 5. A	"	- Fuel pump LH Fuel content indicator Fuel pressure Oil pressure
5 - 10. A	"	- Starter RH Fuel content indicator Oil temperature
6 - 1. A	"	- Turn and bank indicator
7 - 15. A	"	- Wing flaps
8 - 10. A	"	- Cigar lighter
9 - 10. A	"	- Anti collision light
10 - 10. A	"	- Navigation lights
11 - 10. A	"	- LH landing light
12 - 10. A	"	- RH landing light
13 - 5. A	"	- Normal lighting
14 - 5. A	"	- Emergency lighting
15 - 10. A	"	- Pitot
16 - 5. A	"	- D.M.E.
17 - 5. A	"	- VHF.1 supply
18 - 5. A	"	- VHF.2 supply
19 - 5. A	"	- VOR.1 supply
20 - 5. A	"	- VOR.2 and marker supply
21 - 5. A	"	- ADF supply
22 - 1. A	"	- Phone supply
23 - 5. A	"	- Transpondeur supply
24 - 50. A	"	- Battery (opt. IFR)

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1.11 - Airspeed indicating system

A ram air inlet (1) installed on the lower surface of the left wing supplies ram air pressure to airspeed indicator (2).

Two static ports (3) located on each side of the rear fuselage section, feed airspeed indicator (2), altimeter (4) and rate of climb indicator (5) with static pressure.

Both systems are provided with bleeders (6) located at the lower part of the fuselage and accessible from outside.

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SECTION 2 LIMITATIONS

RALLYE 235 C aircraft was certified for "Normal" and "Utility" category on 7.03.78 in accordance with AIR 2052 Regulation, within the limits given hereafter

2.1 -Limit speeds (IAS)

CATEGORY					
N			U		
km/h	kt	MPH	km/h	kt	MPH
315	170	196	337	182	209
250	135	155	250	135	155
210	113	130	210	113	130
176	95	109	176	95	109
1200kg-26451b			1000kg-22051b		
1140kg-25131b			1000kg-22051b		

Vne-Never exceed speed
Vno-Maximum cruise speed
depending on structure
strength

VA-Maximal control sur-
face deflection up to
Vfe-Limit speed with
flaps operating or ex-
tended

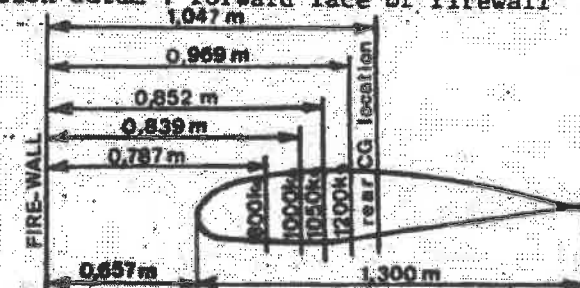
2.2-Maximum weight

Permissible at take-off

Permissible at landing

2.3 -C.G limits

C.G location datum : forward face of firewall



Rear C.G location is limited to 1.047 m = 41.22 in.
Forward C.G location depends on the weight and on
the category of use. It varies linearly between the
following limits :

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800 kg - 1764 lb - 0.787 m - 30.98 in -
 1000 kg - 2205 lb - 0.839 m - 33.03 in -
 1050 kg - 2315 lb - 0.852 m - 33.54 in -
 1200 kg - 2645 lb - 0.969 m - 38.15 in -

Leveling : Fuselage centerline horizontal (canopy slides horizontal)

2.4 - Loading limits

Maximum number of occupants

-Forward station 2

-Rear station 2

Maximum load in luggage compartment : 45kg-100 lb

It is however allowed to carry a third passenger on the rear seat, on condition that :

-The weight of each does not exceed 60kg (132 lb)

-The aircraft is modified in compliance with SOCATA-SERVICE n° 117.

NOTA-The empty weight must include the non usable fuel staying in tanks and pipes (about 7 lb). The empty weight is the one which appears in the last weight and balance sheet.

2.5 - Engine limitations

Continuous duty of starter 30 sec.

Maximum continuous rating 2575 RPM

Maximum rating at take-off 2575 RPM

OIL

Maximum temperature 118°C-244°F

Normal pressure 4,2 to 6.2bar

Minimum pressure at reduced RPM .. 1.7 bar

Red warning light rated at 1 bar

FUEL

Normal pressure 35 to 550 mbar

2.6 - Propeller limitations

Maximum rating 2700 RPM

2.7 - Limits of use in flight

2.7.1 - VFR night and IFR flights

"The aircraft may be operated in VFR or IFR conditions, according to the installed equipment which is defined in the addendum corresponding to the night VFR or night IFR flight use.

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2.7.2 - Icing conditions

Flight is prohibited in icing conditions

2.7.3 - Demonstrated cross-wind

Maximum component at 90° : 16 kt

2.7.4 - Limit load design factors at maximum weight

Category	Flaps retracted	
	N	D
n	+3.8	+ 4.4
	-1.5	- 1.8

Limit load design factor flaps extended n = 2

2.7.5 - Spins and inverted flight

VOLUNTARY SPINS AND INVERTED FLIGHT ARE PROHIBITED

2.8-Manoeuvres permitted in "Utility" category

Manoeuvre	RECOMMENDED/entry speed
Chandelle	VI = 260 km/h - 140 kt - 162 MPH
Lazy eight	VI = 230 km/h - 124 kt - 143 MPH
Steep turns (> 60°)	VI = 200 km/h - 108 kt - 124 MPH

2.9-Instruction plates and markings on instruments

2.9.1 - Instruction plate

FLIGHT CONDITIONS : DAY VFR
 Icing conditions : Not allowed

MAX-LOAD. 100 lbs
 4 persons - max. load 55 lbs

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	Category N	Category U
Max weight	2645 lbs	2205 lbs
Never exceed speed Vne	170 kts	182 kts
Limit manoeuvring load factor	3.8 g	4.4 g
Rough air max. speed	135 kts	135 kts
Max. speed flaps extended	95 kts	95 kts
Max. IAS with controls fully deflected	113 kts	113 kts

This aeroplane must be operated as a normal or utility category aeroplane in compliance with the markings and placards.

The limitations given on the airspeed indicator apply on its normal category operation.

All aerobatic manoeuvres (including spins) are prohibited in normal category operation.

For utility category operation refer to the aeroplane flight manual.

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2.9.2 - Additional instruction plate in case of utilization of the rear seat in three-seater accomodation

" 3 passengers on the rear seat : maxi weight of each 60kg (132 lb)".

2.9.3 - Markings on instruments

- Tachometer

Green sector 750 to 2575 RPM

Red radial line 2575 RPM

- Oil thermometer

Yellow sector under 40°C - 104°F

Green sector from 40 to 118°C (104°F to 244°F)

Red sector above 118°C-244°F

- Oil pressure gage

Red sector under 1.7 bar

Yellow sector from 1.7 to 4.2 bar

Green sector from 4.2 to 6.2 bar

Yellow sector from 6.2 to 7 bar

Red sector above 7 bar.

- Carburettor air thermometer

Yellow sector from -15 to +5°C (5°F to 41°F) or

Yellow sector from -10° to +10°C (14°F to +50°F)

- Fuel pressure gage

Red sector under 50 m.bar

Green sector above 50 m.bar

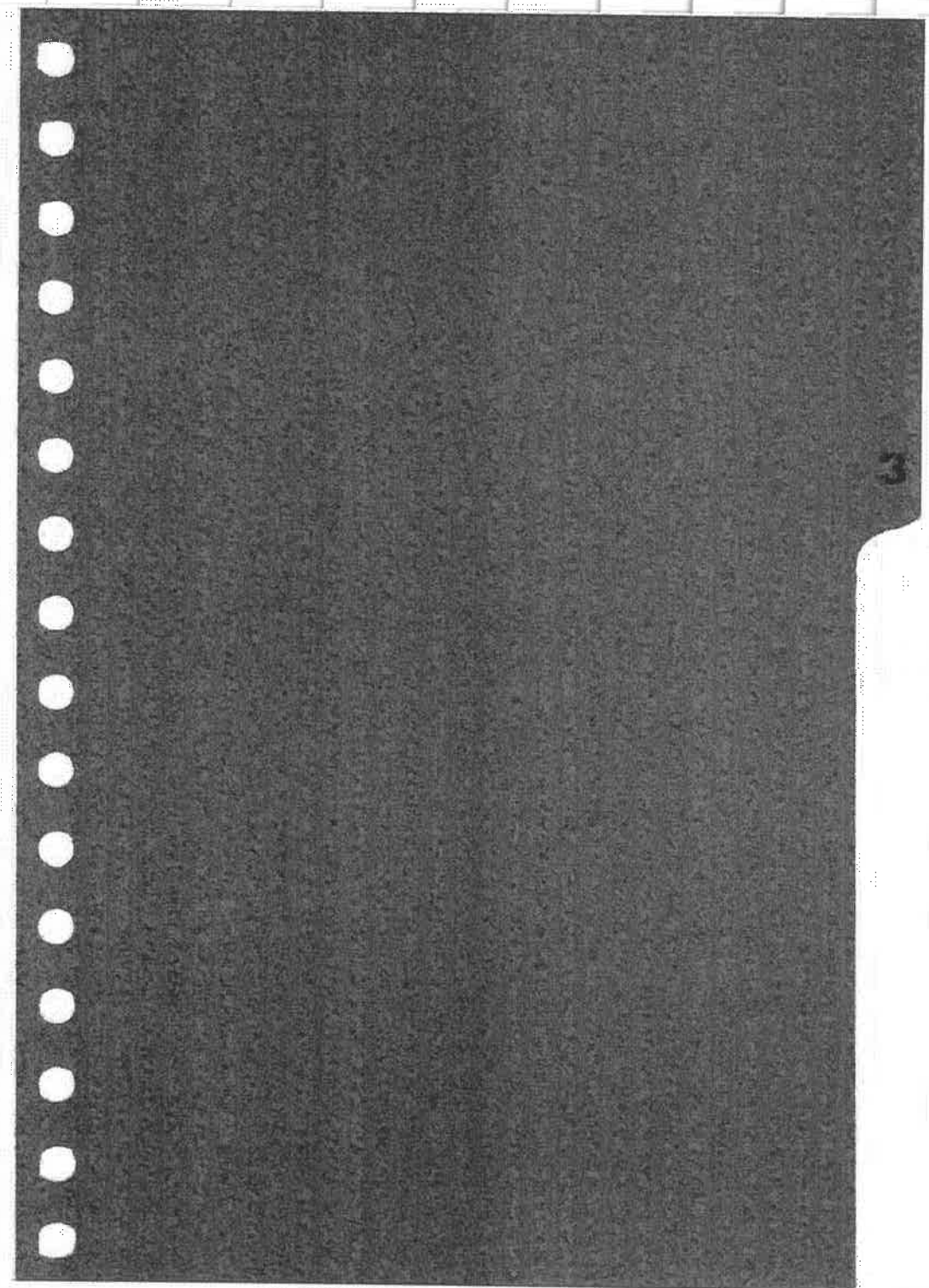
- Airspeed indicator

White sector from 103 to 176km/h-56 kt to 95kt

Green sector from 109 to 250km/h-59 kt to 135kt

Yellow sector from 250 to 315km/h-135kt to 170kt

Red line at 315 km/h - 170 kt.



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SECTION 3
EMERGENCY PROCEDURES

3.1 - Engine failure at take-off

Reduce RPM to minimum. Brake carefully while pulling the control stick fully rearward.

3.2 - Engine failure after take-off

Make use of available power to assist in reaching selected landing ground ahead. When sure that the selected ground can be reached, extend the flaps fully. Speed should not drop under. $V_1 = 130 \text{ km/h} - 70 \text{ kt} - 81 \text{ MPH}$

Before touch-down :

- cut-off magneto switch
- cut-off main switch
- close fuel cock

CAUTION : DO NOT ATTEMPT TO TURN

The altitude drop and the increase in stalling speed resulting from a turn may cause an untimely touch-down in a hazardous attitude.

3.3 - Engine failure in flight

CHECK

- Fuel pressure. Switch on the booster pump
- Fuel level indicators
- Fuel cock open on the tank with the highest level.
- Mixture on full rich (pushed)
- Carburettor heat on full

Fly the aircraft to the best lift-to-drag ratio speed $170 \text{ km/h} - 92 \text{ kt} - 106 \text{ MPH}$ with retracted flaps. The aircraft flies over 10 times approx its altitude (with no wind).

3.4 - Forced landing with an engine failure.

- Fuel cock closed
- Set to full RPM
- Magneto switch cut-off
- If radio installation is provided, send distress signals.

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BEFORE LANDING

- Seat belts..... fastened
- Canopy.....unlocked(not open)
- Speed.....130 km/h-70kt-81 MPH
- Flaps in final approach.....Extended 30°
- Main switch.....Off
- Flare out just before touch-down
- On ground, maintain control stick fully rearward.

3.5 - Precautionary landing

- Observe the landing area by flying over several times at low speed if necessary.
VI = 135 km/h - 73 kt - 84 MPH
- Proceed to a careful approach, with flaps extended (30°) VI = 120km/h-65 kt-75MPH propeller pitch fully fine.
- Main switch.....off
- Flare out just before touch-down while setting throttle control to minimum RPM.

3.6 - Engine fire

- Fuel shut-off cock.....closed
- Booster pump.....off
- Throttle control to full RPM
- Ventilation control....."shut-off"
- After engine stopping
- Magneto switch.....off
- Main switch.....off
- Generator field switch.....off

CAUTION

NO ATTEMPT SHOULD BE MADE TO RE-START THE ENGINE AFTER A FIRE

3.7 - Electrical fire

- Switch off generator excitation
- Set main switch off
- Extinguish the fire using all means available (extinguisher supplied on option)
- In order to evacuate smoke, open fully the ventilation and if necessary open the canopy by 10 cm (4 in) at VI < 180 Km/h-97 kt- 112 MPH

3.8 - Vibrations

Vibrations can be initiated by the engine, or by carburettor icing.

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or by too rich a mixture. Refer to section 4 for adjust the mixture.

In all other cases, land at the earliest opportunity in order to check the cause. Check oil pressure and temperature

3.9 - Fuel supply failure

Should a fuel pressure loss occur :

- Switch on booster pump
- Select the tank with the highest level
In case of RPM drop at full throttle, due to exhaustion of fuel in one tank, reduce throttle to half value approximately in order to ensure quick pick-up on the other tank. Switch to the other tank while booster pump is operating. Advance throttle as soon as the fuel pressure rises.

3.10 - Oil supply failure

In case of oil pressure drop, check the oil temperature. If excessively high (red sector) - Decrease power.
- Proceed to the airfield while taking all measures for a possible landing in the country

3.11 - Icing

3.11.1 - Airframe

Since the airframe is not provided with de-icing devices, the icing area should be left as quick as possible. Ice on the windshield can be removed more rapidly by setting the air conditioning system on fully hot position.

3.11.2 - Carburettor

In case of icing indication (RPM drop, manifold pressure drop, slight vibrations) pull out fully the carburettor heating control for a moment in order to remove the ice and then, push in the control progressively to the cold position. If the aircraft is fitted with a carburettor air thermometer (option88) maintain the indicated temperature within sector located between +5°C and +20°C (41°F and 68°F).

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NOTE :

Pulling the carburettor heating control may cause the RPM to drop by 100 RPM, the manifold pressure to drop by 30 to 50 m. bar, and may increase the vibration level. After the carburettor heating is adjusted it is mandatory to adjust the mixture to suppress the vibrations. The use of carburettor heating increases appreciably the hourly fuel consumption.

3.12 - Propeller governor failure

In case of oil pressure drop in the governor system or a control breakdown, the propeller moves to low pitch.

-Control the engine in order not to exceed 2575 RPM. Full throttle is possible at low speeds only

-Check oil pressure and temperature.

3.13 - Electrical generation failure

Failure of the a.c. generator energizes the red warning light. Check the discharge indication on the ammeter. Check the circuit breaker and engage it if required.

IF THE DISCHARGE STILL REMAINS

- Switch off generator field supply.

-Switch off all electrical equipment not essential for proceeding with the flight.

3.14 - Electrical circuit failure

Failure of electrical equipment : pressure, temperature and fuel level indicators.

-Check the circuit breakers panel. When a circuit breaker is released its knob appears in projection on the instrument panel.

-Reengage the circuit breaker after the checking of the circuit.

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3.15 - Airspeed indicating system failure

In the case of erroneous indications in flight, carry out the approach at an airspeed at which the LE slats begin to open. On ground, bleed the systems and check pitot tubes and static ports for cleanliness. Check the systems for leaks prior to checking the instruments.

3.16 - Locking of L.E. slats

Should the nose edges lock in closed slots position, do not fly under VI = 140 km/h-76 kt - 87 MPH. Proceed to a careful landing with the following approach configuration.

VI = 140 km/h - 76 kt - 87 MPH flaps retracted

VI = 135 km/h - 73 kt - 84 MPH flaps extended 30°

3.17 - Involuntary spins

It is mandatory to apply the spin recovery procedure as soon as the pilot is noticing that the aircraft enters into spinning and this, at the latest, before the aircraft has carried out a complete turn.

RECOVERY SPIN PROCEDURE

Rapidly and simultaneously deflect :

-elevator control quite in nose-down pitch range (see note) -

-rudder control fully against.

-ailerons at neutral position -

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Maintain the three controls in these positions until the spin has stopped.

As soon as the rotation has stopped : rudder control at neutral position and recovery carefully.

NOTE : The elevator is the most important control surface for the spin recovery.

3.18 - Landing without elevator control

To search for a mini VI with engine in order to maintain the aircraft in very slight descent with the elevator trim tab set for maxi nose-up attitude.

Carry out a very long final approach, facing the runway. As the case may be, increase the RPM in order to decrease the rate of descent or decrease the RPM in order to increase the rate of descent.

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SECTION IV
NORMAL PROCEDURES

4.1 - Preparing for flight

4.1.1 - Determining the weight and C.G. location
(Use of the graph.)

1°) Preparation

On the graph, scribe a cross at point MO corresponding to the weight and C.G. location of the aircraft, as mentioned on Inspection Register (weighing and C.G. location report).

2°) Determining C.G. location

When plotting the vectors, make sure that the moment curve is correctly placed by checking the parallelism of weight reference lines. At the point corresponding to the weight and C.G. location of the empty aircraft MO, set point O of "pilots" vector and draw a line whose length corresponds to the added weight. From the new point obtained draw the "passengers" vector and then proceed in the same way for "luggage" and "fuel" vectors. The end of this drawing allows reading the weight and C.G. location of the aircraft. In no case should the last "fuel" vector cross the shaded areas.

Sample drawn on the graph

Weight of empty aircraft (standard)

695kg - 1532 lb

C.G. location 0,787 m - 29.98 in

Pilots 154kg - 340 lb

Passengers 154kg - 340 lb

Luggage 27kg - 59 lb

Fuel (236l - 51.92 Imp. gall.

62.30 gal US 170kg - 374 lb

This yields : total weight 1200 kg-2645 lb
resulting C.G. location 27,47 %

Edition : 1

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3°) Additional fixed weights

When adding weights, the C.G location changes, and then it is advisable to determine its new value and to localize it on the graph by proceeding as follows :

- On the moment curve, localize on the reference axis point B corresponding to the position of the weight installed in the aircraft.
- From point A, draw a line which crosses point B.
- On this line, plot point C corresponding to the installed weight as read on rear passengers scale.
- Drawing vector BC on the graph from point MO, gives the new empty C.G location MI.
- Example drawn on the graph.
- Weight of 20 kg 44 lb installed within the area of the rear seat.

4°) Limit weight and C.G (refer to section 2)

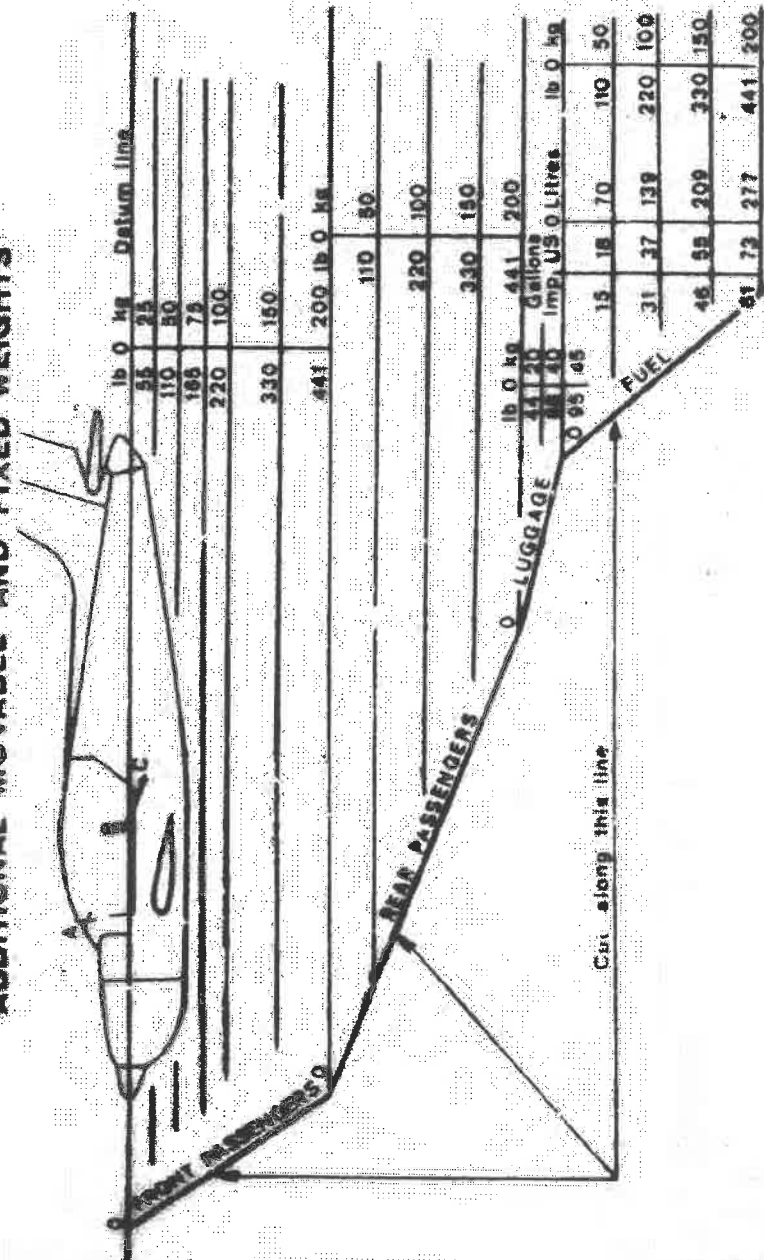
Loading is correct provided the resulting point giving the weight and C.G location is located within the non-shaded area.

NOTE

Correct loading of the aircraft is the responsibility of the pilot. The latter must check that C.G location does not move beyond the limits due to fuel consumption during flight.

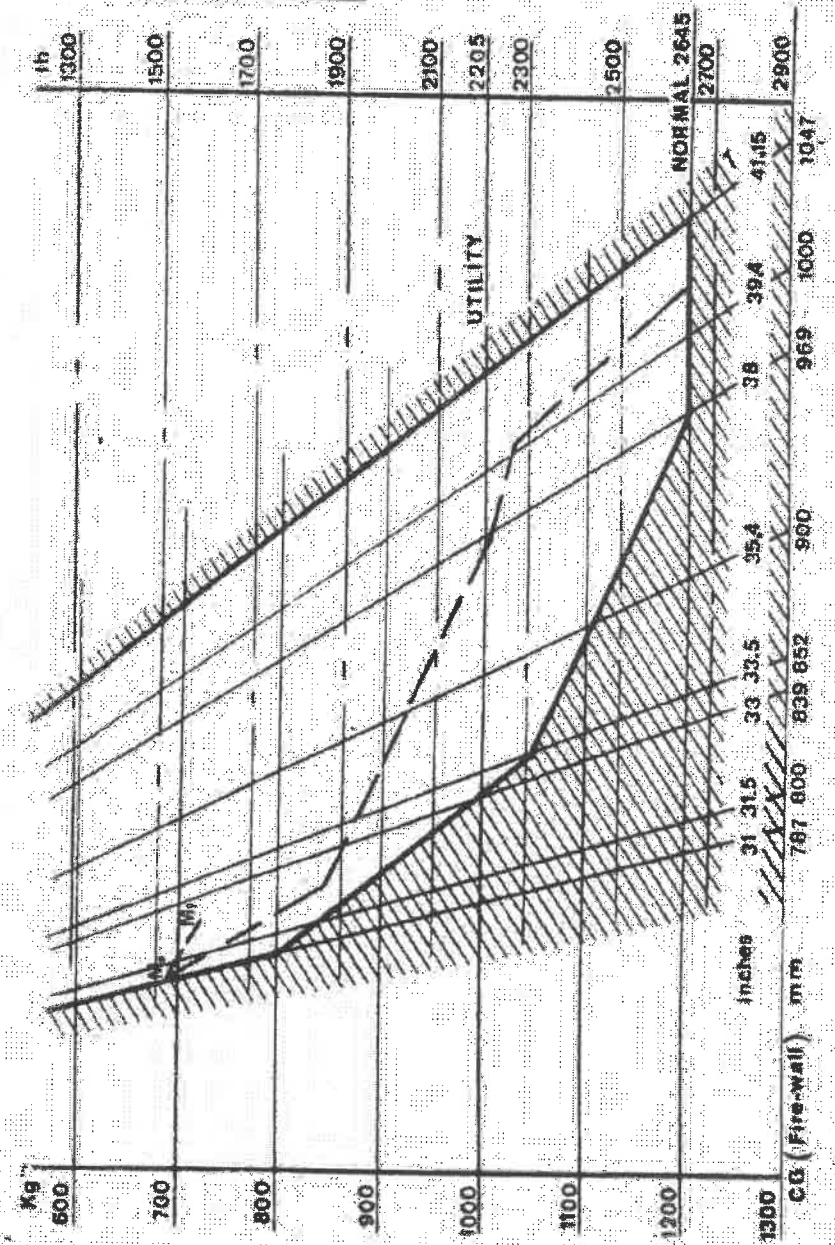
MOMENT CURVE RALLYE 235C

ADDITIONAL MOVABLE AND FIXED WEIGHTS



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4.1.2 - CG Location graph



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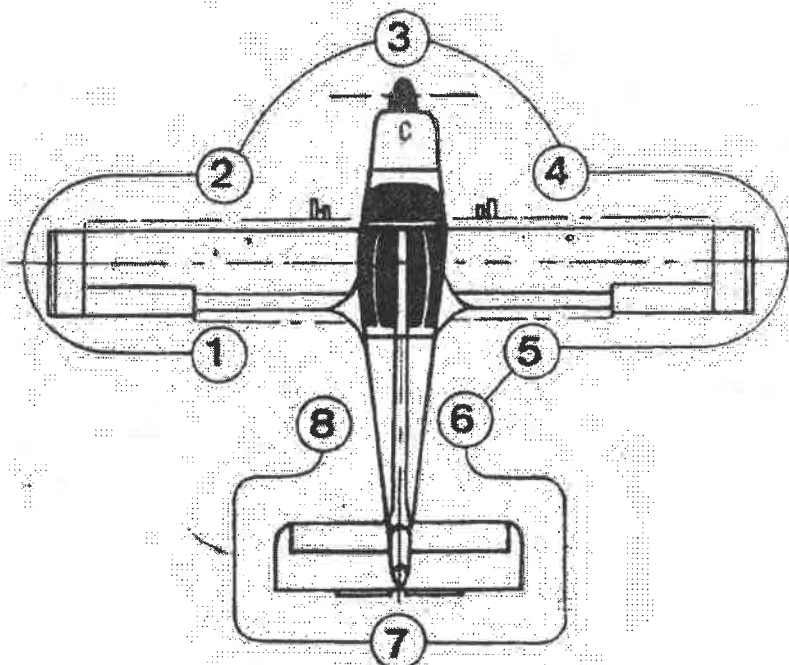
4.2 - Handling on ground

A towing fork supplied in the aircraft kit fits onto the rear wheel and allows handling the aircraft on ground.

For ground operation it is forbidden to push on the movable surfaces : L.E slats, flaps, ailerons, empennage, propeller etc....

On flat ground one operator can move the aircraft using the towing fork.

4.3 - Checking before flight



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4.3.1 - External check

Cabin

Canopy open	normal sliding
Flaps	extended
Magneto selector	set to off
Flight controls	unlocked
Main switch	stop
Tab	neutral position

Carry-out the check by turning clockwise around the aircraft starting from the left side of the cabin.

① Left wing

Ailerons	controls)
Flaps	Hinges) checked
	Deflections)
	Plays)
Ram air inlet	clean, not clogged
Fuel tank	level checked
Fuel tank plug and door	installed, locked
Bleeding	carried out
L.E slats	clean internal surface rollers and arms installed, normal motion

② Main left landing gear

Tire	inflated
Shock absorber	correct

③ Forward fuselage section

Windshield	clean
Oil level	checked, door locked
Cowlings	closed and locked
	no trace of leak
Propeller	clean, good condition

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- | | |
|---------------------|-------------------|
| Propeller nose cone | no play |
| Air intakes | clean not clogged |
- ④ Right main landing gear
- | | |
|----------------|----------|
| Tire | inflated |
| Shock absorber | correct |
- ⑤ Right wing
- | | |
|-------------------------|--|
| L.E. slats | Clean internal surface, rollers and arms installed and locked, normal motion carried out level checked |
| Bleeding | |
| Fuel tank | level checked |
| Fuel tank plug and door | installed, locked |
| Aileron- Controls | |
| Flaps Hinges (| |
| Deflections (| checked |
| Plays (| |
- ⑥ Rear right fuselage section
- | | |
|-------------|--------------------|
| Static port | clean, not clogged |
|-------------|--------------------|
- ⑦ Tail unit
- | | |
|-------------------------------------|---|
| Horizontal and vertical stabilizers | checked |
| Elevators rudder and tabs | Hinges, deflections and plays : checked |
| Controlled tabs | neutral position |
| Tail landing gear | |
| Tire | inflated |
| Shock absorber | correct |
- ⑧ Rear left fuselage section
- | | |
|-------------|---------------------|
| Static port | clean, not clogged. |
|-------------|---------------------|

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4.3.2 - Internal checking of the cabin

- | | |
|-----------------|---|
| Canopy | locking checked, then close and lock |
| Parking brake | applied |
| Seats | adjusted |
| Seat belts | fastened |
| Flight controls | free on 3 axes no play, no excessive friction |
| Tab | checked at neutral position |
| Flaps | retracted |

4.4 - Starting the engine

- | | |
|---------------------------|-------------|
| A.C. generator excitation | off |
| Magneto selector | set to off |
| Carburettor heating | set to cold |

4.4.1 - Normal procedure

- | | |
|-----------------------|---|
| Mixture | full rich |
| Main switch | on |
| Alarm panel | lights energized : ground power unit, oil pressure, fuel cock |
| propeller | full low pitch |
| Fuel level indicators | checked |
| Fuel cock | open, light off |
| Booster pump | operating |
| Injection | 2 to 3 times |
| Throttle control | pushed forwards by 2cm (~1in) |
| Surroundings | cleared |
| Starter | operated for 30 sec. max. |
| Magneto selector | on 1+2 after starting |
| Oil pressure | slow rising. |

4.4.2 - Hot engine procedure

Same as under 4.4.1 except no injection needed.

4.4.3 - Cold weather procedure

Same as under 4.4.1 except, after starting, the engine rating is maintained by successive injections up to 1000 to 1200 RPM.

If the engine is cranked by hand, check that :

- Chocks are installed
- Magnetos are off (selector set to off)

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CAUTION : TO AVOID DAMAGING THE BATTERY, NEVER OPERATE THE STARTER MORE THAN 30 SECONDS. BEFORE PROCEEDING TO THE NEXT START, ALLOW ONE MINUTE AT LEAST TO ELAPSE. NEVER OPERATE THE STARTER UNTIL THE PROPELLER HAS REACHED A COMPLETE STOP.

NOTE : CHECK OIL PRESSURE AS SOON AS THE ENGINE OPERATES. IF PRESSURE IS NIL AFTER 15 OR 20 SECONDS STOP THE ENGINE AND CHECK THE CAUSE.

4.4.4 - Starting failure

Proceed as follows

Mixture control	Fully lean
Throttle control	Fully open
Starter	Operated during a few seconds

Then proceed normally without injections

4.5 - After the engine has started

Rating	Between 1000 and 1200 RPM
A.C. generator excitation	ON
Booster pump	OFF
Fuel cock	Checked on both tanks
Turn and bank Indicator	Operating
Ammeter	Green sector, light out.

4.6 - Taxiing

Parking brake	released, light out
Elevator control	fully backward.

Taxi slowly while using the rudder.

If the rudder efficiency is not sufficient, use the brakes through short successive impulses since a prolonged action would result in slowing down the aircraft.

NOTE : Should a wheel run in a ground hole, avoid braking at the same time.

4.7 - Manœuvring point

4.7.1 - Ground run

Parking brake	applied light energized
---------------	-------------------------

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RALLYE 235 C FLIGHT MANUAL

Elevator control	rear sector
Fuel pressure	green sector
Oil pressure	green sector
Oil temperature	green sector
Mixture	full rich
Propeller	full low pitch
Maxi rating	2575 RPM
Propeller	2000 RPM
Checking of carburettor heating	connected then stopped
Propeller governor	2 cycles. Never decrease the rating below 1500 RPM
Magneto selection	Maxi drop 175 RPM. Difference between magnetos 50 RPM.

NOTE : When temperature is below 0°C 32°F, the carburettor air temperature should be maintained to 15°C 59°F approximately during magneto selection in order to avoid abnormal RPM drops. (Thermometer : optional)

4.7.2 - Before take-off

Seat belts	checked
Canopy	closed, locked
Flight controls	free
Tab	neutral position
Flaps	retracted
Magneto selectors	set to 1+2
Carburettor heating	set to cold
Mixture	full rich
Propeller constant speed	full low pitch
Fuel cock	open, light off
Booster pump	operating, light energized
Fuel pressure	green sector
Oil pressure	green sector
Oil temperature	green sector
Altimeter	reset

4.8 - Take-off

Parking brake	released, light off
Align the aircraft	
Set progressively to full throttle	N = 2575 RPM
Avoid braking during rolling.	

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Lift-off tail wheel	60 to 80 km/h - 32 to 43 kt - 37 to 50 MPH according CGloc.
Take-off cleanly	VI=120km/h-65 kt - 75 MPH
Brake	
Climb to 300 ft	VI=130km/h-70 kt - 81 MPH
Booster pump	Off, light off CORRECT PRESSURE

4.9 - Climb

4.9.1 - Normal climb with L.E slats retracted

Increase speed until slats close

Proceed with optimum climb speed.

VOM = 170 km/h - 92 kt - 106 MPH minus 7 km/h -

4 kt - 4 MPH every 5000 ft.

Maintain full manifold pressure and 2575 RPM maximum. Check the temperatures.

4.9.2 - Maximum gradient climb L.E slats extended

The best climb gradient is obtained for VI = 130 km/h - 70 kt - 81 MPH.

4.10 - Cruise

For RPM to be set and cruise performances refer to section 5.

USE OF FUEL

Maintain 1/4 of fuel content in one tank, as read on the indicator, before exhausting the second tank. Switch back to the first tank.

(1/4 as read on the gauge corresponds to 31.5 litres i.e. (8.30 US gal. - 6.90 Imp.gal) approximately 32 mm of cruise flight)

NOTE : Before switching from one tank to the other, set the booster pump into operation.

Use of mixture control : Since satisfactory engine performance is closely related to mixture setting, adjustment must be carried out very carefully. Maintain mixture control on "full rich" position for take-off rated maximum continuous, climb however, during take-off from high elevation airport or during climbs, roughness or loss of power may result from overrichness.

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In such a case, adjust mixture control only enough to obtain smooth operation not for economy. Rough operation due to over-rich fuel/air mixture is most likely to be encountered in carburetted direct drive engines at altitude above 5000 ft.

Always enrich mixture before increasing power.

To lean the mixture, pull progressively the mixture control towards oneself. In order to obtain a more precise setting, use the E.G.T. indications, as follows :

Maximum cruise and climb

Never lean beyond 150°F (6 divisions) on rich side of peak E.G.T.

Economical cruise (75 % power and below)

Set the pointer at peak E.G.T.

NOTE : Take care not to lean the mixture excessively to avoid resulting detonations and overheating of the engine.

4.11 - Descent

4.11.1 - Fast descent

Carburettor heating	set to hot
Mixture control	full rich
Propeller constant speed	full low pitch
Manifold pressure set as	required

Every 1500 ft, advance throttle momentarily.

4.11.2 - Approach

Mixture control	-full rich
Propeller	-full low pitch
Booster pump	-on, light energized
Fuel cock	-open on the tank of highest level
Flaps extended	-as required-Vfe= 176km/h 95 kt - 109 MPH.

Carburettor heating-adjusted	
Final turn	VI=150km/h-81 kt-93 MPH-
Final approach	
Flaps retracted	VI=140km/h-76 kt-87 MPH-
Flaps extended (30°)	VI=130km/h-70 kt-81 MPH

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RALLYE 235 C FLIGHT MANUAL

4.12 - Landing

4.12.1 - Normal landing (flaps extended)

Flare at maximum (L.E slats open automatically)

Touch-down VI=110 km/h-59 kt-68 MPH

Maintain the tail wheel on ground by keeping the control stick backward eventually, apply the brakes.

4.12.2 - Landing with flaps retracted

Same procedure as for normal landing, flaps extended but with touch-down speed : VI = about 120 km/h - 65 kt - 74 MPH

4.12.3 - Go-around

Throttle control full RPM

Carburettor heating full cold

Elevator trim tab at neutral position

Maintain VI=130 km/h-70 kt-81 MPH

Retract the flaps slowly while taking the normal climb slope at VI=170 km/h - 92 kt - 106 MPH.

4.13 - After landing

Booster pump off, light off

Flaps retracted

Tab neutral position

Carburettor heating full cold

4.14 - Stopping

Parking brakes applied

Electrical equipment de-energized

Magneto cut-off test at idle, cut-off then set to 1+2

Reduced RPM N = 750 RPM $\pm$ 50

Mixture control fully "leaned out"

After engine stopping :

Magneto selector set to off

AC generator excitation off

Main switch off

Fuel cock closed.

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SECTION 5

ACOUSTIC LIMITATION

In compliance with decree dated 15th April 1977, the maximum noise level permissible for SOCATA RALLYE 235 C aircraft corresponding to total maximum certification weight of 2645 lbs, is of 76 d B (A).

The noise level which was determined in conditions stated by above-mentioned decree at maximum continuous power is of 73.6 d B (A).

In compliance with decree dated 30th July 1975, SOCATA RALLYE 235 C aircraft has received the noise limitation Type Certificate n° N22 dated 21st December 1981.

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RALLYE 235 C FLIGHT MANUAL

PERFORMANCES

Performances given in this section result from official tests carried out in accordance with AIR 2052 regulation.

Measurements were taken with zero wind condition, on dry and hard runway.

On grass runway, the rolling distances at take-off or landing shall be increased by :

- 7 % on hard
- 10 % on short grass
- 25 % on high grass

More than 25 % on soft, muddy or snowy field.

The performances are presented in function of the altitude in feet and the temperature at the considered altitude.

SOCATA RALLYE 235 C FLIGHT MANUAL

5.1 - Take-off performances

Take-off performances are given at the weight of 1200 kg - 2645 lb and - 900 kg - 1984 lb

5.1.1 - Take-off at the weight of 1200 kg - 2645 lb Flaps retracted

Take-off speed : 130 km/h - 70 kt - 80 MPH

Rolling distance in meters						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		280	324	360	398	426
2000		336	388	431	478	511
4000		403	467	517	574	613
6000		484	559	623	690	737

Speed when crossing the 15 meters obstacle

VI = 130 km/h - 70 kt - 80 MPH

Distance in meters for crossing the 15 meters obstacle						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		393	452	500	553	592
2000		468	543	601	670	719
4000		569	655	732	819	877
6000		692	808	940	1022	1103

SUCATA RALLYE 235 C FLIGHT MANUAL

Take-off speed : VI = 130 km/h - 70 kt - 80 MPH

Rolling distances in feet						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		919	1063	1181	1306	1398
2000		1102	1273	1414	1568	1676
4000		1322	1532	1696	1883	2011
6000		1588	1834	2044	2264	2418

Speed when crossing the 50 feet obstacle

VI = 130 km/h - 70 kt - 80 MPH

Distances in feet for crossing the 50 feet obstacle						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		1289	1483	1640	1814	1942
2000		1535	1781	1972	2198	2359
4000		1867	2149	2402	2687	2877
6000		2270	2651	3084	3353	3619

SOCATA RALLYE 235 C FLIGHT MANUAL

5.1.2 - Take-off at the weight of 900 kg - 1984 lb
Flaps retracted
Take-off speed : VI = 110 km/h - 59 kt - 68 MPH

Rolling distances in meters						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		182	210	234	258	276
2000		218	252	280	310	332
4000		261	303	336	373	398
6000		314	363	404	448	479

Speed when crossing the 15 meters obstacle
VI = 120 km/h - 65 kt - 74 MPH

Distances in meters for crossing the 15 meters obstacle						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		255	292	324	357	383
2000		298	351	389	434	463
4000		368	427	474	531	568
6000		447	523	588	662	714

SUGATA RALLYE 235 C FLIGHT MANUAL

Take-off speed : VI = 110 km/h - 59 kt - 68 MPH

Rolling distances in feet						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		597	689	768	845	906
2000		715	827	919	1017	1085
4000		856	994	1102	1224	1305
6000		1030	1191	1335	1477	1572

Speed when crossing the 50 feet obstacle
VI = 120 km/h - 65 kt - 74 MPH

Distances in feet for crossing the 50 feet obstacle						
Zpft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		837	958	1063	1171	1237
2000		978	1152	1276	1424	1525
4000		1207	1401	1555	1742	1865
6000		1467	1716	1929	2172	2342

SOCATA
RALLYE 235 C FLIGHT MANUAL

5.2 - LANDING PERFORMANCES

Landing performances are given for weights of
1140 kg- 2513 lb and 900 kg- 1984 lb.

5.2.1 - Landing at the weight of 1140 kg - 2513 lb.

Flaps extended

Final speed of : VI = 130 km/h- 70 kt-
80 MPH.

Distance in meters from crossing the 15 m. obstacle to complete stop						
Zp ft	0°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		346	374	395	415	433
2000		363	392	418	439	456
4000		384	416	436	456	479
6000		404	440	462	484	503

Rolling length in meters						
Zp ft	0°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		144	156	165	175	181
2000		155	168	177	188	195
4000		165	181	190	203	211
6000		180	194	205	216	224

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RALLYE 235 C FLIGHT MANUAL

Final speed : VI = 130 km/h - 70 kt - 80 MPH

Distance in feet from crossing the 50 feet obstacle to complete stop						
Zp ft	0°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		1135	1227	1296	1362	1421
2000		1191	1286	1371	1440	1496
4000		1260	1365	1430	1496	1572
6000		1325	1444	1516	1587	1650

Rolling length in feet						
Zp ft	0°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		472	512	541	574	594
2000		509	551	581	617	640
4000		541	594	623	666	692
6000		591	636	673	709	735

SOGATA RALLYE 235 C FLIGHT MANUAL

5.2.2 - Landing at the weight of 900 kg- 1984lb.

Flaps extended

Final speed of : VI=110 km/h- 59 kt- 68 MPH

Distance in meters from crossing the 15 meters obstacle to complete stop						
Zp ft \ θ°C / °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104	
0	290	310	325	340	350	
2000	295	325	340	360	375	
4000	325	335	360	380	390	
6000	335	360	380	395	415	

Rolling length in meters						
Zp ft \ θ°C / °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104	
0	125	135	140	145	150	
2000	135	145	150	160	165	
4000	145	155	160	170	175	
6000	155	165	175	180	190	

SOGATA RALLYE 235 C FLIGHT MANUAL

Final speed : VI = 110 km/h- 59 kt- 68 MPH.

Distance in feet from crossing the 50 feet obstacle to complete stop						
Zp ft \ θ°C / °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104	
0	951	1017	1066	1115	1148	
2000	968	1066	1115	1181	1230	
4000	1066	1099	1181	1247	1280	
6000	1099	1181	1247	1296	1352	

Rolling length in feet						
Zp ft \ θ°C / °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104	
0	410	443	459	476	492	
2000	443	476	492	525	541	
4000	476	509	525	558	574	
6000	509	541	574	591	623	

SOCATA RALLYE 235 C FLIGHT MANUAL

5.3 - Rates of climb

5.3.1 - Rates of climb at the weight of
1200 kg - 2645 lb

Flaps retracted

Optimum climb speed : VI = 170 km/h-
92 kt - 105 MPH

Rates of climb in m/s.						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		5,66	5,22	4,92	4,59	4,39
2000		4,94	4,52	4,22	3,93	3,74
4000		4,29	3,89	3,60	3,32	3,14
6000		3,64	3,26	2,98	2,72	2,55
8000		3	2,64	2,36	2,12	1,95

Rates of climb in ft/min						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		1114	1028	969	904	864
2000		972	890	831	774	736
4000		844	766	709	654	618
6000		717	642	587	535	502
8000		591	520	465	417	384

SUCRIA RALLYE 235 C FLIGHT MANUAL

Final speed : VI = 110 km/h- 59 kt- 68 MPH.

Distance in feet from crossing the 50 feet obstacle to complete stop						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		951	1017	1066	1115	1148
2000		968	1066	1115	1181	1230
4000		1066	1099	1181	1247	1280
6000		1099	1181	1247	1296	1352

Rolling length in feet						
Zp ft	θ°C °F	-20 -4	0 +32	+15 +59	+30 +86	+40 +104
0		410	443	459	476	493
2000		443	476	492	525	541
4000		476	509	525	558	574
6000		509	541	574	591	623

SOCATA RALLYE 235 C FLIGHT MANUAL

5.3 - Rates of climb

5.3.1 - Rates of climb at the weight of 1200 kg - 2645 lb

Flaps retracted

Optimum climb speed : VI = 170 km/h -
92 kt - 105 MPH

Rates of climb in m/s.						
Zp ft	θ°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		5,66	5,22	4,92	4,59	4,39
2000		4,94	4,52	4,22	3,93	3,74
4000		4,29	3,89	3,60	3,32	3,14
6000		3,64	3,26	2,98	2,72	2,55
8000		3	2,64	2,36	2,12	1,95

Rates of climb in ft/min						
Zp ft	θ°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		1114	1028	969	904	864
2000		972	890	831	774	736
4000		844	766	709	654	618
6000		717	642	587	535	502
8000		591	520	465	417	384

SOCATA RALLYE 235 C FLIGHT MANUAL

5.3.2 - Rates of climb at the weight of 900 kg - 1984 lb

Flaps retracted

Optimum climb speed : VI = 145 km/h -
78 kt - 90 MPH

Rates of climb in m/s.						
Zp ft	θ°C	-20	0	+15	+30	+40
	°F	-4	-32	+59	+86	+104
0		8,2	7,6	7,20	6,8	6,5
2000		7,4	6,9	6,5	6,2	5,9
4000		6,8	6,3	5,9	5,6	5,3
6000		6,1	5,6	5,3	5	4,8
8000		5,4	5	4,7	4,4	4,2

Rates of climb in ft/min						
Zp ft	θ°C	-20	0	+15	+30	+40
	°F	-4	+32	+59	+86	+104
0		1614	1496	1417	1339	1280
2000		1457	1358	1280	1220	1161
4000		1339	1240	1161	1102	1043
6000		1201	1102	1043	984	945
8000		1063	984	925	866	827

SOCATA RALLYE 235 C FLIGHT MANUAL

5.4 - Performances in level flight

5.4.1 - At the weight of 1200 kg- 2645 lb
with 246 l. usable fuel capacity
54,00 Imp. gal - 65 U.S. gal.-

W 75 % - 176 HP								
Z ft	N r.p.m	PA mbar	PA in.Hg	VI km/h	Vp km/h	Cons. Range l/h h.mn km		
0	2400	800	23.6	233	231	52	4.43	1093
2000	2400	785	23.2	230	235	53.5	4.35	1080
4000	2400	765	22.6	227	239	56	4.23	1050
6000	2400	745	22	224	243	59	4.09	1006

W 70 % - 164 HP								
Z	N	PA	PA	VI	Vp	Cons. Range		
0	2300	790	23.3	226	224	49	5.01	1124
2000	2300	770	22.7	224	228	50	4.55	1122
4000	2300	750	22.2	221	232	52	4.43	1097
6000	2300	735	21.7	218	236	54	4.33	1075
8000	2500	680	20	215	240	56	4.23	1054

W 65 % - 153 HP								
Z	N	PA	PA	VI	Vp	Cons. Range		
0	2300	750	22.2	219	217	45	5.27	1230
2000	2300	735	21.7	216	221	46	5.20	1183
4000	2300	715	21.1	213	224	47.5	5.10	1160
6000	2300	700	20.7	210	228	49	5.01	1145
8000	2300	680	20	207	231	51	4.92	1114
10000	2500	635	18.8	204	235	54	4.33	1070

SOCATA RALLYE 235 C FLIGHT MANUAL

In statute miles and U.S. gallons

W 75 % - 176 HP								
Z ft	N RPM	PA mbar	PA in.Hg	VI MPH	Vp MPH	Cons. RANGE G/h h.mn st.M		
0	2400	800	23.6	143	142	13.7	4.43	678
2000	2400	785	23.2	142	145	14.1	4.35	670
4000	2400	765	22.6	140	147	14.8	4.23	651
6000	2400	745	22	138	150	15.6	4.09	624

W 70 % - 164 HP								
Z	N	PA	PA	VI	Vp	Cons. Range		
0	2300	790	23.3	139	138	12.9	5.01	697
2000	2300	770	22.7	138	140	13.2	4.55	696
4000	2300	750	22.2	136	143	13.7	4.43	680
6000	2300	735	21.7	134	145	14.3	4.33	667
8000	2500	680	20	132	148	14.8	4.23	653

W 65 % - 153 HP								
Z	N	PA	PA	VI	Vp	Cons. Range		
0	2300	750	22.2	135	134	11.9	5.27	763
2000	2300	735	21.7	133	136	12.2	5.20	733
4000	2300	715	21.1	131	138	12.5	5.10	719
6000	2300	700	20.7	129	140	12.9	5.01	710
8000	2300	680	20	127	142	13.5	4.92	691
10000	2500	635	18.8	126	145	14.3	4.33	663

SOCATA RALLYE 235 C FLIGHT MANUAL

In nautical miles and Imperial gallons

W = 75 Z - 176 HP								
Z ft	N RPM	PA m.bar	PA In.Hg	VI kt	Vp kt	Imp. G/h	Cons. h.mn	RANGE N.M.
0	2400	800	23.6	126	125	11.4	4.43	590
2000	2400	785	23.2	124	127	11.8	4.35	583
4000	2400	765	22.6	123	129	12.3	4.23	567
6000	2400	745	22	121	131	13	4.09	543

W = 70 Z - 164 HP								
0	2300	790	23.3	122	121	10.8	5.01	607
2000	2300	770	22.7	121	123	11	4.55	606
4000	2300	750	22.2	119	125	11.4	4.43	592
6000	2300	735	21.7	118	127	11.9	4.33	580
8000	2300	680	20	116	130	12.3	4.23	569

W = 65 Z - 153 HP								
0	2300	750	22.2	118	117	9.9	5.27	664
2000	2300	735	21.7	117	119	10.1	5.20	639
4000	2300	715	21.1	115	121	10.4	5.10	626
6000	2300	700	20.7	113	123	10.8	5.01	618
8000	2300	680	20	112	125	11.2	4.92	602
10000	2500	635	18.8	110	127	11.9	4.33	578

SOCATA RALLYE 235 C FLIGHT MANUAL

NOTE 1 - Vp ground speed with zero wind
Vc indicated AIR speed (VI or IAS)
corrected by the airspeed indicating
system calibration.

NOTE 2 - The ranges and crossing distances shown
on the previous tables agree with complete
use of fuel at the indicated altitude,
ignoring take-off, climb, etc...

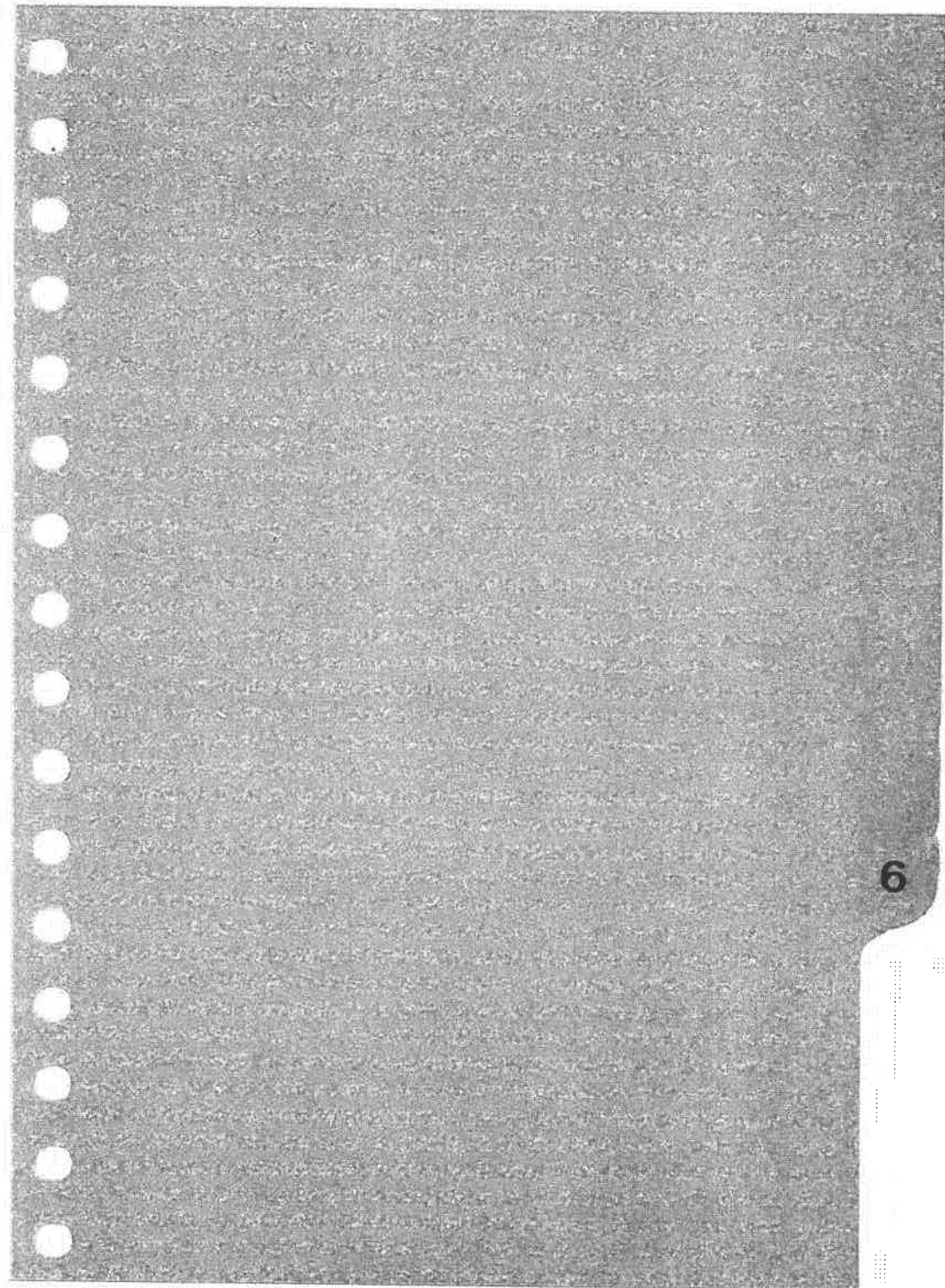
5.5 - Airspeed indicating system calibration
Taking into account the airspeed indicator
tolerances :

$$VC \approx VI - 2 \text{ km/h}$$

5.6 - Recall

Stalling speeds (IAS) for a weight of 1200kg - 2645lb at reduced RPM									
	BANK								
	0°			30°			45°		
	Km/h	kt	MPH	Km/h	kt	MPH	Km/h	kt	MPH
Flaps 0°	109	59	68	116	63	72	130	70	81
Flaps 30°	103	56	64	110	59	68	123	66	76

Demonstrated cross-wind
Maximum component at 90° : 16 kt



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SECTION 6

SPECIAL MANOEUVRES AND OPERATIONS

6.1 - Stalling

CAUTION :

NEVER TRY STALLING NEAR THE GROUND

Stalling with reduced RPM is restricted by the elevator control stop, the aircraft falling flat.

Stalling with high RPM is characterized by a very nose high attitude.

With rear C.G position, a mild wing drop may occur when the elevator control is close to its stop.

The aerodynamic warning is weak at reduced RPM but stronger at high power. Control may be regained immediately by easing the stick forward ; the altitude loss is small in all cases, and is minimum if RPM is immediately increased.

Stalling speeds (IAS) for a weight of 1200 kg 2645 lb - at reduced RPM.

Flaps	BANK								
	0°			30°			45°		
	km/h	kt	MPH	km/h	kt	MPH	km/h	kt	MPH
0°	109	59	68	116	63	72	130	70	81
30°	103	56	64	110	59	68	123	66	76

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NOTE : Values obtained with high RPM are lower by 12 km/h 6 kt - 7 MPH to 18 km/h - 10 kt 11 MPH than those given in the table hereabove.

6.2 - Flight with cross-wind

6.2.1 - Take-off

Aileron control actuated toward wind direction. Maintain the aircraft along the axis using the rudder and hold the tail wheel as soon as possible. Maintain main wheels on ground up to VI = 130 km/h - 70 kt - 81 MPH. Take-off cleanly in order to avoid touch-down with drift.

6.2.2 - Landing

Flaps extended to the minimum possible depending on the ground condition.

Make a crab angle approach or with the wing dropping in the wind direction.

Flare by placing the aircraft along the axis before touch-down.

When on ground maintain the aircraft along the axis using rudder pedals and then the brakes.

Roll while actuating the control stick toward wind direction.

6.3 - Flight in turbulent air

Maximum speed 250 km/h - 134 kt - 155 MPH

Recommended speed 220 km/h - 119 kt - 137 MPH

Check that pilot's and passenger's seat belts are sufficiently fastened.

6.4 - Use in cold weather

When outside temperature on ground is under 0° C - 32° F and since starting is more difficult due to the poor vaporization of fuel it is advisable, after starting, to help the engine running by means of the throttle lever until it reaches a rating from 1000 to 1200 RPM (See oil grade under 1.1.5).

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6.5 - Operation on short runways

6.5.1 - Take-off

Set progressively to full RPM while the brakes are applied. Extend the flaps at the beginning of take-off run.

As soon as the aircraft lifts off, set VI = 120 km/h - 65 kt - 75 MPH ; then retract the flaps progressively while reaching the climbing speed.

6.5.2 - Landing

Proceed to a flat approach with powered engine, VI = 120 km/h - 65 kt - 75 MPH flaps extended to 30°.

Just before touch down, fully reduce the RPM and flare at maximum.

On ground, keep the control stick fully rearward.

6.6 - Take-off after a forced landing

For taking off after landing in the country (see paragraph 3.5) only one pilot may be on board with a limited capacity of fuel.

With 1hr30 mn. of range the RALLYE 235 C will have an approximative weight of 860 kg -1896 lb. Then the take-off procedure is :

-Set progressively to full RPM while brakes are applied.

-Extended full flaps after the beginning of the take-off run.

-Take-off cleanly at VI=100 km/h- 54kt- 62 MPH

-Set VI = 110 km/h - 59 kt - 68 MPH.

- Take the maximum gradient climb VI = 130 km/h- 70 kt - 81 MPH.

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6.7 - Flight with open canopy

Normal flight is possible with the canopy open by 10 cm - 4 in approximately.

For an opening of 0.50 m - 20 in never exceed 180 km/h - 97 kt - 112 MPH.

In no case should the speed exceed 150 km/h 81 kt - 93 MPH, when the canopy is open by more than 0.50 m - 20 in.

NOTE : Never forget to lock the canopy in open position.

6.8 - Utilization of the anti-collision light

An instruction plate located on the left hand side of the instrument panel strip shows the utilization requirements of the anti-collision light (option nr 267)

CAUTION

Turn off strobe light when taxiing near other aircraft or when flying in fog or clouds. Standard position lights must be used for all night operations.

7.1.1 - Requirements

- a towing hook installed on a pylon at the rear section of the fuselage
- a cylinder head temperature indicator (bayonet type sensor) on cylinder n° 2.

Maximum weight of the towed assembly :

<u>Maximum weight of the aircraft</u>	<u>Maximum weight of the glider</u>
900 kg - 1984 lb	900 kg - 1984 lb
1000 kg - 2205 lb	600 kg - 1323 lb

Yellow sector below 93°C (199° F)

Green sector from 93°C to 224°C

(199°F to 237°F)

Yellow sector from 224°C to 260°C
(437°F to 500°F)

Red line at 260°C (500°F)

7.1.2 - Towing procedure

In addition to normal procedure, carry-out a functional test of the towing hook on the aircraft and glider, before any towing flight. Hook up the cable on aircraft and glider. Move the aircraft slowly in order to stretch the cable.

Set to full manifold pressure.

The rating, for full manifold pressure and full low pitch must be 2575 ± 0 rpm.

Take-off normally with flaps retracted or extended as necessary for towing slow gliders ($VI < 110 \text{ km/h}$ - 59 kt - 68 MPH). The extension of the flaps reduces the aircraft attitude but does not improve the rate of climb. Climb at $VI = 100 \text{ km/h}$ - 54 kt - 62 MPH to 120 km/h - 65 kt - 75 MPH depending on the types of gliders. The minimum towing speed is : $VI = 100/110 \text{ km/h}$ - 54/59 kt - 62/68 MPH. Keep, as far as possible, the cylinder head temperature pointer into the green sector.

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In sustained climb, keep watch on the oil temperature maintain it within the green sector by gradually reducing the power. In that case, set 2500 RPM by the pitch control and, eventually, adjust the manifold pressure by means of the throttle lever. After the glider has been released, set if possible such a descent rating as to avoid a sudden cooling of the engine.

It is recommended not to let the cylinder head temperature drop below 110°C (230°F)

Fly over the airfield to release the cable on ground by fully operating twice the release handle.
Turn and proceed to normal landing.

7.1.3 - Long distance towing :

Long distance towing can be carried out normally without special restrictions other than those resulting from the type of glider being towed.
Preferably, the engine rating in cruise should be 2400 RPM adjust the power with the throttle lever.

7.1.4 - Towing take-off on poor ground

Same procedure as under 7.1.2

To reduce the rolling length

Extend flaps (30°)

Set to maximum manifold pressure, full low pitch, brakes applied, towing cable stretched.

Release the brakes.

Take-off cleanly at VI = 100 km/h - 59 kt - 62 MPH.

Retract the flaps slowly while reaching the minimum climbing speed VI for retracting the flaps

110 km/h - 59 kt - 68 MPH.

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7.2 - Streamer towing

7.2.1 - Requirements

For the aircraft, same conditions as under 7.1.1
i.e. :

- Installation of a towing hook
- Installation of a cylinder head thermometer is recommended.
- Maximum weight of the aircraft : 900 kg-1984 lb.

The 100 C x.S of the streamer must not exceed 245 m²- 2637 Sq.ft. i.e. a maximum drag of 145 kg 320 lb at VI = 110 km/h - 59 kt - 68 MPH.

For instance, this drag corresponds to a streamer consisting of 45 characters 1,60 m- 62.992 in - high set on a lattice plus a trail 10 m - 32.808 ft long.

7.2.2 - Towing procedure

In addition to current procedures, carry out a functional test of the aircraft hook.

Hook the cable to the aircraft and to the streamer.

Lay the folded streamer down on the ground ahead of the aircraft in order to allow the latter reaching a sufficient speed at the time the streamer is lifted from the ground.

In the case of "Pick-up" hooking, the hook up speed must be VI : 100 km/h - 54 kt - 62 MPH.

Set full manifold pressure smoothly. The engine rating during ground run (full low pitch) must be 2575 ⁺⁰/₋₄₀ RPM.

Proceed to normal take-off, flaps retracted or extended as necessary. The use of extended flaps changes the aircraft attitude but does not improve the rate of climb.

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Climb : VI = 110 km/h - 59 kt - 68 MPH to 120 km/h - 65 kt - 75 MPH with full manifold pressure, full low pitch, N = 2575 RPM.

The minimum towing speed is VI = 110 km/h - 59 kt - 68 MPH.

The cylinder head temperature must not exceed 260°C (500°F).

The oil temperature should be maintained within the green sector.

Level flight : For a towing speed in level flight of VI : 110 km/h - 59 kt - 68 MPH, set the engine rating to 2400 RPM in reference.

Use of flaps : The normal configuration during streamer stowage is "retracted flaps".

7.2.3 - Take-off with streamer on poor ground

Same procedure as in 7.2.2.

To reduce the rolling length :

- extended flaps to 30°
- take-off cleanly
- retract slowly the flaps when reaching the minimum climbing VI allowed for retracting the flaps :
i.e. 110 km/h - 59 kt - 68 MPH.

SECTION 8

NIGHT AND IFR FLIGHT EQUIPMENT

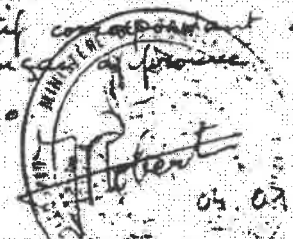
This section includes only the descriptions, limitations, normal and emergency procedures in addition to those of the RALLYE 235 C aircraft in its standard definition.

Section 8.2 - 8.3 - 8.4 - 8.5 -
Pages 8.2.01 - 8.3.01 to 8.3.04 - 8.4.01 to 8.4.04 -
8.5.01 to 8.5.03 -
approved by "DIRECTION GENERALE DE L'AVIATION CIVILE
(D.G.A.C.)".

Approval

*cet additif est la traduction en langue
anglaise de l'additif correspondant au
manuel de vol français*

P.O.



04.07.1979

This document must be embodied in section 8 of the
RALLYE 235 C airplane flight manual

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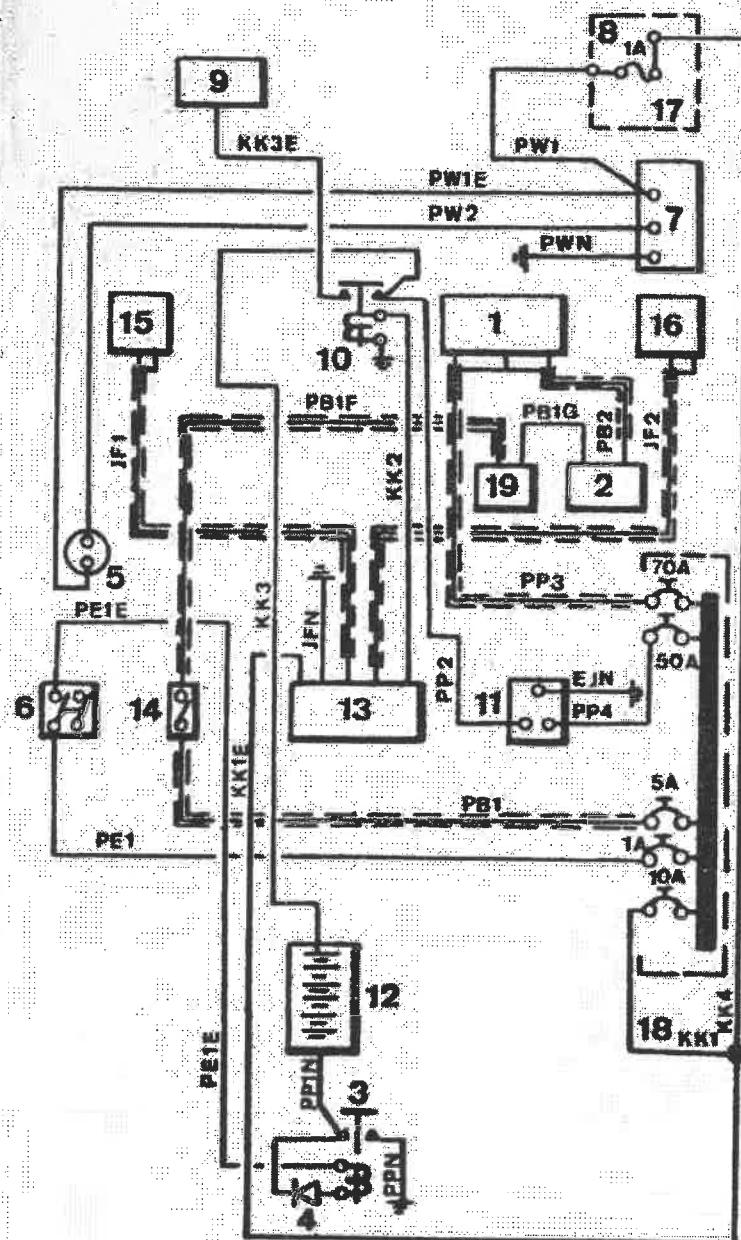
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8.1 - DESCRIPTION

- 8.1.1 - List of regular and mandatory equipment allowing the aircraft to be used in night or IFR flight.
The column "Installation" indicates whether the equipment, is mounted in standard version or on IFR option on the RALLYE 235C aircraft.

Equipment	IFR	Night Flight	Installation
Rate of climb indicator with stops	yes	yes	Std
Artificial horizon	yes	yes	Opt
Turn and bank indicator	yes	yes	Std
Course indicator	yes	yes	Opt
Negative pressure gauge	yes	yes	Opt
2nd sensitive altimeter	yes	yes	Opt
Heated Pitot static tube	yes	yes	Opt
External temperature indicator	yes	yes	Opt
Stop watch	yes	yes	Opt
Emergency static system	yes	yes	Opt
Anti-collision light	yes	yes	Opt
VHF1	yes	yes	Opt
VHF2	yes	yes	Opt
VOR/LOC	yes	yes	Opt
VOR/ILS	yes	yes	Opt
MARKER	yes	yes	Opt
TRANSPONDER	yes	yes	Opt
Radio-compass	yes	yes	Opt
Selection box	yes	yes	Opt
Landing and taxiing lights	no	yes	Opt
Navigation lights	no	yes	Std
Instrument panel lighting	no	yes	Opt
Emergency lighting	no	yes	Opt
For reference			
Flash light with flashing device	no	yes	for ref.

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8.1.2 - Generation, starting and ignition circuit

The 14V. 70 amp current is supplied by an a.c generator and rectifier unit.

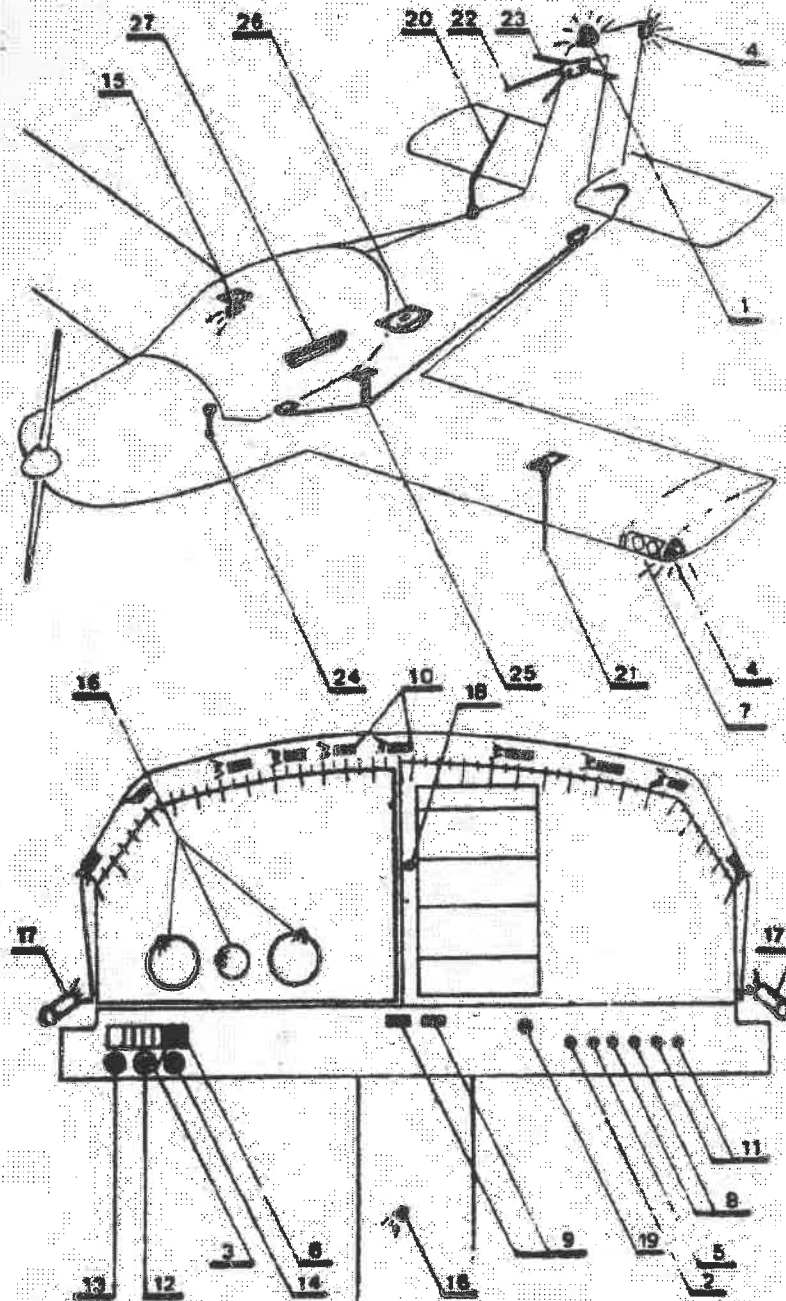
- 1 - A.C generator
- 2 - Voltage regulator
- 3 - Battery relay
- 4 - Diode
- 5 - Generator warning light
- 6 - Battery switch
- 7 - A.C generator flow voltage detector
- 8 - Fuse 1.A (junction box)
- 9 - Starter
- 10 - Starting relay
- 11 - Ammeter
- 12 - Battery
- 13 - Magneto selector
- 14 - "Generator field" control switch
- 15 - L.H magneto
- 16 - R.H magneto
- 17 - Junction box
- 18 - Circuit breakers box
- 19 - Overvoltage relay



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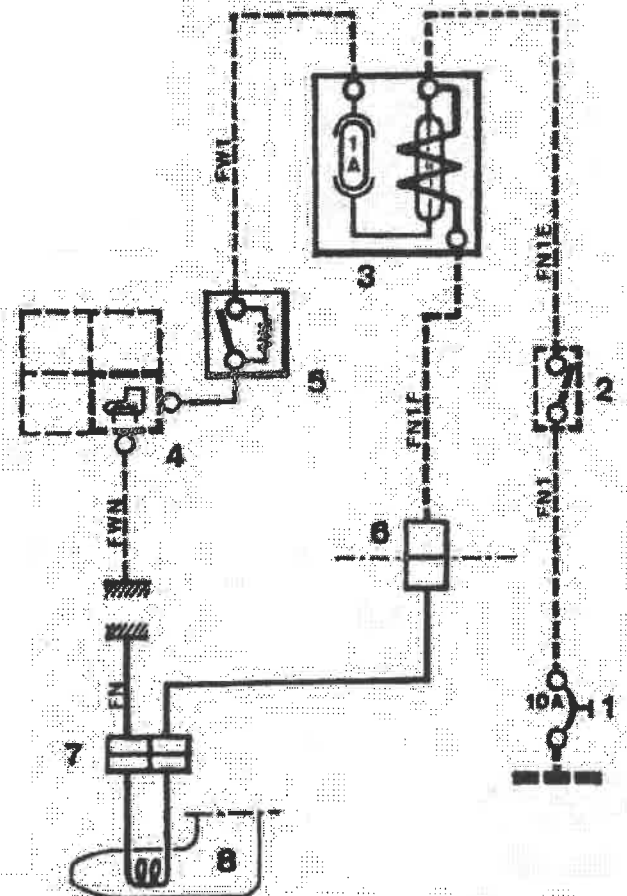
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8.1.4 - Lighting devices

- 1 - Anti-collision light
- 2 - Anti-collision light circuit-breaker
- 3 - Anti-collision switch
- 4 - Navigation lights
- 5 - Navigation lights circuit-breaker
- 6 - Navigation lights switch
- 7 - Landing light and taxiing light
- 8 - Landing and taxiing lights circuit-breaker
- 9 - Landing and taxiing lights switch
- 10 - Instrument panel lighting ramp
- 11 - Lighting circuit-breaker
- 12 - Emergency lighting rheostat
- 13 - Normal lighting rheostat
- 14 - Radio instruments lighting rheostat
- 15 - Overhead light (with its switch)
- 16 - Lighting lamps (fuel cock, watch, alti 2, tachometer indicator, Jaeger compound panel)
- 17 - Emergency lighting floodlights
- 18 - Day-night dimmer
- 19 - Circuit-breaker battery

8.1.5 - Antenna

- 20 - VHF 1 antenna
- 21 - VHF 2
- 22 - VOR
- 23 - Glide ILS
- 24 - ATC Transponder
- 25 - Radio-compass - sense antenna
- 26 - Radio-compass - Loop antenna
- 27 - Marker antenna



system existing in standard version

8.1.6 - Heated Pitot Static tube

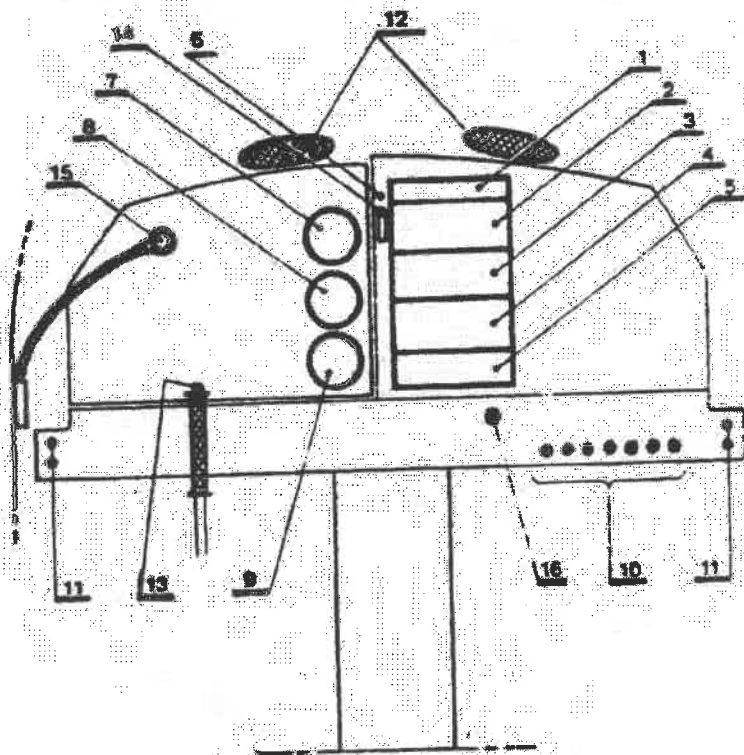
A heated pitot static tube is mounted under the L.H wing instead of the standard pitot tube. Wirings of control switch, protection circuit-breakers and the indicator light are included in the standard cable bundle of the aircraft.

When ON, the green indicator light indicates that the heating resistor operates. Its brightness may be dimmed by means of a day-night selector switch. See paragraph 8.5.6

The installation comprises

- 1 - Circuit-breaker
- 2 - Control switch
- 3 - Magnetic switch system of the indicator
- 4 - Operation indicator light
- 5 - Day-night dimmer switch
- 6 - Disconnect plug in the wing
- 7 - Antenna disconnect plug
- 8 - Heated ram air inlet

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8.1.7 - Radio-navigation equipment

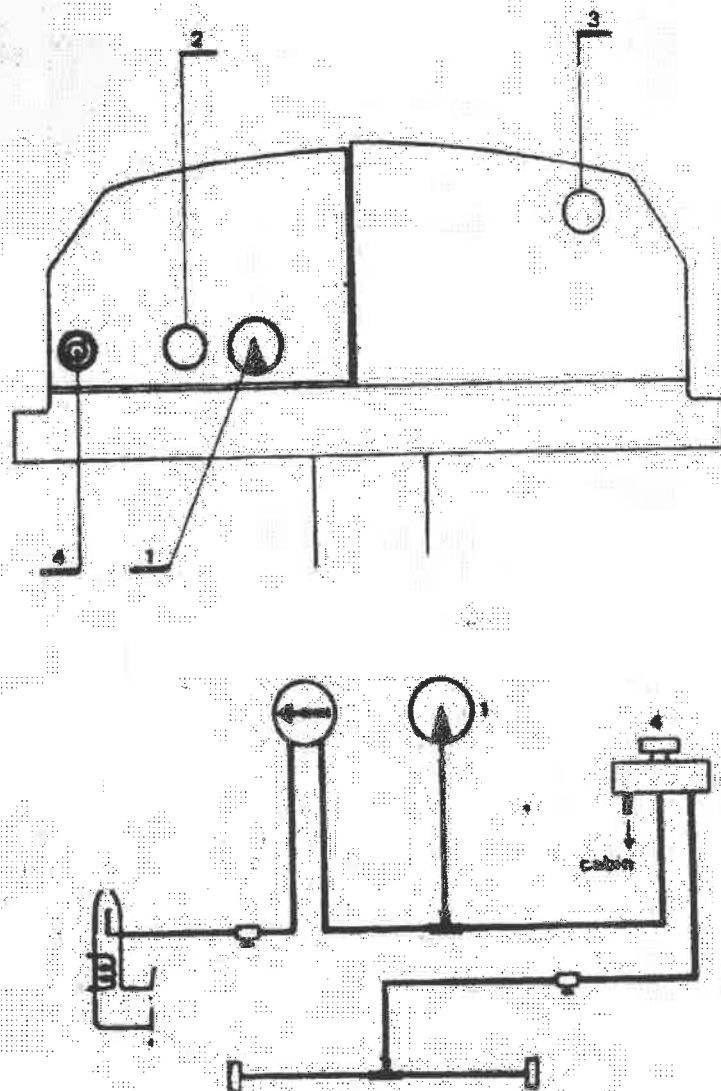
The central area of the instrument panel is provided to accommodate communication and navigation equipment the power supply of which is provided in standard installation on the terminal strip. The antenna feeders, are initially installed.

VHF installation includes the "noise suppression" installation optionally provided.

The installation comprises :

- 1 - Sélection box
- 2 - Radio-compass
- 3 - VHF 1
- 4 - VHF 2
- 5 - Transponder
- 6 - ILS and marker on-off switch
- 7 - Receiver indicator : VOR - ILS
- 8 - Receiver indicator : VOR 2 - LOC
- 9 - ADF indicator
- 10 - Radio circuit breakers assembly
- 11 - Microphones and headset jacks
- 12 - Loudspeaker
- 13 - Push-to talk switch
- 14 - Marker
- 15 - Microboom (optional)
- 16 - Circuit breaker battery

NOTE : The radio-compass reception on the loudspeaker is obtained through VHF 1 or 2.



8.1.8 - Instrument panel additional equipment

1 - Additional sensitive altimeter

In order to prevent icing effects on the external static ports, the 2nd sensitive altimeter is connected to the static pressure which exists in the cabin and is very next to the static pressure of the aircraft.

2 - Stop watch

The stop watch is installed, with its lighting device, on the instrument panel.

3 - External temperature indicator

The indicator is connected to the transmitter which is installed in the LH wing, under the flap cover.

The instrument is provided with an integral lighting. A red warning light is installed on the dial. This warning light, permanently lit, becomes visible by the pointer rotation, when the external temperature is near the "zero" graduation.

4 - Emergency static system

A three-way cock allows the normal static system of the aircraft to be isolated in case of clogging or icing of static ports. This operation connects the static system of the first altimeter and that of the airspeed indicator to the cabin pressure.

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8.2 - LIMITATIONS :

The limitations of the aircraft equipped for IFR or night flight are similar to those of the RALLYE 235 C standard aircraft set forth in section 2 of this flight manual.

INSTRUCTION PLATE

This plate is secured on the instrument panel strip skin.

IFR flight condition : Day and night.

Icing conditions : Not allowed.

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8.3 - EMERGENCY PROCEDURES

These procedures complete those of standard aircraft described in section 3.

8.3.1 - Airspeed indicating system failure

- Wrong indications of airspeed indicator

Check the operation of pitot static tube heating with green indicator light "on". If the switch is "on" and the indicator light is "off" reset the circuit-breaker.

- Wrong indications of airspeed indicator and altimeter 1.

(no concordance with altimeter 2)

Connect the three-way cock to the emergency static system.

If the failure persists, carry-out a careful approach at a speed where the L.E slats just begin to open, while using the pre-setting described on paragraph 8.4.8

8.3.2 - Normal lighting failure

Switch on emergency lights

Check engagement of normal lighting circuit-breaker. The overhead light may be used to complete emergency lighting.

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8.3.3 - Landing light or taxi light failure

Although LH light is provided for taxiing and RH light for landing, it is easy to proceed with either light.

In case of landing with landing and taxi-lights failure, maintain the attitude given by I.L.S slope (see paragraph 8.4.8)

8.3.4 - ALTERNATOR FAILURE

The alternator failure is indicated by the lighting up of the red warning light. Intermittent lighting up of the warning light in the landing phase with reduced throttle is not a case of failure.

Check the charge indication of the ammeter

- Check and, should the occasion arise, reengage the alternator circuit-breaker, the field excitation circuit-breaker and the field excitation switch.

If one of the circuit-breakers disengage again (overcharge) or if the discharge still remains :

- Switch of generator field supply
- Disengage the alternator circuit-breaker.
- Switch-off all electrical equipment which are not essential for proceeding with the flight.

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8.3.5 - Battery failure

If the ammeter gives an abnormal indication (alternator warning light-off).

- Check the battery circuit breaker. If it is engaged, disengage it, if it is disengaged, try to engage it again, once.
- The circuit-breaker being finally disengaged, switch-off anti-collision light.
- Switch-off, one after the other, electrical equipment which are not essential for proceeding with the flight.
- Avoid brutal variations of engine rating. At landing, light-up only one landing light.

8.3.6 - Total electrical failure

Check switches and circuit-breakers of battery and alternator.

- If only the battery circuit-breaker is disengaged :
- Switch-off electrical equipment which are not essential for proceeding with the flight.
- Reengage the battery circuit-breaker.
- If circuit breakers and switches are "ON"
- Disengage battery and alternator circuit-breakers
- Switch-off all electrical equipment if necessary.
- Utilize the emergency flash light.
- Carry out landing while maintaining the attitude given by I.L.S slope pre-setting. (see paragraph 8.4.8)

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8.3.7 - Electrical fire

- Set main switch-off.
- Desengage battery and alternator circuit-breakers.

If there is no change for the better :

After checking of systems, it is possible to reengage the battery system alone or the battery and alternator systems. The alternator system can only be effective again if the battery system is engaged. Therefore, it is important to switch-off the generator field excitation in the last extremity.

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8.4 - Normal procedures for IFR or night flight

These procedures complete those of the aircraft in standard equipment.

8.4.1 - FIRST STEPS

Study the meteorology in order to avoid flying in dangerous conditions (minima, icing...)

Make sure that the fuel level is adequate for complying with regulations.

8.4.2 - Before flight

May be undertaken or continued by night.

- Check the operation of the anti-collision light
- Check the operation of the navigation lights.
- Check the operation of the cabin and instrument panel lighting.
- Check the operation of the landing and taxiing lights.
- Check the operation of the day-night selector switch

An emergency electric flash-light must be present in the cabin.

8.4.3 - Taxiing

- Check the operation of gyroscopic instruments by making alternate turns.
 - Horizon : set the miniature airplane figure horizontally
 - Directional : correct rotation
 - Turn and bank indicator : proper direction
- During the night, preferably use only the LH landing light (Wide beam of rays).

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8.4.4 - Before take-off

- Pilot heating
- Check instruments vacuum
- Test of VHT 1
- Test of VHF 2
- Test of VOR 1
- Test of VOR 2
- Test of radio-compass
- Test of marker lamps
- Put transponder on stand-by
- By night and in moist weather, set the air conditioning to "full hot".

8.4.5 - Path course

Directional and horizon bar setting. By night, lighting-up of RH landing light.
Start chronometer upon brakes release.

NOTE : Take-off by night may be carried out indifferently with RH light or with the two lights.

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8.4.6 - TAKE-OFF

- Take-off cleanly at VI=130km/h-80 MPH-70 kt-
- Always, maintain the rate of climb indicator positive.
- By night, switch off landing lights at the end of the runway.

8.4.7 - CLIMB AND CRUISE

See section 5

8.4.8 - Approach (pre-setting)

Phase	PA m.bar	PA in.Hg	VI			Propeller	LE slats	Wing flaps
			km/h	MPH	kt			
Iding	550/600	16.3/ 17.8	170	105	92	Full low pitch	re- tracted	retra- cted
ILS proach	450/480	13.3/ 14.2	150	92	81	Full low pitch	retrac- ted	retrac- ted
Final	450/480	13.3/ 14.2	130	80	70	Full low pitch	exten- ded	30°

These values are given for a weight of 1200 kg - 2645 lb.

FINAL I.L.S.

A special switch allows glide slope and markers to be set in operation.

In order to accelerate the traffic flow, it is advisable to carry out final approach at VI = 150 km/h- 92 MPH - 81 kt, with flaps retracted.

In short final, extend the flaps at 30°. VI falls to 130 km/h - 80 MPH - 70 kt, and the L.E. slats extend themselves.

It is not necessary to modify the power to maintain the angle of descent.

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8.4.9 - LANDING

By night, it is better to use the RH landing light (long range) or the two lights simultaneously.

Landing is easy with either light.

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8.5 - UTILIZATION OF EQUIPMENT

8.5.1 - Radio Selection Box

It allows to select the transmission and the reception of VHF.1 or VHF.2 by means of the red buttons marked C1 - C2. The white buttons allow the reception to be selected on the loudspeaker.

BOTH of the 2nd VHF not selected on transmission N1 et N2 of VOR 1 and VOR 2.
ADF of radio-compass
MKR of markers

Radio-transmission

The emission may be carried out either by "Flexible boom microphone" (push-to-talk switch on the control wheel) or by hand microphone or by headset microphone. Do not connect two headset microphones in parallel.

RECEPTION

The loudspeaker is the main equipment. The headset is considered as a stand by equipment. The red button : SPKR, on the selection box acts only on the loudspeaker which operates only if one of the VHF is functioning. On headset, all the reception are simultaneous.

8.5.2 - VOR and ADF

Their operation is independant from the VHF but the reception on loudspeaker requires either VHF to be started.

8.5.3 - Glide and marker

They are controlled by a particular switch.

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8.5.4 - Lighting

The lighting ramp under the visor and the lighting ramp of altimeter 2, tachometer are adjustable by means of the rheostat mounted on the instrument panel L.H. strip skin.

The integrated lighting (Radio, instrument panel, engine control, compass), or instrument lighting (chrono, fuel cock) is controlled by an ON-OFF rheostat installed on the R.H side. The emergency lighting including L.H and R.H flood lights is controlled by an ON-OFF rheostat located in the center section. The air temperature indicator is lit permanently. The overhead light allows the maps to be installed and read.

8.5.5 - Landing and taxi-lights.

The lights are controlled by switch located in front of the throttle block which comprises and indicator light.

The L.H light beam is wide and makes the taxiing easy.

The R.H light has a long range and will be preferably used at take-off and landing. The simultaneous utilization is possible in every case.

8.5.6 - DAY NIGHT DIMMER SWITCH

A selector allows to set 2 different brightnesses on the fuel pump, heated pitot static tube, landing and taxi lights switch and marker indicator lights.

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8.5 - UTILIZATION OF EQUIPMENT

8.5.1 - Radio Selection Box

It allows to select the transmission and the reception of VHF.1 or VHF.2 by means of the red buttons marked C1 - C2. The white buttons allow the reception to be selected on the loudspeaker.

BOTH of the 2nd VHF not selected on transmission N1 et N2 of VOR 1 and VOR 2.

ADF of radio-compass
MKR of markers

Radio-transmission

The emission may be carried out either by "Flexible boom microphone" (push-to-talk switch on the control wheel) or by hand microphone or by headset microphone. Do not connect two headset microphones in parallel.

RECEPTION

The loudspeaker is the main equipment. The headset is considered as a stand by equipment. The red button : SPKR, on the selection box acts only on the loudspeaker which operates only if one of the VHF is functioning. On headset, all the reception are simultaneous.

8.5.2 - VOR and ADF

Their operation is independant from the VHF but the reception on loudspeaker requires either VHF to be started.

8.5.3 - Glide and marker

They are controlled by a particular switch.

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8.5.4 - Lighting

The lighting ramp under the visor and the lighting ramp of altimeter 2, tachometer are adjustable by means of the rheostat mounted on the instrument panel L.H. strip skin.

The integrated lighting (Radio, instrument panel, engine control, compass), or instrument lighting (chrono, fuel cock) is controlled by an ON-OFF rheostat installed on the R.H side. The emergency lighting including L.H and R.H flood lights is controlled by an ON-OFF rheostat located in the center section. The air temperature indicator is lit permanently. The overhead light allows the maps to be installed and read.

8.5.5 - Landing and taxi-lights.

The lights are controlled by switch located in front of the throttle block which comprises and indicator light.

The L.H light beam is wide and makes the taxiing easy.

The R.H light has a long range and will be preferably used at take-off and landing. The simultaneous utilization is possible in every case.

8.5.6 - DAY NIGHT DIMMER SWITCH

A selector allows to set 2 different brightnesses on the fuel pump, heated pitot static tube, landing and taxi lights switch and marker indicator lights.

SECTION 9

NIGHT VFR EQUIPMENT

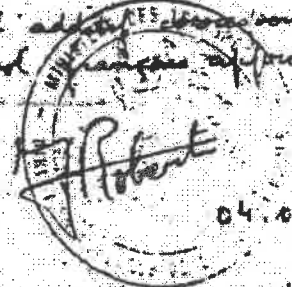
This section includes only the descriptions, limitations, normal and emergency procedures in addition to those of the RALLYE 235 C aircraft in its standard definition.

Section 9.2 - 9.3 - 9.4 - 9.5 -
Pages 9.2.01 - 9.3.01 to 9.3.03 - 9.4.01 to 9.4.03 -
9.5.01 and 9.5.02 -
approved by "DIRECTION GENERALE DE L'AVIATION CIVILE
(D.G.A.C.)"

Approval

*Cet additif est la traduction en langue
anglaise de l'additif correspondant du
manuel de vol en langue française.*

P. e.



04.01.1979

This document must be embodied in section 9 of the
RALLYE 235 C airplane flight manual.

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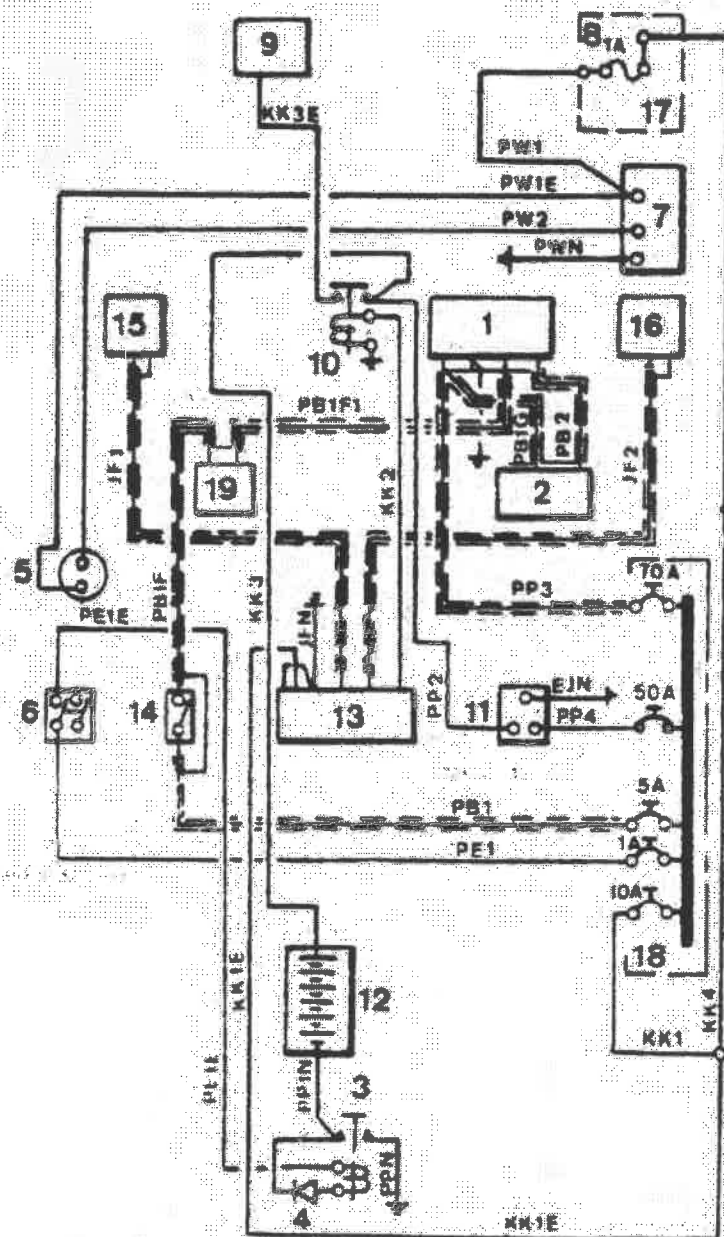
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9.1 - DESCRIPTION

9.1.1 - List of regular and mandatory equipment allowing the aircraft to be used in night flight

The column "installation" indicates whether the equipment is mounted in standard version or in night flight option.

Equipment	Night Flight	Installation
<u>RADIO-NAVIGATION</u>		
VHF - category 2	yes	option
VOR/LOC - category 2	yes	option
Radio-compass - category 2	yes	option
<u>NAVIGATION EQUIPMENT</u>		
Artificial horizon (gyroscopic)	yes	opt.
Turn and bank indicator	yes	std.
Gyroscopic directional indicator	yes	opt.
Operating indicator of gyroscopic apparatuses	yes	opt.
Rate of climb indicator	yes	std.
Anti-collision light	yes	opt.
Position lights	yes	std.
Landing and taxiing lights	yes	opt.
Adjustable cabin lighting	yes	opt.
Flash light	personal equipment	
Night V.F.R. plate	yes	opt.

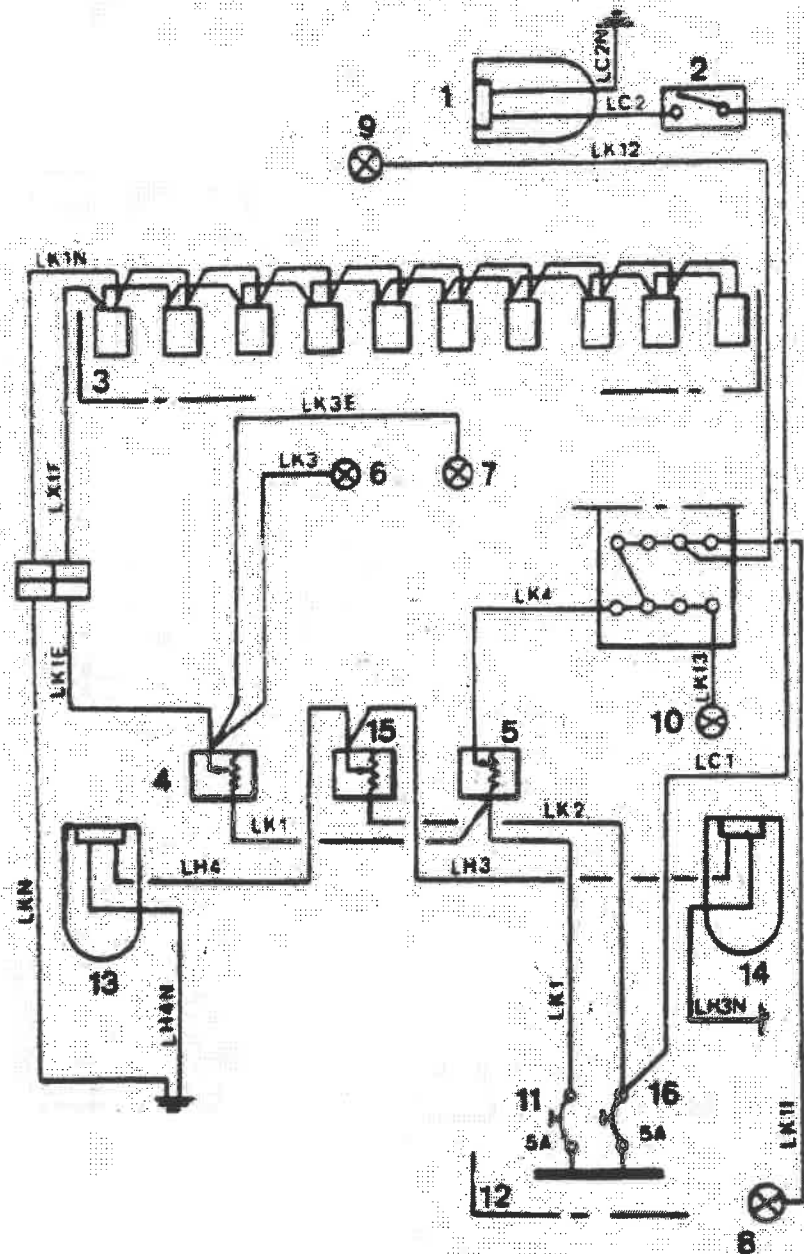


9.1.2 - Generation, starting and ignition circuit

The 14 V. 70 Amp. current is supplied by an a.c. generator and rectifier unit.

- 1 - A.C. generator
- 2 - Voltage regulator
- 3 - Battery relay
- 4 - Diode
- 5 - Generator warning light
- 6 - Battery switch
- 7 - A.C. generator flow voltage detector
- 8 - Fuse 1.A (junction box)
- 9 - Starter
- 10 - Starting relay
- 11 - Ammeter
- 12 - Battery
- 13 - Magneto selector
- 14 - "Generator field" control switch
- 15 - L.H. magneto
- 16 - R.H. magneto
- 17 - Junction box
- 18 - Circuit breakers box
- 19 - Overvoltage relay

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9.1.3 - Lighting system

The optional lighting installation is broken down as follows

- 1 - Cabin lighting
- 2 - Instrument panel lighting
- 3 - Emergency lighting

The installation comprises :

Cabin lighting

- 1 - Overhead light
- 2 - Switch on overhead light

Instrument panel

- 3 - Light ramp
- 4 - Normal lighting rheostat
- 5 - Radio lighting rheostat
- 6 - Tachometer lighting lamp
- 7 - 2nd altimeter lighting lamp
- 8 - Fuel cock lighting lamp
- 9 - Compass lighting
- 10 - Jaeger compound panel lighting
- 11 - 5 A. circuit-breaker
- 12 - Terminal strip

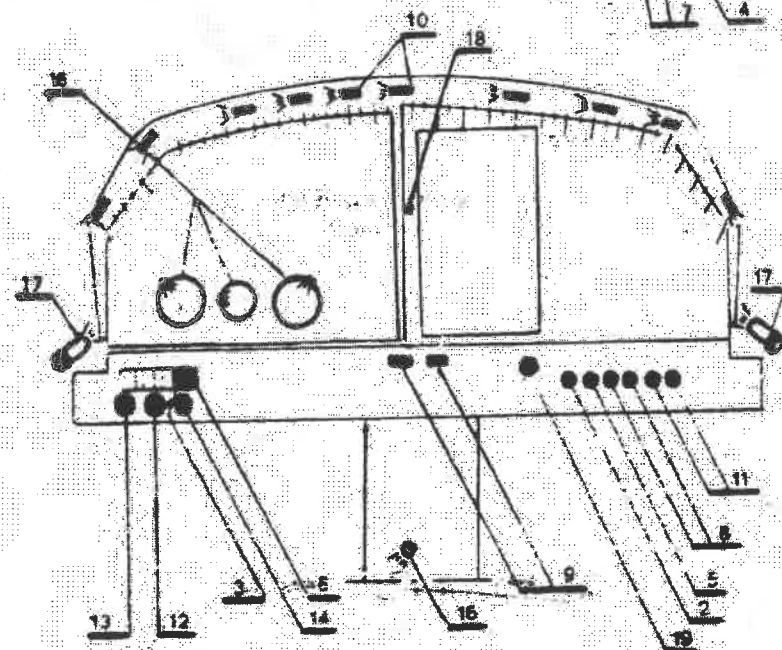
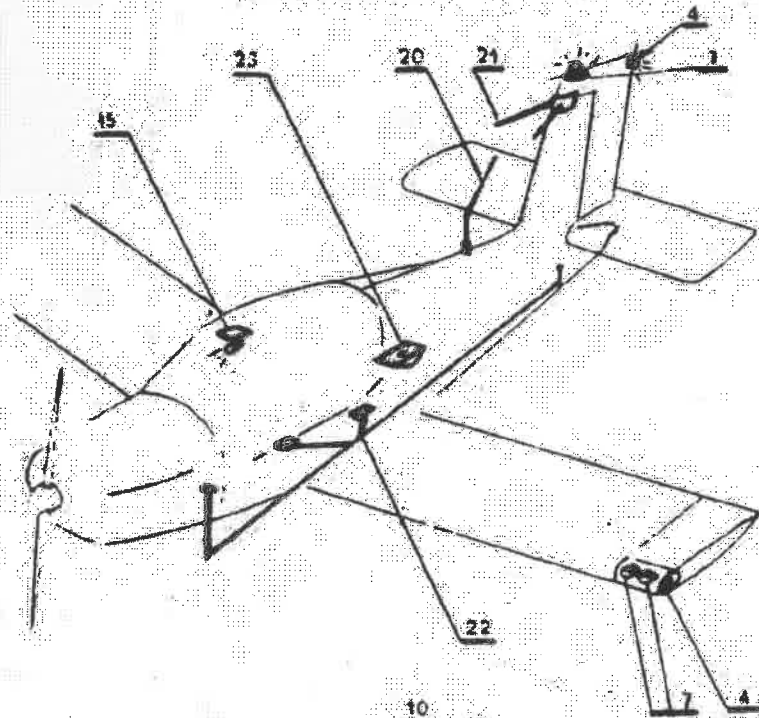
Emergency lighting

- 13 - LH Floodlight
- 14 - RH Floodlight
- 15 - Rheostat
- 16 - 5A circuit-breaker

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9.1.4 - Lighting devices

- 1 - Anti-collision light
- 2 - Anti-collision light circuit-breaker
- 3 - Anti-collision switch
- 4 - Navigation lights
- 5 - Navigation lights circuit-breaker
- 6 - Navigation lights switch
- 7 - Landing light and taxiing light
- 8 - Landing and taxiing lights circuit-breaker
- 9 - Landing and taxiing lights switch
- 10 - Instrument panel lighting ramp
- 11 - Lighting circuit-breaker
- 12 - Emergency lighting rheostat
- 13 - Normal lighting rheostat
- 14 - Radio instruments lighting rheostat
- 15 - Overhead light (with its switch)
- 16 - Lighting lamps (fuel cock, watch, altimeter 2, tachometer)
- 17 - Emergency lighting floodlights
- 18 - Day-night dimmer
- 19 - Battery circuit-breaker

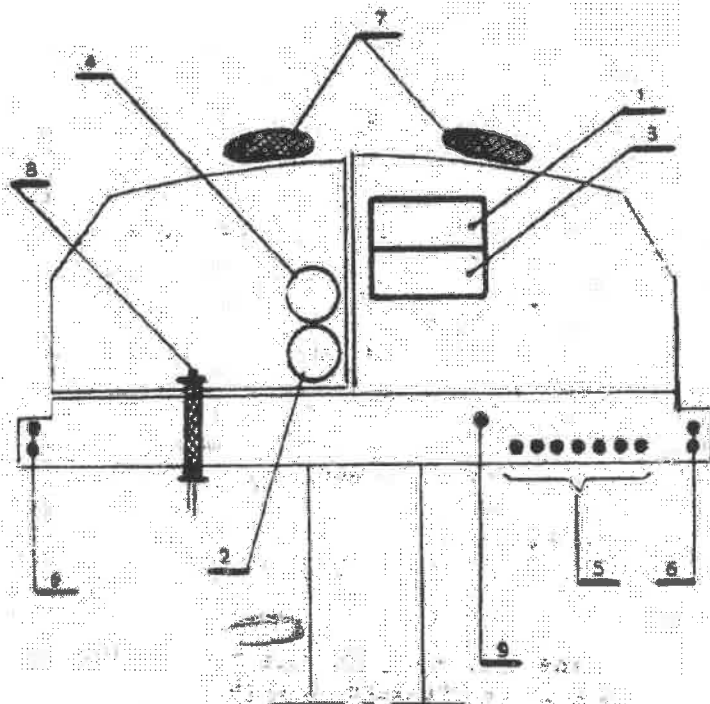
9.1.5 - Antenna

- 20 - VHF 1 antenna
- 21 - V.O.R.
- 22 - Radio-compass - sense antenna
- 23 - Radio-compass - Loop antenna

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9.1.6 - Radio-navigation equipment on instrument panel

The central area of the instrument panel is provided to accommodate communication and navigation equipment the power supply of which is provided in standard installation on the terminal strip. The antenna feeders are initially installed.

VHF installation includes the "noise suppression" installation optionally provided.

The installation comprises :

- 1 - Radio compass
- 2 - Radio-compass indicator
- 3 - V.H.F.
- 4 - Receiver indicator VOR/LOC
- 5 - Radio circuit-breakers assembly
- 6 - Microphones and headset jacks
- 7 - Lonspeaker
- 8 - Push-to- talk switch
- 9 - Circuit breaker - Battery

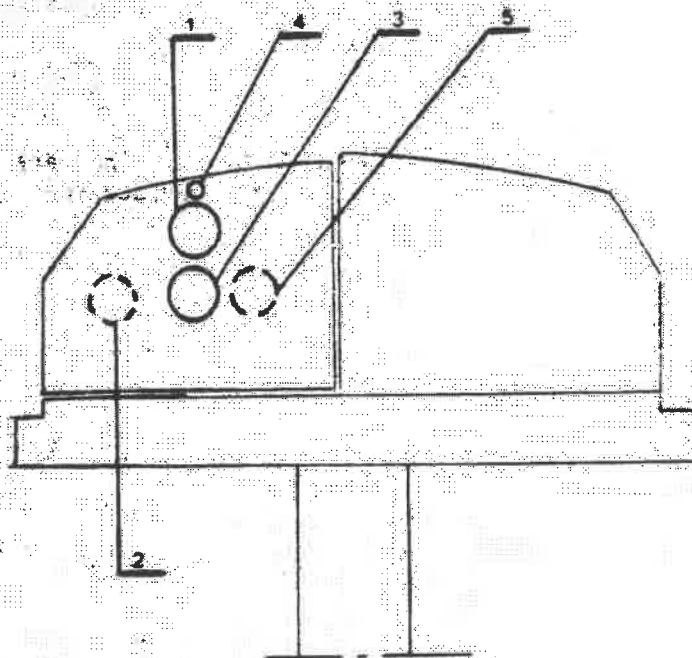
NOTA : The radio-compass reception on the lonspeaker is obtained through V.H.F.

In night VFR equipment definition, one installs either the radio-compass and the indicator or the VOR/LOC.

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9.1.7 - Navigation equipment on the instrument panel

- 1 - Gyroscopic artificial horizon
- 2 - Turn and bank indicator
- 3 - Gyroscopic directional indicator
- 4 - Operating indicator of gyroscopic apparatuses
- 5 - Rate of climb indicator

NOTA - The apparatuses shown in broken lines are installed on the aircraft in production line.

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9.2 - LIMITATIONS

The limitations of the aircraft equipped for night VFR flight are similar to those of the standard aircraft set forth in section 2 of this flight manual.

INSTRUCTION PLATE

This plate is secured on the central upper part of the instrument panel.

**FLIGHT CONDITIONS : DAY AND NIGHT V.F.R.
icing conditions : Not allowed.**

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If only the battery circuit-breaker is disengaged :
switch off electrical equipment which is not essential for the flight.

Re-engage the battery circuit-breaker.

Reset the circuit-breakers and switches to "ON".

Disengage battery and alternator circuit-breakers.

Switch off all electrical equipment if no electrical power can be restored.

Use the emergency flash light for instrument lighting

Proceed to the landing.

9.3.6 - Electrical fire

Set main switch off.

Disengage battery and alternator circuit-breakers.

After checking systems, it is possible to re-engage the battery system alone or the battery and alternator systems. The alternator system can only be effective again if the battery system is engaged.

Therefore, it is important to switch off the generator field excitation only as a last extreme.

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9.3 - EMERGENCY PROCEDURES

These procedures complete those of standard aircraft described in section 3.

9.3.1 - Normal lighting failure

Switch on emergency lights

Check engagement of normal lighting circuit breaker. The overhead light may be used to complete emergency lighting.

9.3.2 - Landing light or taxi light failure

Although LH light is provided for taxiing and RH light for landing, it is easy to proceed with either light.

9.3.3 - Alternator failure

The alternator failure is indicated by the lighting up to the red warning light. Intermittent lighting up of the warning light in the landing phase with reduced throttle is not a case of failure.

- 1 - Check the charge indication of the ammeter:
If the discharge still remains, carry out operation "D".
- 2 - Check and, should the occasion arise, reengage the alternator circuit-breaker, the field excitation circuit-breaker :
If on of the circuit-breakers disengage again (overvoltage), carry out operation "D".
- 3 - The two above points being checked, switch off generator field supply by means of the excitation switch. Put again the switch in position "on". The actions "cut off excitation" and "switch on again" correspond to the starting again of the overvoltage relay.

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If the red warning light remains lighted up (possible failure of the voltage regulator) carry out operation "D".

Operation "D"

- Switch off generator field supply
- Disengage the alternator circuit-breaker
- Switch off all electrical equipment which are not essential for proceeding with the flight.

9.3.4 - Battery failure

If the ammeter gives an abnormal indication (alternator warning light off):

- Check the battery circuit-breaker. If it is engaged, disengage it, and re-engage if it is disengaged. Try to engage it again, once. If the battery cannot be re-engaged switch off anti-collision light.

Switch off one after the other, electrical equipment which is not essential for flight. Avoid severe variations of engine power and electrical loading. At landing, use one landing light only.

Note : With the battery off-line the alternator tends to be unstable and can fail under load variations.

9.3.5 - Total electrical failure

Check switches and circuit-breakers of battery and alternator.
Reset alternator as in 9.3.3 reset battery as in 9.3.4

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9.4 - Normal procedures for night flight

These procedures complete those of the aircraft in standard equipment.

9.4.1 - First steps

Study the meteorology in order to avoid flying in dangerous conditions (minima, icing). Make sure that the fuel level is adequate for complying with regulations.

9.4.2 - Before flight

May be undertaken or continued by night.

- Check the operation of the anti-collision light.
- Check the operation of the navigation light
- Check the operation of the cabin and instrument panel lighting
- Check the operation of the landing and taxiing lights
- Check the operation of the day-night selector switch.

An emergency electric flash-light must be present in the cabin.

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9.4.3 - Taxiing

- Check the operation of gyroscopic instruments by making alternate turns.
- Horizon : set the miniature airplane figure horizontally
- Directional : correct rotation
- Turn and bank indicator : proper direction
- During the night, preferably use only the LH landing light (Wide beam of rays).

9.4.4 - Before take-off

- Check instruments vacuum
- Test of V.H.F.
- Test of VOR/LOC or radio-compass
- By night and in moist weather, set the air conditioning to "full hot".

9.4.5 - Path course

Directional and horizon bar setting. By night, lighting-up of RH landing light.

NOTE - Take-off by night may be carried out indifferently with RH light or with the two lights.

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9.4.6 - Take-off

- Take-off cleanly at VI=110 km/h-68 MPH-59 kt.
- Always maintain the rate of climb indicator positive.
- By night, switch off landing lights at the end of the runway.

9.4.7 - Climb and cruise

The performances of the aircraft equipped for night VFR are similar to those of the standard aircraft shown in the section 5 of this flight manual.

9.4.8 - Landing

By night, it is better to use the RH landing light (long range) or the two lights simultaneously.

Landing is easy with either light.

9.5 - UTILIZATION OF EQUIPMENT

9.5.1 - Radio-transmission

The emission may be carried out either by "Flexible boom microphone" (push-to-talk switch on the control wheel) or by hand microphone or by headset microphone. Do not connect two headset microphones in parallel.

9.5.2 - Reception

The loudspeaker is the main equipment. The headset is considered as a stand-by equipment. A reversing switch allows the reception to be selected on the loudspeaker or on the headset microphone. On headset, all the reception are simultaneous.

9.5.3 - VOR/LOC or ADF

The reception is carried out on VHF auxiliary input.

9.5.4 - Lighting

The lighting ramp under the visor and the lighting ramp of altimeter 2, tachometer and fuel cock are adjustable by means of the rheostat mounted on the instrument panel L.H. strip skin.

The integrated lighting (radio, instrument panel, engine control, compass), or instrument lighting (fuel cock) is controlled by an ON-OFF rheostat installed on the R.H. side. The emergency lighting including L.H. and R.H. flood lights is controlled by an ON-OFF rheostat located in the center section.

The overhead lights allow the maps to be installed and read.

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9.5.5 - Landing and taxi-lights

The lights are controlled by switch located in front of the throttle block which comprises an indicator light.

The L.H. light beam is wide and makes the taxiing easy.

The R.H. light has a long range and will be preferably used at take-off and landing.

The simultaneous utilization is possible in every case.

9.5.6 - Day night dimmer switch

A selector allows to set 2 different brightnesses on the fuel pump, landing and taxi lights switch indicator lights.

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT
or
SUPPLEMENTAL AIRPLANE FLIGHT MANUAL
for the
GARMIN G5 ELECTRONIC FLIGHT INSTRUMENT
as installed in

Make and Model Airplane

Registration Number: _____ Serial Number: _____

This document serves as an Airplane Flight Manual Supplement or as a Supplemental Airplane Flight Manual when the aircraft is equipped in accordance with Supplemental Type Certificate SA01818W1 for the installation and operation of the Garmin G5 Electronic Flight Instrument. This document must be carried in the airplane at all times.

The information contained herein supersedes or supersedes the information made available to the operator by the aircraft manufacturer in the form of clearly stated placards or markings, or in the form of an FAA approved Airplane Flight Manual, only in those areas listed herein. For limitations, procedures and performance information not contained in this document, consult the basic placards or markings, or the basic FAA approved Airplane Flight Manual.

FAA APPROVED BY: _____

Robert Murray
ODA STC Unit Administrator
GARMIN International, Inc
ODA-240087-CE

DATE: 10/18/2017



4.2.4 Maintenance Intervals

Table 4-1 shows items installed by this STC which must undergo tests or checks at specific intervals.

Table 4-1, Maintenance Intervals

Item	Description/Procedure	Manual Section No.	Interval
G5 unit	Removal & Installation	6.1	On Condition
	Altimeter System Test	7.7	24 calendar months
G5 battery	Removal & Installation	6.2	On Condition
	Capacity Check	4.2.5	12 calendar months
G5 mounting ring	Removal & Installation	6.3	On Condition
GMU 11 unit	Removal & Installation	6.5	On Condition
GAD 29/29B unit	Removal & Installation	6.6	On Condition

4.2.5 Battery Capacity Check

1. Without power applied to the aircraft, turn on the G5 by pressing the power button in the lower left corner of the unit.
2. Note the remaining battery capacity (%) at the top left corner of the display.
3. After about a minute, the remaining capacity will change from (%) to time (hour:min).
4. If the remaining capacity is less than one hour (1:00), allow the battery to charge until the capacity shows greater than 95% and repeat the check.
5. If the remaining capacity is less than one hour (1:00) after charging, the battery must be replaced.

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LOG OF REVISIONS				
Rev	Page	Description	Date of Approval	FAA Approval
1	All	Original Issue	7/22/2016	Robert Murray ODA STC Unit Administrator
2	All	Added information regarding G5 DG/HSI	4/28/2017	Robert Murray ODA STC Unit Administrator
3	All	Added interface to 3 rd party autopilots	See Cover	See Cover

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Section 1. GENERAL

The G5 Electronic Flight Instrument can display the following information to the pilot depending on the installation and location of the G5 instrument.

- Primary attitude
- Primary slip and turn rate information
- Primary heading
- Secondary airspeed
- Secondary altimeter
- Secondary ground track

When installed in place of the attitude indicator, the primary function of the G5 is to provide attitude information to the pilot. When installed in place of the rate of turn indicator, the primary function of the G5 is to provide turn rate and slip ball information to the pilot. When installed in place of the directional gyro, the primary function of the G5 is to provide directional information to the pilot.

In case of a loss of aircraft electrical power, a backup battery (optional when installed as a DG/HSI) sustains the G5 Electronic Flight Instrument for up to four hours.

An optional GAAD 29B may be installed to provide course and heading datum to an autopilot based on the data selected for display on the HSI.

Section 2. LIMITATIONS

2.1 System Software Requirements

The G5 must utilize the following or later FAA approved software versions for this AFMS revision to be applicable:

Component	Software Version
G5 Electronic Flight Instrument	4.00

2.2 Use of Secondary Instruments

The original type design approved instruments for airspeed, altitude and vertical speed remain the primary indications for these parameters.

If the G5 Electronic Flight Instrument is installed in place of the rate of turn indicator, the original type design approved instrument for attitude remains in the primary indication for attitude.

If the G5 Electronic Flight Instrument is installed in place of the directional gyro, the original type design approved instruments for attitude remains the primary indication for attitude.

NOTE:

For aircraft approved for VFR-only operations, the G5 Electronic Flight Instrument may be installed as an attitude indicator and rate of turn indicator.

2.3 Kinds of Operations

No Change.

Section 3. EMERGENCY PROCEDURES

3.1 Emergency Procedures

3.1.1 G5 Failure Indications

If a G5 function fails, a large red 'X' is typically displayed over the instrument(s) or data experiencing the failure. Upon G5 power-up, certain instruments remain invalid as equipment begins to initialize. All instruments should be operational within one minute of power-up. If any instrument remains flagged and it is not likely an installation related problem, the G5 should be serviced by a Garmin-authorized repair facility.



Attitude Failure

Attitude failure is indicated by removal of the sky/ground presentation, a red X, and a yellow "ATTITUDE FAIL" on the display.

Rate-of-turn and slip information will not be available.

1. Use standby instruments.
2. Seek VFR conditions or land as soon as practical.

Heading Failure, Loss of Magnetometer Data, or Magnetic Field Error

A heading failure, loss of magnetometer data, or magnetic field error is indicated by removal of the digital heading readout, a red X, and a yellow "HDG" on the display.

1. Use standby magnetic compass.

NOTE:

If the G5 DG/HSI has a valid GPS signal the G5 DG/HSI instrument will display the GPS track information in magenta.

GPS Failure

If GPS navigation receivers and/or navigation information are not available or invalid, the G5 will display Dead Reckoning mode (DR) or Loss Of Integrity mode (LOI) on the HSI in the lower left corner.

If Alternate Navigation Sources (ILS, LOC, VOR) Are Available:

1. Use alternate navigation source.

If No Alternate Navigation Sources Are Available:

If DR is Displayed on HSI:

1. Use the amber CDI for course information.
2. Fly toward known visual conditions.

If LOI is Displayed on HSI:

1. Fly toward known visual conditions.

For aircraft equipped with a GAD 29B interfaced to an autopilot, GPSS will be displayed in amber text when GPSS emulation has been selected from the G5 menu.

1. Deselect GPSS from the G5 menu and select a different autopilot mode.

3.1.2 Attitude Aligning

During system initialization, the G5 displays the message 'ALIGNING' over the attitude indicator. The G5 will typically display valid attitude within the first minute of power-up. The G5 can also align itself while taxiing and during level flight.

If the "ALIGNING" indication occurs during flight and attitude remains displayed, the attitude display is acceptable for use for flight in instrument conditions. The message will clear when the attitude solution is within the systems internal accuracy tolerances. It is recommended to maintain wings level to reduce the time for the system to align.

3.1.3 Attitude Aligning / Keep Wings Level

If the "ALIGNING KEEP WINGS LEVEL" indication occurs during flight, the G5 has detected an invalid attitude solution and will not display any attitude information.

1. Use standby instruments to maintain wings level flight. The system will display attitude when internal accuracy tolerances have been met.
2. If attitude does not return, seek VFR conditions or land as soon as practical.

3.1.4 Loss of Electrical Power to the G5 Display

In the event of a loss of aircraft electrical power to the G5 attitude display, the indicator will continue to function on its internal battery. If an internal battery is installed on the optional G5 HSI, the indicator will continue to function on the internal battery if aircraft power is lost. Internal battery endurance is indicated on the G5 display in hours and minutes. The charging symbol will be removed and the internal battery will not be charged.

3.1.5 Loss of Electrical Power to the GAD 29B (If Installed)

In the event of a loss of aircraft electrical power to the optional GAD 29B, the heading and course datum will be unavailable to the autopilot and the autopilot may deviate from the intended path or may disconnect. GPS flight plan course information may be displayed on the HSI and VFR will be displayed in amber text on the HSI. GPSS will be displayed in amber text, if GPSS mode is selected.



1. Deselect GPSS from the G5 menu and select a different autopilot mode.
2. Lateral GPS course guidance may only be used in VFR conditions.

3.2 System messages

The G5 has the capability to display system messages to the crew along the bottom of the display. The following table shows the meaning of each message. System messages are displayed in white text.

Message	Meaning
External Power Lost	Aircraft power has been removed from the G5
Critical battery fault! Powering off...	Battery has critical fault condition and the unit is about to power off to avoid damage to the battery.
Battery fault	Battery has a fault condition - contact Garmin if it persists.
Battery charger fault	Battery charger has a fault condition - contact Garmin if it persists.
Low battery	Battery charge level is low
Hardware fault	Unit has a hardware fault - contact Garmin for service
Power supply fault	Unit power supply fault detected - contact Garmin for service if it persists
Unit temperature limit exceeded	Unit is too hot or too cold
Network address conflict	Another G5 with the same address is detected on the network (most commonly a wiring error on one of the units)
Communication error	General communication error (most commonly appears in conjunction with Network Address Conflict message)
Factory calibration data invalid	Unit calibration data not valid - return to Garmin
Magnetic field model database out of date	Internal magnetic field database is out of date - software update required
Using external GPS data	GPS data from another network LRU is being used. The unit's internal GPS receiver is enabled, but unable to establish a GPS fix

No specific pilot action is required for any of the displayed system messages. As long as attitude is displayed, the system is adequate for flight in instrument conditions.

These messages remain while the condition persists, or until cleared by pressing the knob.

Section 4. NORMAL PROCEDURES

4.1 G5 Power Button and Knob

The G5 display will power on with the application of aircraft power. The G5 power button is used to turn the display on and off. Press and hold the power button to turn the display off.

The knob performs the following functions:

Press	Press to access the Menu From the Menu, press to select the desired menu item. Press to accept the displayed value when editing numeric data or selecting from a list Press to sync the heading or track bug for the HSI.
Turn	From the Menu, turn the Knob to move the cursor to the desired menu item. For the ADI, rotate to adjust the baro setting on the secondary altitude display. For the HSI, rotate to adjust the heading or track bug. Turn to select the desired value when editing numeric data or selecting from a list.

4.2 Backlight Intensity Adjustment

The power up state of the G5 backlight is in Auto adjustment mode.

To adjust the backlighting:

To select Manual mode from Auto mode:

1. While the unit is turned on, press the Power button.
2. Turn the knob to manually adjust the backlight intensity.
3. Press the knob to close the backlight page.

To select Auto mode from Manual mode:

1. While the unit is turned on, press the Power button.
2. Press the Power button again to select Auto.
3. Press the knob to close the backlight page.

4.3 Prior to Flight in Instrument Meteorological Conditions

1. Press the Power button on the G5 attitude indicator.
2. Verify the battery status indicator is green on the G5 attitude indicator.

4.4 Autopilot Operations with the G5 HSI

The G5 and optional GAD 29B offer various integration capabilities dependent upon the type of autopilot installed in a particular aircraft.

The G5 Electronic Flight Instrument installation in this aircraft provides the following autopilot functions (appropriate boxes will be checked):

- ☐ This installation does not interface with the autopilot (basic wing leveling autopilot or no autopilot is installed in the aircraft).
- ☐ A GAD 29B Adapter is installed in this aircraft.
- ☐ Course / NAV Selection coupling to the autopilot.
- ☐ Heading Bug coupling capability to the autopilot.
- ☐ Roll Steering (GPSS) emulated via heading mode.

OR

- ☐ Roll Steering capable autopilot (GPSS menu function for emulation not applicable).

4.4.1 Course / NAV Selection Coupling to the Autopilot (If Configured)

When operating the autopilot in NAV mode, the deviation information from the installed navigation sources (i.e. GPS or NAV) is switched via the navigation source. The NAV source displayed on the HSI is the NAV source the autopilot is following. Many autopilots also use the course datum to determine the best intercept angles when operating in NAV mode.

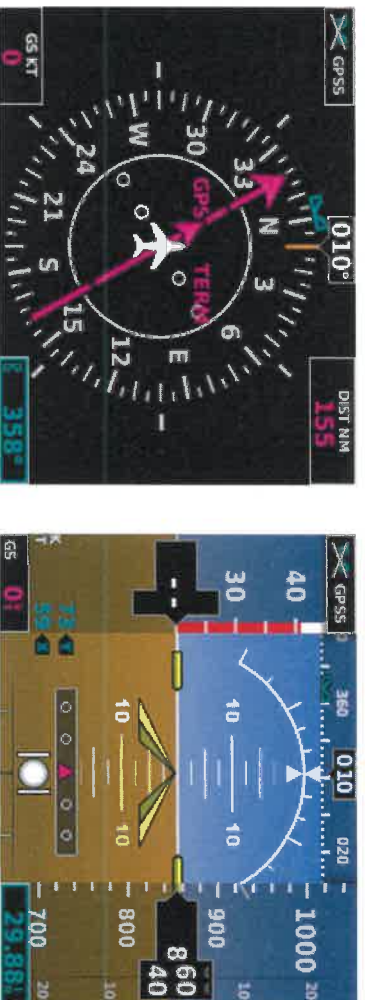
4.4.2 Heading Bug Coupling Capability to the Autopilot (If Configured)

When operating the autopilot in HDG mode, the difference between the HDG bug location on the HSI and the actual aircraft heading creates an error signal which the autopilot will minimize by turning in the direction of the bug. If the bug is turned more than 180 degrees, the autopilot may turn the airplane in the opposite direction of the desired turn.

4.4.3 Roll Steering (GPSS) Emulated via HDG Mode (If Configured)

For autopilots that do not support digital GPSS signals, GPSS functionality may be emulated by operating the autopilot in HDG mode and selecting GPSS from the G5 menu. If the autopilot is already designed to receive roll steering information, the data is transmitted digitally from the navigator to the autopilot.

When GPSS is selected on the G5 menu, the heading bug on the HSI changes to a hollow outline and a crossed-out heading bug appears on the G5 HSI display indicating that the autopilot is not coupled to the heading bug. The bug is still controllable and may still be used for reference.



When GPSS is selected on the G5, GPSS turn commands are converted into a heading error signal to the autopilot. When the autopilot is operated in HDG mode, the autopilot will fly the turn commands from the GPS navigator. If

the GPSS data is invalid (for example, if there is no active GPS leg) or the selected HSI source on the G5 HSI is not GPS, the annunciated GPSS text will be yellow and a zero turn command will be sent to the autopilot.

Section 5. PERFORMANCE

No change.

Section 6. WEIGHT AND BALANCE

See current weight and balance data.

Section 7. SYSTEM DESCRIPTIONS

Refer to Garmin G5 Pilot's Guide P/N 190-01112-12 Revision 3 or later, for a description of the G5 electronic flight instrument. This reference material is not required to be on board the aircraft but does contain a more in depth description of all the functions and capabilities of the G5.

The ATT circuit breaker supplies power to the G5 instrument for normal power operation and to charge the internal battery.

The DG circuit breaker supplies power to the G5 instrument for normal power operation when configured as a DG, and to charge the internal battery (if installed).

The HSI circuit breaker supplies power to the G5 instrument for normal power operation when configured as an HSI, and to charge the internal battery (if installed).

The GAD circuit breaker supplies power to the optional GAD 29 adapter for normal power operation.



S O C A T A

OSSUN-LOUEY 65-FRANCE

REGISTRE INDIVIDUEL DE CONTROLE
INDIVIDUAL INSPECTION RECORD

AVION - AIRCRAFT

R.235C

N° SERIE
SERIAL N°
13074

DATE
7-90

IMMATRICULATION
REGISTRATION

REPertoire - CONTENTS

Inventaire des équipements de série	List of standard equipments	Feuille - sheet 1 - 2
Inventaire des options	List of optional equipments	» » 3
Procès-verbal de pesée et de centrage	Weight and balance report	» » 4
Etat des modifications	Modifications status	» » 5 - 6
Etat des dérogations	Concessions status	» » 7
Certificat de conformité	Conformity certificate	» » 8
Compte-rendu d'essai en vol	Flight test report	» » 9

Je soussigné, **Gérard PEREZ**
I the undersigned,

Chef du Contrôle Qualité, certifie l'exactitude des contrôles et mesu-
Head Quality Control, do hereby certify the exactness of the checks
res reportés sur les feuilles du présent registre.
and measures reported in the attached report.

Date : **12 JUIL. 1990**

Visa :



Nous soussignés, **J. CRESSEVER**
We the undersigned,

Représentant du **BUREAU VERITAS** déclarons accepter le présent
Representative of **BUREAU VERITAS** certify this manufacturer's
registre.
design conformity.

Date : **24 JUIL. 1990**

Visa :



SOCATA

65 - OSSUN-LOUEY

REGISTRE INDIVIDUEL DE CONTROLE

INVENTAIRE DES EQUIPEMENTS DE SÉRIE - LIST OF STANDARD EQUIPMENTS

RALLYE 235 C

N° 13074

Qté Qty	Désignation Description		Marque Mark	Type Type	(1)	N° Série Sérial N° (2)
1	Moteur	Engine	LYCOMING	0540-B4-B5	X	L-18340-40A L-19277-40A
1	Equipements moteur (voir livret moteur)	Engine equipments (see engine log-book)			X	
1	Hélice (3)	Propeller (3)	HARTZELL	HC-C2YK-1BF/ F8468 A-4	X	NS15848 G4-11-848 L-22607 L-22605 L-22607
—	Moyeu	Hub			—	
—	Pales	Blades			—	
	Régulateur d'hélice	Propeller governor	WOODWARDS	210-681	X	1291FR12
1	Batterie	Battery	G-35	12V - 35 Ah	X	
1	Tachymètre	Tachometer	A.C.	RT 11	X	
1	Indicateur de pression d'huile	Oil pressure indicator	)		X	
1	Indicateur température d'huile	Oil temperature indicator	) Combiné	610-081-01	X	
1	Indicateur pression essence	Fuel pressure indicator	) JAEGER		X	
1	Ampèremètre	Ammeter	)		X	
2	Indicateur jaugeur essence	Fuel gage indicator (2)	)		X	
	Manomètre admission	Manifold pressure gage			X	
	Indicateur température carburateur	Carburetor temperature indicator	RICHTER	299-23	X	

(3) Le type indiqué peut éventuellement correspondre à une option.

The indicated type can eventually correspond to an optional equipment.

(1)

X - Monté avant la pesée - Fitted before weighing

O - Non monté avant la pesée - Not fitted before weighing

(2)

Renseignement facultatif - Optional information

SOCATA

65 - OSSUN.LOUEY

REGISTRE INDIVIDUEL DE CONTROLE

RALLYE 235 C

N° 13074

INVENTAIRE DES ÉQUIPEMENTS DE SÉRIE - LIST OF STANDARD EQUIPMENTS

Qté Qty	Désignation Description	Marque Mark	Type Type	(1)	N° Série Série N° (2)
1	Anémomètre Airspeed indicator	EDO AIRE	EA.5.172.1	x	
1	Altimètre Altimeter	MAC CLEOD UI	12003 M 5934 M	x	
1	Variomètre Rate of climb indicator	EDO AIRE	EA.1404-12	x	
	Indicateur de virage Turn and bank indicator	EDO AIRE	52075-10	X	
1	Compas Compass	AIRPATH	C.2300	x	
1	Niveau transversal Side slip indicator	AIR PRECISION	57	x	
	INTERFONO		SPA 400	X	
	ATTITUDE INDICATOR G5	GARMIN	G5 PILOT 11-03808	X	450066421
	FIRE EXTINGUISHER			X	
	FIRST AID			X	
	Ceinture Seat Belt	L'AIGLON	341 M3	x	

Peinture - Paint : Max Mayer

- (1) { X - Monté avant la pesée - Fitted before weighing
O - Non monté avant la pesée - Not fitted before weighing
- (2) Renseignement facultatif - Optional information

65 - OSSUN. LOUEY

INVENTAIRE DES OPTIONS - LIST OF OPTIONAL EQUIPMENTS

Q235C
№ 13074

Visas des Services de Contrôle . Visa of Inspection Offices

Résultats - Results

(1) } X - Monté avant la pesée - Filled before weighing
O - Non monté avant la pesée - Not filled before weighing

SOCATA

65 - OSSUNLOUEY

REGISTRE INDIVIDUEL DE CONTROLE

RALLYE 235 C

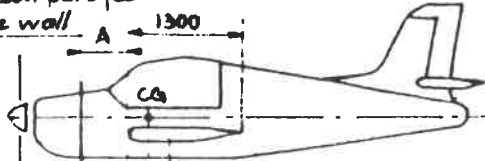
N 13074

PROCÈS-VERBAL DE PESÉE ET DE CENTRAGE - WEIGHT AND BALANCE REPORT

Mise à niveau: rail de verrière horizontal

Levelling: canopy rail horizontal

Ref. cloison pare feu
Ref. fire wall



	m	in
A	0.657	25.9
B	1.271	50.0
C	1.291	50.8

Masse à vide - Pesée effectuée sur points de levage
Empty weight - Weighing effected on jack points

	Masse lue calculée Read calculated weight (1)	Tare	Masse nette Net weight kg lb
Point G Left point			248
Point D Right point			241
Point AV Fore point			233
(1) Rayer les mentions inutiles Delete unapplicable item Masse - weight - P			
			722

Distance du CG
Distance of CG

- aux points de levage AR
to rear jacking points
 $D = \frac{P_1 \times C}{P} = 0.416 \text{ m}$ in
- à la cloison pare-feu
to fire wall.
 $E = B - D = 0.855 \text{ m}$ in

Report

Essence inutilisable

Masse kg	weight lb	Bras de levier m	Arm in	Mt par rapport à la ref m.kg	Mt vs reference lb.-in
P 722	3.2	E) 0.855	42	617.31	296
		1.067		3.41	

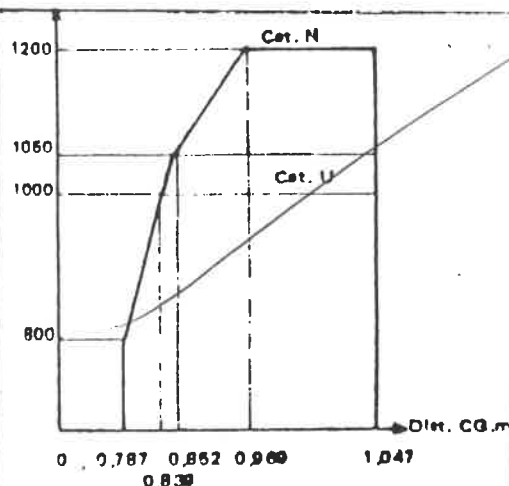
Centrage à vide
Empty CG position

$F = E - A$
0.199 m
in

Résultats nets - Net results

725.2	E) 0.856	620.72
Masse à vide Empty weight	Dist. CG à la ref. Dist. of CG to ref	Moment résultant à vide Empty resulting moment

18.30 %



LIMITES DE CENTRAGE ET DE CHARGEMENT

LOADING AND BALANCE LIMITS

Avion vide Aircraft empty
Pilot + passager w Pilot and forward passenger
Passagers AR Rear passengers
Essence Fuel
Huile Oil
Bagages Baggage

Masse kg	weight lb	Bras de levier m	Arm in	Moment mkg	Moment inlb
725.2		0.856		620.72	
154	340	0.967	38	148.91	12920
154	340	1.777	70	273.65	23800
125.8		1.067	42	134.23	
11	23	0.500	19.8	5.50	455
30		2.447	96.3	73.41	
1200		1.047		1256.42	

à la cloison pare-feu

Distance of CG
Distance du CG

à la cloison pare-feu

Date: 5 JUL 1998

Cachet:
Stamp



SOCATA

65 - OSSUN-LOUEY

REGISTRE INDIVIDUEL DE CONTROLE

ETAT DES MODIFICATIONS - MODIFICATIONS STATUS

RALLYE 235 C

N° 13076

5

MODIFICATIONS APPLIQUEES A L'APPAREIL - MODIFICATIONS AS APPLIED TO THE AEROPLANE

Les modifications antérieures au n° 139 sont incorporées dans la liasse ou n'intéressent pas ce type d'appareil.

The modifications previous to n° are included in manufacturing documents or do not concern this aircraft model.

Exemple d'application - Example

1	2	3	4	5	6	7	8
☒	☒		☐		☒		



Appliquée en totalité - Totally applied



Appliquée partiellement - Partially applied



Non appliquée - Not applied



Sans objet pour cet avion - Not applicable to this aircraft

Dans l'exemple ci-dessus, la dernière modification appliquée à la date d'établissement du dossier est la n° 6
In the above example, the last modification applied at the date of this inspection book was n° 6

Visas des Services de Contrôle
Visa of Inspection Offices



O C A T A

I - OSSUN-LOUEY

REGISTRE INDIVIDUEL DE CONTRÔLE

RALLYE 235 C

№ 13074

ETAT DES MODIFICATIONS - MODIFICATIONS STATUS

[illegible]

Visas des Services de Contrôle
Visa of Inspection Offices



DSSUN-LOUEY

ÉTAT DES DÉROGATIONS - CONCESSIONS STATUS

A 235C

N^o 13074

9	Désignation - Description	Cachets Stamps
5	RALLYE TYPE "C"	

Visas des Services de Contrôle
Visa of Inspection Offices



SOCATA

65 - OSSUN-LOUEY

REGISTRE INDIVIDUEL DE CONTROLE

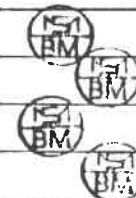
CERTIFICAT DE CONFORMITÉ - CONFORMITY CERTIFICATE

Q 235 C
N° 13074

Description des opérations - Description of operations

Contrôle de l'ensemble structure	Airframe inspection
Contrôle des commandes de vol et gouvernes	Flight controls inspection
Contrôle des commandes moteur	Engine controls inspection
Contrôle des équipements et aménagements	Equipments inspection

Cachets - Stamps



Je soussigné, **Gérard PEREZ**, Chef du Contrôle Qualité de la SOCATA, usine d'Ossun-Louey, certifie que l'avion Q 235 C N° 13074 immatriculé remplit les conditions exigées par la sécurité, les normes et règlements en vigueur; les dérogations intéressant l'interchangeabilité ou susceptibles de limiter l'emploi de l'avion ont été acceptées par les Services Officiels et sont énumérées feuille 7 du présent document.

Je certifie en particulier — que toutes les matières, les accessoires, les équipements et les organes utilisés pour la fabrication ont été réceptionnés — que l'avion est conforme, sauf dérogations officielles rappelées ci-dessus, à la liasse identifiée du CDN de type 22 acceptée, complétée par le dossier de modifications agréées par le Service de Surveillance — que toutes les épreuves de fonctionnement exigées par la sécurité et/ou prévues par la réglementation en vigueur, ont été effectuées et ont donné satisfaction.

I the undersigned, **SOCATA Head** Quality Control at the factory of Ossun-Louey, do hereby certify that aircraft, N° 13074, registration N°

fulfills the conditions required by safety, specifications and rules in force at the time; accepted concessions either concerning interchangeability or susceptible to limit the aircraft use have been approved by Official Services and are enumerated on sheet 7 of present document.

I certify in particular that all materials, accessories, equipments and components used in manufacture have been accepted and that, except above enumerated official concessions, the aircraft is in conformity with the identified documentation of the airworthiness type 22 accepted, completed by modifications agreed by Security Official and that all the checks required by the security, and/or imposed by the rules in force have been made and found satisfactory.

Date :

12 JUIL. 1990

Visa :



Contrôle Officiel - Official Inspection



OCATA
- OSSUN-LOUEY

REGISTRE INDIVIDUEL DE CONTRÔLE

R.235C
N° 13074

COMPTE-RENDU D'ESSAI EN VOL - FLIGHT TEST REPORT

Comportement en vol : - Behaviour in flight :

de la cellule *airframe*

du GMP *power plant*

des équipements *equipments*

Observations du pilote - Pilot's observations

- Correct -

- Correct -

- Correct -

Je soussigné,

J.F. SOCHOR

pilote réceptionnaire de

I the undersigned,

reception pilot of

l'avion

R.235C

N°

13074

immatriculé

aircraft

N°

registration

certifie que cet appareil, essayé en vol dans les conditions normales d'utilisation définies par
do certify that this aircraft was flight tested under normal operating conditions as outlined in type

la fiche de navigabilité, a satisfait au programme approuvé de réception.

certificate data-sheet and was found to comply with the approved flight test schedule.

Fait à OSSUN, le 11 Juillet 1980



Contrôle Officiel - Official Inspection

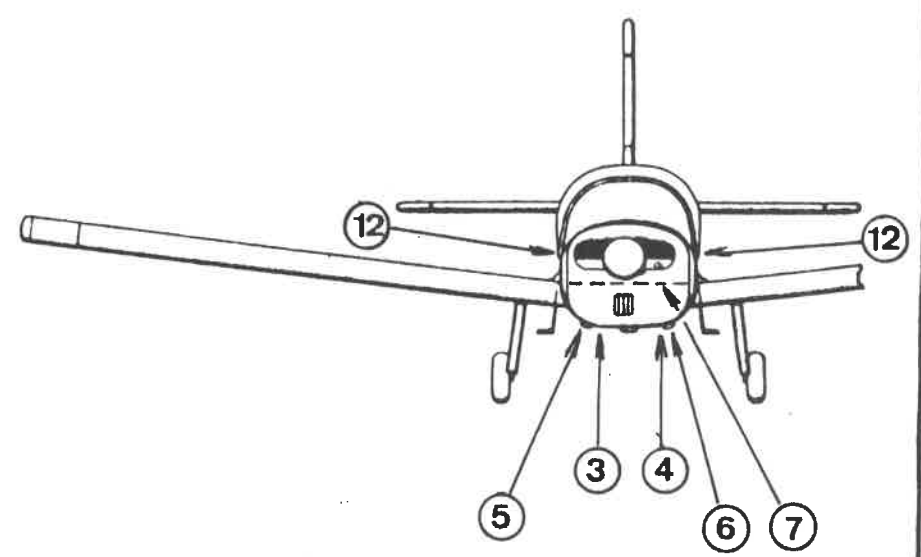
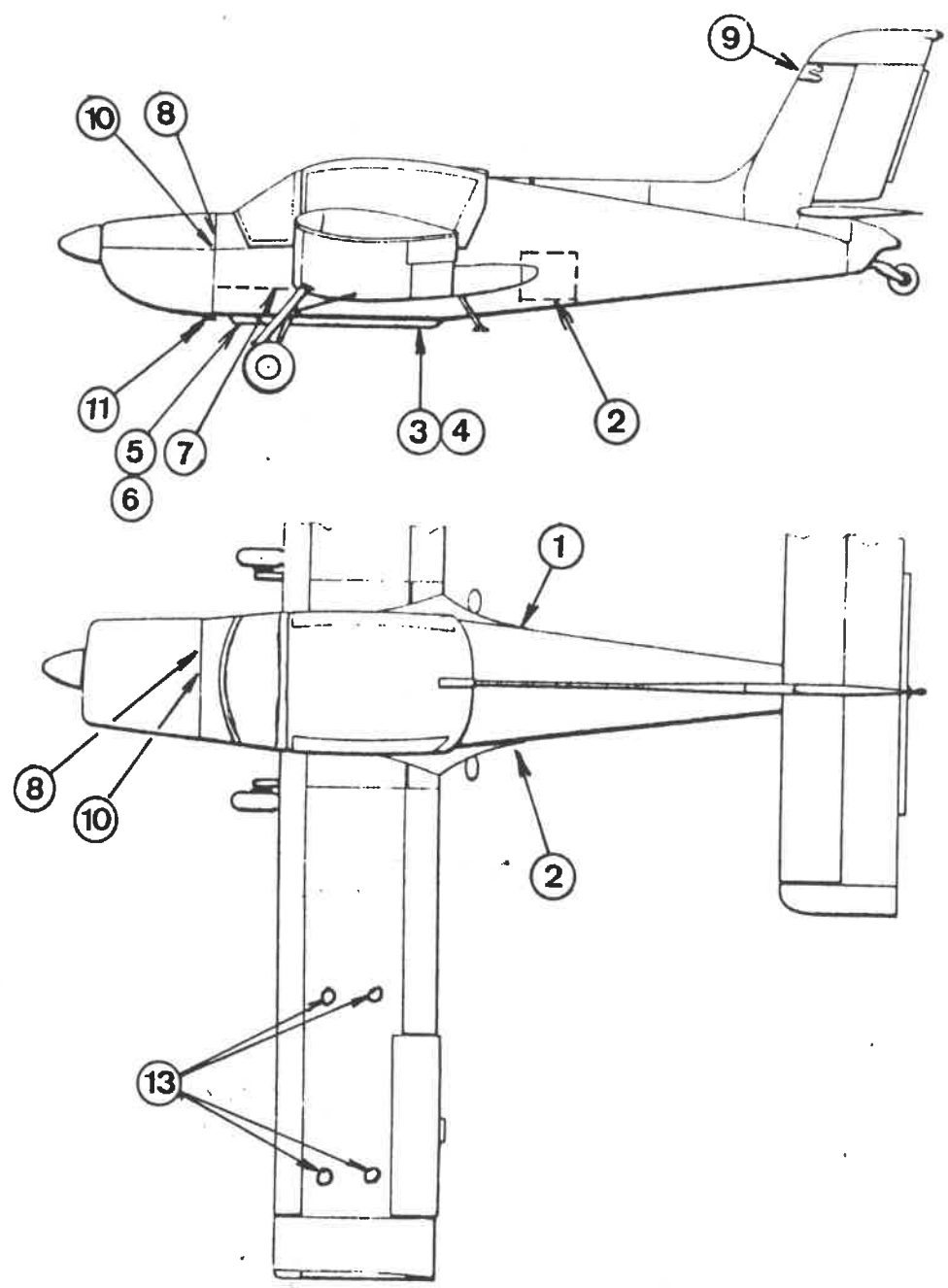


Firme - Firm - Usine de - Works S.O.C.A.T.A	Aeronef Aircraft Type RALLYE TYPE "C"	N° de feuilles - Sheet of 6	CONCESSION	
Société émettrice - Originator's Company S.O.C.A.T.A	N° Plan et élément Drawing and part number 895 00 0 017 00	Application N° Technical office N° DEROGATION N° 365		
Destinataire - Destination of part S.O.C.A.T.A	Commande ou contrat - Order/Contrat 60 900 F	N° de pièces - N° oll 2	Désignation - Description	

LIBELLÉ de la DEMANDE et exposé des remèdes proposés	DESCRIPTION of DIVERGENCE and proposed remedy	N° S/Nbs	Pièce - Part	Ensemble - Component	Avion - Aircraft 13074
TRANSFORMATION OF A RALLYE AGRICULTURAL AIRCRAFT 895 00 1 010 00 INTO A RALLYE "C" (CLASSIC TYPE LANDING GEAR) 895 00 0 017 00. The purpose of this conversion is to get the aircraft in compliance with a RALLYE 235 C, thus remove all equipment, supports and brackets as well as certain airframe, wing and engine control installations that are specific for an agricultural aircraft (see Pages 2 to 6) We are hereby asking you to accept the aircraft in this configuration.		DECISION B. E. RESPONSABLE ET REMÈDE ADOPTÉ RESPONSIBLE DESIGN OFFICE DECISION AND REMEDY OK - BE			
ATELIER de - SHOP FOR PARTS - Autre dérogation affectant cet élément - Any other concession on this item		Limitations d'emplois - Limitations imposed on the part NONE			

Intéresse l'interchangeabilité - Is Interchangeability affected (1)		☒ OUI YES ☐ NON NO		Enregistrable Recordable (1) Non enregistrable Not Recordable (1) Interne Internal (1)
Action corrective - Engineers or production comments NONE				

SERVICES AUTHORITY	DEMANDEUR ORIGINATOR AND STAMP	Avis Contrôle demandeur Originating Chief Inspector	Avis Contrôle officiel demandeur Originating official Authority	Chet Contrôle responsable Main contr. Chief inspector	Contrôle officiel Official Authority
Avis ou Décisions - Opinion NOM - NAME Signature Date	LESAGE J. 29.06.90	Following DESIGN OFFICE opinion C. POUETO 29.06.90	IDENTIFICATION J. CRÉSSEVER 12/07/90	Accord. G. PEREZ 12-07-1990	Accord J. CRÉSSEVER 12.07.90



WINGS ARRANGEMENT

All spraying bars and supply bars supports attachment points will be plugged with large round head screws (see Page 2/6 Item 13)

no 365	
Indice	Page 3/6

AIRFRAME ARRANGEMENT

Inspection door between frames Nr 9 and Nr 10 on right hand side, and lower filling hatch between frames Nr 9 and Nr 10 on left hand side are covered with a 1.2 mm thick AU4G plate which is attached to the airframe structure with dia. 3.2 mm AU4G brazier head rivets with approximately 30 mm space. (see Page 2/6 Items 1 and 2).

Junction box doors between frames Nr 4 and Nr 6 on left hand and right hand sides are covered with a 1.2 mm thick AU4G plate and a 3 mm thick neoprene seal attached to the airframe structure with 12 dia. 5 mm type 5027 screws (see Page 2/6 Items 3 and 4).

The dump control cable openings in the undercarriage fairing between frame Nr 1 and Nr 2 on both the left hand and right hand sides, and opening in the left hand side floorboard, are covered with a 1 mm thick AU4G plate attached with dia 3.2 mm IMEX rivets with approximately 30 mm space and with 4 screws, type 5027, dia. 5 mm (see Page 2/6 Items 5, 6 and 7)

Battery vent hole on right hand side engine bulkhead is covered with a 1mm thick AU4G plate attached with 4 dia 3.2 mm IMEX rivets (see Page 2/6 Item 8).

n° 365	
Indice	Page 4/6

Wire-cutter blade bracket remains riveted to the vertical stabilizer upper section. Attachment holes for the wire-cutter blade are plugged with dia. 5mm brazier head screws (SI) together with lockwashers (SI TUBTARA Rivedé dia 5mm captive nut)

On the firewall, the 4 battery attachment holes are plugged with hex head screws, washers and nuts dia. 4mm (see Page 2/6 Item 10).

On the firewall and frame Nr 0 angle, the 7 SIMPLEX pump attachment holes are plugged with hex head screws, 12.5 mm long, washers and nuts dia. 6 mm (see Page 2/6 Item 11).

On canopy rails, on aircraft left hand and right hand sides, the 16 attachment holes of agricultural tank and the 12 attachment holes of agricultural canopy are plugged with 120° raised countersunk head screws, 12.5 mm long installed with "Nylstop" anchor nuts except for the first screw (Front L.H. and R.H.) installed with "Nylstop" nut (see Page 2/6 Item 12)

PROPELLER AND ENGINE CONTROLS

n° 365

Indice

Page

5/6

All engine and propeller controls are of RALLYE "G" design and are installed on the aircraft according to drawings 895 57 0 003 . 895 76 0 163 and 895 90 1 041.

INTERIOR GENERAL PROTECTION

Aircraft internal protection is made according to agricultural aircraft protection drawing 895 90 1 591.

Therefore, parts with identification tags, installed on the aircraft will have a specific identification for RALLYE agricultural aircraft. They are mechanically interchangeable with parts of RALLYE "C" version. The only difference is the protection.

All these parts are listed on page 6/6.

CANOPY

The canopy installed on the aircraft is not upholstered, its P/N is 892 25 1 009 0. It has been installed, replacing an upholstered canopy P/N 895 25 0 003 0.

These canopies are mechanically interchangeable.

CROSS. TABLE FOR PARTS WITH IDENTIFICATION TAGS

no 365

Index

Page

6/6

PART DESCRIPTION	"AG" RALLYE ASSY. N°	"C" RALLYE ASSY. N°	REMARKS
Fuselage assy.	895 90 1 588 0	895 21 0 027 0	
L.H. wing assy.	895 90 1 638 1	895 11 1 002 1	
R.H. wing assy.	895 90 1 638 2	895 11 1 002 2	
L.H. aileron assy.	895 90 1 640 1	890 15 0 001 5	
R.H. aileron assy.	895 90 1 640 2	890 15 0 001 6	
L.H. flap assy.	895 90 1 641 1	880 16 0 079 1	
R.H. flap assy.	895 90 1 641 2	880 16 0 079 2	
Vertical stabilizer assy.	895 90 1 601 0	890 31 0 001 4	
Rudder assy	895 90 1 602 0	894 32 0 001 0	
Horizontal stabilizer assy.	895 90 1 603 0	890 33 0 052 4	
L.H. elevator assy.	895 90 1 604 1	880 34 0 061 1	
R.H. elevator assy.	895 90 1 604 2	880 34 0 061 2	

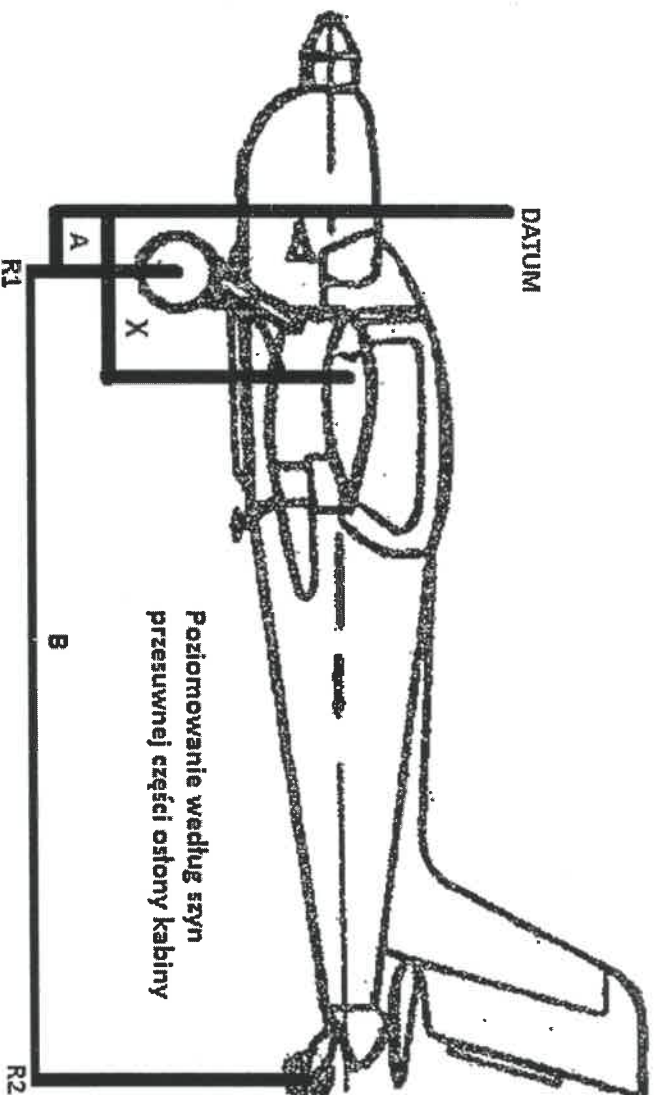
Lisie Kąty, dn.26.05.2020 r.

Protokół ważenia i wyznaczenia środka ciężkości samolotu

Typ: Socata Rallye 235C

Nr fabryczny: 13074

Znaki: SP-KNF



Konfiguracja samolotu:

- wyposażenie niezbędne do lotu zgodnie z IUWL
- nieużywana ilość paliwa
- pełna ilość oleju - 12 l
- pełna ilość płynów w pozostałych układach

Lp.	Odczyt z wagi (kg)	Pomiar (m)	
1	R ₁	677,0	A
2	R ₂	56,2	B
3	Q _c = R ₁ +R ₂	733,2	

$$x = A + \frac{R_2 \times B}{Q_c} = 0,874$$

Dopuszczalna masa do startu: 1000 kg

Maksymalna masa załadunku: 266,8 kg

Dopuszczalny zakres położenia środka ciężkości: 0,721 – 1,047 m

26 MAJ 2020

W. Serwatka
PL.MF.026/8

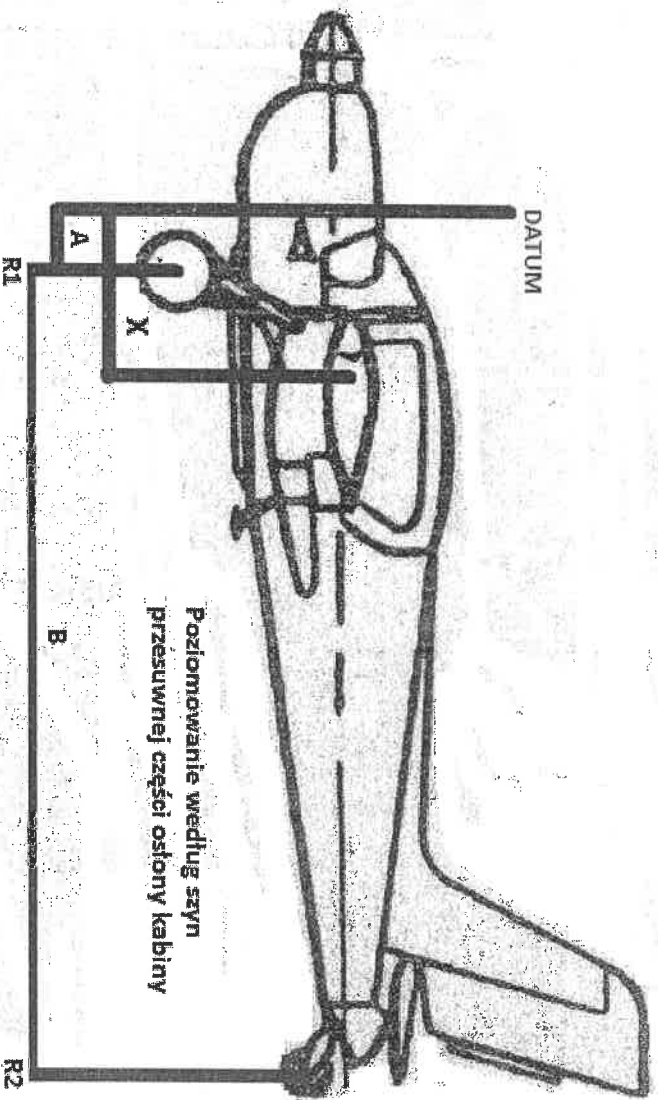
(Data, nr upoważnienia, podpis)

Aeroklub Nadwiślański PL.CAO.0020

Miejscowość, dn. 01 WRZ 2022

Protokół ważenia i wyznaczenia środka ciężkości samolotu

Typ: Socata, Morane tyline	Nr fabryczny: 13074	Znaki: SP-KNF
kółko		



Konfiguracja samolotu:

- wyposażenie niezbędne do lotu zgodnie z IUWL
- nieużywana ilość paliwa
- pełna ilość oleju - 22 l
- pełna ilość płynów w pozostałych układach

Lp.	Odczyt z wagi (KG)	Pomiar (m)
1	R1 676,1	A 0,465
2	R2 56,1	B 5,345
3	Qc = R1+R2 732,2	

$$X = A + \frac{R2 \times B}{Qc} = 0,874 \text{ m}$$

01 WRZ 2022

W. Serwatka
PL.CAO.0020/8

Serwatka

Dok. nr AN-T-15 Zmiana nr 1 z 10.10.2019 r.

**Lista wyposażenia do Protokołu ważenia i wyznaczania środka ciężkości
pustego samolotu.**

Typ: Socata Rallye 235C	Nr fabryczny: 13074	Znaki: SP-KNF
-------------------------	---------------------	---------------

Lp.	typ	umiejscowienie
1	Prędkościomierz	Tablica przyrządów, lewa strona
2	Wysokościomierz	Tablica przyrządów, lewa strona
3	Wariometr	Tablica przyrządów, lewa strona
4	Zakrętomierz	Tablica przyrządów, lewa strona
5	Sztuczny horyzont	Tablica przyrządów, lewa strona
6	żyrobusola	Tablica przyrządów, lewa strona
7	obrotomierz	Tablica przyrządów, lewa strona
8	Wskaźnik ciśnienia ładowania	Tablica przyrządów, lewa strona
9	Wskaźnik podciśnienia	Tablica przyrządów, lewa strona
10	Radiostacja IC-A220	Tablica przyrządów, prawa strona
11	Transponder KT-76A	Tablica przyrządów, prawa strona
12	Wskaźnik EGT	Tablica przyrządów, prawa strona
13	Wskaźnik CHT	Tablica przyrządów, prawa strona
14	Wskaźnik temperatury gazów wylotowych	Tablica przyrządów, prawa strona
15	Busola	Przednia rama kabiny
16	Pasy bezpieczeństwa (4 komplety)	Fotele załogi
17	Gaśnica	Kabina
18	Apteczka	Bagażnik
19	Zaczep holowniczy	Goleń podwozia tylnego
20	Lusterko	Rama osłony kabiny

26 MAJ 2020

W. Serwatka
PL.MF.026/8

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(Data, nr upoważnienia, podpis)