

**- S.I.P.A. 200 -**

**FLIGHT MANUAL**

This document must be joined to the airworthiness certificate

FLIGHT MANUAL

AIRCRAFT S.I.P.A. type S.200 Serial # .

Approved by S.G.A.C.C. on 25.5.1955

CATEGORY : Liaison, training, aerobatic.

Wing span : 26.247 ft  
Length : 17.119 ft  
Height : 5.840 ft

Wing area : 103 ft<sup>2</sup>  
Maximum takeoff weight : 1874 lb.

ENGINE : Turboméca « Palas » 350 lb.

Take-off N = 34,000 rpm maximum duration 5 min  
Climb N = 32,500 rpm " " 20 min  
Cruise N = 31,500 rpm unlimited duration  
Approach N = 25,000 rpm minimum  
Landing N = 15,000 rpm

Fuel : Kerosene 55.5 US Gal  
French standard AIR 3405  
US standard JP1 (ANF 32)

Oil lubricant : 3.2 quarts  
French standard AIR 3512  
Esso 57  
Shell 9

. Control instruments

- Mechanical speed indicator
- Triple indicator giving:
  - 1/ - Exhaust temperature
  - 2/ - Oil pressure
  - 3/ - Oil temperature

. Recommendations

- In flight exhaust temperature (T4) : maximum 650 °C  
; when starting engine, during injections : maximum 500 °C

Note.- Comply with the individual engine manual maximum temperatures.

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- Oil pressure
  - Maximum - 5 Hpz/cm<sup>2</sup> (71 PSI)
  - Minimum - 1 " " (14 PSI)
  - Normal - 3 " " (42 PSI)
- Oil temperature
  - Maximum - 70 °C
  - Normal - 40 °C

Note.- The oil tank contains 3.2 quarts with 1.8 quarts useable, due to the flapper valve for inverted flight. A gauge indicates those levels.

#### Engine servicing

- . Startup (see also pages 9-10-)
- with external power 24 volts - 35 amps maximum, ground connector Sourian type 7458 MSP.6 three pins.
- With on board battery consisting of 1.5v - 35 amps/hr elements.

Note.- This battery fully charged can provide 7 consecutive startups.

#### ENGINE OPERATION

Refer to page 1, to the aircraft operation page 4 and to the individual Turboméca operation card.

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AIRCRAFT

Navigation and control instruments

1/- Navigation :

- Speed
- Altitude
- Vertical speed
- Bank
- Heading

2/- Hydraulic system

- Pressure gauge

3/- Electrical system

- Voltmeter
- Ammeter
- Fuel gauge
- Flap position indicator
- Landing gear indicator

Weight statement

- (1) - Pilot and passenger = 366 lb.
- (2) - Maximum fuel capacity = 55.5 US gal  
Kerosene density : 0.786
- (3) - Engine oil capacity = 3.2 quarts
- (4) - Hydraulic oil capacity = 1.6 quarts

	Fwd	Aft	Total	Balance
	Wheel	Wheels	Weight	%
A/- Empty +(4)	0	:1,074 lb:	1,098 lb:	33.4
B/- Case A+fuel	0	:1,473 lb:	1,473 lb:	32.7
C/- Case B+pilot:	75 lb:	1,578 lb:	1,653 lb:	26.8
D/- Case C+pass.:	148 lb:	1,687 lb:	1,834 lb:	21.9

The case A weight indicates 24 lb. on the nacelle strut.

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- Maximum take-off weight authorized in conditions "training" "liaison" "aerobatics".
- Balance limits 20 to 27%.

## OPERATION

### 1/- Limitations

- . Maximum cruise speed = 250 kts
- . " manoeuvring speed = 130 kts
- . " gear extended speed = 120 kts
- . " flaps extended speed at:
  - B = 10 ° = 100 kts
  - B = 20 ° = 90 kts
  - B = 35 ° = 80 kts
- . G loadings : +4.5g -1.9g

### Aerobatics

Aerobatics are allowed with or without passenger at maximum takeoff weight.

All aerobatic maneuvers are allowed except for the "flick roll" and "forward flip".

Fuel and oil supply are assured during inverted flight, but for not more than 20 seconds due to the loss of oil that can occur in the aft engine bearing.

### / - Recommendations

- . Take-off : N = 34,000 rpm flaps B 12°  
Indicated airspeed 65-70 kts
- . Initial climb : N = 34,000 rpm flaps B 0°  
Indicated airspeed 95-100 kts
- . Climb : N = 32,500 rpm flaps B 0°
- . Cruise : N = 31,500 rpm
- . Descent : N minimum 25,000 rpm
- . Approach : gear down  
Indicated airspeed 120 kts - N minimum 25,000 rpm

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65 ft obstacle clearance

Take-off distance : 4,000 ft (flaps 12 ° , ground roll  
1,600 ft)

Landing distance : 2,500 ft (flaps 35 ° ; round roll  
650 ft with braking).

VERY IMPORTANT

Those values are correct for standard atmosphere, ie:

Sea level, temperature +15 °C

The following corrections may be applied as first  
approximation for ground roll distances:

- Temperature effect :

For  $15\text{ °C} < t \leq 30\text{ °C}$  : add 15% per 15 °C

- Altitude effect

For  $0\text{ ft} < \text{altitude} \leq 3,000\text{ ft}$  : add 15% per 1,500 ft

Example:

Field elevation at 1,500 ft; temperature = +30°C

Ground roll =  $1,500 \times 1.15 \times 1.15 = 2,000\text{ ft}$

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4/ - Miscellaneous informationA/ - Landing gear

## . Forward:

- Wheel : ERAM type 042  
Tire : reference Dunlop 0,42 A  
Pressure : 17 PSI.

- Shock absorber ERAM  
Pressure : upper chamber : 700 PSI  
Pressure : lower chamber : 70 PSI

## . Rear:

- Wheels : ERAM 400x100, fitted with hydraulic  
disk brakes.

Tire : 400x100 (4x16) Dunlop  
Pressure : 36 PSI

- Shock absorber ERAM  
Pressure : 400 PSI

When pressurizing the shock absorbers, the aircraft must be on jacks. For this purpose, three jack attach points are available on the airframe, two on both sides of the fuselage around the aft spar, the third on the right fwd of the fuselage.

The jack heads must be made out of a sphere of 23mm diameter.

For gear maintenance, refer to ERAM note.

## B/ Landing gear and flap actuation

The landing gear and flaps are hydraulically actuated.

The oil is sucked by a hand pump from a 1.6 quarts tank; a graduated gauge allows to check its level.

Pressure is limited by a safety valve rated at 850 PSI.

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Two three-way valves are operated by a unique lever that allows for the operation of either the landing gear or the flaps.

Note.- Use oil Air 3520 FHS

. The position of the landing gear is controlled by an electrical indicator located on the instrument panel.

Green or red lights show:

- Green : gear down and locked
- Red : " unlocked, or in transit
- Lights off : gear up and locked.

There are two lights of each color for each gear : nose, left main, right main.

By turning the key located at the center of the display, either one set of lights is illuminated or the other.

Lights are tested by pushing the center of the indicator key.

. Flap position indication is controlled by an indicator located on the instrument panel.

/ - Brakes

Hydraulic actuation from each seat behind the rudder pedals.

One charge tank is located in the nose, next to the battery. Minimum level at 0.4 inches from end.

Oil used:

- French standard : AIR 3520 FHS
- American " : MIL - O - 5606
- British " : DTD 585

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D/- Fuel

- . The 55 gallons of Kerosene are contained in 5 fuel tanks.  
4 tanks located in the wing are feeding one central sump tank with a capacity of 13.2 gallons. This sump tank is equipped with a flapper valve that assures fuel supply in all attitudes. A check valve prevents fuel from flowing back to the wing.
- . Refueling is made through a single fuel tube above the fuselage.
- . Refueling must be made slowly in order to allow fuel to reach all tanks.  
Fuel level must be visible in the refueling tube.
- . Fuel venting in level flight is assured for the 5 fuel tanks.  
One additional fuel vent is dedicated to the sump Tank to assure proper venting during inverted flight.

E/ - Radio and intercom

VHF radio brand LMT type TR-AP-1A  
Number of frequencies : 3, quartz stabilized  
Possible band : 116 to 126 MHz.

F/ - Battery

The battery consists of:

17/18 elements of 1.5 V. - type UR 35 Amps/hr

Tension, not connected, fully charged (31.4 V.  
(33.3 V.

Tension, connected with 3.5 Amps load : 25.5 - 27 V.

F/- Battery (Following from next page)

Important recommendations

As soon as the unconnected tension goes below 27 V., charge the battery while following the particular recommendations for maintaining the Andyar batteries.

G/- Engine

Startup

- . Remove air intakes and exhaust covers
- . Depending on the situation, either connect the external power source (see page 2) or decide to use the internal battery.
- . Turn the on board electrical system on.
- . Position the inverters on "injection" and "startup".
- . Open the "oil" and "kerosene" valves.
- . Position the throttle lever on idle 15,000 rpm
- . Start the engine by pushing the "start" button.
- . As soon as the engine reaches 4,000 rpm, push the "injection" button (the red indicator light must be on).
- . If ignition is difficult, position the throttle lever slightly higher than 15,000 rpm.
- . While ignition occurs, the rpm will increase rapidly.  
Stop injection before 10,000 rpm and even sooner if the exhaust gas temperature has a tendency to overshoot 500 °C
- . Cut off startup around 10,000 rpm.

G/ - Engine

Important recommendations

- Do not operate the starter for more than 20 seconds.  
Wait for the starter to cool down before any new attempt.
- If the engine fails to rotate rapidly when the starter is activated, this might indicate an inadequate battery charge.
- Keep the starter button continuously pushed during startup sequence. A short cutoff may damage the starter gear.
- If the engine fails to start:
  - 1/ - Close the fuel valve
  - 2/ - Position the throttle lever on idle/cutoff
  - 3/ - Position the inverter on "ventilation"
  - 4/ - (the starter being cooled) push only on "start" during 10 to 20 seconds to dump unburned fuel. The fuel will be dumped by the exhaust duct and by the dedicated combustion chamber manifold drain. This drain is located below the fuselage.

It is very important to insure before each startup that this manifold drain is not obstructed.

### Operation

Refer to indications on pages 1 and 2.

### Important recommendations

When increasing the engine rpm, compliance with careful and progressive operation of the throttle lever must be assured in order to prevent any exaggerated supply of fuel to the combustion chamber which would immediately be followed by a rapid increase of temperature and an unstable combustion which may damage the engine.

### Engine cutoff

- Slowly reduce throttle down to idle detent in order to allow progressive cooling of the engine.
- Cutoff by going below idle detent (throttle full aft).
- Turn the fuel valve off.
- Wait for the engine to stop before turning the oil valve off.
- Turn off electrical switches.

EMERGENCY MANOEUVERS/ Go-around (too high)Above 60 ft

- Gently re-apply throttle and raise the landing gear while maintaining an indicated airspeed of at least 70 kts.
- Slowly raise the flaps while increasing airspeed to 80 kts.

Below 60 ft

- Flaps maximum down
- Cutoff engine by passing idle detent.
- Land the aircraft and brake hard. The roll-out will be short.

/ Engine out landing

- If possible, land with gear down, regardless of emergency field condition.
- Use full flaps, if necessary.
- After touchdown, open and release canopy.

/ In-flight egress

- If the aircraft allows, reduce airspeed to 70 kts.
- Simultaneously, open and release canopy.
- Unstrap.
- Try to egress head first and below the wing.

/ Fire

- Cut off oil and fuel valves without reducing throttle.
- Shut off all electrical switches
- If fire persist, evacuate aircraft.

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