SECTION 7

DESCRIPTION

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A pointer indicator located on the right of the trim control wheel gives the anti-tab position. Forward rotation of the control wheel will trim nose-down, conversely, aft rotation will trim nose-up.

Stabilator tab deflection with stabilator in maximum nose-up attitude must be :

- nose-up 2.5° ± 0.5°
- nose-down 17° ± 1.5°

INSTRUMENT PANEL

L.H. instrument panel (see Figure 7.1) is designed around the basic "T" configuration.
The gyros (if installed) are located in front of the pilot and arranged vertically.
The airspeed indicator or the true airspeed indicator and the altimeter are to the left and right of the gyros, respectively.
The upper edge of the instrument panel contains the alarm panel (see Figure 7.5).
The left side of the panel contains lighting controls, emergency beacon switch (if installed) and registration (enabling airplane radio call).

The L.H. panel strip (see Figure 7.1) contains from left to right : L.H. vent, magneto / start switch, parking brake knob ; alternate static source valve and vacuum system pressure gage (if installed) complete the L.H. panel strip.

The central console (see Figure 7.2) contains in the upper edge, the engine controls panel then radio-navigation equipment vertically mounted to console lower edge.

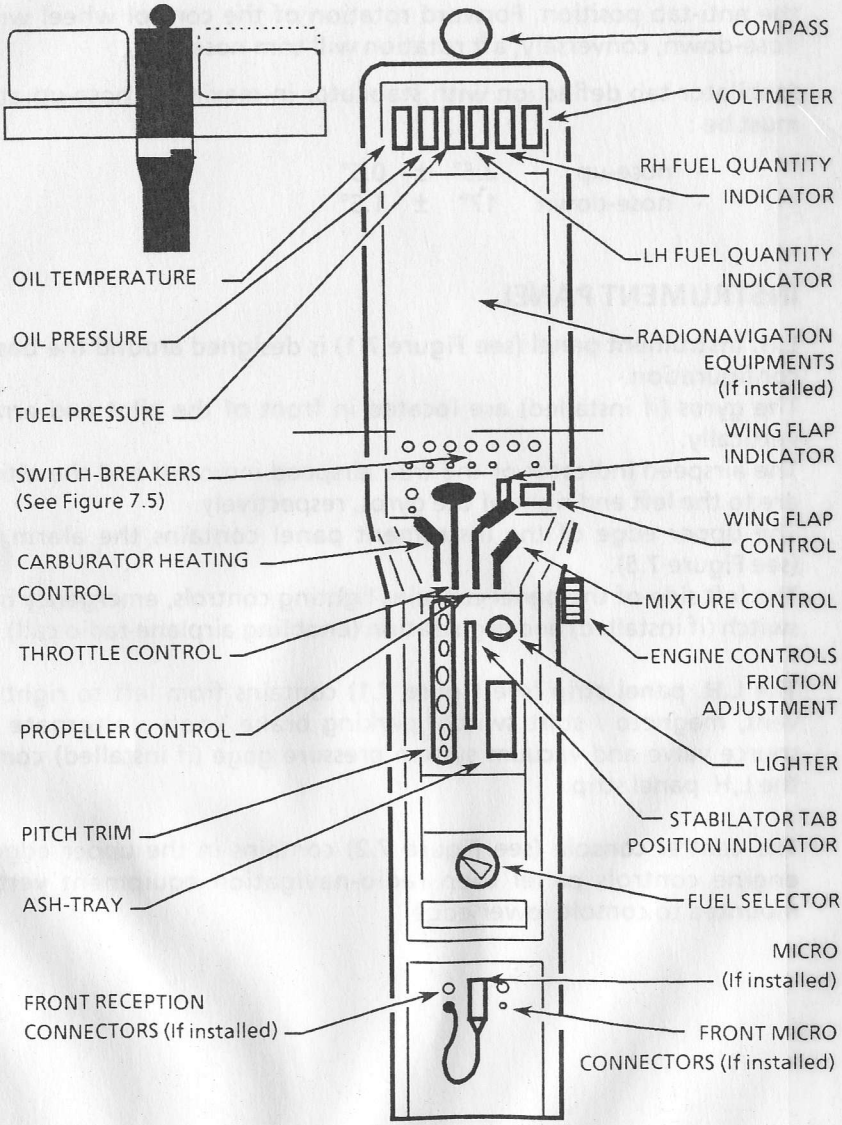


Figure 7.2 - EXAMPLE OF CONSOLE AND PEDESTAL

The central pedestal (see Figure 7.2) contains fore to aft :

- the switch-breakers panel, flaps control and indicator
- the engine controls (from left to right : carburettor heating, throttle, propeller, mixture)
- the pitch trim and its indicator
- the lighter and the ash-tray
- the fuel selector
- the micro (if installed)
- the reception and micro jacks (if installed)
- on pedestal R.H. side, engine controls friction device.

The R.H. instrument panel (see Figure 7.3) contains locations for additional equipment (2nd altimeter, VOR / LOC indicator, outside air temperature, cylinder head temperature, exhaust gas temperature...).

The R.H. panel strip (see Figure 7.3) contains a location for radio equipment or any other one, air conditioning control, R.H. vent.

Upper duct central part (see Figure 7.4) contains fore to aft :

- "Flight conditions" placard
- "Instruction" plate
- Front overhead lights
- Radio loud-speaker (if installed)
- Blower switch (if installed)
- Autopilot alarm (if installed)
- Rear overhead light
- Rear vents.

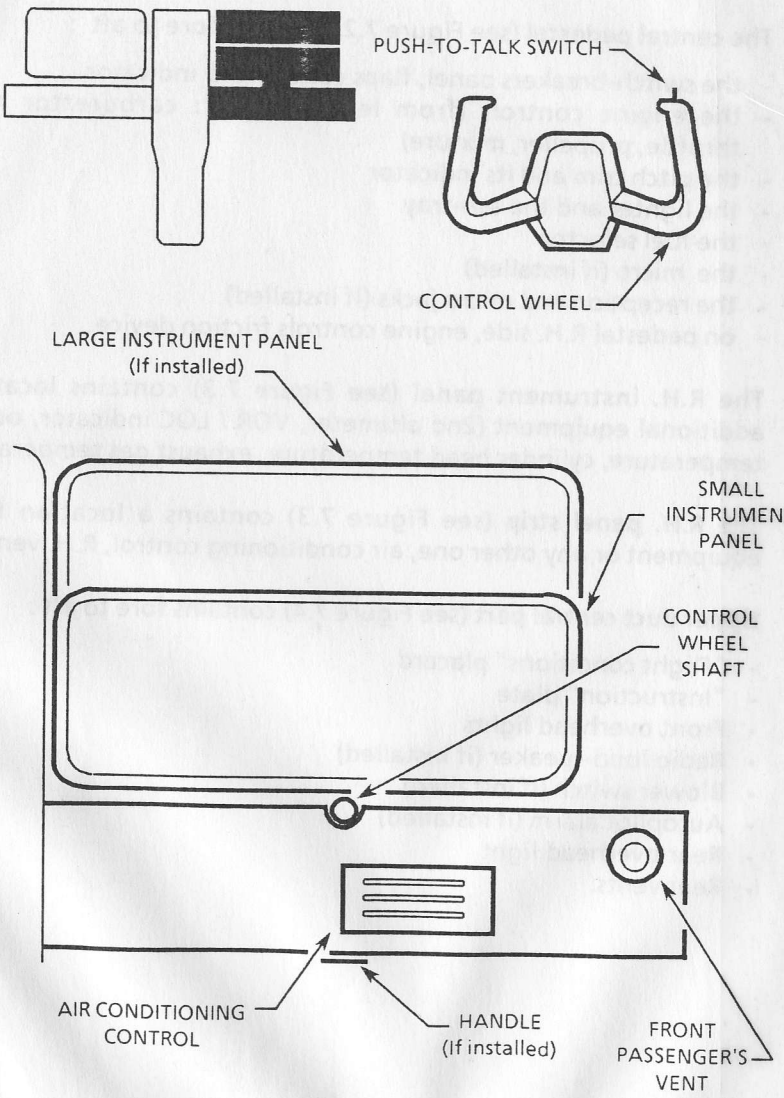


Figure 7.3 - EXAMPLE OF INSTRUMENT PANEL AND R.H. SUBPANEL

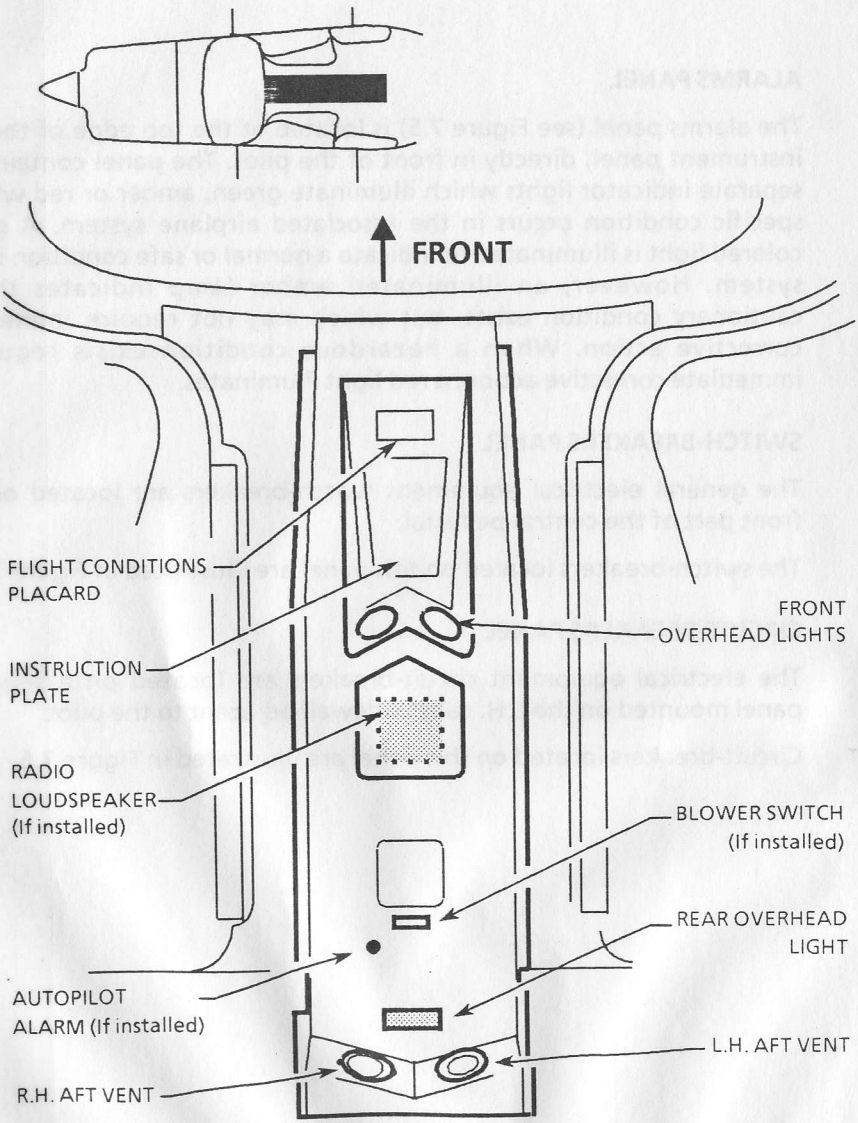


Figure 7.4 - EXAMPLE OF UPPER DUCT CENTRAL PART

ALARMS PANEL

The alarms panel (see Figure 7.5) is located at the top edge of the L.H. instrument panel, directly in front of the pilot. The panel contains ten separate indicator lights which illuminate green, amber or red when a specific condition occurs in the associated airplane system. A green colored light is illuminated to indicate a normal or safe condition in the system. However, an illuminated amber lamp indicates that a cautionary condition exists, but which may not require immediate corrective action. When a hazardous condition exists requiring immediate corrective action, a red light illuminates.

SWITCH-BREAKERS PANEL

The general electrical equipment switch-breakers are located on the front part of the central pedestal.

The switch-breakers located on this panel are illustrated in Figure 7.5.

CIRCUIT-BREAKERS PANEL

The electrical equipment circuit-breakers are located on a separate panel mounted on the L.H. cabin sidewall adjacent to the pilot.

Circuit-breakers located on this panel are illustrated in Figure 7.6.

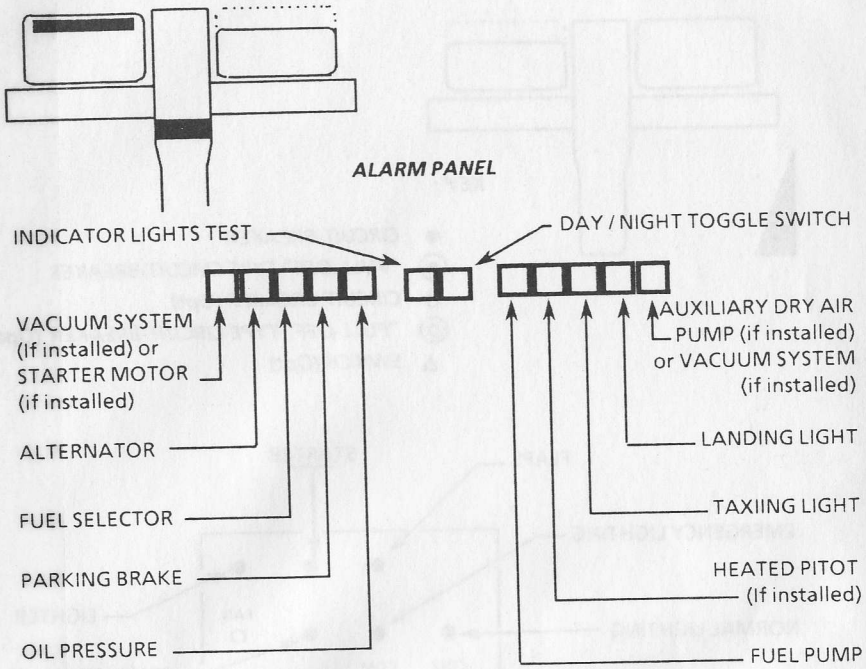
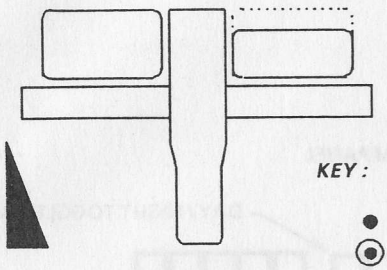


Figure 7.5 - INDICATOR LIGHTS AND SWITCH-BREAKERS



KEY :

- ● *CIRCUIT-BREAKER*
- ◉ *"PULL-OFF" TYPE CIRCUIT-BREAKER*
- ○ *CIRCUIT-BREAKER (Opt)*
- ◎ *"PULL-OFF" TYPE CIRCUIT-BREAKER (Opt)*
- △ *SWITCH (Opt)*

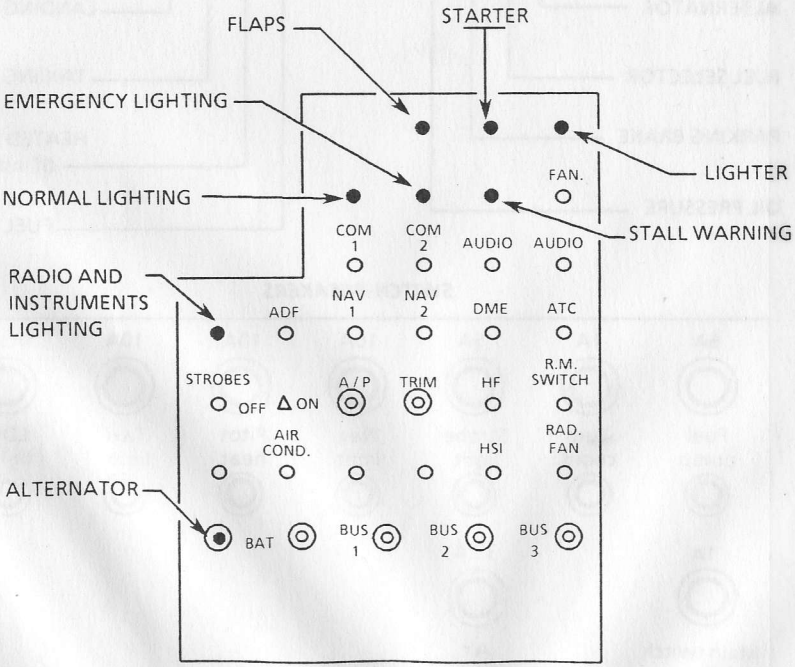


Figure 7.6 - CIRCUIT-BREAKERS ASSEMBLY
(Typical arrangement)

GROUND CONTROL

Effective ground control while taxiing is accomplished through nose-wheel steering by using the rudder pedals connected to nose-wheel through rods.

When a rudder pedal is fully pushed, the nose-wheel rotates through an arc of approximately 22° to the left and 18°30' to the right. By applying either left or right brake, the degree of turn may be increased.

The minimum turning radius of the airplane is obtained by using differential braking and nose gear steering (see Figure 7.7).

Moving the airplane by hand is most easily accomplished by attaching a tow bar (stowed in the baggage compartment) to the nose gear leg.

If the airplane is to be towed by vehicle, never turn the nose gear more than 22° to the left and 18°30' to the right or structural damage to the nose gear could result.

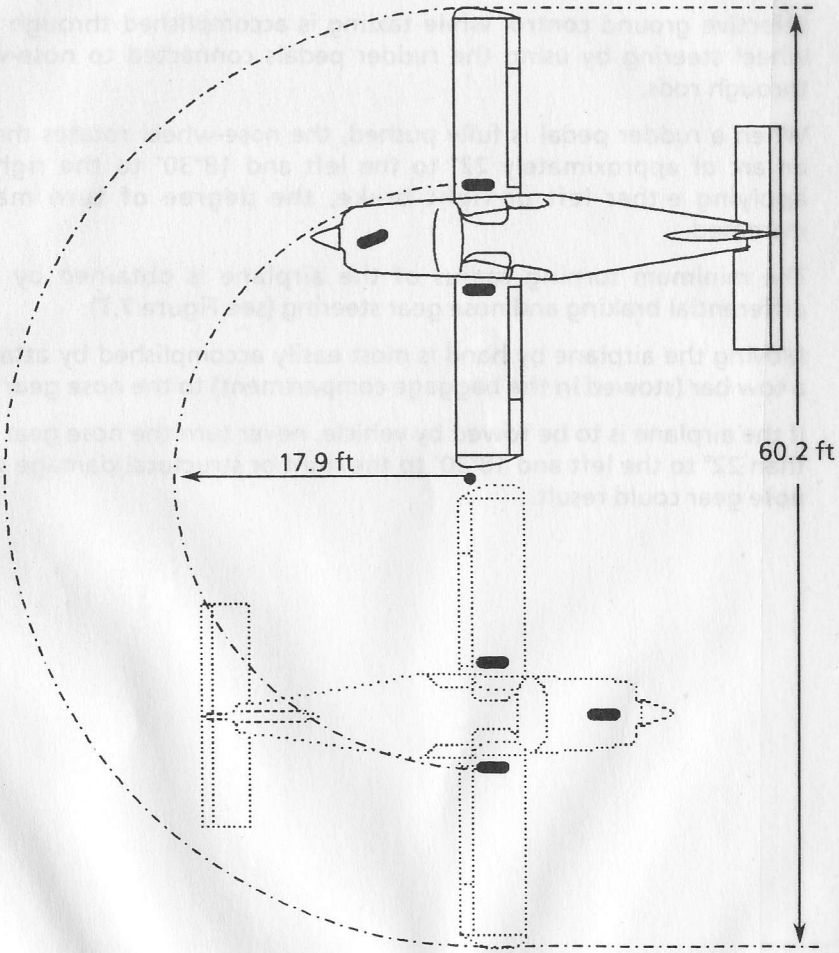


Figure 7.7 - MINIMUM TURNING RADIUS

WING FLAPS

The wing flaps are of the large span, single-slot type. They are retracted or extended by positioning to the desired flap deflection position the flaps control located on the pedestal, on R.H. side of the switch-breakers.

The switch lever tilts up or down with stops at 0° and 25°30'. If your aircraft is equipped with pre-setting flaps, the switch lever is moved up or down in a slotted panel with mechanical stops at "retracted" (0°) ; "take-off" (10°) and "landing" (25°30') positions (see Figure 7.2). An indicator located near the control provides various flaps positions.

The wing flaps system is protected by a 15-amp. circuit-breaker, labeled "FLAPS" located on L.H. circuit-breakers side panel (see Figure 7.6).

LANDING GEAR

The landing gear system is a stationary tricycle type utilizing a conventional steerable nose gear. Nose gear and main gears are provided with telescopic and oil / air shock absorbers incorporated in landing gear leg. Each main gear wheel is equipped with a hydraulically-actuated, single-disc brake on the inboard side of the wheel.

BAGGAGE COMPARTMENT

The baggage compartment extends from the rear seat to the bottom bulkhead of the cabin (former n° 6). The access is possible either through a lockable door located on the left side of the airplane, or from the inside of the cabin.

Prior to any flight, check that this door is locked.

To open the access door, proceed as follows :

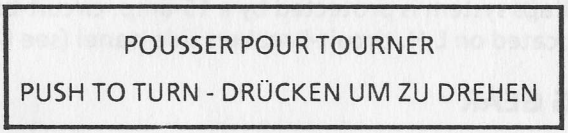


Figure 7.8

WARNING

ANY PARCEL OR BAGGAGE MUST BE FIXED WITH STRAPS. IT IS FORBIDDEN TO TRANSPORT PEOPLE IN THE BAGGAGE COMPARTMENT.

ANY MATERIAL THAT MIGHT BE DANGEROUS FOR THE AIRPLANE OR THE OCCUPANTS SHOULD NOT BE PLACED IN THE AIRPLANE.

CARGO CONFIGURATION

The rear seat may be taken off to easy loading in cargo configuration. For further information, refer to Section 6 "Weight and Balance".

SEATS, SEAT BELTS AND SHOULDER HARNESSES

FRONT SEATS

The various possibilities of seats adjustment depend on the version chosen.

- To move the seat forward and aft (*) :
  Use the cross bar located on the front part of the seat, under the seating and grasp handle under instrument panel strip.
- To tilt the seat (*) :
  Use the lever located on the outboard side of the seat.
- To change the seat back angle (if installed) :
  Use the knurled knob located at the bottom part on the inboard side of the seat back.
- To adjust the back, at lumbar level (if installed) :
  Use the knob located over the knurled knob on the inboard side of the seat back.
  Press on the knob and moderately lean back to the desired position, release the button, the seat back should fit perfectly with your back.

(*) Lift up cross bar or lever to unlock ; when in desired position, release it and make sure it is locked.

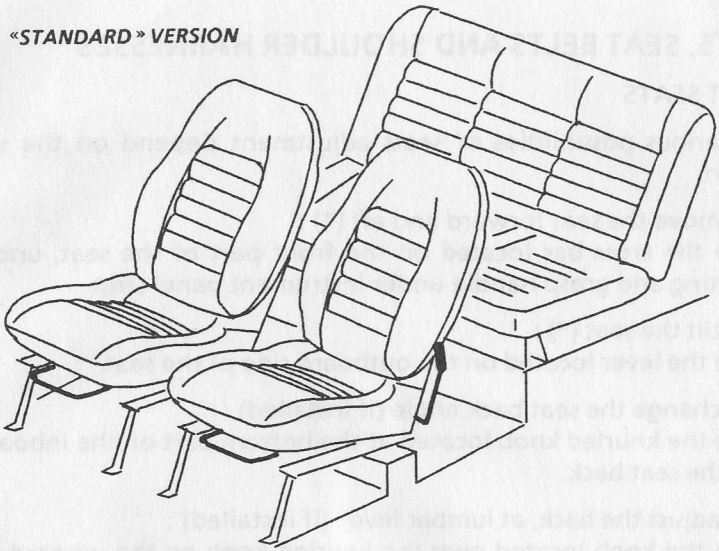
REAR SEAT

- To remove rear seat, refer to Section 6 "Weight and Balance".
  Rear seat is not adjustable.

HEADRESTS (if installed)

- To adjust and remove the headrest :
  Simply make it slide vertically.
- To fit the headrest into the seat back :
  Turn the centering bush (bearing an arrow) of $\frac{1}{4}$ turn clockwise (in the arrow direction) and maintain it to fit the headrest in the seat back.

«STANDARD» VERSION



«LUXE» AND
«EXECUTIVE» VERSIONS

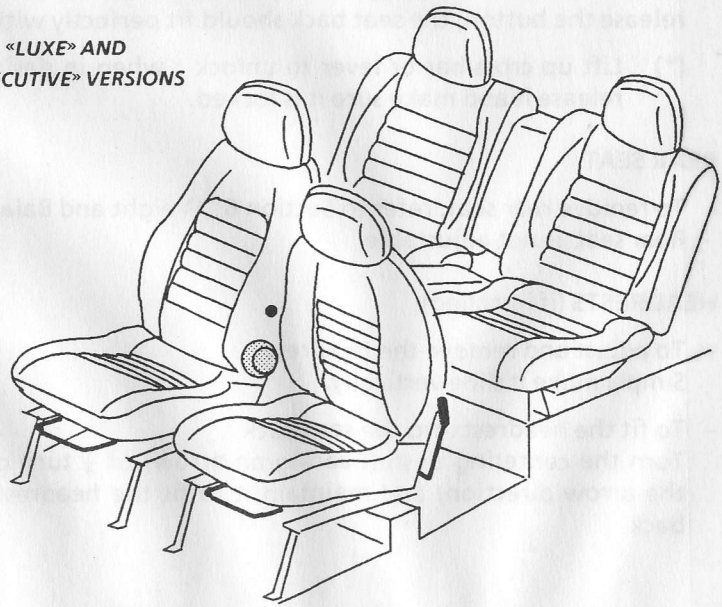


Figure 7.9 - FRONT SEATS AND REAR SEAT

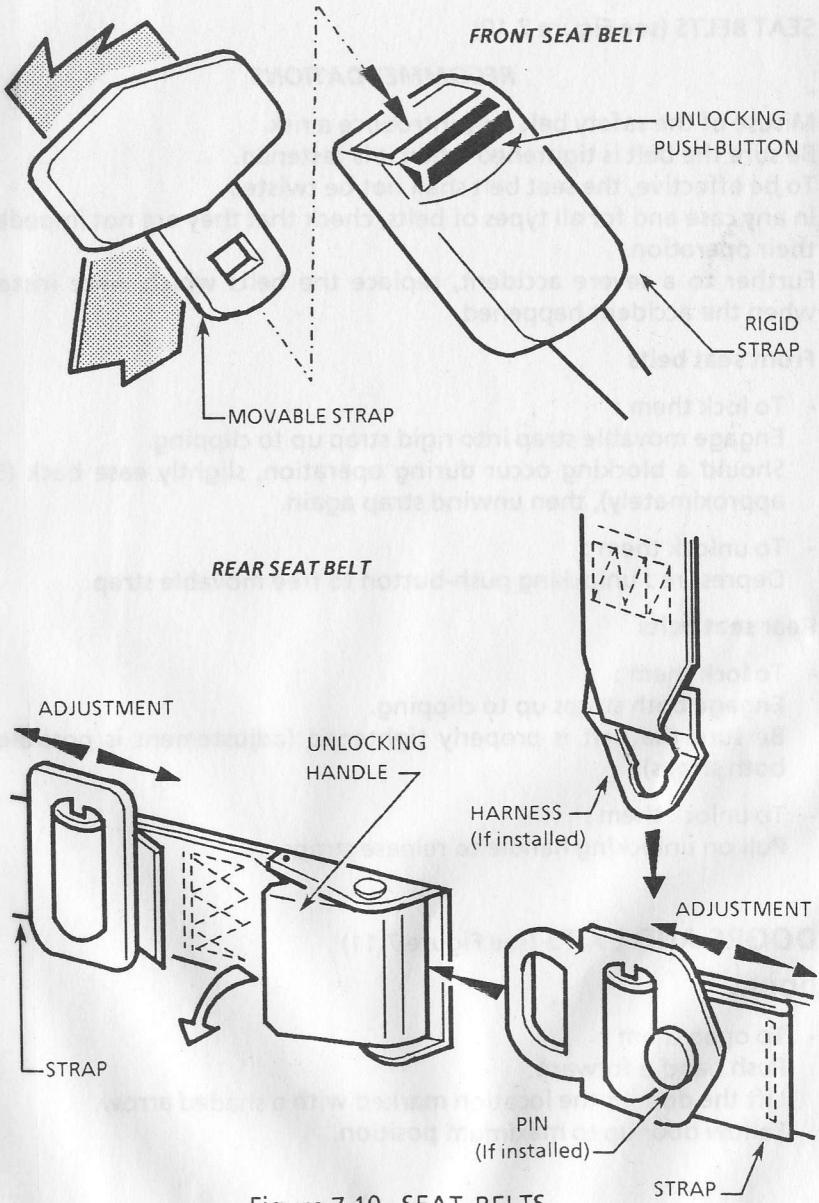


Figure 7.10 - SEAT BELTS

SEAT BELTS (see Figure 7.10)

RECOMMENDATIONS

Misuse of the safety belt may introduce a risk.
Be sure the belt is tightened when it is fastened.
To be effective, the seat belt shall not be twisted.
In any case and for all types of belts, check that they are not impeded in their operation.
Further to a severe accident, replace the belts which were installed when the accident happened.

Front seat belts

- To lock them :
  Engage movable strap into rigid strap up to clipping.
  Should a blocking occur during operation, slightly ease back (5 in. approximately), then unwind strap again.
- To unlock them :
  Depress red unlocking push-button to free movable strap.

Rear seat belts

- To lock them :
  Engage both straps up to clipping.
  Be sure the belt is properly tightened (adjustement is possible on both straps).
- To unlock them :
  Pull on unlocking handle to release straps.

DOORS AND EXITS (see Figure 7.11)

DOORS

- To open them :
  Push handle forward.
  Lift the door at the location marked with a shaded arrow.
  Follow door up to maximum position.

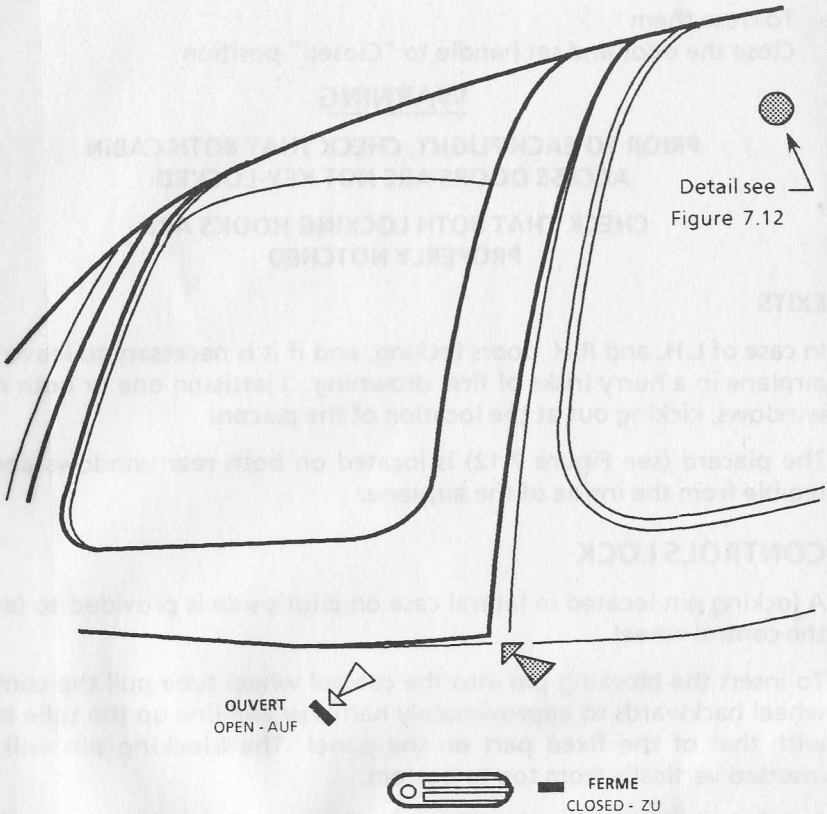


Figure 7.11 - DOORS OPENING AND CLOSING

Figure 7.12 - EMERGENCY EXIT

- To close them :
  Close the door and set handle to "Closed" position .

WARNING

PRIOR TO EACH FLIGHT, CHECK THAT BOTH CABIN ACCESS DOORS ARE NOT KEY-LOCKED

CHECK THAT BOTH LOCKING HOOKS ARE PROPERLY NOTCHED

EXITS

In case of L.H. and R.H. doors locking, and if it is necessary to leave the airplane in a hurry (risks of fire, drowning...) jettisson one or both rear windows, kicking out at the location of the placard.

The placard (see Figure 7.12) is located on both rear windows and is legible from the inside of the airplane.

CONTROLS LOCK

A locking pin located in lateral case on pilot's side is provided to block the control wheel.

To insert the blocking pin into the control wheel tube pull the control wheel backwards to approximately half-way and line up the tube hole with that of the fixed part on the panel. The blocking pin will be inserted vertically from top to bottom.

A safety device preventing the introduction of the magneto / start selector key forbids operation of the engine with blocked control wheel.

Pull the blocking pin upwards to free the control wheel and the magneto / start selector.

ENGINE

The TB 10 airplane is powered by a four-cylinder, horizontally opposed, direct drive LYCOMING O-360-A1AD engine rated at 180 BHP at 2700 RPM. It is provided with a starter, a 14 volt / 70 amps alternator, an all-weather shielded ignition harness, a dual magneto, a vacuum pump drive, a fuel pump and a manifold air filter.

The engine cowl is a laminate cantilever structure, fixed on the firewall and made of two elements. The upper cowl is fitted with an inspection door provided to check oil level ; it can also be fitted with an access door to the propeller deicing fluid tank. The lower cowl is fitted with incorporated air intakes and may be fitted with an inspection door to easy quick drain. Both cowls are completely removable without requiring removal of the propeller.

The engine mount is made of steel tube, rigidly attached on firewall. Engine attachment is provided by dynafocal mounting brackets to attenuate vibrations.

Engine and accessories cooling is provided by a downwards airflow. Air penetrates through holes located on each side of the propeller cone, is guided around the engine by airproof deflectors, then conducted to two air outlets located on the lower cowl.

Engine inlet air penetrates through an air intake located on the left side of the lower cowl and goes directly through a filter, before being admitted in the air duct under the carburator. The air duct comprises an alternate air intake with mechanical closing, the purpose of which is to supply the carburator with heated air when the airplane is involuntary in icing conditions.

The stainless steel exhaust system comprises a silencer with a heat exchanger in order to provide cabin hot air supply. Exhaust gases are evacuated through the exhaust duct at the basis of engine lower cowl, on R.H. side.

In order to obtain the maximum engine performance and T.B.O, the pilot should apply the procedures recommended by Lycoming Operator's Manual concerning the engine.

ENGINE CONTROLS

- Engine manifold pressure is controlled by the throttle (large black knob) located on the control pedestal. In the forward position, the throttle is open (full power) ; in the aft position, it is closed (engine idling).
- The propeller governor is controlled by the propeller control (black notched knob) located on the central pedestal. In the forward position, the propeller moves to "low pitch" position (high RPM), in the aft position, it moves to "high pitch" position (low RPM).
- The mixture is controlled by the mixture control (red notched knob) located on R.H. side of the central pedestal. In the forward position, the mixture is open (full rich) ; in the aft position, the mixture is closed (idle cut-off).
- The carburated air temperature is controlled by the carburator heating control (blue round knob) located on the control pedestal on the L.H. side. If control lever is in forward position, the outside temperature air is carried through the air filter to the carburator, if in the aft position, exchanger heated air, mixed with outside temperature air, is directly carried to the carburator.
- Engine controls friction is controlled by a knurled knob located in the alignment of the controls on the R.H. side of the pedestal.

ENGINE INSTRUMENTS

Indicators enable the pilot to assure a permanent check of fuel pressure, oil pressure, oil temperature, tachometer and (if installed) EGT and CHT.

IGNITION - STARTER SYSTEM

Engine ignition is provided by a dual magneto on two spark plugs per cylinder.

The R.H. part of the magneto fires the R.H. lower and L.H. upper spark plugs ; the L.H. part of the magneto fires the L.H. lower and R.H. upper spark plugs.

Ignition is controlled by a key-operated rotating switch, located on L.H. side of the L.H. panel strip.

The switch operates clockwise : "OFF" ; "L.H." magneto ; "R.H." magneto ; "L.H. + R.H." magnetos ; "STARTER" by pushing.

CAUTION

RELEASE THE PRESSURE ON THE KEY AFTER ENGINE STARTING

NEW ENGINE BREAK-IN AND OPERATION

The engine underwent a run-in at the factory and is ready for the full range of use. It is, however, recommended that cruising flights be accomplished at 65 to 72 % until a total of 50 hours has accumulated or oil consumption has stabilized.

The airplane is delivered from the factory with corrosion preventive engine oil. If, during the first 25 hours, oil must be added, use only aviation grade straight mineral oil in compliance with Specification MIL-L-6082.
Use dispersant oil in compliance with Specification MIL-L-22851 only after the first 50 hours.

ENGINE LUBRICATION SYSTEM

The engine is lubricated by an oil system powered by a pump located on engine rear table. A sump located at the bottom of the engine allows oil recovery, a cartridge throw-away type filter located on engine rear table and a strainer type filter located in the sump complete the system.
A pressure probe and a temperature probe transmitting the values to two indicators located on upper edge of the console enable the pilot to check the oil system.
An inspection door located on engine upper cowl provides access to oil system filling port.
A dipstick attached on the port blanking cap enables to check oil level in the sump. A union located under the engine case enables a quick drain of the latter.

AIR INDUCTION SYSTEM

The engine is supplied with an air intake located on the L.H. side of the lower cowling. This air intake is fitted with a filter which removes dust and other foreign matters from the induction air so that they do not penetrate into the air duct. However, in the event the air filter becomes blocked, place carburator heating control in the ON position to open an alternate air door allowing air to enter the engine.
For flights in sandy or dusty atmosphere, install a second specific filter.

EXHAUST SYSTEM

Exhaust gas from each cylinder is collected by pipes to be conducted, in order to reduce its noise level to an exhaust duct which vents it outboard on R.H. side of lower engine cowl.

PROPELLER

The airplane is fitted with all-metal, two-bladed, constant-speed, governor-regulated propeller. The propeller control actuates on the governor. According to the control position, the governor determines propeller rotation speed, and thus the engine speed to be maintained. The governor controls flow of engine oil, boosted to high pressure by the governing pump, on a piston located in propeller hub. Oil pressure twists the blades toward high pitch (low RPM). When oil pressure to the piston is relieved, the blades twist to low pitch (high RPM).

FUEL SYSTEM

The fuel system (see Figures 7.13 and 7.14) consists of two vented integral fuel tanks (one in each wing), a selector valve, a filter, an auxiliary fuel pump as well as an engine-driven fuel pump and a carburator.

Engine-driven fuel pump suction draws fuel from L.H. or R.H. tank through the three-position selector valve and a filter.
The selector valve is controlled through a knob labeled "FUEL SELECTOR"
The selector valve knob has following positions labeled : "CLOSED", "LEFT", "RIGHT".

Then, the fuel goes through the auxiliary fuel pump (electric) and supplies the engine fuel pump. The engine pump supplies under pressure the carburator.

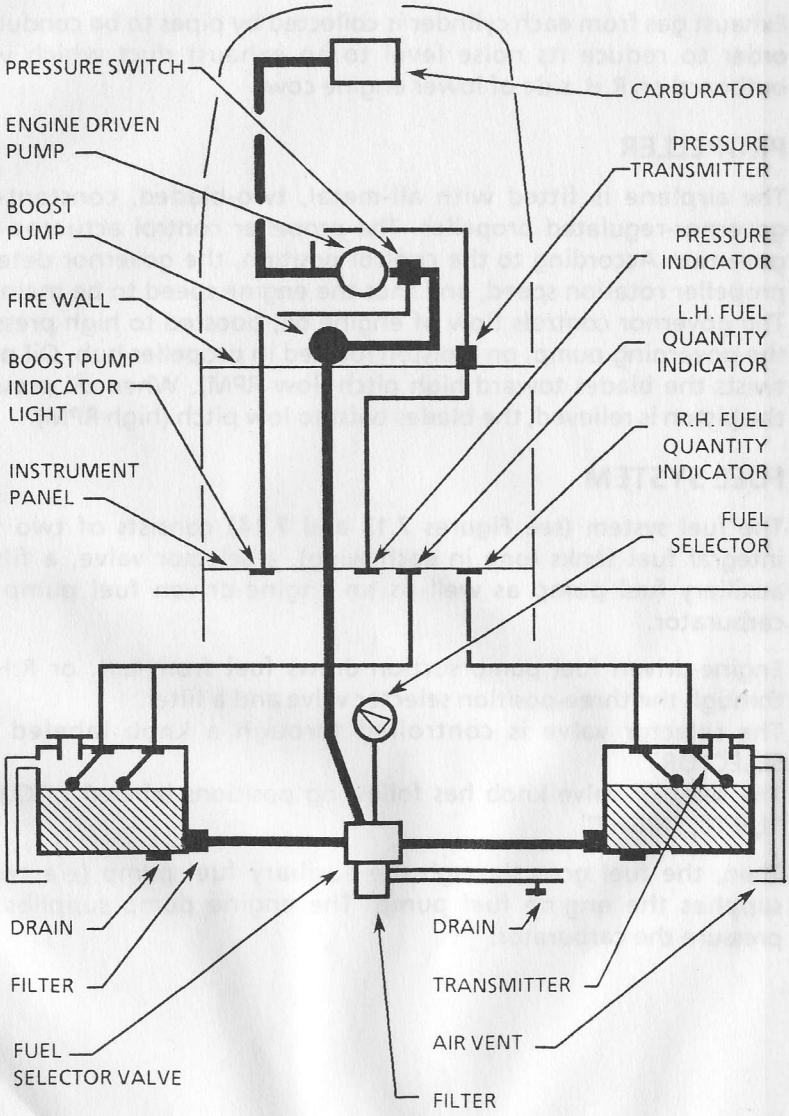


Figure 7.13 - FUEL SYSTEM

Fuel quantities :

- Total maximum : 55.4 U.S Gal. (210 l)
- Total usable : 53.9 U.S Gal. (204 l)
- Unusable : 1.6 U.S Gal. (6 l)

In cruise flight, a continuation of fuel flow must be assured as the new tank is being selected. When switching from one tank to the other, place the auxiliary fuel pump switch momentarily in the "ON" position until normal fuel flow has been restored.

Each fuel tank is equipped with its own venting system, which is essential to fuel system operation. Blockage of a venting system will result in a decreasing fuel flow from the respective fuel tank and eventual stoppage of the engine. Venting is accomplished by a vent line which terminates at each wing lower surface.

Fuel quantity is measured by four electrically-operated fuel quantity transmitters (two in each wing tank) and is shown by two fuel quantity indicators located on the upper portion of the central console.
Indicators are calibrated at 1/4, 1/2, 3/4, 4/4, a red line indicating an empty tank. When and indicator shows an empty tank, approximately one gallon remains in the tank as unusable fuel.
The indicators cannot be relied upon for accurate readings during skids, slips or unusual attitudes. If both indicator pointers should rapidly move to a zero, check voltmeter and oil temperature indicators. If they are not indicating, an electrical malfunction has occurred.

The auxiliary fuel pump is controlled by a switch-breaker located on front part of pedestal.
An indicator light located on the alarms panel show operation of the auxiliary pump.

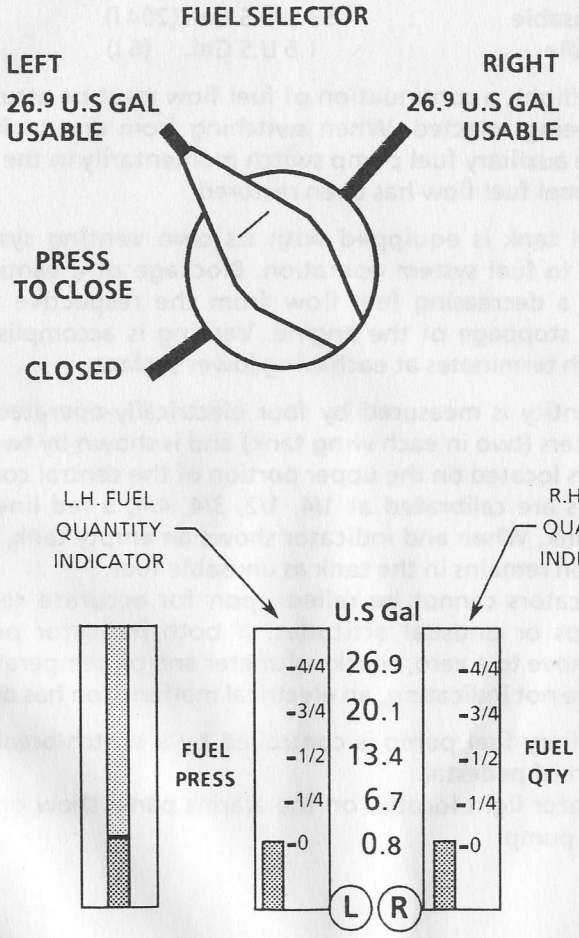


Figure 7.14 - FUEL SYSTEM MARKINGS

The fuel system is equipped with drain valves to provide a means for the examination of the fuel in the system for contamination and grade. The system should be drained before the first flight of every day and after each refueling by using the fuel sampler provided to drain fuel from the wing tank sump drain and the fuel strainers drains. The fuel tank sump drains are located just outboard of each main landing gear well and the fuel strainer drain is located under the R.H. front fuselage, near its intersection with R.H. wing.

The fuel tanks should be filled after each flight to minimize condensation, thus respecting the weight and balance limits.
The tanks are provided with a gage visible from the filling port.
The fuel tanks uplift (not marked on the gage) is completed when the fuel is flush with the filling port.

BRAKE SYSTEM

BRAKING

Braking is provided by hydraulic disc brakes actuated by braking pedals located on the L.H. station rudder pedals.

The R.H. station may also be equipped with braking pedals.

Differential braking helps to maneuver during taxiing :
- L.H. pedal actuates the L.H. wheel,
- R.H. pedal actuates the R.H. wheel.

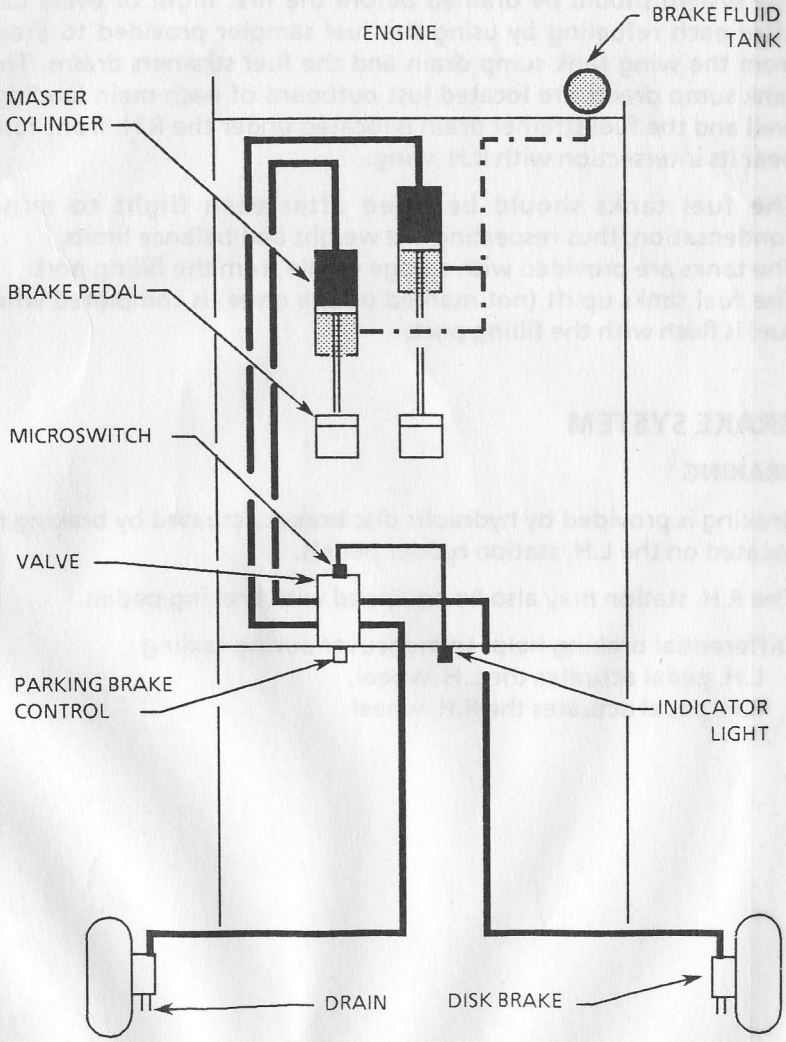


Figure 7.15 - BRAKE SYSTEM

PARKING BRAKE

- Parking brake is constituted with a knob located on the lower section of the L.H. strip, actuating a valve.
- To apply the parking brake, depress the pedals and turn the parking brake knob rightward.
- To release the parking brake, depress the pedals and set knob again in its vertical position (turn it leftward).
- An indicator light located on the alarms panel shows the position of the parking brake knob.

NOTE :
Turning the brake knob only does not operate braking of the parking brake.

STANDARD ELECTRICAL SYSTEM

The airplane is equipped with a 14-volt, direct-current electrical system (see Figure 7.16). The system is powered by a belt-driven 70 amps alternator on engine and a battery located in the engine compartment on firewall R.H. side.

The alternator is controlled by an alternator control unit providing voltage regulation, plus overvoltage sensing.

A "pull-off" type circuit-breaker calibrated at 60 amps limits the alternator electrical load to the battery and the networks.

ALTERNATOR REGULATOR

A regulator located on the firewall, on cabin side provides the alternator voltage regulation and overvoltage protection.

In the event of overvoltage, the regulator disconnects the alternator and the amber indicator light labeled "ALT" illuminates. Only the battery powers the airplane network.

The regulator reset is operated by disconnecting and closing the switch-breaker labeled "ALT".

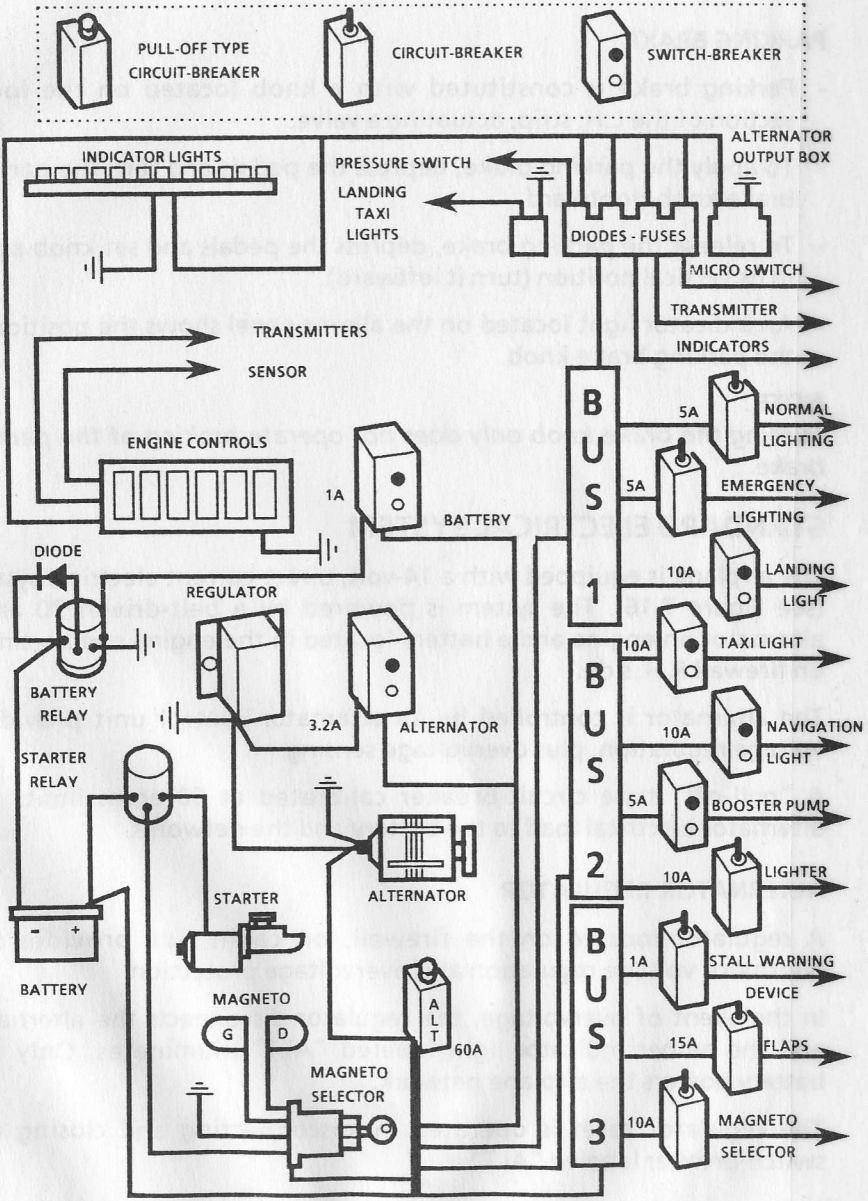


Figure 7.16 - STANDARD ELECTRICAL DIAGRAM

MAIN SWITCH

Battery connection to the electrical network is made through the switch-breaker labeled "MAIN SWITCH".

Disconnecting "MAIN SWITCH" in flight disconnects simultaneously all electrical power supplies.

Before connecting ground power receptacle (if installed) on external power unit, check that main switch is OFF.

ALTERNATOR CONTROL

Located on the R.H. side of the main switch, the alternator switch-breaker labeled "ALT" controls the operating of the alternator through the regulator.

In the event of an alternator disconnection, should the flight be continued, only the necessary electrical equipment will be used.

AVIONICS POWER SWITCH (if installed)

A switch labeled "RADIO MASTER" is installed on R.H. side of the L.H. strip to control the supply of avionics equipment and enable automatic diconnection of avionics systems when the engine starts, or manual disconnection during abnormal conditions.

When the switch is in OFF position, no electrical power will be applied to the avionics equipment. The avionics power switch "RADIO MASTER" should be placed in the OFF position prior to turning main switch ON or OFF, or applying an external power source and may be utilized in place of the individual avionics equipment switches.

"RADIO MASTER" function does not concern some optional equipment such as electric trim, autopilot, HF transceiver...

VOLTMETER

A voltmeter is incorporated to the engine control intruments module, located on the upper part of the console, to monitor electric generation system efficiency.

With the alternator operating, the indication must stabilize in the green sector.

With the alternator off, indication may go down to the yellow sector.

If indication is within lower red sector, remove and charge the battery.

If indication is within the upper red sector with the alternator operating, the regulator has to be adjusted.

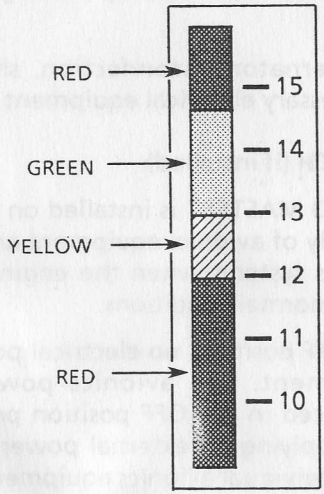


Figure 17 - VOLTMETER MARKING

CIRCUIT-BREAKERS AND FUSES

Most of electrical circuits are protected by circuit-breakers installed on the L.H. side panel, adjacent to the pilot. Should an overload occur on a circuit, the circuit-breaker trips and will switch off the circuit. Allow it to cool for three minutes approximately, then the circuit-breaker may be reengaged (pressed down).

Avionics equipment are protected by circuit-breakers grouped in the lower part of the L.H. side circuit-breakers panel.

Fuses located on L.H. firewall door protect the engine control instruments, the regulation units, cabin entrance courtesy light and (if installed) the watch.

UNDERVOLTAGE WARNING LIGHT

Anytime electrical system voltage falls below approximately 12.7 volts, as directly sensed by the distribution systems, an amber indicator light labeled "ALT" illuminates on alarms panel to warn the pilot.

GROUND POWER RECEPTACLE (if installed)

A ground power receptacle permits the use of an external power source for cold weather starting and during maintenance work on the airplane electrical system. Details of the gound power receptacle are presented in Section 9 "Supplements".

IFR AND NIGHT VFR ELECTRICAL SYSTEMS (if installed)

For IFR and night VFR operation, a stricter network protection segregation has been done.

In addition to protection of the alternator supply with a 60 amps pull-off type circuit-breaker labeled "ALT", the following pull-off type circuit-breakers have been installed :

- 70 A labeled "BAT" between battery and network
- 40 A labeled "BUS 1" on bus bar 1 supply
- 40 A labeled "BUS 2" on bus bar 2 supply
- 40 A labeled "BUS 3" on bus bar 3 supply

These five pull-off type circuit-breakers are manually-operated and can isolate the various sources or bus bars.

For further information, refer to Section 9 : "IFR" Supplement 1 and "VFR" Supplement 2 of this Flight Manual.

LIGHTING SYSTEMS

EXTERIOR LIGHTING

Exterior lighting consists of conventional navigation lights located an the wing tips and tail cone stinger, a landing light and a taxi light mounted on the L.H. wing leading edge.

The airplane may be equipped with an anticollision light on vertical stabilizer. In addition to navigation lights the exterior lighting may include a strobe light installed on tail cone stinger and on each wing tip.

All exterior lights are controlled by switch-breakers located on central console. The switch-breakers are on pushing forward and off pushing rearward.

Anticollision light and strobe lights should not be used when flying through clouds or overcast, the flashing light reflected from water droplets or particles in the atmosphere, particularly at night, can produce vertigo and loss of orientation.

INTERIOR LIGHTING

Intrument panel and control panels lighting is provided by integral, flood, post lights and electroluminescent lighting. Three lighting control knobs are grouped together on the L.H. part of the L.H. instrument panel.

These three controls vary the intensity of all instrument panel and L.H. sidewall circuit-breakers panel, except for the rear overhead light. The following paragraphs describe the function of these controls.

Lighting controls :

They allow the operating from down to up of :

- "Normal" control which controls and modulates L.H. and R.H. instrument panels visors lighting.
- "Emergency"control (if installed) which modulates lighting of overhead lights controlled by rotating them.
- "Radio and instruments" control which controls and modulates console visor lighting, instruments and equipment on instrument panel and circuit-breakers panel.

NOTE :

- *Both "normal" and "radio and instruments" controls operate and modulate lighting ; from high position "OFF", turn clockwise for "FULL INTENSITY OPERATION" then still clockwise, modulate towards "MINIMUM INTENSITY", turn back to "OFF" position turning counterclockwise.*
- *"Emergency" control modulates lighting ; from high position "FULL INTENSITY" turn clockwise to modulate towards "MINIMUM INTENSITY" ; turn back to high position "FULL INTENSITY" turning counterclockwise .*

AIR CONDITIONING

Hot air

Comes from the exchanger (located around exhaust duct).

This heated air supplies a cabin air mixer located aft of the firewall (in front of front passenger's feet).

The hot airflow supplying this mixer is regulated by a fire cut-off shutter from the control panel located on R.H. portion of the instrument panel strip.

Cold air

Comes from R.H. NACA. This cold air supplies cabin air mixer.

Hot / cold air mixing in cabin air mixer

Hot and cold airflows in cabin air mixer are actuated through a single control. Regulation is obtained by moving the control ; rightwards air becomes warmer, leftwards air becomes colder, fully moved to the left in fire cut-off position for the cabin air mixer.

Distribution of conditioned air

The mixed airflow in the cabin air mixer is regulated by a shutter before being distributed in the cabin towards pilot's feet, front and rear passengers' feet and in upper part of rear seat back-rest.

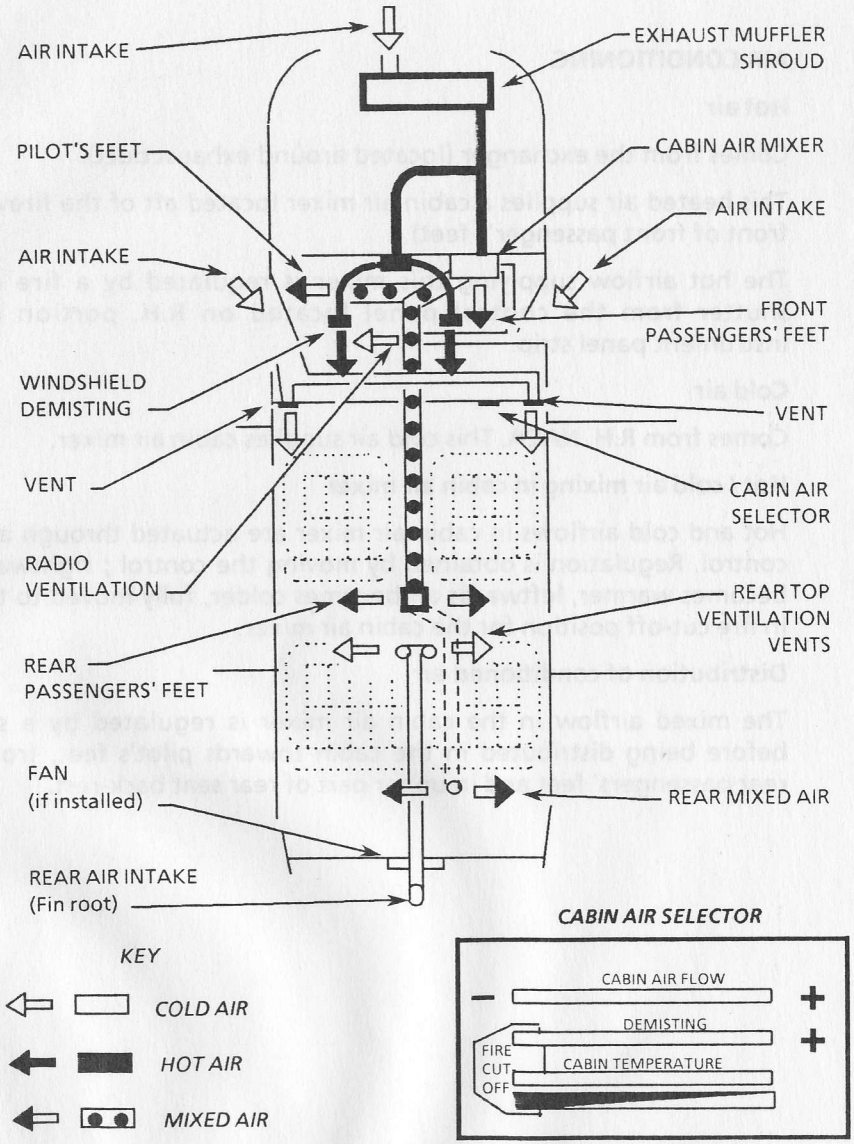


Figure 7.18 - DEMISTING, AIR CONDITIONING, VENTILATION, CUT-OFF SYSTEM

VENTILATION

Low ventilation

See "Cold air" and "air distribution" of the previous "Air conditioning" paragraph.

High ventilation

- Pilot + front passenger

  Air (at outside temperature) coming from NACA L.H. air intake supplies two steerable vents which airflow may be regulated, located on both parts of the instrument panel strip.

- Rear passengers

  An air intake (at outside temperature), located at the bottom part of the fin, supplies two vents (steerable and with adjustable airflow) installed on the upper duct.

A blower (if installed) attached on aft face of the baggage compartment (former 6) and picking up outside air in aft fuselage permits to accelerate the cold airflow at rear seats. The blower switch is located on the upper duct, in front of vents (see Figure 7.4).

FIRE CUT-OFF

CAUTION

TO PROVIDE THE CUT-OFF OPERATION, BOTH "DEMISTING" AND "CABIN TEMPERATURE" CONTROLS MUST BE POSITIONED FULLY TO THE LEFT

AIRSPEED INDICATING SYSTEM AND INSTRUMENTS

The airspeed indicating system (see Figure 7.19) supplies ram air pressure to the airspeed indicator or to the true airspeed indicator and a static air pressure to the airspeed indicator or to the true airspeed indicator, the vertical speed indicator and the altimeter.

The system consists of a pitot, which can be heated, located on the lower surface of the L.H. wing, two static ports located on L.H. and R.H. side of aft fuselage, a static system drain located on the wings splicing.

The pitot heating system (if installed) is controlled by a switch-breaker located on the central pedestal.

The alternate static source (if installed) is controlled by a knob located on the L.H. strip, this knob controls a valve which supplies static pressure inside the cabin.

Refer to Sections 3 "Emergency procedures" and 5 "Performance" of this manual for the pressure variations influence on instruments indication.

When stopped, protect the static ports and pitot with covers.

TRUE AIRSPEED INDICATOR (if installed)

The true airspeed indicator is fitted with a rotable ring which works in conjunction with its dial in a manner similar to a flight computer.

To set the indicator, first rotate the ring until pressure altitude is aligned with ouside air temperature.

To obtain pressure altitude, set the barometric scale of the altimeter to 29.92 in.Hg (1013.2 hPa) and read pressure altitude. Pressure altitude should not be confused with true altitude.

Having set the ring to correct for altitude and temperature, read the true airspeed shown on the rotable ring by the indicator pointer.

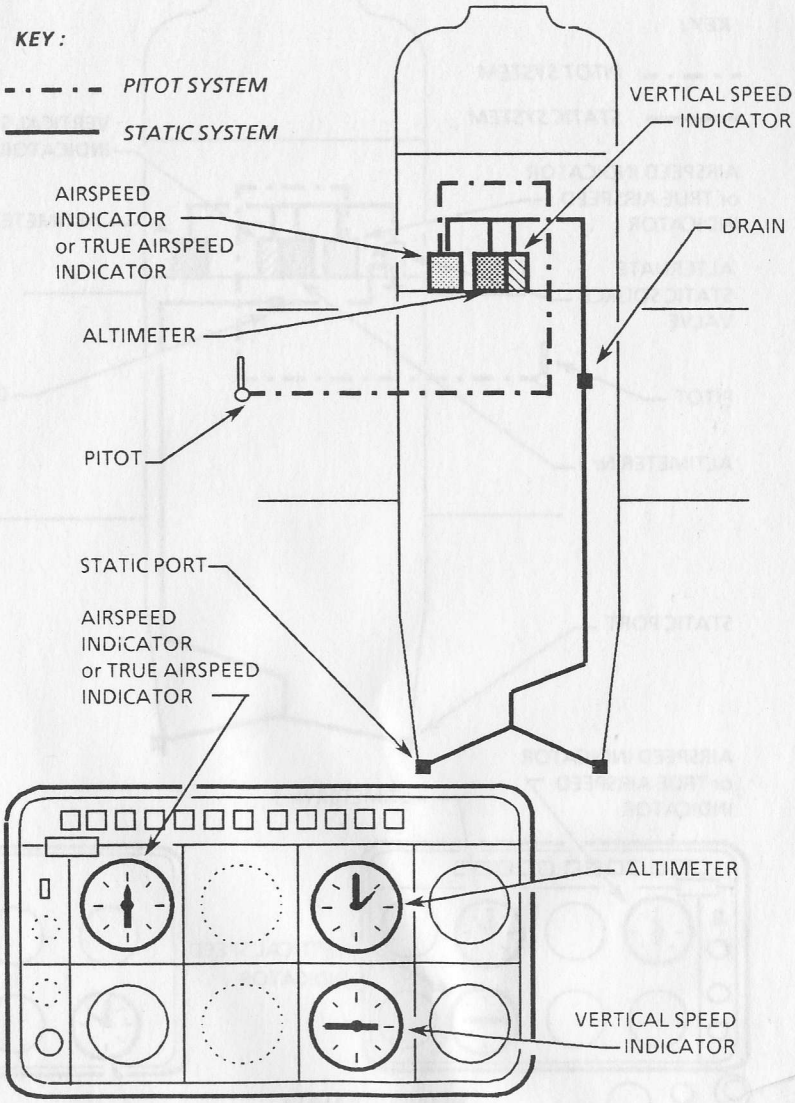


Figure 7.19 - AIRSPEED INDICATING STANDARD SYSTEM

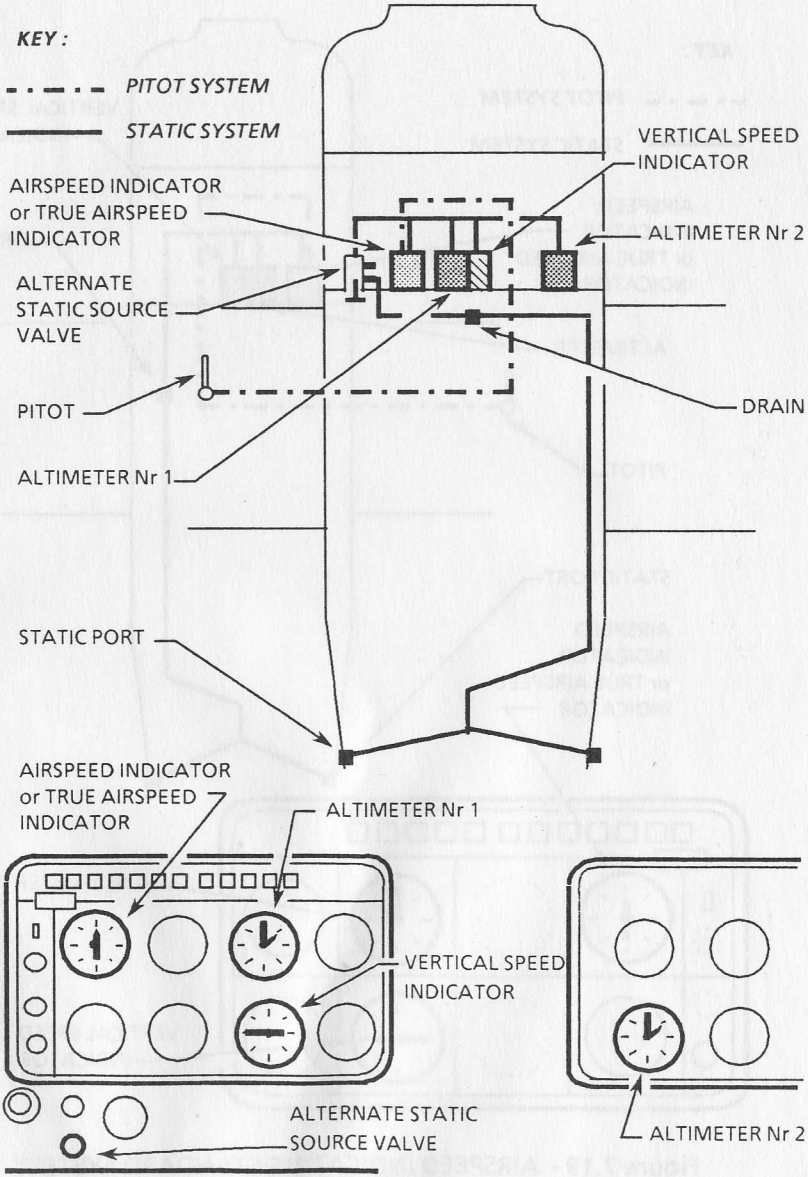


Figure 7.19A - AIRSPEED INDICATING SYSTEM WITH ALTERNATE STATIC SOURCE

For best accuracy, the indicated airspeed should be corrected to corrected airspeed by referring to the Airspeed calibration chart in Section 5 "Performance". Knowing the calibrated airspeed, read true airspeed on the ring opposite the cabibrated airspeed.

VERTICAL SPEED INDICATOR

The vertical speed indicator depicts airplane rate of climb or descent in feet per minute. The pointer is actuated by atmospheric pressure changes resulting from changes of altitude as supplied by the static source.

ALTIMETER

Airplane altitude is depicted by a barometric type altimeter. A knob near the lower left portion of the indicator provides adjustment of the instrument barometric scale to the current altimeter setting.

ALTERNATE STATIC SOURCE (if installed)

A two position selector allows the normal static source system of the airplane to be isolated in case of clogging or icing of static ports.

The "EMERGENCY" position of the alternate static source valve admits cabin static pressure to the static system (see Figure 7.19A).

VACUUM SYSTEM AND INSTRUMENTS

The airplane may be fitted with a vacuum system (see Figure 7.20) providing the suction necessary to operate an attitude indicator and directional indicator.

The sytem consists of an engine-driven vacuum system, a vacuum relief valve and an air filter installed between the firewall and instrument panel, vacuum-operated instruments installed on L.H. instrument panel and a suction gage installed on L.H.panel strip, near the pilot's control wheel.

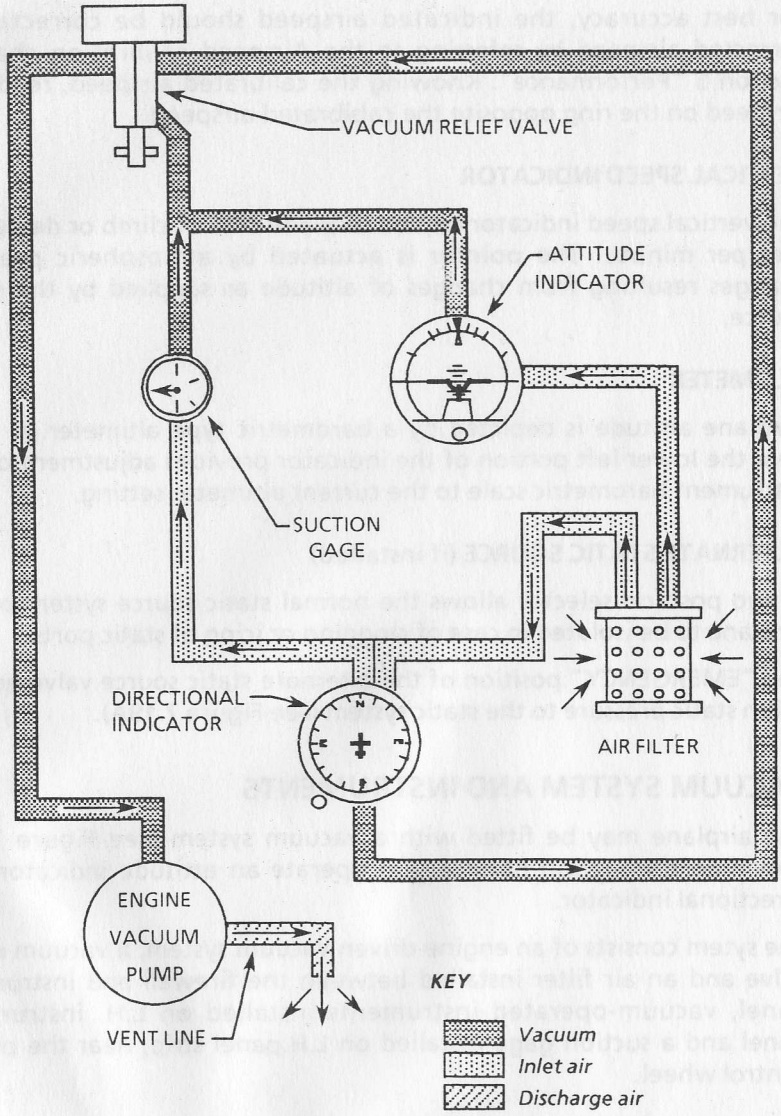


Figure 7.20 - VACUUM SYSTEM

The system may be provided with an alarm, red warning light labeled "GYROS" on the alarms panel ; this warning light indicating an insufficient suction illuminates between 3 and 3.5 in.Hg.

ATTITUDE INDICATOR (if installed)

The attitude indicator gives a visual indication of flight attitude. Bank attitude is presented by an index at the top of the indicator relative to the bank scale which has index marks at 10°, 20°, 30°, 60° and 90° either side of the center mark.

Pitch and roll attitudes are presented by a miniature airplane superimposed over a symbolic horizon area divided into two sections by a white horizon bar. The upper "sky blue" area and the lower "ground" area have arbitrary pitch reference lines useful for pitch attitude control.

A knob at the bottom of the instrument is provided for inflight adjustment of the miniature airplane to the horizon bar for a more accurate flight attitude indication.

DIRECTIONAL INDICATOR (if installed)

The directional indicator displays airplane heading on a compass card in relation to a fixed simulated airplane image and index. The directional indicator will precess slightly over a period of time. Therefore, the compass card should be set in accordance with the magnetic compass just prior to take-off and regularly re-adjusted on extended flights. A knob on the lower left edge of the instrument is used to adjust the compass card to correct for any precession.

SUCTION GAGE (if installed)

The suction gage is calibrated in inches of mercury and indicates the suction available for operation of the attitude and directional indicators. The desired suction range is 4.4 to 5.2 in.Hg.

A suction reading out of this range may indicate a system malfunction or improper adjustment, and in this case, the indicators should not be considered reliable.

AUXILIARY DRY AIR PUMP (if installed)

Refer to Section 9 "Supplements".

AUTOPILOTS

Refer to Section 9 "Supplements".

STALL WARNING SYSTEM

The airplane is equipped with a vane-type stall warning unit in the leading edge of the left wing. The unit is electrically connected to an aural warning. The vane in the wing senses the change in airflow over the wing and operates the warning unit, which produces a tone over the alarms speaker. This warning tone begins between 5 and 10 knots above the stall in all configurations.

The stall warning system should be checked during the preflight inspection by momentarily turning on the battery switch and actuating the vane in the wing. The system is operational if a continuous bell is heard in front of the L.H. instrument panel.

STATIC DISCHARGERS (if installed)

As an aid in IFR flights, wick-type static dischargers are installed to improve radio communications during flight through dust or various forms of precipitation (rain, snow or ice crystals).

Under these conditions, the build-up and discharge of static electricity from the trailing edges of the wings (flaps and ailerons), rudder, stabilator, propeller tips and radio antennas can result in loss of usable radio signals on all communications and navigation radio equipment. Usually, the ADF is first to be affected and VHF communication equipment is the last to be affected.

Installation of static dischargers reduces interference from precipitation static, but it is possible to encounter severe precipitation static conditions which might cause the loss of radio signals, even with static dischargers installed. Whenever possible, avoid known severe precipitation areas to prevent loss of dependable radio signals. If avoidance is impractical, minimize airspeed and anticipate temporary loss of radio signals while in these areas.

TABLE OF CONTENTS
(Continued)

GENERAL

This section contains the procedures recommended by SOCATA for the proper ground handling and routine care and servicing of your SOCATA Model TB 10 airplane. Also included in this section are the inspection and maintenance requirements which must be followed if your airplane is to retain its performance and dependability.

It is recommended that a planned schedule of lubrication and preventive maintenance be followed, and that this schedule be tailored to the climatic or flying conditions to which the airplane is subjected.

For this, see Manufacturer's Maintenance Manual.

IDENTIFICATION PLATE (see Figure 8.1)

All correspondence regarding your airplane should include its serial number. This number together with the model number, type certificate number and production certificate number are stamped on the identification plate attached to the left side of the fuselage beneath the horizontal stabilizer.

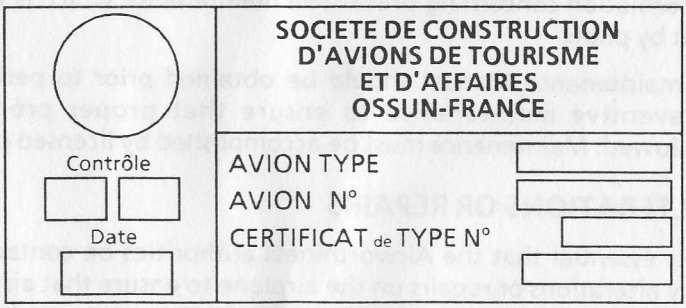


Figure 8.1 - IDENTIFICATION PLATE

PUBLICATIONS

When the airplane is delivered from the factory, it is supplied with a Pilot's Operating Handbook and supplemental data covering optional equipment installed in the airplane.

In addition, the owner may purchase the following :

- Maintenance Manual
- Illustrated Parts Catalog
- Price Catalog
- Removal and Installation Labor Allowances

NOTE :
At the beginning of the Manual, you will find a sheet which enables you to order various Manuals available from SOCATA.

CAUTION

PILOT'S OPERATING HANDBOOK MUST ALWAYS BE IN THE AIRPLANE

INSPECTION PERIODS

Refer to regulations in force in the certification country for information concerning preventive maintenance which is to be carried out by pilots.

A maintenance Manual should be obtained prior to performing any preventive maintenance to ensure that proper procedures are followed. Maintenance must be accomplished by licensed personnel.

ALTERATIONS OR REPAIRS

It is essential that the Airworthiness authorities be contacted prior to any alterations or repairs on the airplane to ensure that airworhiness of the airplane is not violated. Alterations or repairs must be accomplished by licensed personnel.

GROUND HANDLING

TOWING

CAUTION

USING THE PROPELLER FOR GROUND HANDLING COULD RESULT IN SERIOUS DAMAGE, ESPECIALLY IF PRESSURE OR PULL IS EXERTED ON BLADE TIPS

The airplane should be moved on the ground with the aid of nose gear strut fork tow bar which is stowed in the baggage compartment or with a vehicle which will not damage the nose gear steering device or exert excessive loads on the latter.

CAUTION

DO NOT TOW THE AIRPLANE WHEN CONTROLS ARE LOCKED

WHEN TOWING WITH A VEHICLE, DO NOT EXCEED THE NOSE GEAR TURNING ANGLE, OR DAMAGE TO THE GEAR AND STEERING DEVICE WILL RESULT

(see Figure 8.2)

PARKING

When parking the airplane, head into the wind. Do not set the parking brake when brakes are overheated or during cold weather when accumulated moisture may freeze the brakes. Care should be taken when using the parking brake for an extended period of time during which an air temperature rise or drop could cause difficulty in releasing the parking brake or damage the brake system.

For long term parking, blanking covers (static ports, pitot), cockpit cover, tie-downs, wheel chocks and control wheel lock are recommended. Block wheels and install chocks. In severe weather and high wind conditions, tie the airplane down as outlined in the following paragraph.

TIE-DOWN

Proper tie-down procedure is the best protection against damage to the parked airplane by gusty or strong winds. To tie-down the airplane securely, proceed as follows :

- Install control wheel lock.
- Chock all wheels and block them.
- Tie sufficiently strong ropes or chains to hold airplane back ; insert a rope in each tie-down hole located on flaps hinge arms and in rear tie-down fitting, located under horizontal stabilizer ; secure each rope to a ramp tie-down.
- Check that doors are closed and locked.

JACKING

When it is necessary to jack the airplane off the ground or when jacking points are used, refer to Maintenance Manual for specific procedures and equipment required.

LEVELING

Level the airplane as described in Maintenance Manual.

FLYABLE STORAGE

Airplanes placed in storage for a maximum of 30 days or those which receive only intermittent use for the first 25 hours are considered in flyable storage.

Every seventh day during these periods, the propeller should be rotated by hand through several revolutions. This action "limbers" the oil and prevents any accumulation of corrosion on engine cylinder walls.

CAUTION

CHECK THAT THE MAGNETO SWITCH IS OFF, THE THROTTLE IS CLOSED, THE MIXTURE CONTROL IS IN THE IDLE CUT-OFF POSITION, AND THE AIRPLANE IS SECURED BEFORE ROTATING THE PROPELLER BY HAND. DO NOT STAND WITHIN THE ARC OF THE PROPELLER BLADES WHILE TURNING THE PROPELLER.

After 30 days in storage, the airplane should be flown for at least 30 minutes, or a ground runup should be made just long enough to produce an oil temperature within the lower green arc range. Avoid prolonged runups.

Engine runup helps to eliminate excessive accumulations of water in the fuel system and other air spaces in the engine. Keep fuel tanks full to minimize condensation in the tanks. Keep the battery fully charged to prevent the electrolyte from freezing in cold weather.

LONG TERM STORAGE WITHOUT FLYING POSSIBILITY

Refer to Maintenance Manual for the procedures to follow.

SERVICING

MAINTENANCE

In addition to the preflight inspection in Section 4, servicing, inspection, and test requirements for your airplane are detailed in the Maintenance Manual.

Maintenance Manual outlines all items which require attention at 50, 100, 400, 500 and 1000 hours intervals plus those items which require servicing, inspection or testing at special intervals, first 25 flight hours, yearly inspection, major inspection.

ENGINE OIL

Grade and Viscosity for temperature range

Outside Air Temperature	MIL-L-6082 Spec. Mineral Grades 50 first hours	MIL-L-22851 Spec. Dispersant Grades after 50 hours
All temperatures	.....	SAE 15W50 or 20W50
Above 80°F (27°C)	SAE 60	SAE 60
Above 60°F (15°C)	SAE 50	SAE 40 or SAE 50
30°F (-1°C) to 90°F (32°C)	SAE 40	SAE 40
0°F (-18°C) to 70°F (21°C)	SAE 30	SAE 30, SAE 40 or SAE 20W40
0°F (-18°C) to 90°F (32°C)	.....	SAE 20W50 or 15W50
Under 10°F (-12°C)	SAE 20	SAE 30 or SAE 20W30

NOTE :

This airplane was delivered from the factory with a corrosion-preventive aircraft engine oil. If oil must be added during the first 50 hours, use only aviation grade straight mineral oil conforming to specification MIL-L-6082.

Capacity of engine sump : 8 U.S. qt (7.6 litres)

Do not operate on less than 4 U.S. qt (3.8 litres). To minimize loss of oil through breather, fill to 6 U.S. qt (5.7 litres) for normal flights of less than 3 hours. For extended flights, fill to 8 U.S. qt (7.6 litres). These quantities refer to oil dipstick level readings. During oil and filter changes 0.45 additional U.S. qt (0.4 litres) is required for the filter.

Oil and oil filter change :

After the first 25 hours of operation, drain engine oil sump and replace filter. Refill sump with straight mineral oil and use this kind of oil until a total of 50 hours has accumulated or oil consumption has stabilized ; then change to dispersant oil and replace filter. It is recommended that the oil filter element be changed every 50 hours or sooner under unfavorable conditions. Engine oil is normally changed with the filter. However, if the full flow (cartridge type) oil filter is used and changed every 50 hours of operation, the intervals between oil changes may be increased as much as 100 percent. Drain the engine oil sump and replace the filter at least every 6 months even though less than the recommended hours have accumulated. Reduce intervals for prolonged operation in dusty areas, cold climates, or even when short flights and long idle periods result in sludging conditions.

NOTE :
During the first 25-hour oil and filter change, a general inspection of engine compartment is required. Items which are normally checked during a preflight inspection should be given a particular attention. Hoses, metal lines and fittings should be inspected for signs of oil and fuel leaks, and checked for abrasions, chafing, security, proper routing and support and evidence of deterioration.

Inspect the intake and exhaust systems for cracks, evidence of leakage and security of attachment. Engine controls and linkages should be checked for freedom of movement through their full range, security of attachment and evidence of wear. Inspect wirings for security, chafing, burning, defective insulation, loose or broken terminals, heat deterioration and corroded terminals. Check the alternator belt and retighten if necessary. A periodic check of these items during subsequent servicing operations is recommended.

FUEL

Approved fuel grades (and colors)

100 LL Grade Aviation Fuel (Blue)
100 Grade Aviation Fuel (Formerly 100 / 130) (Green).

CAUTION

NEVER FLY THE AIRPLANE WITH CONTAMINATED (WATER, SAND, RUST, DUST...) OR UNAPPROVED FUEL

NOTE :
Isopropyl alcohol or ethylene glycol monomethyl ether may be added to the fuel supply in quantities not to exceed 1 % or 0.15 % by volume, respectively, of the total. Refer to "Fuel Additives" paragraph hereafter for additional information.

Capacity each tank : 27.7 U.S Gal (105 l)

NOTE :
Service the fuel system after each flight and keep fuel tanks full to minimize condensation in the tanks, respecting weight and balance limits.

WARNING

DO NOT OPERATE ANY AVIONICS OR ELECTRICAL EQUIPMENT ON THE AIRPLANE DURING FUELING. DO NOT ALLOW OPEN FLAME OR SMOKING IN THE VICINITY OF THE AIRPLANE WHILE FUELING.

DURING ALL FUELING OPERATIONS, FIRE FIGHTING EQUIPMENT MUST BE AVAILABLE ; ATTACH GROUNDING WIRE TO ANGLE (IF INSTALLED) ON UPPER SURFACE OF WING NEAR THE CAP ; IN CASE THERE IS NO ANGLE, ATTACH CABLE TO A METALLIC PART OF THE AIRPLANE WHICH IS NOT PAINTED.

Fuel additives

Strict adherence to recommended preflight draining instructions as called for in Section 4 will eliminate any free water accumulations from the tank sumps. While small amounts of water may still remain in solution in the gasoline, it will normally be consumed and go unnoticed in the operation of the engine.

One exception to this can be encountered when operating under the combined effect of use of certain fuels, with high humidity conditions on the ground followed by flight at high altitude and low temperature. Under these unusual conditions, small amounts of water in solution can precipitate from the fuel stream and freeze in sufficient quantities to induce partial icing of the engine fuel system.

While these conditions are quite rare and will not normally pose a problem to owners and operators, they do exist in certain areas of the world and consequently must be dealt with, when encountered.

Therefore, to alleviate the possibility of fuel icing occurring under these unusual conditions, it is permissible to add ispropyl alcohol or ethylene glycol monomethyl ether (EGME) compound to the fuel supply.

The introduction of alcohol or EGME compound into the fuel provides two distinct effects :

- it absorbs the dissolved water from the fuel
- alcohol has a freezing temperature depressant effect.

Alcohol, if used, is to be blended with the fuel in a concentration of 1 % by volume. Concentrations greater than 1 % are not recommended since they can be detrimental to fuel tank materials.

The manner in which the alcohol is added to the fuel is significant because alcohol is most effective when it is completely dissolved in the fuel.

To ensure proper mixing, the following is recommended :

- For best results, the alcohol should be added during the fueling operation by pouring the alcohol directly on the fuel stream issuing from the fueling nozzle.
- An alternate method that may be used is to premix the complete alcohol dosage with some fuel in a separate clean container (approximately 2 to 3 U.S Gal - 7 to 11 litres) and then transferring this mixture to the tank prior to the fueling operation.

Any high quality isopropyl alcohol may be used, such as anti-icing fluid or isopropyl alcohol (Federal Specification TT-I-735a). Figure 8.3 provides alcohol - fuel mixing ratio information.

Ethylene glycol monomethyl ether (EGME) compounds, in compliance with MIL-I-27686, if used, must be carefully mixed with the fuel in concentration not to exceed 0.15 % by volume. Figure 8.3 provides EGME - fuel mixing ratio information.

CAUTION

MIXING OF THE EGME COMPOUND WITH THE FUEL IS EXTREMELY IMPORTANT. A CONCENTRATION IN EXCESS OF THAT RECOMMENDED (0.15 % BY VOLUME MAXIMUM) WILL RESULT IN DETRIMENTAL EFFECTS TO THE FUEL TANKS (DETERIORATION OF PROTECTIVE PRIMER AND SEALANTS) TO FUEL SYSTEM AND ENGINE COMPONENTS (DAMAGE TO SEALS). USE ONLY BLENDING EQUIPMENT RECOMMENDED BY THE MANUFACTURER TO OBTAIN PROPER PROPORTIONING.

DO NOT ALLOW CONCENTRATED EGME COMPOUND TO COME IN CONTACT WITH THE AIRPLANE FINISH AS DAMAGE CAN RESULT.

Prolonged storage of the airplane will result in a water buildup in the fuel which "leeches out" the additive. An indication of this is when an excessive amount of water accumulates in the fuel tank sumps. The concentration can be checked using a differential refractometer. It is imperative that the technical manual for the differential refractometer be followed explicitely when checking the additive concentration.

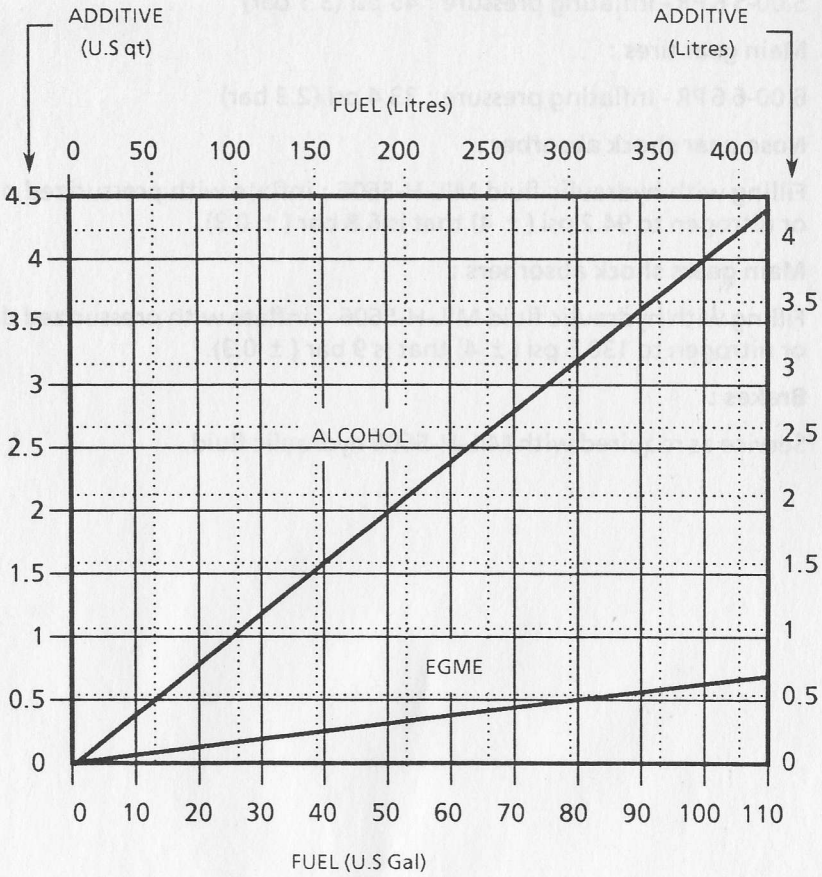


Figure 8.3 - ADDITIVE MIXING RATIO

LANDING GEAR

Nose gear tire :

5.00-5 6 PR - Inflating pressure : 45 psi (3.1 bar)

Main gear tires :

6.00-6 6 PR - Inflating pressure : 33.4 psi (2.3 bar)

Nose gear shock absorber :

Filling with hydraulic fluid MIL-H-5606 ; inflate with pressurized dry air or nitrogen to 94.2 psi (± 4) that is 6.8 bar (± 0.3).

Main gears shock absorbers :

Filling with hydraulic fluid MIL-H-5606 ; inflate with pressurized dry air or nitrogen to 130.5 psi (± 4) that is 9 bar (± 0.3).

Brakes :

Service as required with MIL-H-5606 hydraulic fluid.

AIRPLANE CLEANING AND CARE

WINDOWS AND WINDSHIELD

The plastic windshield and windows should be cleaned with an airplane windshield cleaner. Apply the cleaner sparingly with soft cloths and rub with moderate pressure until all dirt, oil scum and bug stains are removed. Allow the cleaner to dry, then wipe it off with soft flannel cloths.

NOTE :
Never use gasoline, benzine alcohol, acetone, fire extinguisher or anti-ice fluid, lacquer thinner or glass cleaner to clean the plastic. These materials will attack the plastic and may cause it to craze.

Follow by carefully washing with a mild detergent and plenty of water. Rinse thoroughly, then dry with a clean moist chamois. Do not rub the plastic with a dry cloth since this builds up an electrostatic charge which attracts dust. Waxing with a good commercial wax will finish the cleaning job. A thin, even coat of wax polished out by hand with clean soft flannel cloths will fill in minor scratches and help prevent further scratching.

Do not use a canvas cover on the windshield unless freezing rain or sleet is anticipated since the cover may scratch the plastic surface.

PAINTED SURFACES

Refer to Maintenance Manual for the procedures to follow.

PROPELLER CARE

Preflight inspection of propeller blades for nicks and wiping them occasionally with an oily cloth to clean off grass and bug stains will assure long blade life. Small nicks on the propeller, particularly near the tips and on the leading edges, should be dressed out as soon as possible since these nicks produce stress concentrations, and if ignored, may result in cracks. Never use an alkaline cleaner on the blades ; remove grease and dirt.

ENGINE CARE

Refer to Maintenance Manual for the procedures to follow.

INTERIOR CARE

To remove dust and loose dirt from the upholstery and carpet, clean the interior regularly with a vacuum cleaner.

For additional information, refer to Maintenance Manual.

FRONT ASH-TRAY

To empty front ash-tray, remove it while holding it on its edges (if necessary, lift it up with a screwdriver wrapped up in a cloth.

REAR ASH-TRAYS

To empty a rear ash-tray, open it tilting its movable part to its stop, then push moderately on central part to disengage the ash-box.

To install again the ash-box, insert upper part then push on lower part.

SECTION 9

SUPPLEMENTS

NOTE

The Supplements Section must include approved Supplements for all optional equipment installed on the airplane. Additional Supplements for optional equipment not installed on this airplane may be included and can be removed if desired.

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(cont'd)

GENERAL

This section consists of a series of supplements, each covering a single system which may be installed in the SOCATA Model TB 10 airplane. Each supplement contains a brief description, and when applicable, operating limitations, emergency and normal procedures, and performance. The supplements are arranged numerically (See table of contents) to make it easier to locate a particular supplement. Some installed items of optional equipment, whose function and operational procedures do not require detailed instructions, are discussed in Section 7.

Limitations contained in the following supplements are Airworthiness Authorities approved and their strict respect is imperative.

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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 1

DAY AND NIGHT IFR EQUIPMENT

This supplement includes only the general, limitations, emergency procedures, normal procedures and performance in addition to those of SOCATA airplane in its standard version.

Sections 2 - 3 - 4

Pages 9.1.14 to 9.1.23 approved by DIRECTION GENERALE DE L'AVIATION CIVILE (D.G.A.C.).

Approval :

P. O

Date : 22 AOUT 1988

"Ce supplément est une traduction en langue anglaise du Supplément Français correspondant approuvé par la D.G.A.C."

THIS DOCUMENT MUST BE EMBODIED IN SECTION 9 OF THE FLIGHT MANUAL

FLIGHT MANUAL

SECTION 9

SUPPLEMENT 1

DAY AND NIGHT IFR EQUIPMENT

LOG OF PAGES AND VALIDITIES

TB 9 / TB 10 Airplanes

From S / N 1

EDITION ... 1 ... January 31, 1988

(P / N Z00. 182013T088)

Page N°	Edition N°	Revision N°
9.1A thru 9.1D	1	–
9.1.1 thru 9.1.6	1	–
9.1.6A and 9.1.6B	1	–
9.1.7 thru 9.1.26	1	–

D.G.A.C. Approved

P. O

DIRECTION GÉNÉRALE DE L'AVIATION CIVILE

G. RAT

I.E.E.A.C

Date : 22 AOUT 1988

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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 1

DAY AND NIGHT IFR EQUIPMENT

LIST OF AMENDMENTS

Edition 1 of January 31, 1988

Pages	Description
9.1A 9.1.1 to 9.1.26	New presentation
9.1B to 9.1D	Adding of necessary pages for the supplement approval

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DIRECTION GÉNÉRALE DE L'AVIATION CIVILE
DU CONTRÔLE TECHNIQUE
G. RAT
I E E A C

Date : 22 AOUT 1988

SUPPLEMENT

DAY AND NIGHT IFR EQUIPMENT

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SECTION 1
GENERAL

LIST OF APPROVED AND MANDATORY EQUIPMENT
ALLOWING FLIGHT OF THE AIRPLANE
IN DAY AND NIGHT IFR CONDITIONS
(in addition to the basic flight instruments)

EQUIPMENT	Day IFR	Night IFR
Vertical speed indicator	yes	yes
Horizontal attitude gyro	yes	yes
Turn and bank indicator	yes	yes
Directional gyro	yes	yes
Suction gage	yes	yes
Second sensitive altimeter	yes	yes
Heated pitot	yes	yes
Carburator temperature indicator	yes	yes
OAT indicator	yes	yes
Stop watch	yes	yes
Alternate static source	yes	yes
Anti-collision light	yes	yes
VHF 1	yes	yes
VHF 2	yes	yes
VOR / LOC	yes	yes
VOR / ILS	yes	yes
Marker	yes	yes
Transponder with "C" mode	yes	yes
DME	*	*
Radio compass	yes	yes
Audio control panel	yes	yes
Landing and taxi lights	no	yes
Navigation lights	no	yes
Adjustable interior lighting	no	yes
Adjustable emergency lighting	no	yes
1 microphone and headset assy	yes	yes
1 hand microphone and cabin loud-speaker	yes	yes
<u>For reference</u> :		
Flashlight with flashing device	no	yes
Day and Night IFR placard	yes	yes

* Mandatory only in certain TMAs or TCAs.

NOTE :

Refer to the prevailing regulation, which can evolve anytime.

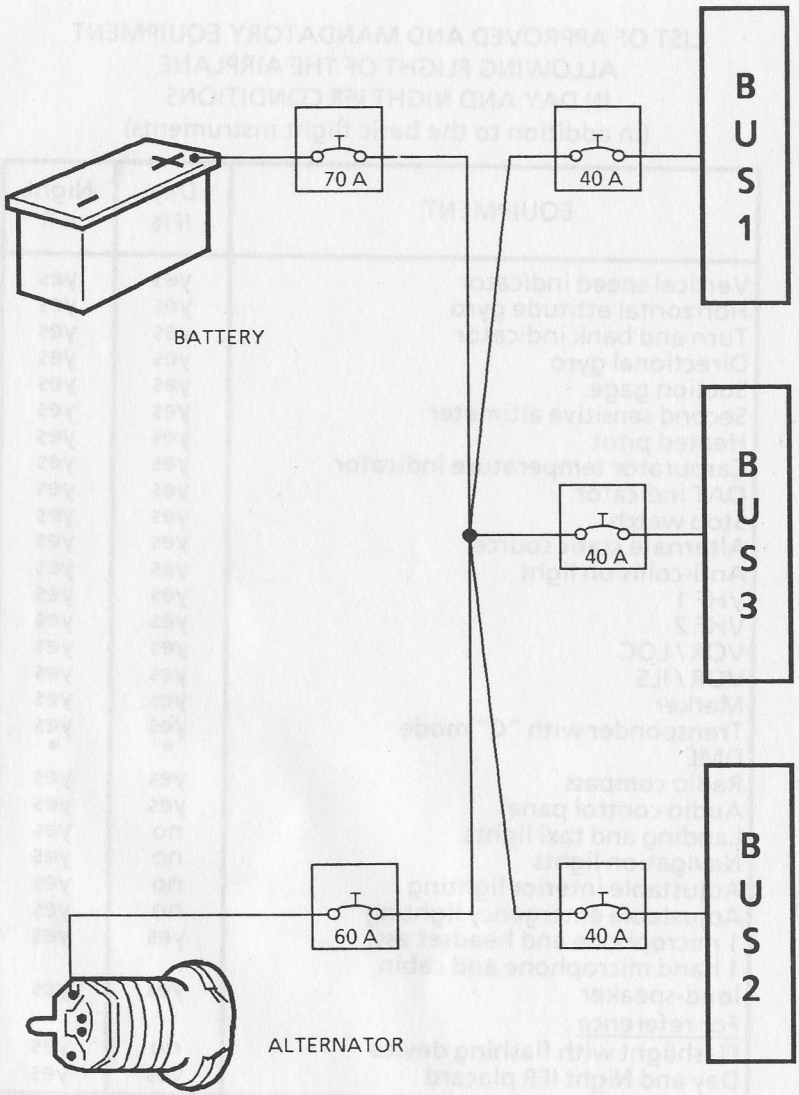

Figure 9.1.1 - BUS BARS POWER SUPPLY

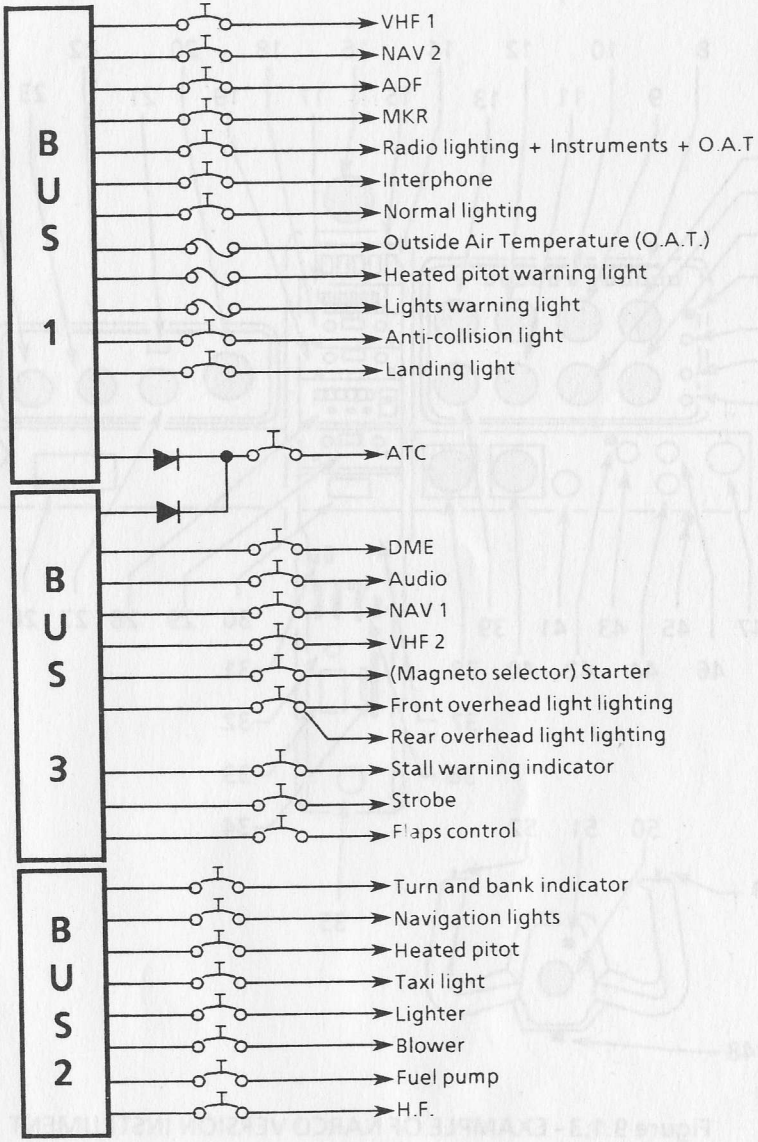

Figure 9.1.2 - POWER DISTRIBUTION IN IFR

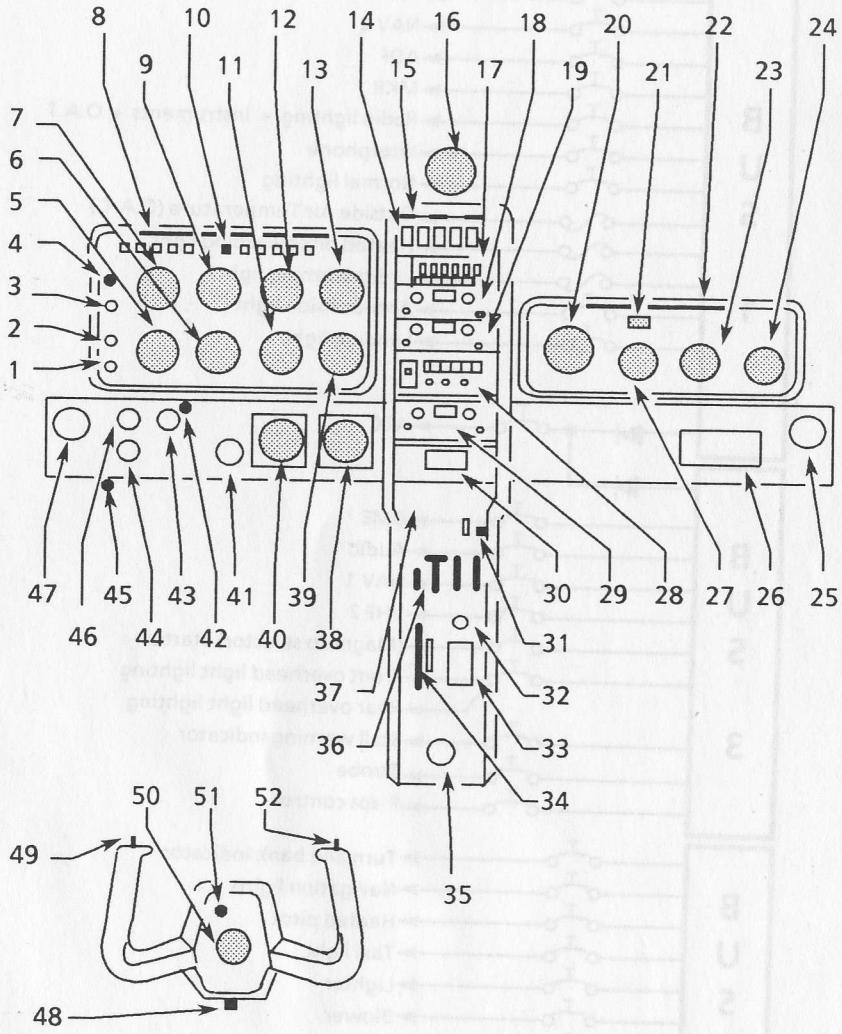

Figure 9.1.3 - EXAMPLE OF NARCO VERSION INSTRUMENT PANEL « IFR »

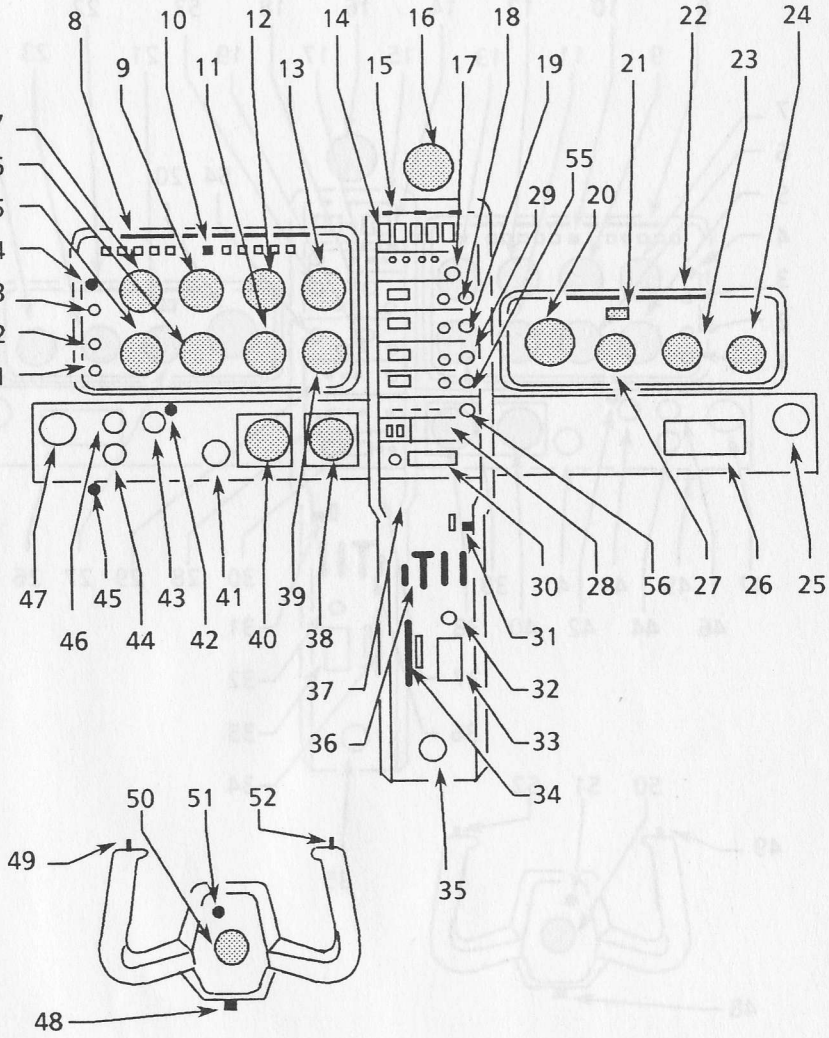

Figure 9.1.3A - EXAMPLE OF KING VERSION INSTRUMENT PANEL « IFR »

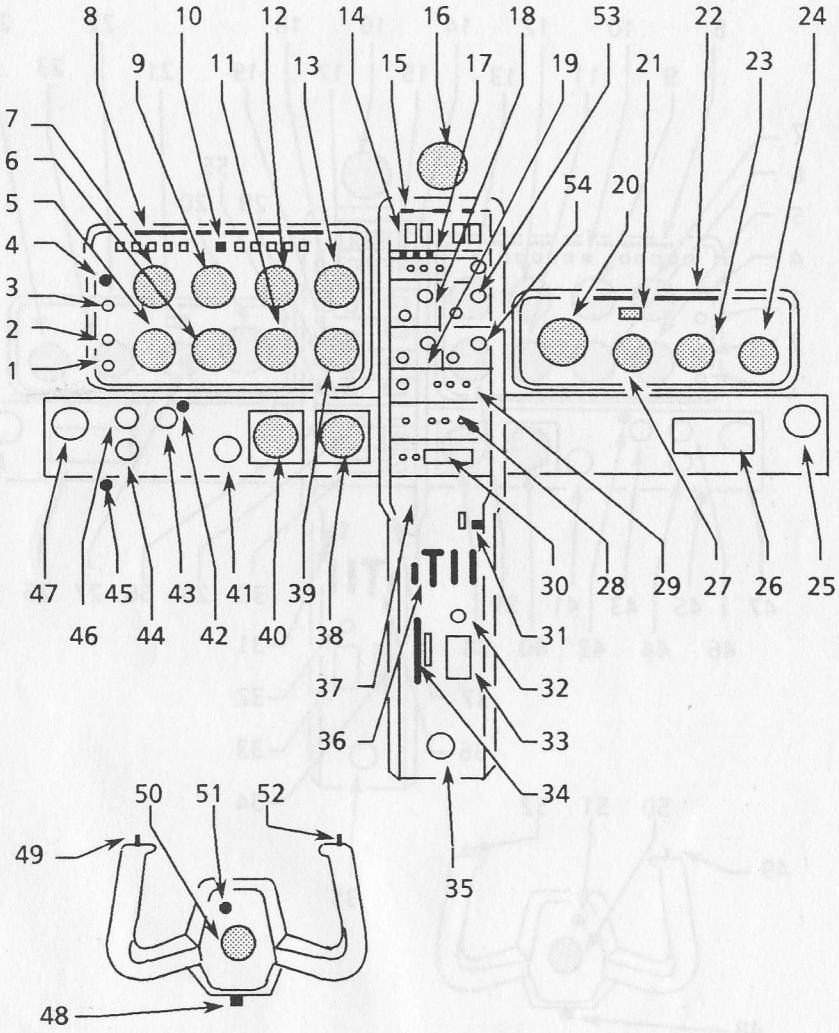

Figure 9.1.3B - EXAMPLE OF COLLINS VERSION
INSTRUMENT PANEL « IFR »

INSTRUMENT PANEL EXAMPLE (NARCO, COLLINS or KING)

1 - Normal lighting control (Std)
2 - Emergency lighting control (Std)
3 - Instruments and radio lighting control (Std)
4 - Emergency radio beacon switch (if installed)
5 - Illuminated turn and bank indicator
6 - Illuminated directional indicator
7 - Illuminated true airspeed indicator (Std)
8 - L.H. instrument panel visor lighting
9 - Illuminated horizontal attitude indicator
10 - Pitot heat indicator light
11 - Illuminated vertical speed indicator (Std)
12 - Illuminated altimeter (Std)
13 - VOR 1 receiver-indicator (NARCO)
13 - VOR 1 indicator (COLLINS - KING)
14 - Engine controls panel (Std)
15 - Radio support visor lighting
16 - Illuminated compass (Std)
17 - Audio control panel
18 - VHF 1
19 - VHF 2
20 - Illuminated tachometer (Std)
21 - Carburator temperature indicator
22 - R.H. instrument panel visor lighting
23 - Illuminated combination CHT / EGT
24 - Illuminated OAT indicator
25 - R.H. vent (Std)
26 - Cabin air selector (Std)
27 - Manifold pressure gage
28 - Transponder
29 - Radio compass
30 - DME indicator
31 - Wing flaps control and illuminated indicator (Std)
32 - Lighter (Std)
33 - Ash-tray (Std)
34 - Pitch trim control wheel and illuminated indicator (Std)
35 - Fuel selector (Std)
36 - Engine controls (Std)
37 - Switch-breakers for turn and bank indicator, anti-collision, navigation lights, heated pitot and landing lights.

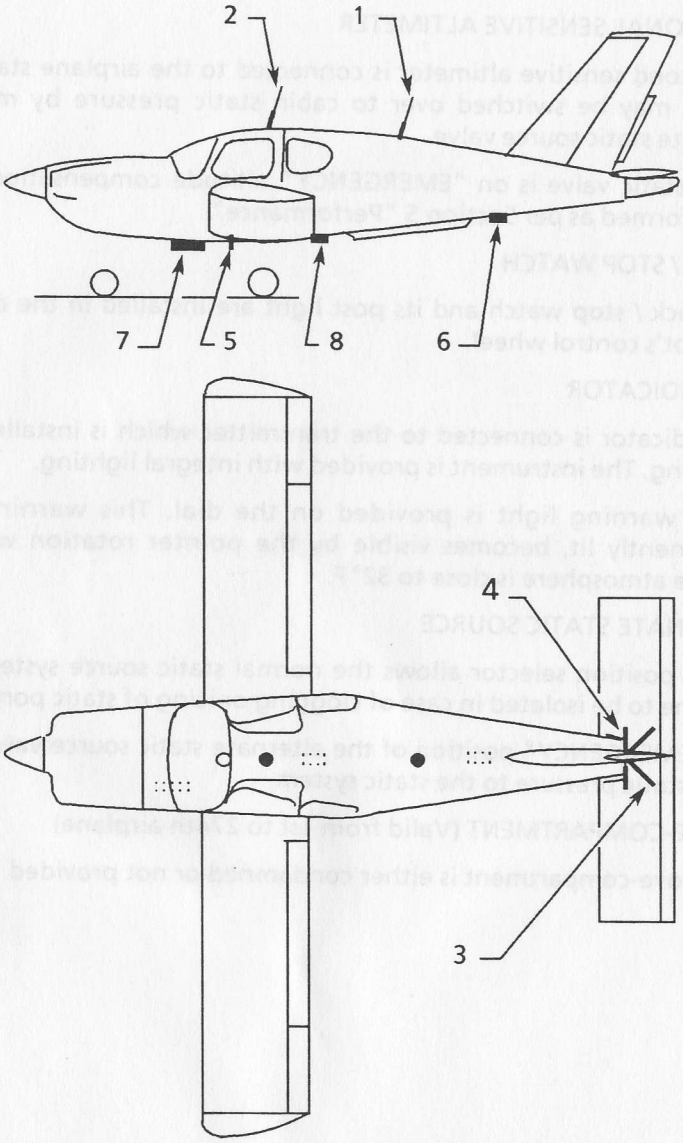

Figure 9.1.4 - ANTENNAS

ANTENNAS

1 - VHF 1 antenna

2 - VHF 2 antenna

3 - VOR antenna

4 - Glide ILS antenna

5 - ATC transponder antenna

6 - Radio compass - loop and sense antenna

7 - Marker antenna

8 - DME antenna

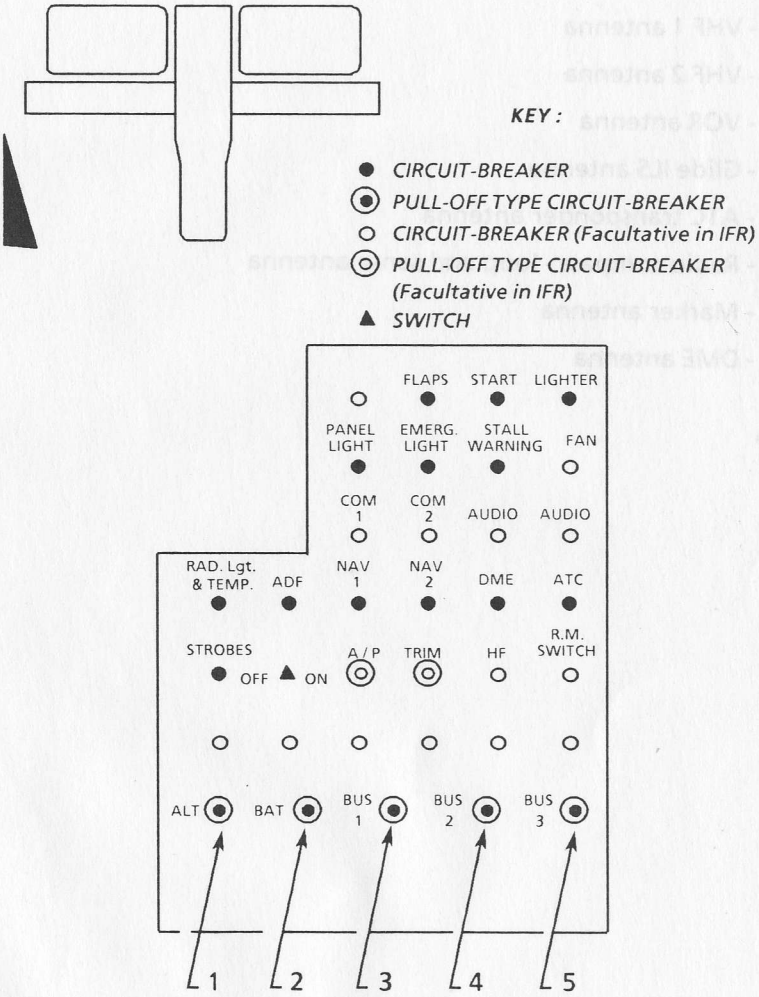

Figure 9.1.5 - CIRCUIT-BREAKERS ASSEMBLY
(Typical arrangement)

CIRCUIT-BREAKERS ASSEMBLY

1 - Alternator "pull-off" type circuit-breaker (60 A)

2 - Battery "pull-off" type circuit-breaker (70 A)

3 - Bus bar 1 "pull-off" type circuit-breaker (40 A)

4 - Bus bar 2 "pull-off" type circuit-breaker (40 A)

5 - Bus bar 3 "pull-off" type circuit-breaker (40 A)

SECTION 2
LIMITATIONS

The installation and the operation of the day and night IFR equipment do not change the basic limitations of the airplane described in Section 2 "Limitations" of the basic Flight Manual.

PLACARDS

This placard is located near the instruction plate :

FLIGHT CONDITIONS : DAY AND NIGHT IFR AND VFR ICING CONDITIONS NOT ALLOWED

This placard is located on L.H. instrument panel :

CAUTION : DURING ILS APPROACH AVOID ENGINE RPM HIGHER THAN 2600

SECTION 3

EMERGENCY PROCEDURES

These procedures complete those of standard airplane described in Section 3 "Emergency procedures" of the basic Flight Manual.

AIRSPEED INDICATING SYSTEM FAILURE

- Check the operation of the heated pitot, green indicator light "ON". If the switch-breaker is "ON" and the indicator light "OFF", check that BUS BAR 2 circuit-breaker is "ON".
- Erroneous indications of true airspeed indicator and altimeters.

Alternate static source valve Pull on "EMERGENCY"

Open vents and / or actuate cabin air conditioning flow lever to open position. Then, airspeed indicator and altimeter errors are slight.

If the failure persists, perform a careful approach down to the stalling limit using the pre-settings. See Figure 9.1.9.

NORMAL LIGHTING FAILURE

- Switch on emergency lighting system (front overhead lights)
- Check that normal lighting circuit-breaker is "ON".

LANDING LIGHT FAILURE

The left light has a wide beam and is considered a taxi light, and the right has a narrow beam and is considered a landing light, but either or both can be used as desired.

When landing without lights, it is suggested to use the same pitch attitude as that required to maintain the ILS Glide Slope.

FIRE OR SMOKE OF ELECTRIC ORIGIN

- Disengage "pull-off" type circuit-breakers of bus bars 1, 2, 3.
- After a few moments reset "pull-off" type circuit-breakers in the numerical order with a delay between each operation for observation. Disengage the faulty bus bar and disconnect all the equipment supplied by the latter. See Figure 9.1.2.
- Reset "pull-off" type circuit-breaker and reconnect one after the other all the disconnected equipment to isolate the failed item. Leave the "pull-off" type circuit-breaker for this item tripped.

VACUUM SYSTEM FAILURE

Vacuum below green arc or zero : Pneumatically operated horizontal attitude and / or directional gyro / HSI inoperative. Electric turn and bank indicator and magnetic compass continue normal operation.

Leave IMC conditions, fly airplane carefully in partial panel mode, and proceed with landing as soon as possible.

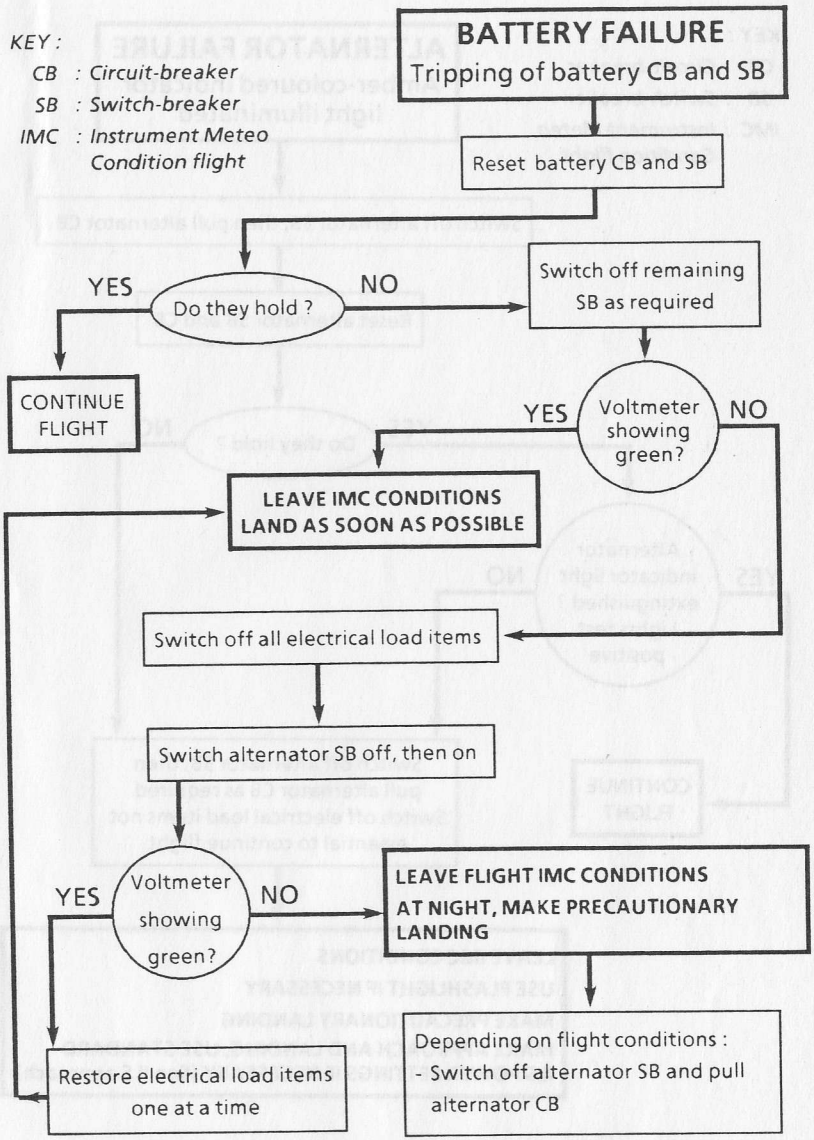

Figure 9.1.6 - BATTERY FAILURE DIAGRAM

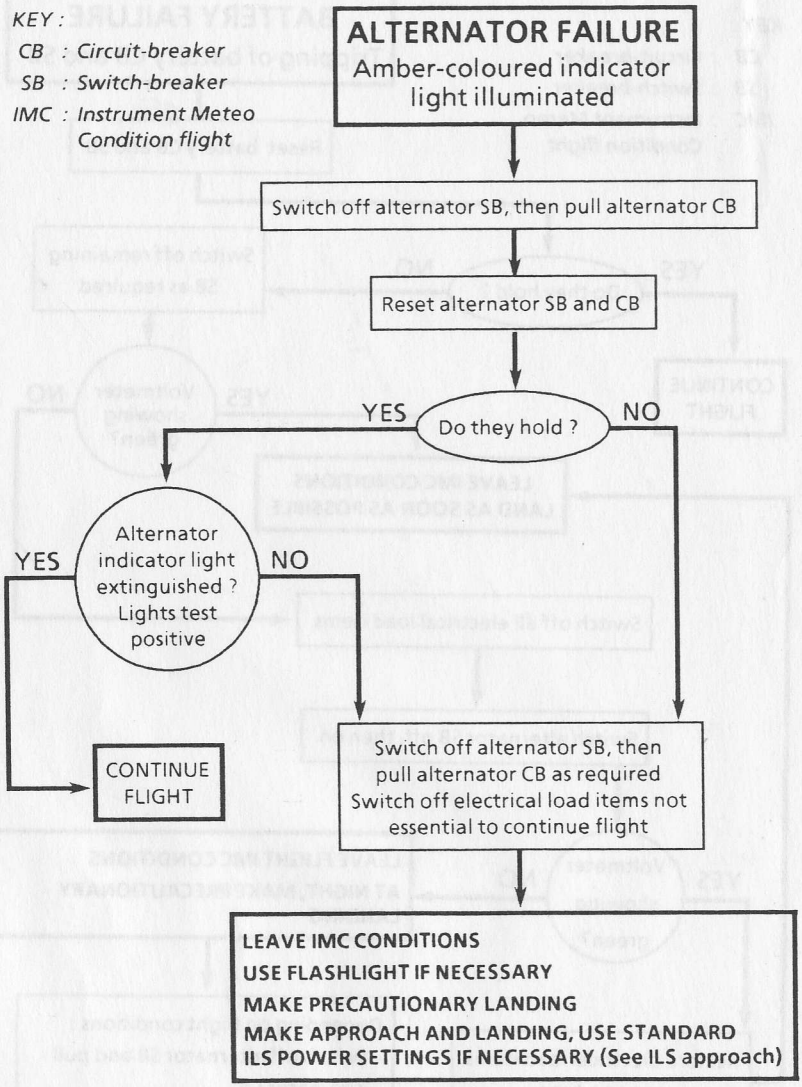

Figure 9.1.7 - ALTERNATOR FAILURE DIAGRAM

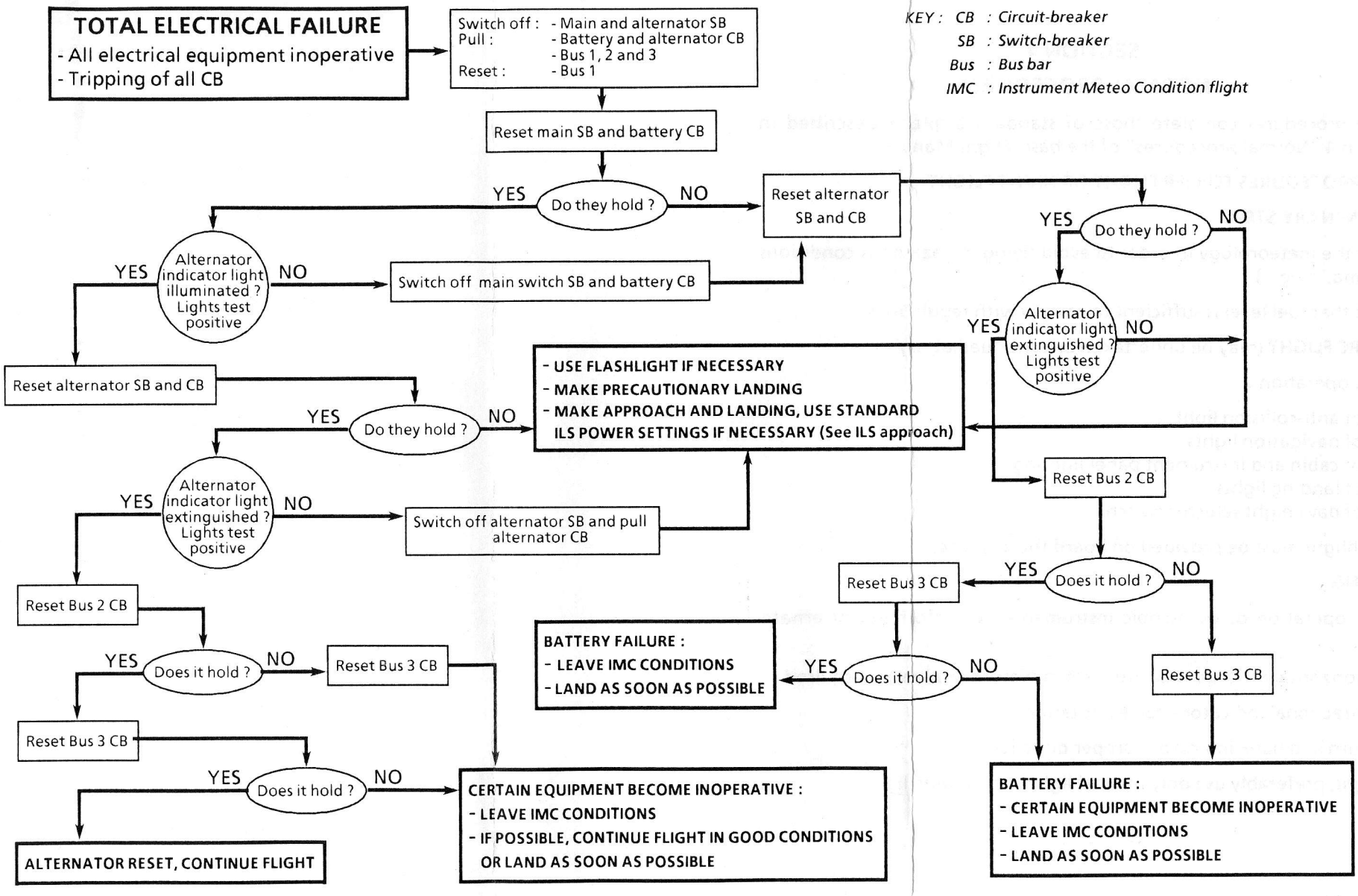

Figure 9.1.8 - TOTAL ELECTRICAL FAILURE DIAGRAM

SECTION 4
NORMAL PROCEDURES

These procedures complete those of standard airplane described in Section 4 "Normal procedures" of the basic Flight Manual.

4-1 - PROCEDURES FOR IFR FLIGHT OR NIGHT FLIGHT

PRELIMINARY STEPS

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

Check that fuel level is sufficient to comply with regulations.

BEFORE FLIGHT (may be undertaken or continued at night)

Check operation :

. of anti-collision light
. of navigation lights
. of cabin and instrument panel lighting
. of landing lights
. of day / night selector switch.

A flashlight must be provided on board the airplane.

TAXIING

Check operation of gyroscopic instruments by performing alternate turns :

- Horizontal attitude indicator - set miniature airplane as required
- Directional indicator - correct rotation
- Turn and bank indicator - proper direction.

At night, preferably use only the taxi light (left landing light).

BEFORE TAKE-OFF

- Heated pitot
- Check suction gage in green arc
- Check VHF 1
- VHF 2
- VOR 1
- VOR 2
- Radio compass
- Marker lights
- Set transponder to "stand-by"
- At night or in damp weather, set the air conditioning system to maximum demisting.

LINED UP ON RUNWAY

Check directional gyro heading and horizontal attitude gyro bar.

At night, turn on landing lights as required.

TAKE-OFF

See Section 4 "Normal procedures" of this manual.

Always maintain a positive rate of climb.

At night, switch off landing lights when safely airborne.

CLIMB, CRUISE AND DESCENT

See Section 4 "Normal procedures" of this manual.

Beware of the risk of eye-sight problems above 8000 feet (without oxygen).

ILS APPROACH (pre-setting)

These values are given for a weight of 2535 lbs (1150 kg - TB 10) - 2337 lbs (1060 kg - TB 9).

In order to facilitate air traffic, it is advisable to proceed with final approach at VIAS = 86 / 92 KIAS - 99 / 106 MPH IAS with flaps retracted.

In short final run, fully extend the flaps, VIAS will then drop to 70 / 76 KIAS - 81 / 87 MPH IAS. It is not necessary to modify the power to maintain the angle of descent.

	Wing flaps	KIAS	MPH IAS	MP in.Hg	Propeller RPM	Vert. Sp. indicator ft/min
Holding	0°	86 / 92	99 / 106	20.7	2500 (TB 10) 2250 (TB 9)	0
ILS Approach	0°	86 / 92	99 / 106	14.8	2500 (TB 10) 1900 (TB 9)	- 450
Final	25°30'	70 / 76	81 / 87	*	Full low pitch (TB 10) 1900 (TB 9)	- 450

(*) as required

Figure 9.1.9 - PRE-SETTINGS, ILS APPROACH

ILS approach with KING ILS

"Erratic deviations have been observed with airplane flown down an ILS path with KING RADIO-NAV installations. Analysis of the phenomenon indicates that the perturbations are due to an interference between propeller rotation frequency and one of LOC frequencies. The more sensitive conditions are met when the localizer beacon is right ahead and the engine speed is adjusted toward 2650 RPM.

The localizer use is not significantly impaired by the phenomenon when :

- engine speed is reduced to lower than 2600 RPM
- localizer beacon lies right or left by more than 30 degrees from airplane heading.

Autopilot APR mode operation should be discontinued whenever high engine power settings are anticipated. This can be done by switching to HDG mode or CWS mode or by switching off the autopilot. Of course from above one understands that REV mode or BCK COURSE mode are not concerned by this limitation after take-off (loc. beacon lies 180° from airplane heading in this case)."

LANDING

At night, preferably use the R.H. landing light (long range) or both lights simultaneously.

4-2 - USE OF AVIONICS

AUDIO CONTROL PANEL

The buttons allow selecting the transmission and reception of VHF 1 or VHF 2, double VHF reception, reception of VOR 1, VOR 2, ADF, Marker and DME.

TRANSMISSION

Transmission may be made either through hand microphone, or through the headset boom microphone with its push-to-talk-switches located on the control wheels. Headsets that will not be used should be unplugged.

RECEPTION

Select the loud-speaker or headset reception by means of the corresponding button on audio control panel (SPKR or PHONE).

In I.M.C. or at night, it is recommended to use the headset.

VOR, ADF, MKR and DME

Operate independent of VHF comm transceivers, but at least one VHF comm transceiver must be turned on to provide an audio amplifier for loud-speaker operation unless the audio control panel contains an integral amplifier. Headphone operation is normal regardless of VHF operation on loud-speakers.

LIGHTING

Three controls are located on the left side of the L.H. instrument panel. See Figure 9.1.3 :

- Lower control (normal)

  Controls and modulates lighting of L.H. and R.H. instrument panels' visors.

- Central control (emergency)

  Modulates both forward overhead lights.

  Rotating the overhead lights turns them on and off.

- Upper control (radio-equipment) operates and modulates :
  - Radio equipment lighting
  - Instruments and indicators lighting on instrument panel
  - Circuit-breakers panel lighting

NOTE :

Both "normal" and "radio-equipment" controls operate and modulate lighting ; from high position "OFF" turn clockwise for "FULL INTENSITY OPERATION", then, still clockwise, modulate towards "MINIMUM INTENSITY" ; turn back to "OFF" turning counterclockwise.

"Emergency" position control modulates lighting ; high position from "FULL INTENSITY" turn clockwise to modulate to "MINIMUM INTENSITY" ; turn back to high position "FULL INTENSITY" turning counterclockwise.

LANDING LIGHTS

The lights are controlled by two switch-breakers. See Figure 7.5.

The L.H. light has a wide beam which facilitates taxiing.

The R.H. light has a long range beam and should be used for take-off and landing.

Simultaneous operation is possible.

DAY / NIGHT DIMMER

A day / night switch allows the indicator lights for the fuel pump, pitot heater and landing lights to be dimmed during night operations.

SECTION 5
PERFORMANCE

The installation and the operation of the day and night IFR equipment do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Flight Manual.
However, the installation of the externally mounted antennas will result in a minor reduction in cruise performance. See Section 5 "Performance" of this manual.

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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 2

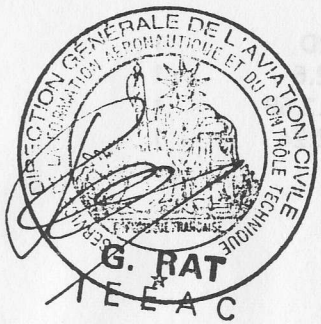
NIGHT VFR EQUIPMENT

This supplement includes only the general, limitations, emergency procedures, normal procedures and performance in addition to those of SOCATA airplane in its standard version.

Sections 2 - 3 - 4

Pages 9.2.13 to 9.2.21 approved by DIRECTION GENERALE DE L'AVIATION CIVILE (D.G.A.C.).

Approval :



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Date : 22 AOUT 1988

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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 2

NIGHT VFR EQUIPMENT

LOG OF PAGES AND VALIDITIES

TB 9 / TB 10 Airplanes

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EDITION ... 1 ... January 31, 1988

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9.2.6A and 9.2.6B	1	-
9.2.7 thru 9.2.24	1	-

P. o

D.G.A.C. Approved

DIRECTION GÉNÉRALE DE L'AVIATION CIVILE DE LA NAVIGATION AÉRONAUTIQUE ET DU CONTRÔLE TECHNIQUE

G. RAT

I E E A C

Date : 22 AOUT 1988

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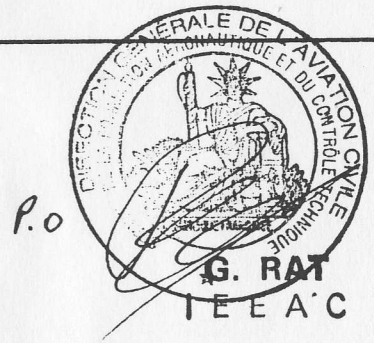
NIGHT VFR EQUIPMENT

LIST OF AMENDMENTS

Edition 1 of January 31, 1988

Pages	Description
9.2A 9.2.1 to 9.2.24	New presentation
9.2B to 9.2D	Adding of necessary pages for the supplement approval

D.G.A.C. approval :



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NIGHT VFR EQUIPMENT

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GENERAL

LIST OF APPROVED AND MANDATORY EQUIPMENT
ALLOWING FLIGHT OF THE AIRPLANE
IN NIGHT FLIGHT
(in addition to the basic flight instruments)

EQUIPMENT
- RADIO-NAVIGATION
VHF - Category 2 VOR / LOC - Category 2 or Radio compass - Category 2
- NAVIGATION EQUIPMENT
Horizontal attitude gyro indicator Turn and bank indicator Directional gyro indicator Gyro "ON" indicator Vertical speed indicator Anti-collision light Navigation lights Landing and taxi lights Interior panel lighting Flashlight (Personal equipment) Night VFR placard

NOTE :

Refer to the prevailing regulation, which can evolve anytime.

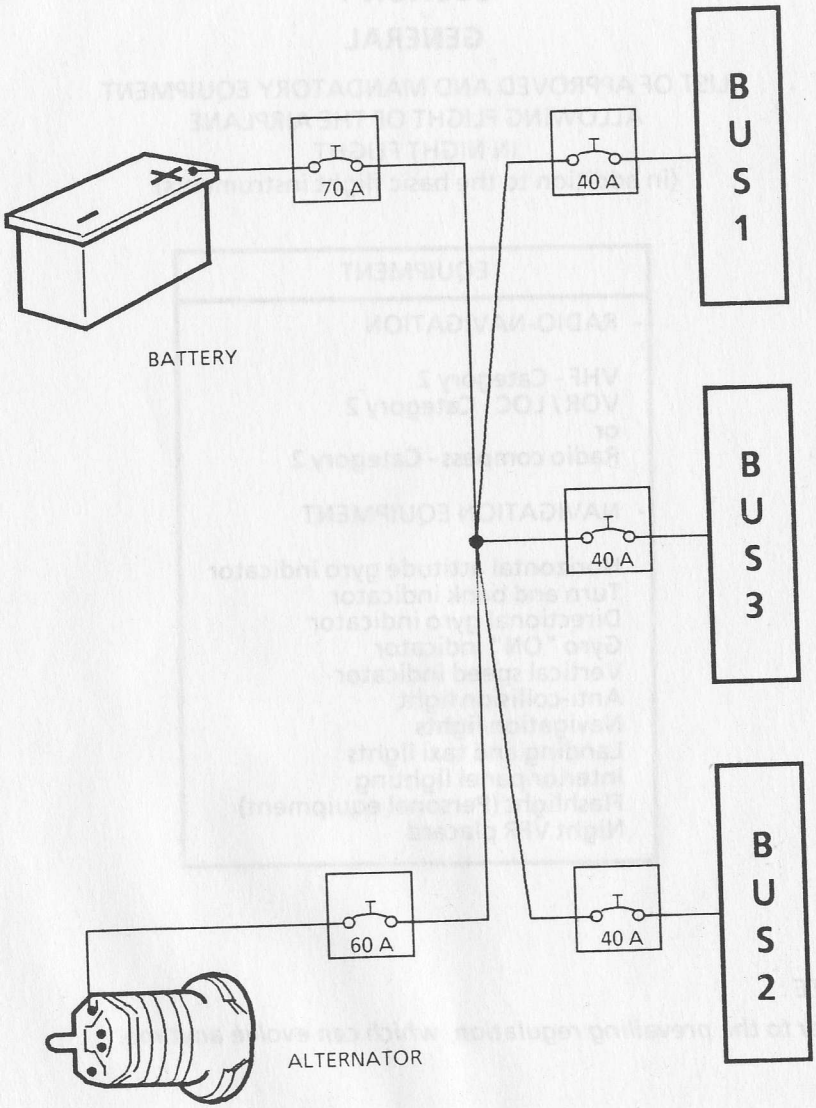

Figure 9.2.1 - BUS BARS POWER SUPPLY

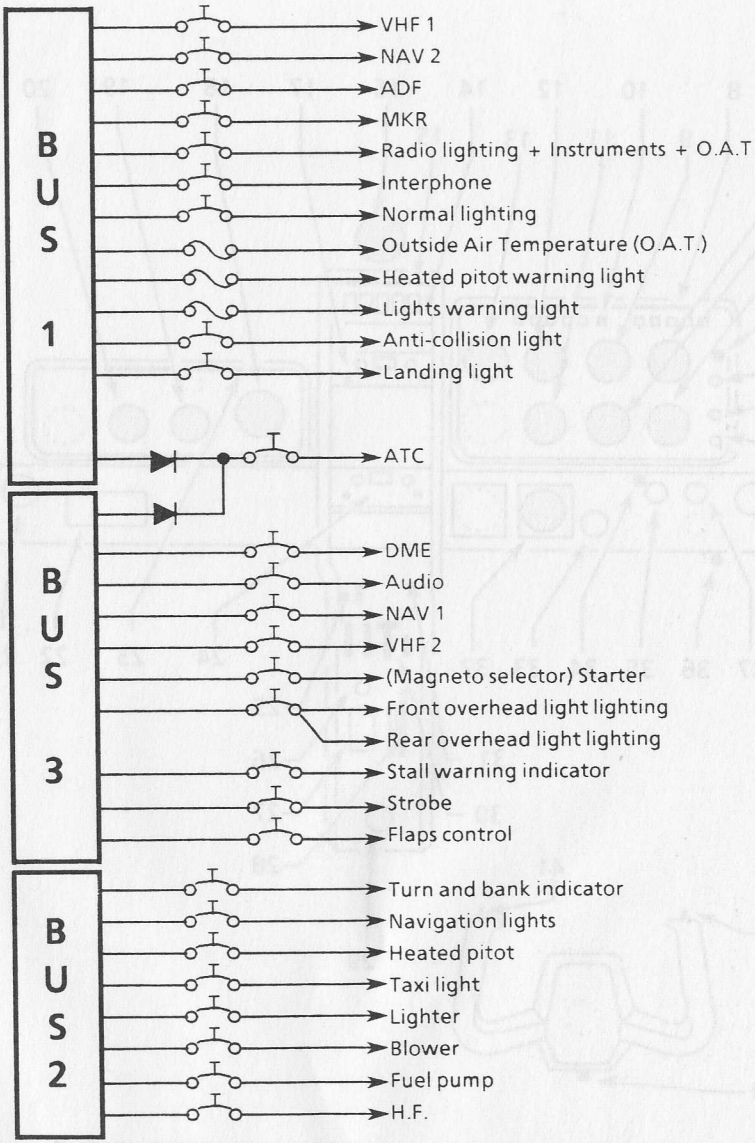

Figure 9.2.2 - POWER DISTRIBUTION IN VFR

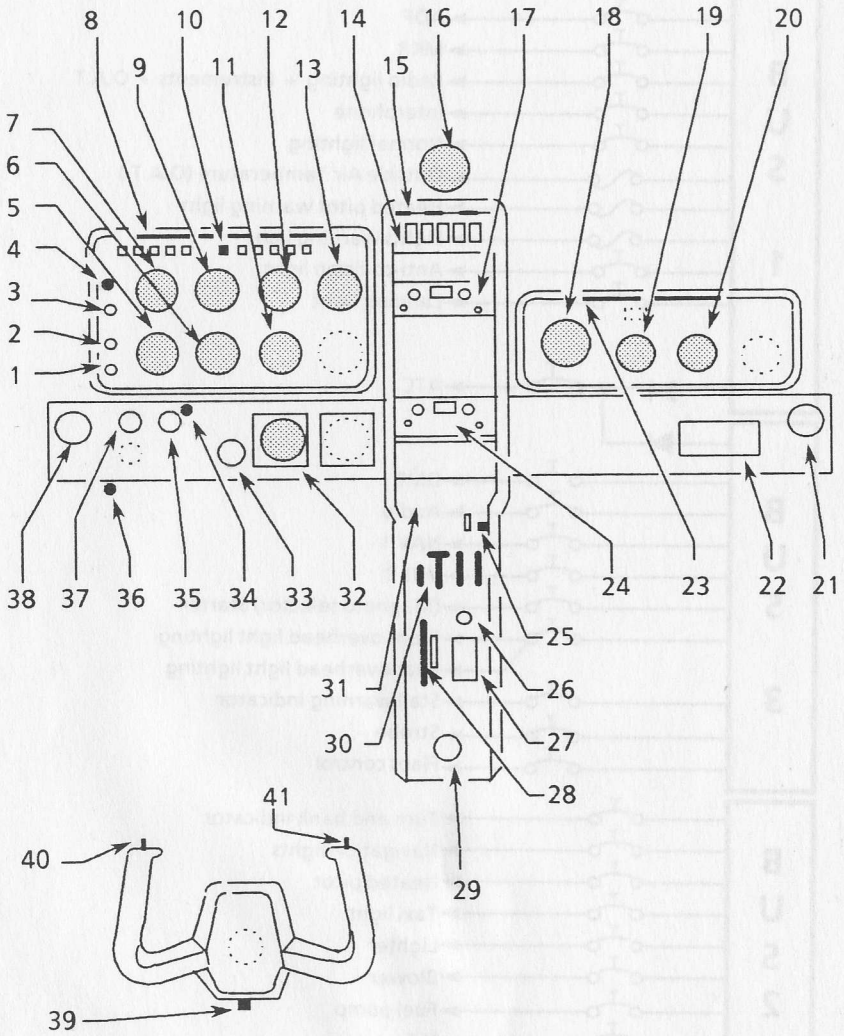

Figure 9.2.3 - EXAMPLE OF NARCO VERSION INSTRUMENT PANEL « VFR »

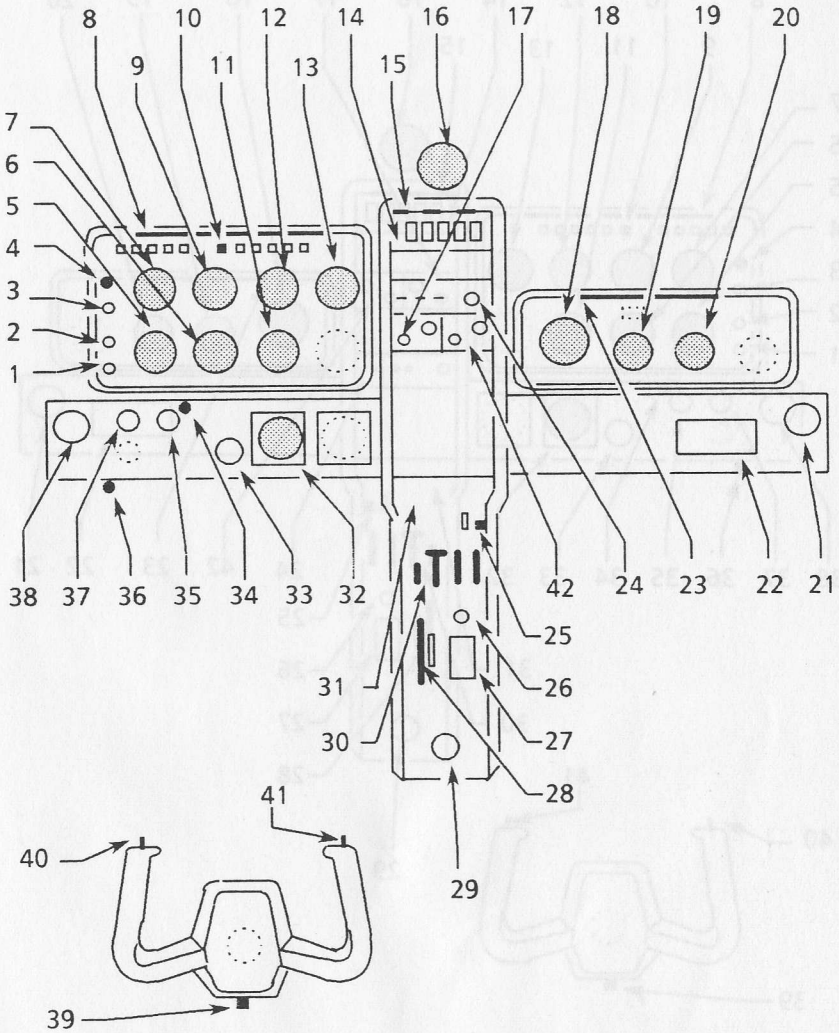

Figure 9.2.3A - EXAMPLE OF KING VERSION INSTRUMENT PANEL « VFR »

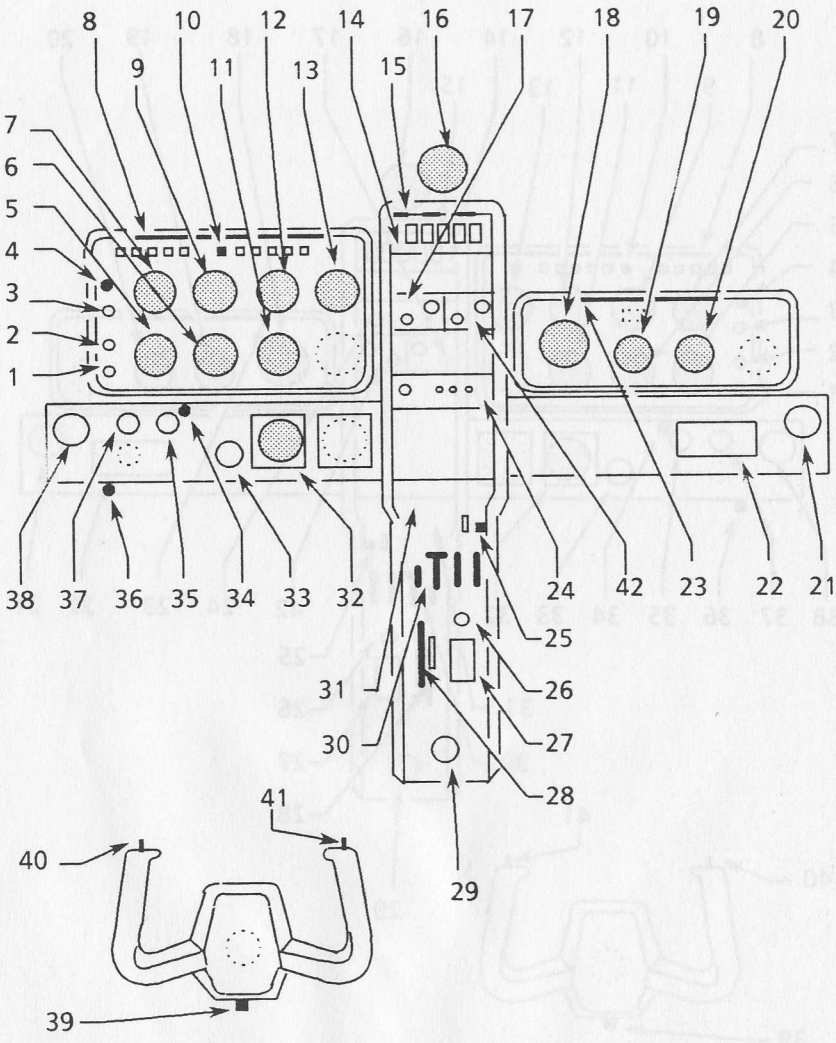

Figure 9.2.3B - EXAMPLE OF COLLINS VERSION INSTRUMENT PANEL « VFR »

INSTRUMENT PANEL EXAMPLE (NARCO, COLLINS or KING)

1 - Normal lighting control (Std)
2 - Emergency lighting control (Std)
3 - Instruments and radio lighting control (Std)
4 - Emergency radio beacon switch (if installed)
5 - Illuminated turn and bank indicator
6 - Illuminated directional indicator
7 - Illuminated true airspeed indicator (Std)
8 - L.H. instrument panel visor lighting
9 - Illuminated horizontal attitude indicator
10 - Pitot heat indicator light
11 - Illuminated vertical speed indicator (Std)
12 - Illuminated altimeter (Std)
13 - VOR indicator (COLLINS - KING)
13 - VOR receiver-indicator (NARCO)
14 - Engine controls panel (Std)
15 - Radio support visor lighting
16 - Illuminated compass (Std)
17 - VHF 1
18 - Illuminated tachometer (Std)
19 - Manifold pressure gage
20 - Illuminated combination CHT / EGT
21 - R.H. vent (Std)
22 - Cabin air selector (Std)
23 - R.H. instrument panel visor lighting
24 - Radio compass
25 - Wing flaps control and indicator (Std)
26 - Lighter (Std)
27 - Ash-tray (Std)
28 - Pitch trim illuminated control wheel and indicator (Std)
29 - Fuel selector (Std)
30 - Engine controls (Std)
31 - Switch-breakers for turn and bank indicator, anti-collision, navigation lights, heated pitot and landing lights
32 - Illuminated ADF indicator
33 - Parking brake knob (Std)
34 - L.H. subpanel post light
35 - Vacuum system suction gage

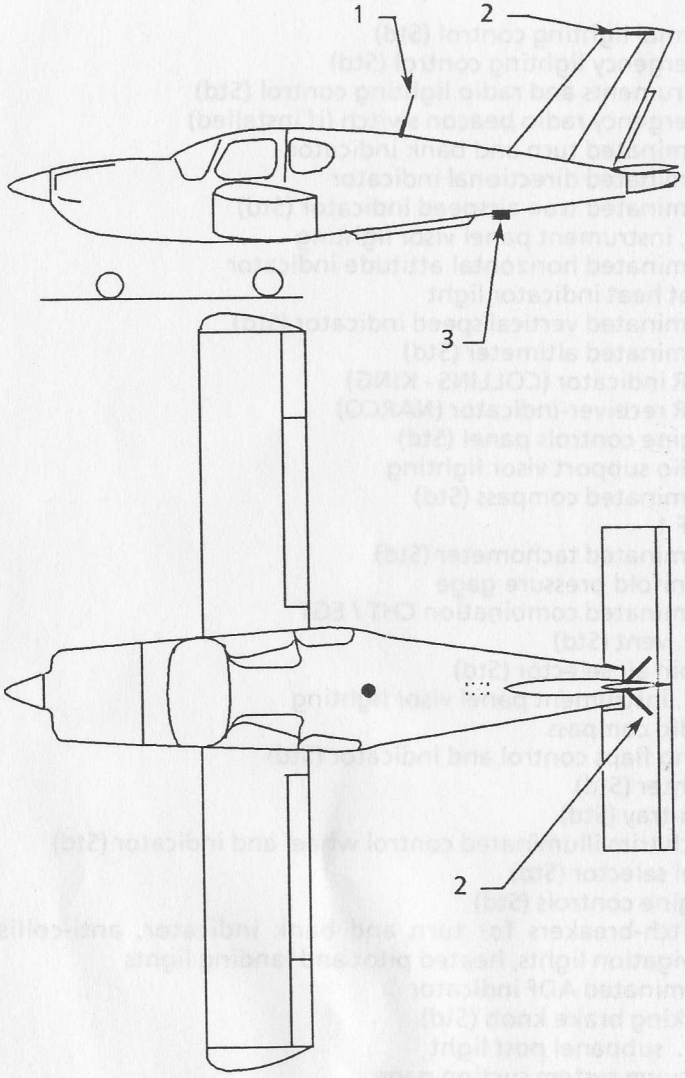

Figure 9.2.4 - ANTENNAS

INSTRUMENT PANEL EXAMPLE (Cont.)

36 - Circuit-breakers panel post light
37 - Magneto / start switch (Std)
38 - L.H. vent (Std)
39 - Maps reading light (if installed)
40 - Push-to-talk switch
41 - Maps reading light switch
42 - VOR / LOC receiver (KING - COLLINS)

LIGHTING DEVICES

INSTRUMENT PANELS LIGHTING

- See Figure 9.2.3.
- Controlled and modulated by "Normal" and "Radio" controls.

EMERGENCY LIGHTING

- Front overhead lights controlled by turning post lights, modulable by "Emergency" control. See Figure 9.2.3.

CABIN LIGHTING

- Front overhead lights controlled by turning post lights, modulable by "Emergency" control. See Figure 9.2.3.
- Rear overhead light (Manual or automatic when pilot's door opens).

GLOVE-COMPARTMENT (Valid from 1st to 274th airplane)

The glove-compartment is either condamned or not provided.

ANTENNAS

1 - VHF antenna

2 - VOR antenna

3 - Radio compass - loop and sense antenna.

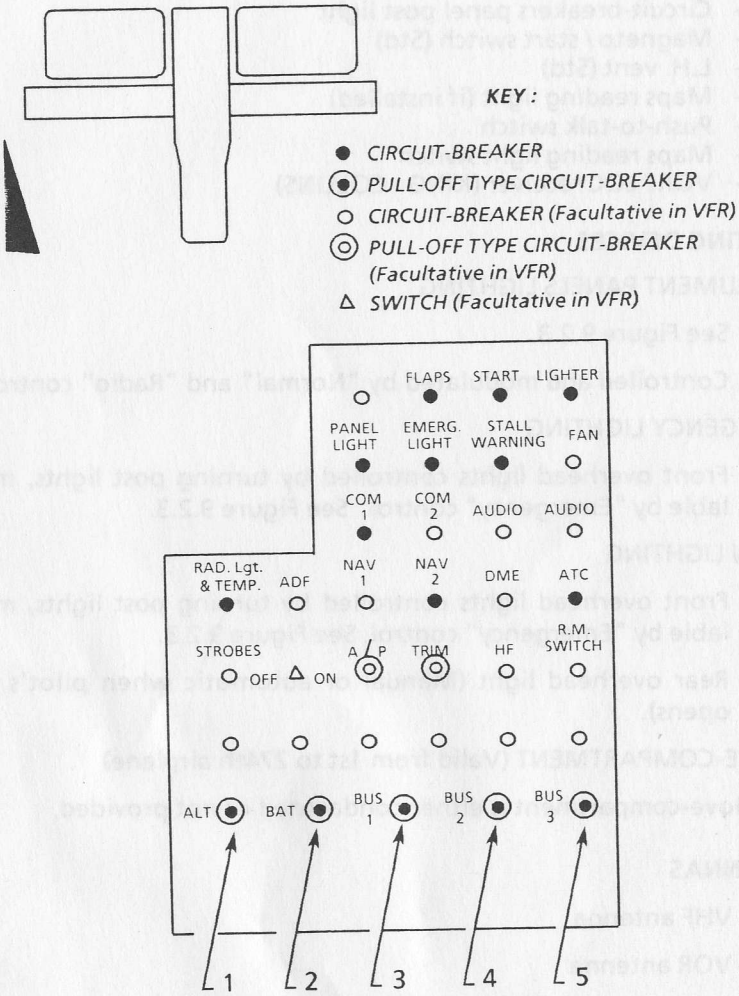

Figure 9.2.5 - CIRCUIT-BREAKERS ASSEMBLY
(Typical arrangement)

CIRCUIT-BREAKERS ASSEMBLY

1 - Alternator "Pull-off" type circuit-breaker (60 A)

2 - Battery "Pull-off" type circuit-breaker (70 A)

3 - Bus bar 1 "Pull-off" type circuit-breaker (40 A)

4 - Bus bar 2 "Pull-off" type circuit-breaker (40 A)

5 - Bus bar 3 "Pull-off" type circuit-breaker (40 A)

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SECTION 2
LIMITATIONS

The installation and the operation of the night VFR equipment do not change the basic limitations of the airplane described in Section 2 "Limitations" of the basic Flight Manual.

PLACARDS

This placard is located near the instruction plate :

FLIGHT CONDITIONS : DAY AND NIGHT VFR
ICING CONDITIONS NOT ALLOWED

This placard is located on L.H. instrument panel :

CAUTION : DURING ILS APPROACH
AVOID ENGINE RPM HIGHER THAN 2600

SECTION 3
EMERGENCY PROCEDURES

These procedures complete those of standard airplane described in Section 3 "Emergency procedures" of the basic Flight Manual.

NORMAL LIGHTING FAILURE

- Switch on emergency lighting system
- Check that normal lighting circuit-breaker is "ON".

LANDING LIGHT FAILURE

The left light has a wide beam and is considered a taxi light, and the right has a narrow beam and is considered a landing light, but either or both can be used as desired.

When landing without lights, it is suggested to use the same pitch attitude as that required to maintain the ILS Glide Slope.

FIRE OR SMOKE OF ELECTRIC ORIGIN

- Disengage "pull-off" type circuit-breaker of bus bars 1, 2, 3.
- After a few moments reset "pull-off" type circuit-breakers in the numerical order with a delay between each operation for observation. Disengage the faulty bus bar and disconnect all the equipment supplied by the latter. See Figure 9.2.2.
- Reset "pull-off" type circuit-breaker and reconnect one after the other all the disconnected equipment until the faulty equipment is found and isolated. Leave the "pull-off" type circuit-breaker for this item tripped.

VACUUM SYSTEM FAILURE

Vacuum below green arc or zero : Pneumatically operated horizontal attitude and / or directional gyro / HSI inoperative. Electric turn and bank indicator and magnetic compass continue normal operation.

Fly the airplane carefully in partial panel mode, and proceed with landing as soon as possible.

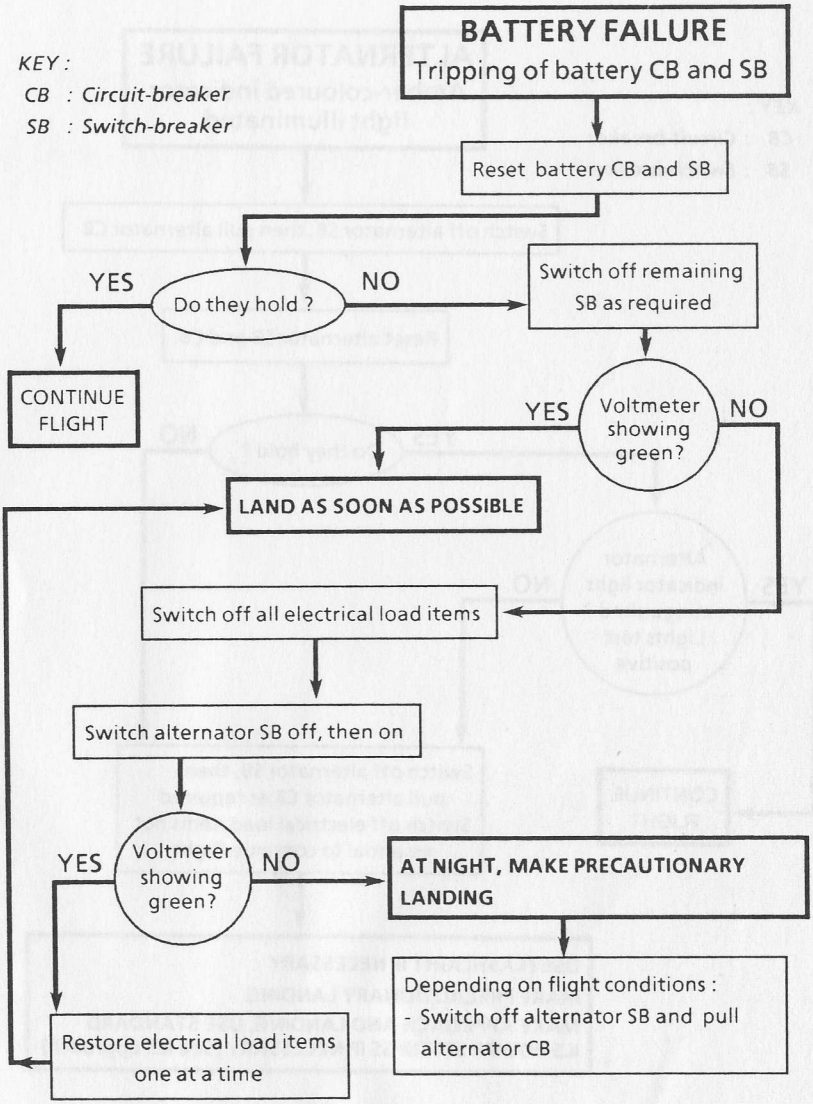

Figure 9.2.6 - BATTERY FAILURE DIAGRAM

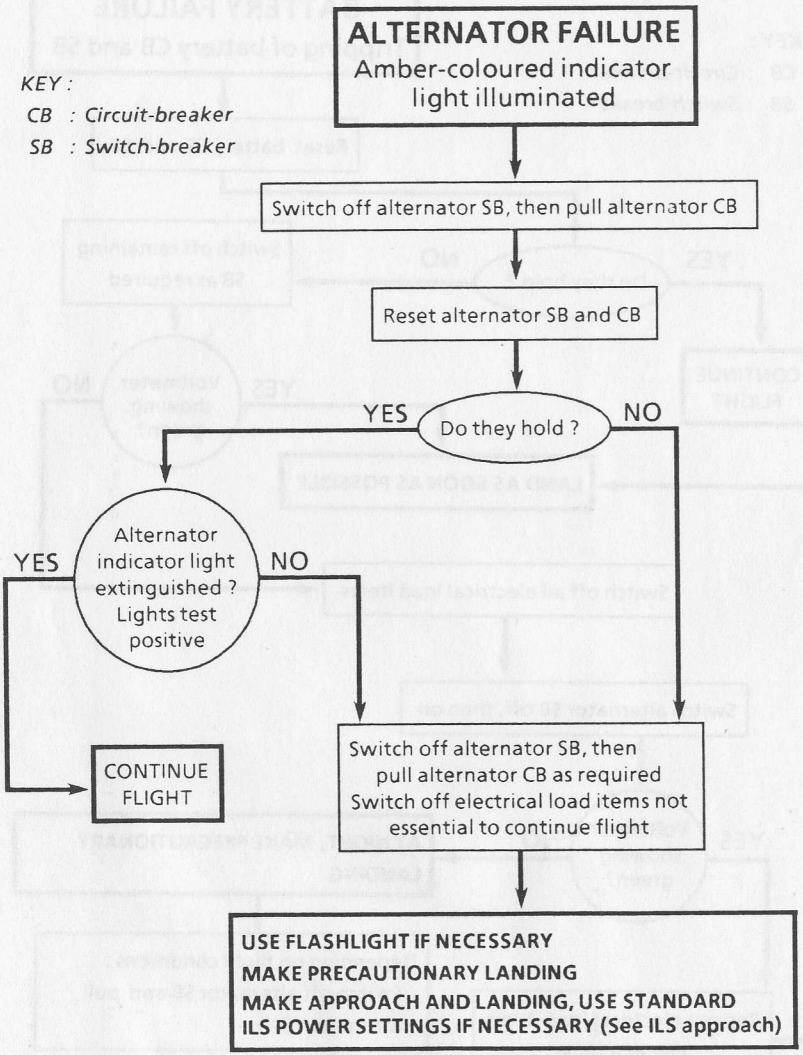

Figure 9.2.7 - ALTERNATOR FAILURE DIAGRAM

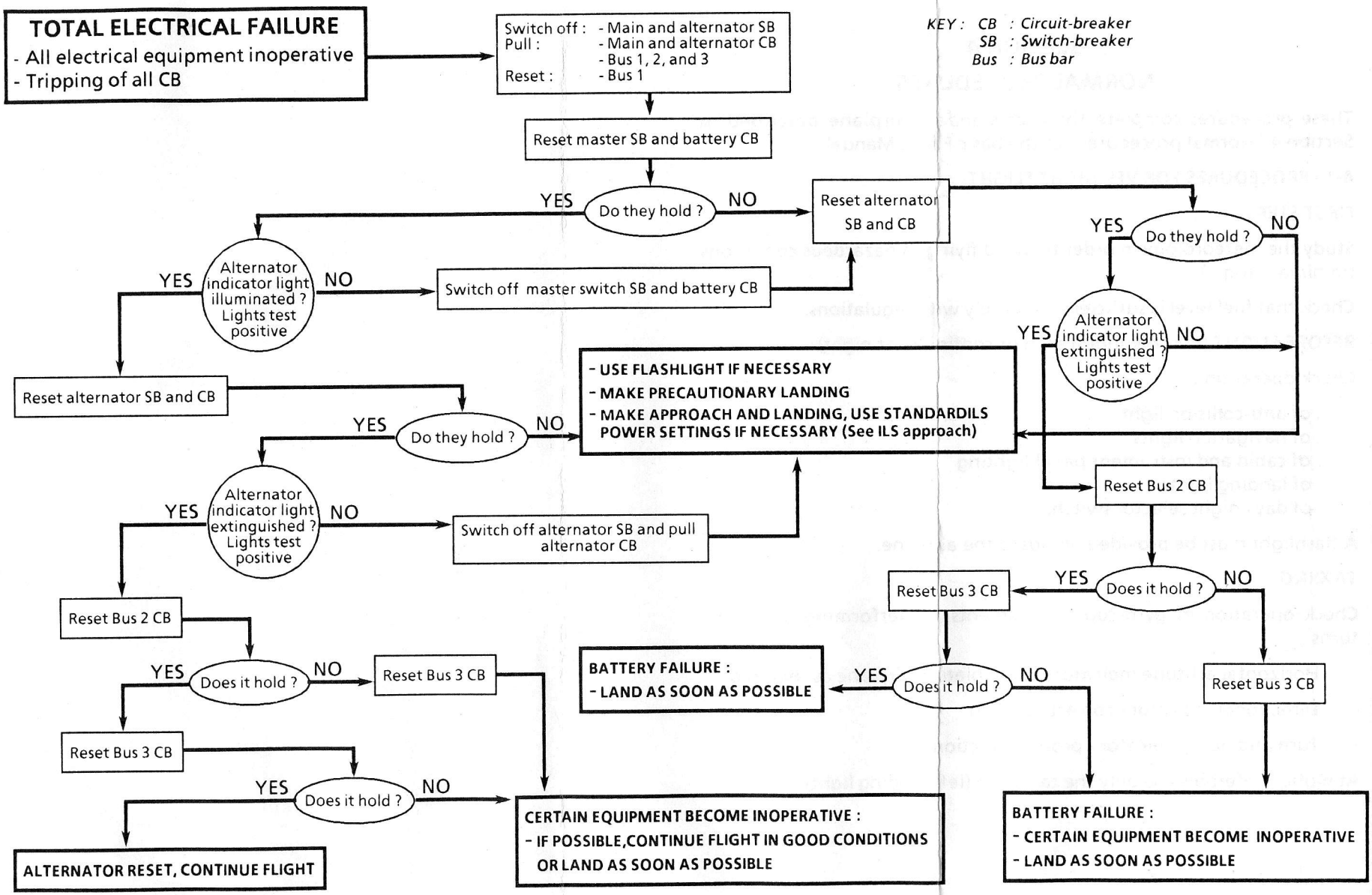

Figure 9.2.8 - TOTAL ELECTRICAL FAILURE DIAGRAM

SECTION 4
NORMAL PROCEDURES

These procedures complete those of standard airplane described in Section 4 "Normal procedures" of the basic Flight Manual.

4-1 - PROCEDURES FOR VFR NIGHT FLIGHT

FIRST STEPS

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

Check that fuel level is sufficient to comply with regulations.

BEFORE FLIGHT (may be undertaken or continued at night)

Check operation :

. of anti-collision light
. of navigation lights
. of cabin and instrument panel lighting
. of landing lights
. of day / night selector switch.

A flashlight must be provided on board the airplane.

TAXIING

Check operation of gyroscopic instruments by performing alternate turns :

- Horizontal attitude indicator - set miniature airplane as required
- Directional indicator - correct rotation
- Turn and bank indicator - proper direction.

At night, preferably use only the taxi light (left landing light).

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BEFORE TAKE-OFF

- Check suction gage in green arc
- Check VHF
- VOR or radiocompass
- At night or in damp weather, set the air conditioning system to maximum demisting.

LINED UP ON RUNWAY

Check directional gyro heading and horizontal attitude gyro bar.

At night, turn on landing lights as required.

TAKE-OFF

See Section 4 "Normal procedures" of this manual.

Always maintain a positive rate of climb.

At night, switch off landing lights when safely airborne.

CLIMB, CRUISE AND DESCENT

See Section 4 "Normal procedures" of this manual.

Beware of the risk of eye-sight problems above 8000 feet (without oxygen).

ILS APPROACH (pre-setting)

These values are given for a weight of 2535 lbs (1150 kg - TB 10) - 2337 lbs (1060 kg - TB 9).

In order to facilitate air traffic, it is advisable to proceed with final approach at VIAS = 86 / 92 KIAS - 99 / 106 MPH IAS with flaps retracted.

In short final run, fully extend the flaps, VIAS will then drop to 70 / 76 KIAS - 81 / 87 MPH IAS. It is not necessary to modify the power to maintain the angle of descent.

	Wing flaps	KIAS	MPH IAS	MP in.Hg	Propeller RPM	Vert. Sp. indicator ft/min
Holding	0°	86 / 92	99 / 106	20.7	2500 (TB 10) 2250 (TB 9)	0
ILS Approach	0°	86 / 92	99 / 106	14.8	2500 (TB 10) 1900 (TB 9)	- 450
Final	25°30'	70 / 76	81 / 87	*	Full low pitch (TB 10) 1900 (TB 9)	- 450

(*) as required

Figure 9.2.9 - PRE-SETTINGS, ILS APPROACH

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ILS approach with KING ILS

"Erratic deviations have been observed with airplane flown down an ILS path with KING RADIO-NAV installations. Analysis of the phenomenon indicates that the perturbations are due to an interference between propeller rotation frequency and one of LOC frequencies. The more sensitive conditions are met when the localizer beacon is right ahead and the engine speed is adjusted toward 2650 RPM.

The localizer use is not significantly impaired by the phenomenon when :

- engine speed is reduced to lower than 2600 RPM
- localizer beacon lies right or left by more than 30 degrees from airplane heading.

Autopilot APR mode operation should be discontinued whenever high engine power settings are anticipated. This can be done by switching to HDG mode or CWS mode or by switching off the autopilot. Of course from above one understands that REV mode or BCK COURSE mode are not concerned by this limitation after take-off (loc. beacon lies 180° from airplane heading in this case)."

LANDING

At night, preferably use the R.H. landing light (long range) or both lights simultaneously.

4-2- USE OF AVIONICS

TRANSMISSION

Transmission may be made either through the hand microphone, or through the headset boom microphone with its push-to-talk-switches located on the control wheels. Headsets that will not be used should be unplugged.

RECEPTION

The loud-speaker is the main equipment, the headset being considered as a stand-by equipment.

A selector switch selects reception on the loud-speaker or headset.

On headset operation, all receptions are simultaneous.

LIGHTING

Three controls are located on the left side of the L.H. instrument panel. See Figure 9.2.3 :

- Lower control (normal)

  Controls and modulates lighting of L.H. and R.H. instrument panels'visors.

- Central control (emergency)

  Modulates both forward overhead lights.

  Rotating the overhead lights turns them on and off.

- Upper control (radio-equipment) operates and modulates :
  - Radio equipment lighting
  - Instruments and indicators lighting on instrument panel
  - Circuit-breakers panel lighting

NOTE :

Both "normal" and "radio-equipment" controls operate and modulate lighting ; from high position "OFF" turn clockwise for "FULL INTENSITY OPERATION", then, still clockwise, modulate towards "MINIMUM INTENSITY" ; turn back to "OFF" turning counterclockwise.

"Emergency" position control modulates lighting ; high position from "FULL INTENSITY" turn clockwise to modulate to "MINIMUM INTENSITY" ; turn back to high position "FULL INTENSITY" turning counterclockwise.

LANDING LIGHTS

The lights are controlled by two switch-breakers. See Figure 7.5.

The L.H. light has a wide beam which facilitates taxiing.

The R.H. light has a long range beam and should be used for take-off and landing.

Simultaneous operation is possible.

DAY / NIGHT DIMMER

A day / night switch allows the indicator lights for the fuel pump, pitot heater and landing lights to be dimmed during night operations.

SECTION 5

PERFORMANCE

The installation and the operation of the night VFR equipment do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Flight Manual.
However, the installation of the externally mounted antennas will result in a minor reduction in cruise performance. See Section 5 "Performance" of this manual.

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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 7

"KING" AUTOPILOT TYPE KAP 100

This supplement includes only the general, limitations, emergency procedures, normal procedures and performance in addition to those of SOCATA airplane in its standard version.

Sections 2 - 3 - 4

Pages 9.7.14 to 9.7.22 approved by DIRECTION GENERALE DE L'AVIATION CIVILE (D.G.A.C.).

Approval :

P. O

G. RAT
I E E A C

22 AOUT 1988

Date : .....

"Ce supplément est une traduction en langue anglaise du Supplément Français correspondant approuvé par la D.G.A.C."

THIS DOCUMENT MUST BE EMBODIED IN SECTION 9 OF THE FLIGHT MANUAL

FLIGHT MANUAL

SECTION 9

SUPPLEMENT 7

"KING" AUTOPILOT TYPE KAP 100

LOG OF PAGES AND VALIDITIES

TB 10 Airplane
From S / N 275

TB 20 / TB 21 Airplanes
From S / N 1

EDITION ... 1 ... January 31, 1988
(P / N Z00. 182073T088)

Page N°	Edition N°	Revision N°
9.7A thru 9.7D	1	-
9.7.1 thru 9.7.22	1	-

P.O

DIRECTION GÉNÉRALE DE L'AVIATION CIVILE
DE LA FORMATION AÉRONAUTIQUE

G. RAT
IEEAC

D.G.A.C. Approved

22 AOUT 1988

Date : .....

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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 7

"KING" AUTOPILOT TYPE KAP 100

LIST OF AMENDMENTS

Edition 1 of January 31, 1988

Pages	Description
9.7A 9.7.1 to 9.7.22	New presentation
9.7B to 9.7D	Adding of necessary pages for the supplement approval

D.G.A.C. approval :

P.O

Date : 22 AOUT 1988

DIRECTION GÉNÉRALE DE L'AVIATION CIVILE
DE LA FORMATION AÉRONAUTIQUE ET DU CONTRÔLE TECHNIQUE
G. RAT
TEEAC

SUPPLEMENT

"KING" AUTOPILOT TYPE KAP 100

"OPTIONAL EQUIPMENT N° 668"

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Figure 9.7.1 - KC 190 AUTOPILOT COMPUTER

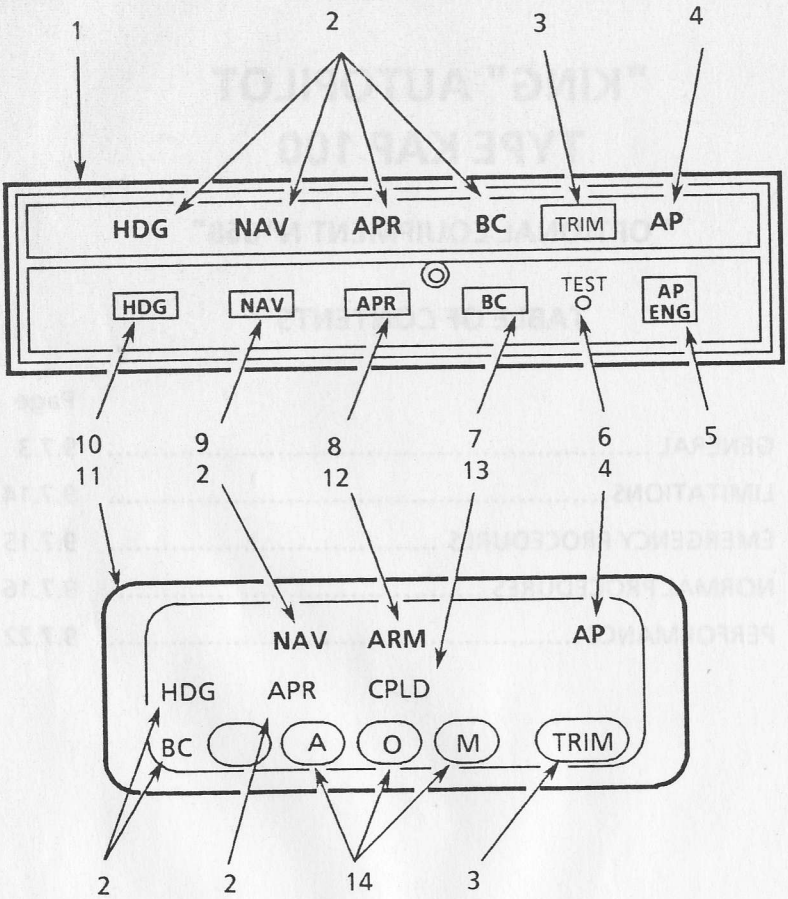

Figure 9.7.2 - KA 185 REMOTE MODE ANNUNCIATOR
(Option)

SECTION 1
GENERAL

This supplement is provided to acquaint the pilot with the limitations as well as normal and emergency operating procedures of the King KAP 100 Automatic Flight Control System. The limitations presented are pertinent to the operation of the KAP 100 System as installed in the SOCATA Models TB 10, TB 20 and TB 21 airplanes ; the Flight Control System must be operated within the limitations herein specified.

The KAP 100 Autopilot is certified in this airplane with roll axis control. The various instruments and the controls for the operation of the KAP 100 Autopilot are described in the figures of this supplement.

The KAP 100 Autopilot has an optional electric pitch trim system. The trim system is designed to withstand any single inflight malfunction. A trim fault is visually and aurally annunciated.

A lockout device prevents autopilot engagement until the system has been successfully preflight tested.

The following conditions will cause the Autopilot to automatically disengage :

A - Power failure

B - Internal Flight Control System failure

C - With the KCS 55A Compass System, a loss of compass valid (displaying HDG flag) disengages the Autopilot when a mode using heading information is engaged.
With the HDG flag present only the autopilot wings level mode can be selected.

D - Roll rates in excess of 14° per second will cause the Autopilot to disengage except when the CWS switch is held depressed (TB 21).

Item 1 - KAP 100 KC 190 AUTOPILOT COMPUTER - Complete Autopilot Computer. Includes system mode annunciators and system controls.

Item 2 - MODE ANNUNCIATORS - Illuminate when a mode is selected by the corresponding mode selector button (PUSH ON - PUSH OFF).

Item 3 - TRIM WARNING LIGHT (TRIM) - Illuminates continuously whenever trim power is not on or the system has not been preflight tested. The TRIM warning light will illuminate and be accompanied by an audible warning whenever a manual pitch trim malfunction occurs (trim running without being commanded to run).

Item 4 - AUTOPILOT (AP) ANNUNCIATOR - Illuminates continuously whenever the autopilot is engaged. Flashes approximately 12 times whenever the autopilot is disengaged (an aural alert will also sound for 2 seconds).

Item 5 - AUTOPILOT ENGAGE (AP ENG) BUTTON - When pushed, engages autopilot if all logic conditions are met. When pushed again, disengages autopilot.

Item 6 - PREFLIGHT TEST (TEST) BUTTON - When momentarily pushed, initiates preflight test sequence which automatically turns on all annunciator lights, tests the roll rate monitor, checks the manual trim drive voltage, checks the manual electric trim monitor and tests all autopilot valid and dump logic. If the preflight is successfully passed, the AP annunciator light will flash for approximately 6 seconds (an aural tone will also sound simultaneously with the annunciator flashes).The autopilot can not be engaged until the autopilot preflight tests are successfully passed. The test button should not be operated in flight.

Item 7 - BACK COURSE APPROACH (BC) MODE SELECTOR BUTTON - When pushed will select the Back Course Approach Mode. This mode functions indentically to the approach mode except that response to LOC signals is reversed.

Item 8 - APPROACH (APR) MODE SELECTOR BUTTON - When pushed, will select the Approach mode. This mode provides all angle intercept (with HSI) or a fixed angle intercept of 45° (with DG), automatic beam capture and tracking of VOR, RNAV or LOC signals. The tracking gain of the APR mode is greater than the gain in the NAV mode. The APR annunciator will flash until the automatic capture sequence is initiated. On the KA 185 remote mode annunciator, APR ARM will annunciate until the automatic capture sequence is initiated. At beam capture, APR CPLD will annunciate.

Item 9 - NAVIGATION (NAV) MODE SELECTOR BUTTON - When pushed will select the Navigation mode. The mode provides all angle intercept (with HSI) or a fixed angle intercept of 45° (with DG), automatic beam capture and tracking of VOR, RNAV or LOC signals.
The NAV annunciator will flash until the automatic capture sequence is initiated. On the KA 185 remote mode annunciator, NAV ARM will annunciate until the automatic capture sequence is initiated. At beam capture, NAV CPLD will annunciate.

Item 10 - HEADING (HDG) MODE SELECTOR BUTTON - When pushed will select the Heading mode, which commands the airplane to turn to and maintain the heading selected by the heading bug on the DG or HSI.
A new heading may be selected at any time and will result in the airplane turning to the new heading with a maximum bank angle of about 18°. Selecting HDG mode will cancel NAV, APR or BC track modes.

Item 11 - KA 185 REMOTE MODE ANNUNCIATOR (OPTIONAL) - Provides mode annunciation in the pilot's primary scan area as well as three Marker Beacon lights.

Item 12 - ARMED (ARM) ANNUNCIATOR - Illuminates continuously along with NAV or APR when either the NAV or APR mode selector button is depressed. The ARM annunciator will continue to illuminate until the automatic capture sequence is initiated at which time ARM will extinguish and CPLD will annunciate.

Item 13 - COUPLED (CPLD) ANNUNCIATOR - Illuminates continuoulsy along with NAV or APR at the initiation of automatic beam capture sequence in either the NAV or APR modes. Normally the CPLD condition follows an ARM condition but may be entered into directly if the beam capture criteria is met when NAV or APR is selected.

Item 14 - REMOTE MARKER BEACON LIGHTS - Remote Airway, Outer and Middle Marker Beacon lights driven by the Marker Beacon receiver.

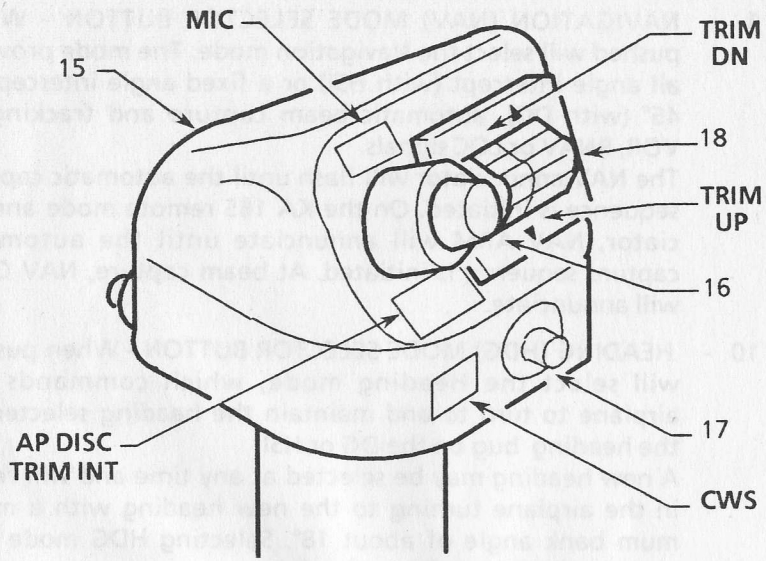

Figure 9.7.3 - AUTOPILOT CONTROL WHEEL SWITCH CAP

Item 15 - AUTOPILOT CONTROL WHEEL SWITCH CAP (installed with optional manual electric trim) (TB 20 - TB 21)
(installed on TB 10 airplane without optional manual electric trim)
Molded plastic unit mounted on the left horn of the pilot's control wheel which provides mounting for the switch units associated with the autopilot and manual electric trim systems.

Item 16 - AUTOPILOT DISCONNECT / TRIM INTERRUPT (AP DISC TRM INT) SWITCH (installed with optional manual electric trim) (TB 20 - TB 21)
(installed on TB 10 airplane without optional manual electric trim)
When depressed and released will disengage the autopilot and cancel all operating autopilot modes. When depressed and held will interrupt all electric trim power (stop trim motion), disengage the autopilot, and cancel all operating autopilot modes.

Item 17 - CONTROL WHEEL STEERING (CWS) BUTTON (installed with optional manual electric trim) - When depressed, allows pilot to manually control the airplane (disengages the servo) without cancellation of any of the selected modes.

Item 18 - MANUAL ELECTRIC TRIM CONTROL SWITCHES (installed with optional manual electric trim) - A split switch unit in which the left half provides power to engage the trim servo clutch and the right half to control the direction of motion of the trim servo motor. Both halves of the split trim switch must be actuated in order for the manual trim to operate in the desired direction.

Item 19 - KG 258 VERTICAL GYRO - Displays airplane attitude as a conventional attitude gyro. The gyro is air driven.

Item 20 - ROLL ATTITUDE INDEX - Displays airplane roll attitude with respect to the roll attitude scale.

Item 21 - ROLL ATTITUDE SCALE - Scale marked at 0, ± 10, 20, 30, 60 and 90 degrees.

Item 22 - PITCH ATTITUDE SCALE - Moves with respect to the symbolic airplane to present pitch attitude.
Scale graduated at 0, ± 5, 10, 15, 20 and 25 degrees.

Item 23 - SYMBOLIC AIRPLANE - Serves as a stationary symbol of the airplane. Airplane pitch and roll attitudes are displayed by the relationship between the fixed symbolic airplane and the movable background.

Item 24 - SYMBOLIC AIRPLANE ALIGNMENT KNOB - Provides manual positioning of the symbolic airplane for level flight under various load conditions.

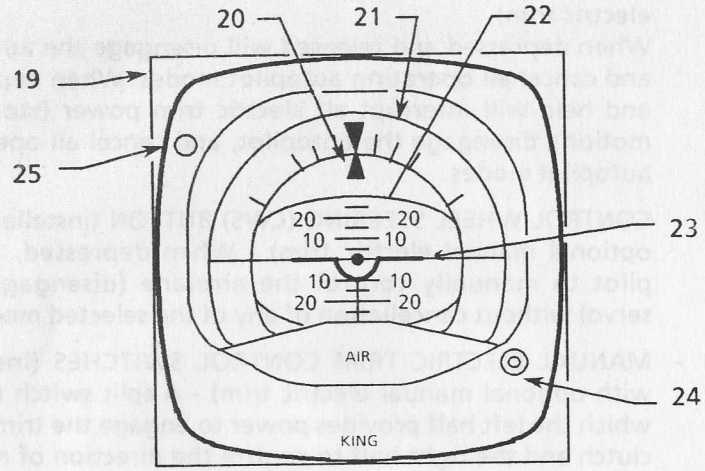

Figure 9.7.4 - KG 258 VERTICAL GYRO

Item 25 - DECISION HEIGHT (DH) ANNUNCIATOR LIGHT - Optional light for use with the airplane optional radar altimeter.

Item 26 - KI 525 A HORIZONTAL SITUATION INDICATOR (HSI) - Provides a pictorial presentation of airplane deviation relative to VOR radials or localizer beams. It also displays Glide Slope deviations and gives heading reference with respect to magnetic north.

Item 27 - NAV FLAG - Flag is in view when the NAV receiver signal is inadequate. When a NAV flag is present in the navigation indicator (CDI or KI 525 A) the autopilot operation is not affected. The pilot must monitor the navigation indicators for NAV flags to insure that the Autopilot is tracking valid navigation information.

Item 28 - LUBBER LINE - Indicates airplane magnetic heading on compass card (Item 35).

Item 29 - HEADING WARNING FLAG (HDG) - When flag is in view the heading display is invalid. If a HDG flag appears and a lateral mode (HDG, NAV, APR or APR BC) is selected, the Autopilot will be disengaged. The Autopilot may be re-engaged in the basic wings level mode. The CWS switch would be used to manually maneuver the airplane laterally.

Item 30 - COURSE BEARING POINTER - Indicates selected VOR course or localizer course on compass card (Item 35). The selected VOR radial or localizer heading remains set on the compass card when the compass card (Item 35) rotates.

Item 31 - TO / FROM INDICATOR FLAG - Indicates direction of VOR station relative to selected course.

Item 32 - DUAL GLIDE SLOPE POINTERS - Indicate on Glide Slope scale (Item 33) airplane displacement from Glide Slope beam center. Glide Slope pointers in view indicate a usable Glide Slope signal is being received.

Item 33 - GLIDE SLOPE SCALES - Indicate displacement from Glide Slope beam center. A Glide Slope deviation bar displacement of 2 dots, represents full scale (0.7°) deviation above or below Glide Slope beam centerline.

Item 34 - HEADING SELECTOR KNOB (⌐¬) - Positions heading Bug (Item 39) on compass card (Item 35) by rotating the heading selector knob. The Bug rotates with the compass card.

Item 35 - COMPASS CARD - Rotates to display heading of airplane with reference to lubber line (Item 28) on HSI or DG.

Item 36 - COURSE SELECTOR KNOB - Positions course bearing pointer (Item 30) on the compass card (Item 35) by rotating the course selector knob.

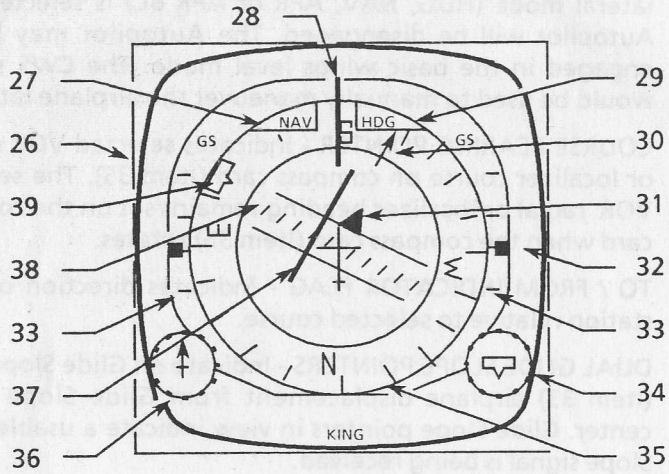

Figure 9.7.5 - KI 525 HSI

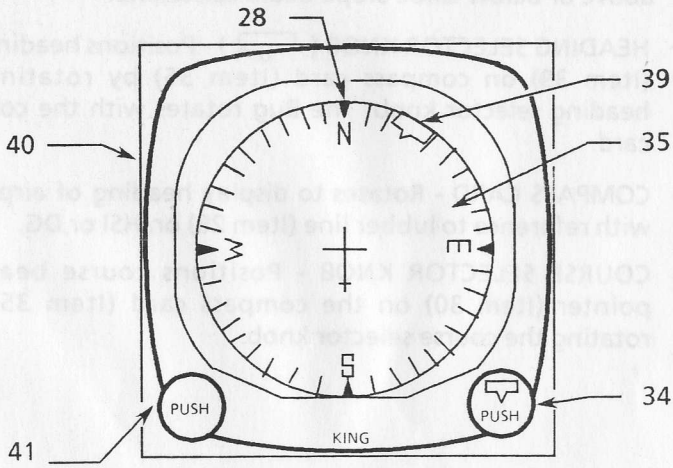

Figure 9.7.6 - KG 107 DG

Item 37 - COURSE DEVIATION BAR (D-BAR) - The center portion of omni bearing pointer moves laterally to pictorially indicate the relationship of airplane to selected course. It indicates in degrees of angular displacement from VOR radials and localizer beams or displacement in nautical miles from RNAV courses.

Item 38 - COURSE DEVIATION SCALE - A course deviation bar displacement of 5 dots represents full scale (VOR = ± 10° ; LOC = ± 2.5° ; RNAV = 5 NM ; RNAV APR = 1.25 NM) deviation from beam centerline.

Item 39 - HEADING BUG - Moved by ⟲ knob (Item 34) to select desired heading.

Item 40 - KG 107 NON-SLAVED DIRECTIONAL GYRO (DG) - Provides a stable visual indication of airplane heading to the pilot. The gyro is air driven.

Item 41 - GYRO ADJUSTMENT KNOB (PUSH) - When pushed in, allows the pilot to manually rotate the gyro compass card (Item 35) to correspond with the magnetic heading indicated by the magnetic compass.
The unslaved compass card must be manually reset periodically to compensate for precessional errors in the gyro.

Item 42 - VOR / LOC / GLIDE SLOPE INDICATOR - Provides rectilinear display of VOR / LOC and Glide Slope deviation.

Item 43 - COURSE INDEX - Indicates selected VOR course.

Item 44 - COURSE CARD - Indicates selected VOR course under course index.

Item 45 - GLIDE SLOPE DEVIATION NEEDLE - Indicates deviation from ILS Glide Slope.

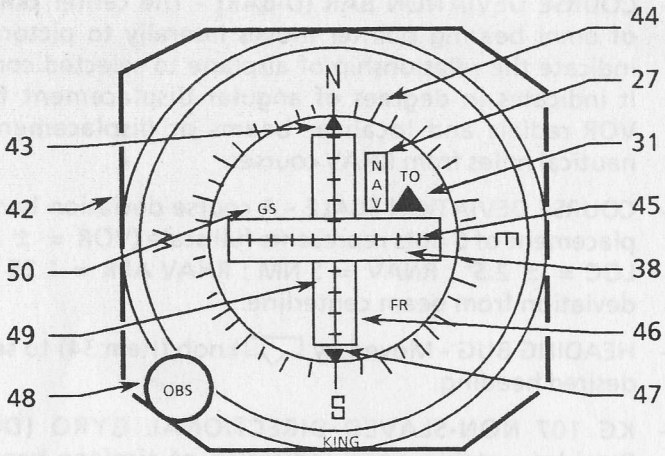

Figure 9.7.7 - KI 204 / 206 VOR / LOC / GS INDICATOR

Item 46 - GLIDE SLOPE SCALE - Indicates displacement from Glide Slope beam center. A Glide Slope deviation needle displacement of 5 dots represents full scale (0.7°) deviation above or below Glide Slope beam centerline.

Item 47 - RECIPROCAL COURSE INDEX - Indicates reciprocal of selected VOR course.

Item 48 - OMNI BEARING SELECTOR (OBS) KNOB - Rotates course card to selected course.

Item 49 - COURSE DEVIATION NEEDLE - Indicates course deviation from selected omni course or localizer centerline.

Item 50 - GLIDE SLOPE (GS) FLAG - Flag is in view when the GS receiver signal is inadequate.

The airplane MAIN SWITCH function is unchanged and can be used in an emergency to shut off electrical power to all flight control systems while the problem is isolated.

The AUTOPILOT MASTER switch supplies power to the AUTOPILOT (A / P) circuit-breaker.

The following circuit-breakers are used to protect the following elements of the KING KAP 100 Autopilot :

LABEL	FUNCTION
A / P	Supplies power to the KC 190, the autopilot roll servo, and the TRIM circuit-breaker.
TRIM	Supplies power to the optional manual electric pitch trim system.
HSI	Supplies power to the optional KCS 55A Compass System.

SECTION 2
LIMITATIONS

These limitations complete those of standard airplane described in Section 2 "Limitations" of the basic Flight Manual.

A - The autopilot must be OFF during take-off and landing.

B - It is forbidden to operate TEST button in flight.

C - Maximum fuel imbalance :

20 U.S Gal 75 litres	(TB 20-TB 21)	6 U.S Gal 23 litres	(TB 10)

D - Autopilot maximum airspeed limitation :

175 KIAS 322 km/h	(TB 20-TB 21)	150 KIAS 278 km/h	(TB 10)

Placards :

NONE

SECTION 3
EMERGENCY PROCEDURES

These procedures complete those of standard airplane described in Section 3 "Emergency procedures" of the basic Flight Manual.

A - System with Autopilot only

- In case of Autopilot malfunction : (accomplish the two following items simultaneously)
  - . Airplane control wheel - GRASP FIRMLY and regain airplane control.
  - . AP ENG button (AP DISC button on TB 10 airplane) - PRESS to disengage autopilot.

B - Systems with Autopilot and optional manual electric trim

- In case of Autopilot malfunction : (accomplish the two following items simultaneously)
  - . Airplane control wheel - GRASP FIRMLY and regain airplane control.
  - . AP DISC TRM INT Switch - PRESS.
- In case of manual electric trim malfunction :
  - . AP DISC TRM INT switch - PRESS and HOLD.
  - . TRIM circuit-breaker - PULL.
  - . Airplane - RETRIM manually.

CAUTION

MAXIMUM BANKS DUE TO AUTOPILOT MALFUNCTION :

Configuration	Maximum banks	
Cruise, climb, descent	60°	
Maneuvers	45° (TB 20-TB 21)	40° (TB 10)
Approach	30° (TB 20-TB 21)	20° (TB 10)

SECTION 4
NORMAL PROCEDURES

These procedures complete those of standard airplane described in Section 4 "Normal procedures" of the basic Flight Manual.

A - Preflight (Perform prior to each flight)

- GYROS - Allow 3-4 minutes for gyros to come up to speed.
- AUTOPILOT MASTER Switch - ON.
- PREFLIGHT TEST BUTTON - PRESS momentarily and NOTE :
  a) All annunciator lights on (TRIM annunciator flashing).
  b) After approximately 5 seconds, all annunciator lights off except AP which will flash approximately 12 times and then remain off.

  NOTE :

  If trim warning light stays on then the manual electric trim did not pass preflight test. The trim circuit-breaker should be pulled. The autopilot can still be used.
- MANUAL ELECTRIC TRIM (if installed) - TEST as follows :
  a) Actuate the left side of the split switch to the fore and aft positions. The trim wheel should not move on its own. Rotate the trim wheel manually against the engaged clutch to check the pilot's overpower capability.
  b) Actuate right side of split switch unit to the fore and aft positions. The trim wheel should not move on its own and normal trim wheel force is required to move it manually.
  c) Press the AP DISC TRM INT switch down and hold. Manual Electric Trim should not operate either nose up or nose down.
- AP ENG button - Press to engage autopilot.
- Control wheel - MOVE left or right to verify that the autopilot can be overpowered.

b) When equipped with DG

. OBS Knob - SELECT desired course.

. NAV Mode Selector Button - PRESS.

. Heading Selector Knob - ROTATE BUG to agree with OBS course.

NOTE :

When NAV is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-BAR is greater than 2 to 3 dots : the autopilot will annunciate HDG mode (unless HDG not selected) and NAV flashing ; when the computed capture point is reached the HDG annunciator will go out, the NAV annunciator will illuminate steady and the selected course will be automatically captured and tracked.

If the D-BAR is less than 2 to 3 dots : the HDG mode will disengage upon selecting NAV mode ; the NAV annunciator will illuminate steady and the capture / track sequence will automatically begin.

- Approach (APR) Coupling

a) When equipped with HSI

. Course Bearing Pointer - SET to desired course.

NOTE :

When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS 2 to the desired course.

. HEADING Selector Knob - SET BUG to provide desired intercept angle.

. APR Mode Selector Button - PRESS.

If the Course Deviation Bar is greater than 2 to 3 dots : the airplane will continue in HDG mode (or wings level if HDG not selected) with the APR annunciator flashing ; when the computed capture point is reached, the HDG will disengage, the APR annunciator will illuminate steady and the selected course will be automatically captured and tracked.

If the D-BAR is less than 2 to 3 dots : the HDG mode will disengage upon selecting APR mode ; the APR annunciator will illuminate steady and the capture / track sequence will automatically begin.

b) When equipped with DG

. OBS Knob - SELECT desired approach course.

. APR Mode Selector Button - PRESS.

. Heading Selector Knob - ROTATE Bug to agree with OBS course.

NOTE :

When APR is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-BAR is greater than 2 to 3 dots : the autopilot will annunciate HDG mode (unless HDG not selected) and APR flashing ; when the computed capture point is reached the HDG annunciator will go out, the APR annunciator will illuminate steady and the selected course will be automatically captured and tracked.

If the D-BAR is less than 2 to 3 dots : the HDG mode will disengage upon selecting APR mode ; the APR annunciator will illuminate steady and the capture / track sequence will automatically begin.

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- BC Approach Coupling

a) When equipped with HSI

. Course Bearing Pointer - SET to the ILS front course inbound heading.

NOTE :

When equipped with NAV 1 / NAV 2 switching and NAV 2 is selected, set OBS to the ILS front course inbound heading.

. HEADING Selector Knob - SET BUG to provide desired intercept angle.

. BC Mode Selector Button - PRESS.

If the Course Deviation Bar is greater than 2 to 3 dots : the airplane will continue in HDG mode (or wings level if HDG not selected) with BC annunciator steady and APR annunciator flashing ; when the computed capture point is reached the HDG will disengage, the BC and APR annunciators will illuminate steady and the selected course will be automatically captured and tracked.

If the D-BAR is less than 2 to 3 dots : the HDG mode will disengage upon selecting BC mode ; the APR BC annunciator will illuminate steady and the capture / track sequence will automatically begin.

b) When equipped with DG

. OBS Knob - SELECT the ILS front course inbound heading.

. BC Mode Selector Button - PRESS

. Heading Selector Knob - ROTATE Bug to the ILS front course inbound heading.

NOTE :

When BC is selected, the lateral operating mode will change from HDG (if selected) to wings level for 5 seconds. A 45° intercept angle will then be automatically established based on the position of the bug.

If the D-BAR is greater than 2 to 3 dots : the autopilot will annunciate HDG (unless HDG not selected) and BC modes with APR flashing ; when the computed capture point is reached the HDG annunciator will go out, the BC and APR annunciators will illuminate steady and the selected course will be automatically captured and tracked.

If the D-BAR is less than 2 to 3 dots : the HDG mode will disengage upon selecting BC mode ; the BC and APR annunciators will illuminate steady and the capture / track sequence will automatically begin.

- Missed Approach

a) Autopilot - DISENGAGE by pressing AP ENG switch (AP DISC TRM INT switch on TB 10 airplane), or optional AP DISC TRM INT switch.

b) MISSED APPROACH - EXECUTE.

c) AP ENG Button - PRESS (if AP operation is desired)
Note AP annunciator ON.

- Before landing

a) Autopilot - DISENGAGE by pressing AP ENG switch (AP DISC TRM INT switch on TB 10 airplane), or optional AP DISC TRM INT switch.

SECTION 5

PERFORMANCE

The installation and the operation of the autopilot do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Flight Manual.

FLIGHT MANUAL

SECTION 9

SUPPLEMENT 13

GROUND POWER RECEPTACLE

This supplement includes only the general, limitations, emergency procedures, normal procedures and performance in addition to those of SOCATA airplane in its standard version.

Sections 2 - 3 - 4

Pages 9.13.4 to 9.13.6 approved by DIRECTION GENERALE DE L'AVIATION CIVILE (D.G.A.C.).

Approval :

P. O

22 AOUT 1988

Date : .....

DIRECTION GENERALE DE L'AVIATION CIVILE ET DU CONTROLE TECHNIQUE
SERVICE DE LA NAVIGABILITE ET DE LA NORMALISATION
G. RAT
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FLIGHT MANUAL

SECTION 9

SUPPLEMENT 13

GROUND POWER RECEPTACLE

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SUPPLEMENT

GROUND POWER RECEPTACLE

"OPTIONAL EQUIPMENT N° 519"

TABLE OF CONTENTS

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SECTION 1
GENERAL

The ground power receptacle permits the use of an external power source for cold weather starting and during lenghty maintenance work on the electrical and avionics equipment. The receptacle is located under the baggage compartment access door, near the anti-twist edge.

NOTE :

If no avionics equipment is to be used or worked on, the avionics power switches should be turned off or the circuit-breakers should be released. If maintenance is required on the avionics equipment, it is advisable to utilize a battery cart external power source to prevent damage to the avionics equipment by transient voltage.

NOTE :

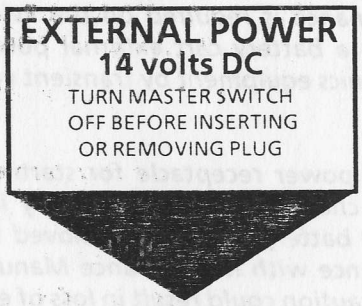
Use of the ground power receptacle for starting an airplane with a "dead" battery or charging a "dead" battery in the airplane is not recommended. The battery should be removed from the airplane and serviced in accordance with Maintenance Manual procedures. Failure to observe this precaution could result in loss of electrical power during flight.

SECTION 2

LIMITATIONS

These limitations complete those of standard airplane described in Section 2 "Limitations" of the basic Flight Manual.

The following information must be presented in the form of a placard located above the ground power receptacle access door.



SECTION 3

EMERGENCY PROCEDURES

The installation and the operation of the ground power receptacle do not change the basic emergency procedures of the airplane described in Section 3 "Emergency procedures" of the basic Flight Manual.

SECTION 4
NORMAL PROCEDURES

These procedures complete those of standard airplane described in Section 4 "Normal procedures" of the basic Flight Manual.

The engine starting using auxiliary power does not change the basic procedures, however :

WARNING

IF THE BATTERY HAS BEEN REMOVED, BEFORE CONNECTING THE AUXILIARY POWER SOURCE, ISOLATE USING RUBBER OR PLASTIC, OR CHECK THE ISOLATION OF THE ELECTRICAL HARNESS TERMINAL LUGS.

- The avionics power switches should be turned off, and the battery switch turned off.
- Let the engine run with the auxiliary power only if the "radio master" is off.

WARNING

WHEN TURNING ON THE BATTERY SWITCH, USING AN EXTERNAL POWER SOURCE, OR PULLING THE PROPELLER THROUGH BY HAND, TREAT THE PROPELLER AS IF THE MAGNETO SWITCHES WERE ON. DO NOT STAND, NOR ALLOW ANYONE ELSE TO STAND, WITHIN THE ARC OF THE PROPELLER, SINCE A LOOSE OR BROKEN WIRE, OR A COMPONENT MALFUNCTION, COULD CAUSE THE PROPELLER TO ROTATE.

The ground power receptacle circuit incorporates a polarity reversal protection. Power from the external power source will flow only if the ground power receptacle is correctly connected to the airplane. If the plug is accidentally connected backwards, no power will flow to the electrical system, thereby preventing any damage to electrical equipment.

The following check should be made after starting engine and removing the external power source, if there is any question as to the condition of the battery.

1 - Battery Switch-breaker - "OFF".

2 - Taxi and Landing Lights switch-breakesr - "ON".

3 - Engine RPM - REDUCE the engine to idle.

4 - Battery Switch-breaker - "ON" (with taxi and landing lights turned on).

5 - Engine RPM - INCREASE the engine to approximately 1500 RPM.

6 - Voltmeter - CHECK.

NOTE :

If the voltmeter is in red sector : remove and charge the battery.

7 - Landing lights switch-breaker - "OFF".

SECTION 5
PERFORMANCE

The installation and the operation of the ground power receptacle do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Flight Manual.

FLIGHT MANUAL

SECTION 9

SUPPLEMENT 13

GROUND POWER RECEPTACLE

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Sections 2 - 3 - 4

Pages 9.13.4 to 9.13.6 approved by DIRECTION GENERALE DE L'AVIATION CIVILE (D.G.A.C.).

Approval :

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DIRECTION GENERALE DE L'AVIATION CIVILE
SERVICE DE LA NAVIGABILITE ET DU CONTRÔLE TECHNIQUE
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SECTION 9

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GROUND POWER RECEPTACLE

LIST OF AMENDMENTS

Edition 1 of January 31, 1988

Pages	Description
9.13A 9.13.1 to 9.13.6	New presentation
9.13B to 9.13D	Adding of necessary pages for the supplement approval

D.G.A.C. approval :

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SUPPLEMENT

GROUND POWER RECEPTACLE

"OPTIONAL EQUIPMENT N° 519"

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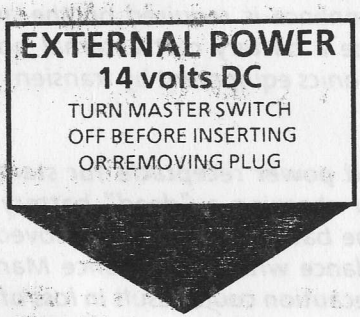

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SECTION 5

PERFORMANCE

The installation and the operation of the ground power receptacle do not change the basic performance of the airplane described in Section 5 "Performance" of the basic Flight Manual.

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