

SUD AVIATION CARAVELLE 10 R PANEL made for Allied Fs Group plane

v 3.0 for MS Flight Simulator X
(not available for previous versions of FS)
(Freeware - Benoît Gaurant - 04-2017)

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ABOUT CARAVELLE 10R

GENERALITIES



This Caravelle 10R panel is mostly based on instrumentation of the German company "Aero Lloyd" according to photographs. Some gauges could be different depending on companies.

Although this cockpit is only available for 10R, it is quite close to the previous 6R and the following 11R one. 10B3 and Super12 versions had totally new hydraulic and electrical systems while III and VI-N had a quite different cockpit.

Caravelle 10-R is based technically on 6-R. This new version (previously named 10B1-R) had new Pratt & Whitney JT8 engines.

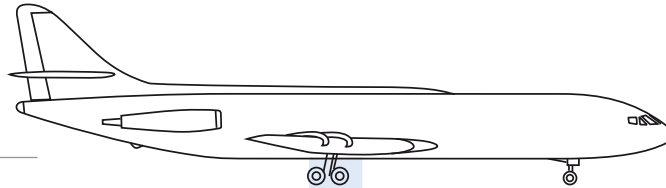
10B1-R had been the base version for the future 10B3. 10R were built in 1965 to offer companies a cheaper plane range than 10B3 although equipped with the same new JT8 engines.



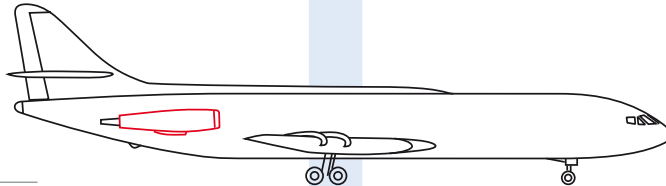
CARAVELLE HISTORY

GENERALITIES

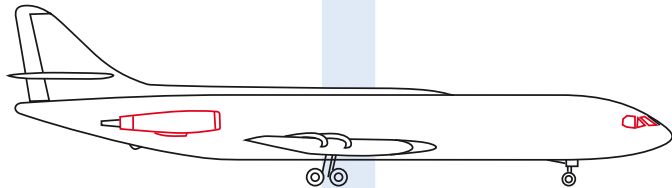
III
first series



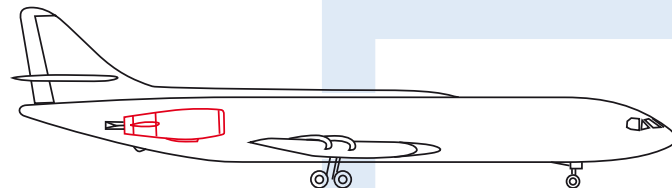
VI-N
more powerful
Avon engines,
and stronger
electrical system



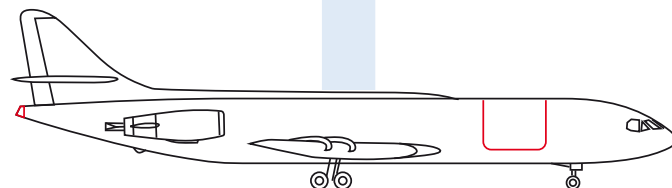
6-R
Avon engines
with reverses,
ground spoilers,
new cockpit



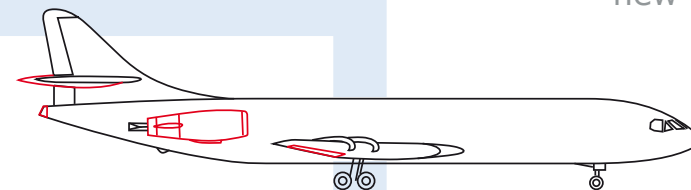
10-R
JT8
Pratt & Whitney
engines



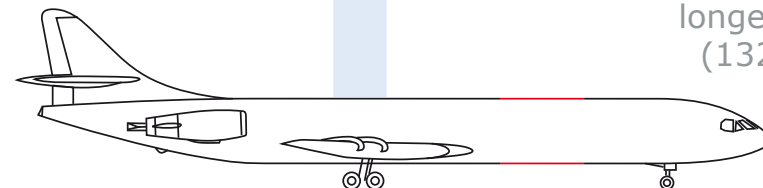
11-R
cargo door
and APU



10-B3
JT8 Pratt & Whitney
engines,
new electrical system,
new hydraulic system,
new flaps,
tail cone,
and APU



12
longer version
(132 seats)



MORE INFOS AND FEATURES

GENERALITIES

This panel has been especially built for Allied FsGroup planes.

Their planes could be found at "Historic Jetliners Group" site: www.simviation.com/hjg/download.htm

You can see Caravelle cockpit photographs at : <http://www.airliners.net>

Almost every gauges have been especially built to be as close as I could to the real plane and almost everything should be at the right place to look like the real panel according to the documentation.

It has to be said anyway, that flights on this plane could be managed by 3 people (captain, first officer, and flight engineer) and you will be alone to do all their tasks !... So, be grateful the panel has been simplified even if almost every systems are there in this new version.

When loading the panel, a window allows to choose a start configuration. Select COLD START to enter a cockpit in parking configuration (all systems off and engines off). Select EASY START to enter a cockpit with all systems on and engines on (in flight or ready to take off configuration).

To load the plane, it is better to create a flight [FS GEN1&2 ON] choosing first a default FS2004 plane (B737 for instance) and then, once the flight is loaded, choose the Caravelle from the "Aircraft" menu.



CLIC AREAS TO DISPLAY AND HIDE PANELS



GENERALITIES

Although the main instruments are on the screen, some major parts of the panel are located in separate windows. As a matter of fact the real panel is divided in different parts such as the upper panel, the pedestal and the flight engineer panel which is on the right side of the cockpit.

To display and hide those separate panels, some invisible clic areas are spread all over the main panel.

Due to the number of clic areas, it could be easy to forget each position. To refresh one's memory, it is possible to display/hide all those clic areas by clicking onto the GPWS warning lights just in front of the captain position, in the center of the main panel. Clic again to hide the clic areas.

Those external panels are :

- the gear indicators (on the right side in the real cockpit)
- the pedestal (PED.)
- the tadg and battery switch (TADG BAT.S.)
- the electrical panels (ELEC.)
- the main fuel panel (FUEL)
- the first part of the upper panel (UP2)
- the second part of the upper panel (UP3)
- the clock and set altitude window
- the autopilot only (AP)
- the failure and start window (FAIL PANEL)
- FS GPS

PANELS OVERVIEW WINDOW

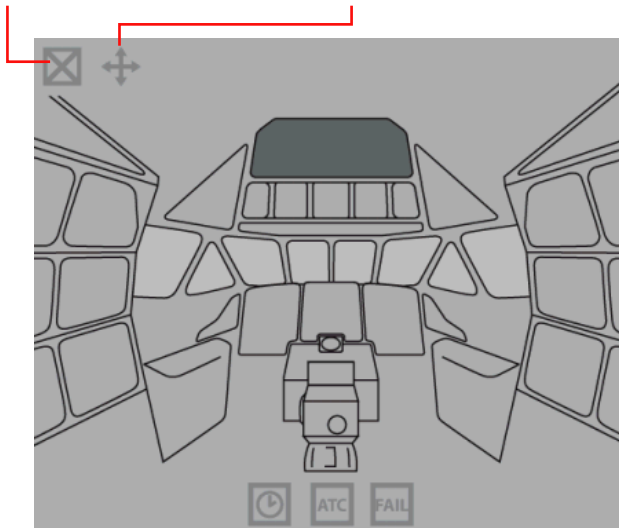
overview window display area



click here to activate the "always visible" mode

close window icon

drag window icon



GENERALITIES

Another way to display and hide additional windows is a panels overview mode. This allows to call those additional windows by clicking onto the corresponding areas of their location in the real cockpit.

This will provide the same result as click areas located on the main panel.

Fly the mouse over the cockpit areas of the panels overview and click onto the dark areas to display or hide additional windows corresponding to this part of the real cockpit.

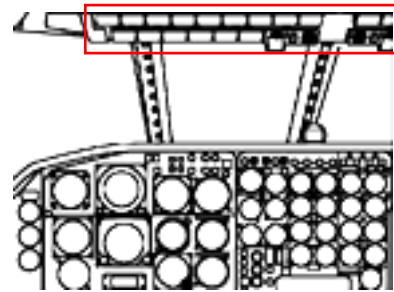
To automatically display the panels overview window, lead the mouse cursor (without clicking) along the upper edge of the main screen.

This little window can be closed by clicking onto the X icon and it could be dragged by clicking onto the drag cross icon.

By default, overview window disappears as soon as mouse click is done onto a dark gray click area. It is yet possible to maintain the window always visible once one click is done onto the display/hide click areas of the main panel (see picture beside). It is possible to click again onto this same area to hide those main panel blue click areas, overview window will remain in "always visible" mode until it will be closed by clicking onto the X icon.

It is possible to disable the overview display area (upper edge screen) by rightclicking onto this area (1 rightclick). Once overview gray window will be closed, it will never appear again. Click with the left mouse button on this same display area (upper edge screen) to active it again.

FS 2004 ADAPTATION

ALARMS

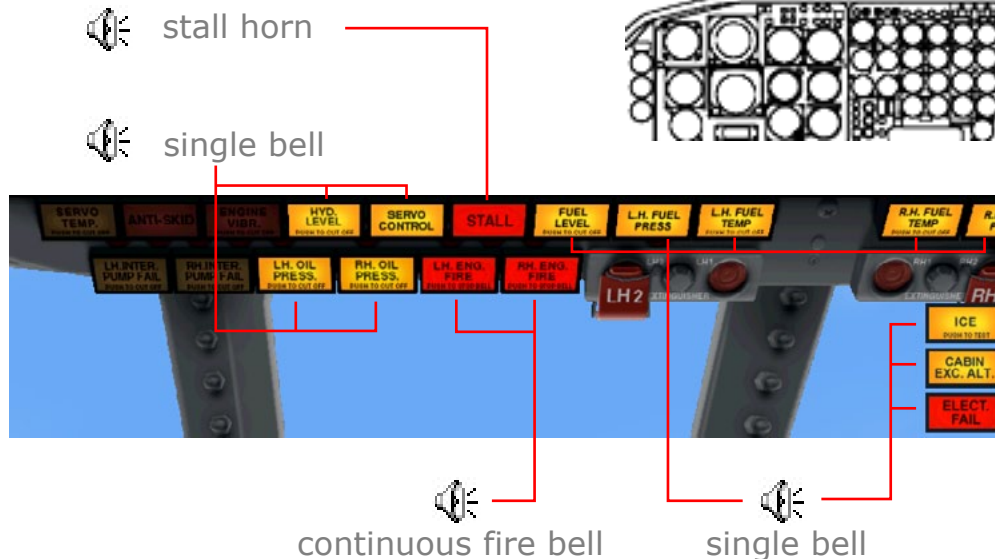
Alarm panel is located just above the main windows of the cockpit. In the real plane, alarms are mainly located in relation with the corresponding failure, so that left warnings (such as "left engine fire") are located at the left side, just above the captain, while right warnings are located at the right side, above the first officer.

For better convenience, those locations have been slightly modified to keep all the main information on the same screen.

One clic on the lights with PUSH TO CUT OFF written on it stop the alarm and rearm the warning sound and light for another failure.

One clic on the PUSH TO STOP BELL lights will stop the continuous fire bell.

As soon as an orange light is on (as well as ELECT. FAIL), a single bell warning sound is heard. As long as an orange warning light (or red ELECT. FAIL) is on, the warning sound could not be played for a second warning until it has been rearmed. Fire warnings trigger a fire bell sound and STALL triggers the stall horn warning sound.



magnetic indicators



circuit on



circuit off

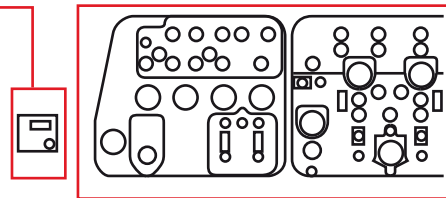


disagree with
switch position
or no electricity

TADG IIS
POWER SUPPLY
switch
and light



GENERALITIES



ELECTRICAL SYSTEM

Electrical system is almost entirely there. It is almost the same as 6-R, most 6-N and some 3. Electrical switches are mainly located on the flight engineer panel at the right side of the cockpit.

In normal flight, electrical power is provided by the 2 engines thanks to 2 28V DC generators (1 by engine): GENE 1 & GENE 2 as well as 2 alternators which provide also DC current thanks to 2 transformers.

2 normal and 1 stand-by inverters provide 115V alternative current (AC) from 28V DC one provided by the generators.

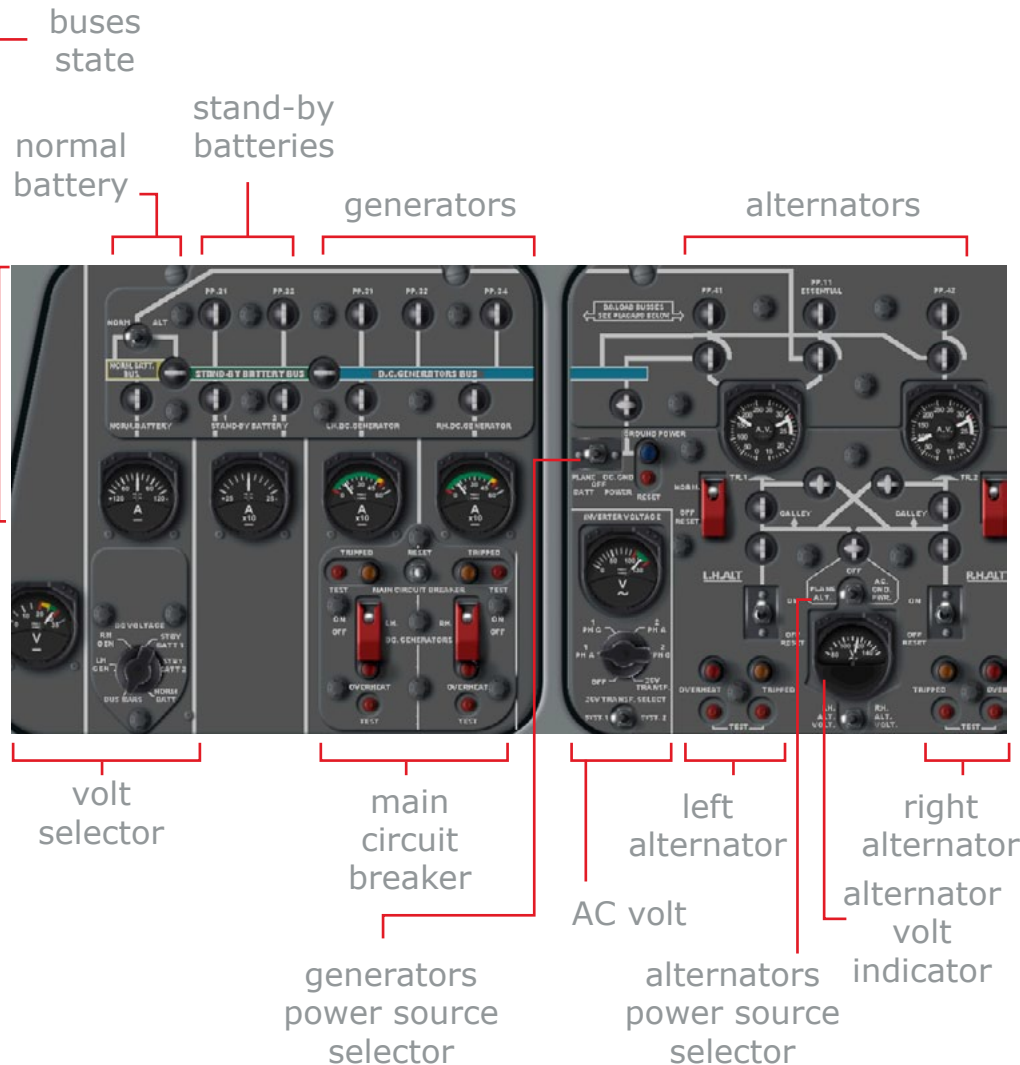
When the engines are off, electrical power is provided by 1 normal battery and two stand-by batteries to main instruments (in emergency case).

In this case, to avoid requiring too much power from batteries and allow engine start up, enough electrical power could be provided by an external ground power source. However, following a special procedure, a battery commutator allows the engines start up taking power from the 5 stand-by batteries without any external electrical power source.

When on ground with engine off, some instruments requiring lots of power could be switched off (OFF position) with a switch called TADG IIS POWER SUPPLY (located on a separated panel) to use less power from the batteries (this is similar to the fs2004 "avionics" switch).

This switch disconnects the HSI, VOR1/2 and ADF1/2 indicators as well as the autopilot.

As this electrical system is independent from FS one, FS electrical failure won't trigger anything in this panel.



DIRECT CURRENT (DC)

ELECTRICAL SYSTEM

bus state :

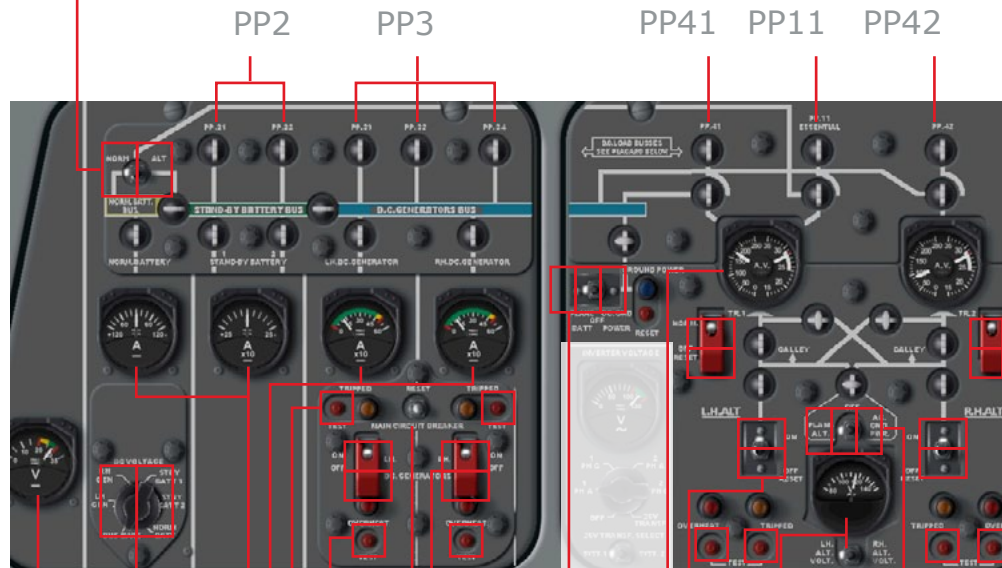


off



powered

stand-by selector
(1: PP11 is powered
by normal batt.
2: PP11 is powered
by stand-by batt.)



DC volt ind.
and selector

batteries
DC amps

generators
DC amps

tests

breaker
reset
switch

generators
source
selector

line switch

alt1 line
DC
amps & volt
indicators

volt ind.

alternators
source
selector

alternator
line switches
transformers
switch

Power is mainly provided by the 2 Generators. Powered by the 2 engines, the 2 generators power the DC GENERATOR BUS also called PP3 (PP means Primary Power). Alternators directly power PP11 essential, PP41 and PP42 buses.

In case of a failure on both engines, 5 stand-by batteries power PP2 bus and a normal battery powers PP1 bus in order to power the main systems.

In normal conditions, those 3 primary buses are linked so that it is 1 single bus.

Without any generators, PP3 will be cut off, PP2 is on if batteries commutator is in 28V position and PP1 is on if the electrical source selector is in PLANE BATT position.

If on ground with engines off and with no ground power on, it is recommended to keep the TADG IIS switch in OFF position to preserve some power from batteries. With TADG IIS in ON position, batteries could provide power during about half an hour, this could be 3 times more with the ALIM.PA IIS in OFF position.

A red light is on to warn the corresponding instruments are not powered.

2 DC amps indicators shows amps provided by batteries and 2 other ones amps provided by the generators.

1 DC Volt indicator allows to check power in the part of the electrical system selected with the selector located below.

A main circuit breaker can automatically cut off one of the generators in case of problem (a red TRIPPED light will be on as well as the warning ELEC light). A RESET switch allows to reset the breaker. It is also possible to cut off manually each generator (overtemp. case) with a line switch (under red bonnet).

DIRECT CURRENT (DC) SPECIFIC FEATURES

ELECTRICAL SYSTEM

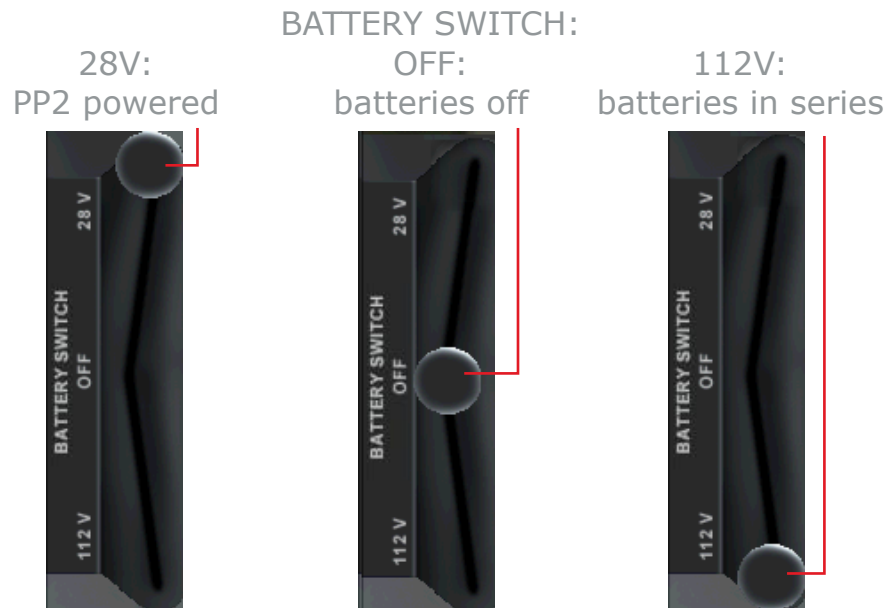
Primary buses PP1, PP2 and PP3 power groups of smaller buses (for instance, PP3 powers PP31 and PP32).

In flight, in normal conditions, every buses are powered, but on ground or in case of 1 or both generators), some buses are cut off in order to reduce the amount of power needed to preserve the working source still alive.

On ground, when power is provided by generators, PP32 is always cut off.

In flight, in case of a generator failure, PP32 is cut off. In case of both generator failure, PP3 is cut off.

In case of both alternators failure, PP11 essential, PP41 and PP42 are powered by the 2 generators. In case of both generators failure, alternators don't power PP3 witch will be then cut off.



In normal conditions, electrical power needed for engines start up is given by an external 112V ground power source (see also "external power" part).

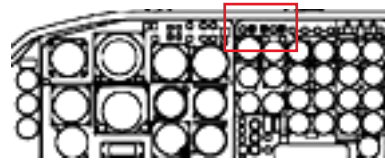
However, engines start up could be done from batteries power only (see also "engines" part).

In this case, battery switch is set to 112V, then the 5 stand-by batteries will be connected in series (unlike the 28V position where each stand-by battery powers separately PP2) in order to power only the engines starter.

In OFF position, stand-by batteries are cut off from the plane buses.

ALTERNATIVE CURRENT (AC)

ELECTRICAL SYSTEM

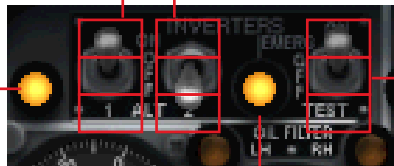


2 (main) inverters provide 115V alternative current (AC) to AC buses from 28V direct current (DC).

inverters switches are located at the upper center part of the main panel.

INVERTERS:

main INVERT 1 switch main INVERT 2 switch



EMERG INVERT
stand-by
inverter
switch

main inverter 1
(or emerg. invert)
failure light main inverter 2
(or emerg. invert)
failure light

Inverter 1 powers VP1,VP2, VP3 and VP4 buses if INVERT 1 switch (left switch) is in "ON" position.

Inverter 2 (center switch) powers in normal conditions VP6 and VP7 but it could powers VP1,VP2, VP3 and VP4 if INVERT 1 switch is in "ALT" position or in case of inverter 1 failure if INVERT 1 switch is in ON position and INVERT 2 switch is in ALT position. In those cases, VP6 and VP7 buses are cut off. If INVERT 2 switch is in ON position (and if INVERT 1 switch is not in ALT position), inverter 2 will power VP6 and VP7 whatever inverter 1 state.

A third inverter (stand-by inverter, powered by batteries) powers VP3 and VP4 in case of normal inverters failure if EMERG INVERT switch is in "ON" position (right switch).

In normal condition, this stand-by inverter does not work until normal inverters fail.

If EMERG INVERT switch is "TEST" position, stand-by inverter will work.

In case of main inverter 1 or 2 failure (if the corresponding switch is in ON or ALT position), an orange light will be on beside the corresponding switch. In case of emergency inverter failure, both light will be on.

On electrical panel, an AC Volt indicator allows to check power in VP3 if the selector is in PH A (1 or 2) position and to check VP4 when the selector is in PH C (1 or 2) position. When the selector is in 26V TRANSF. position, VP5 power can be checked.

AC Volt
indicator

AC Volt
selector



inactive

ELECTRICAL SYSTEM

On ground, electrical power can be provided by a 28V external source from the airport.

To ask for this, 2 click areas (either located on electrical panel below the DC GND POWER green light, or located on the red GND PLUG DOOR light) allow to simulate that an external electrical power source is required by the crew.

To be allowed to obtain the connection to an external source, the plane should be on ground without moving and with at least 1 engine off.

When external power is plugged to the plane, a blue light is on (located at the right side of the generators power source selector) to show the 28V ground power unit is plugged to the plane.

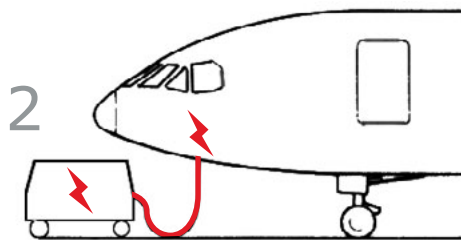
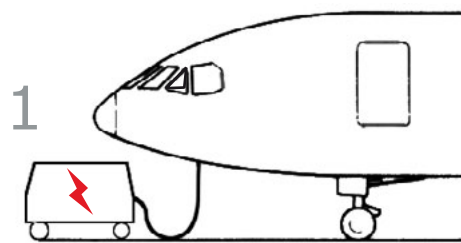
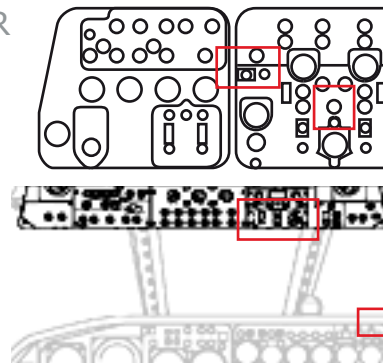
The red GND PLUG DOOR light located at the upper right part of the main panel will also be on to signal that the ground external source plug door is open.

To connect the external power to the circuits, the source selector must be in DC GND POWER position. To power with ground power unit the circuits witch should be powered by alternators, alternators power source selector should be set on AC GND POWER position.

To start engines, a 112V ground power is also required. In this simulation, both (112V and 28V) are asked and plugged together (in reality, there are 2 different plugs : 28V for plane circuits and 112V only for engine starter).

A green light (located at the center of the engine start panel) allows to confirm engine starter is powered by 112V ground power.

EXTERNAL POWER



"asking for external power" clic area

GND PLUG DOOR light (ground plug door is open)



external power light



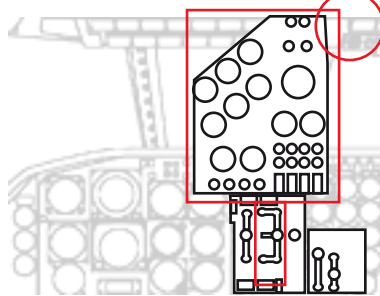
source selector on DC and AC GND POWER position

112V ground power light



YELLOW selector

GENERALITIES



HYDRAULIC SYSTEM

Hydraulic pressure is provided by 4 circuits named with a color code for each one.

GREEN and BLUE circuits are the normal ones.

in the GREEN circuit, 2 pumps powered by each engine supply pressure to the following systems :

- flight commands
- speed brakes
- flaps
- gear
- brakes
- nose wheel steering
- stairs

in the BLUE circuit, 2 pumps powered by each engine supply pressure to flight commands only.

RED and YELLOW circuits are the emergency ones.

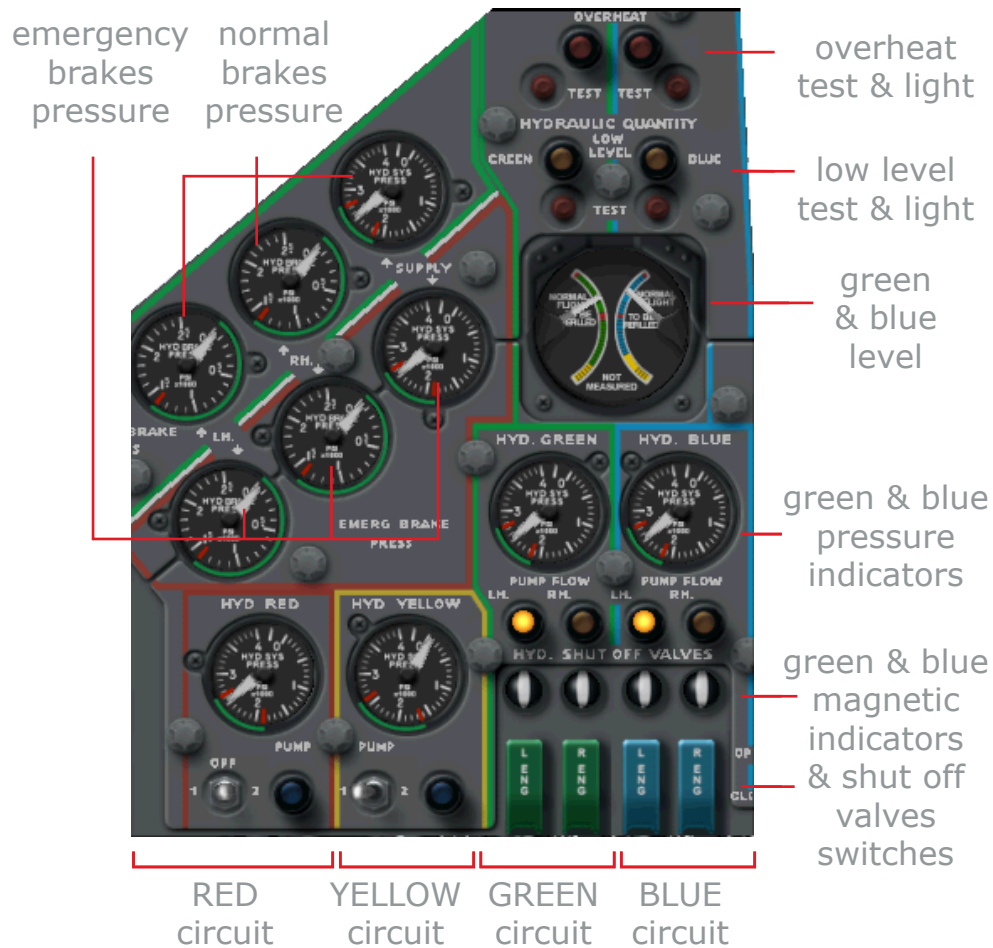
in the RED circuit, 1 electro-pump supplies pressure to flaps, gear (exit only) and brakes.

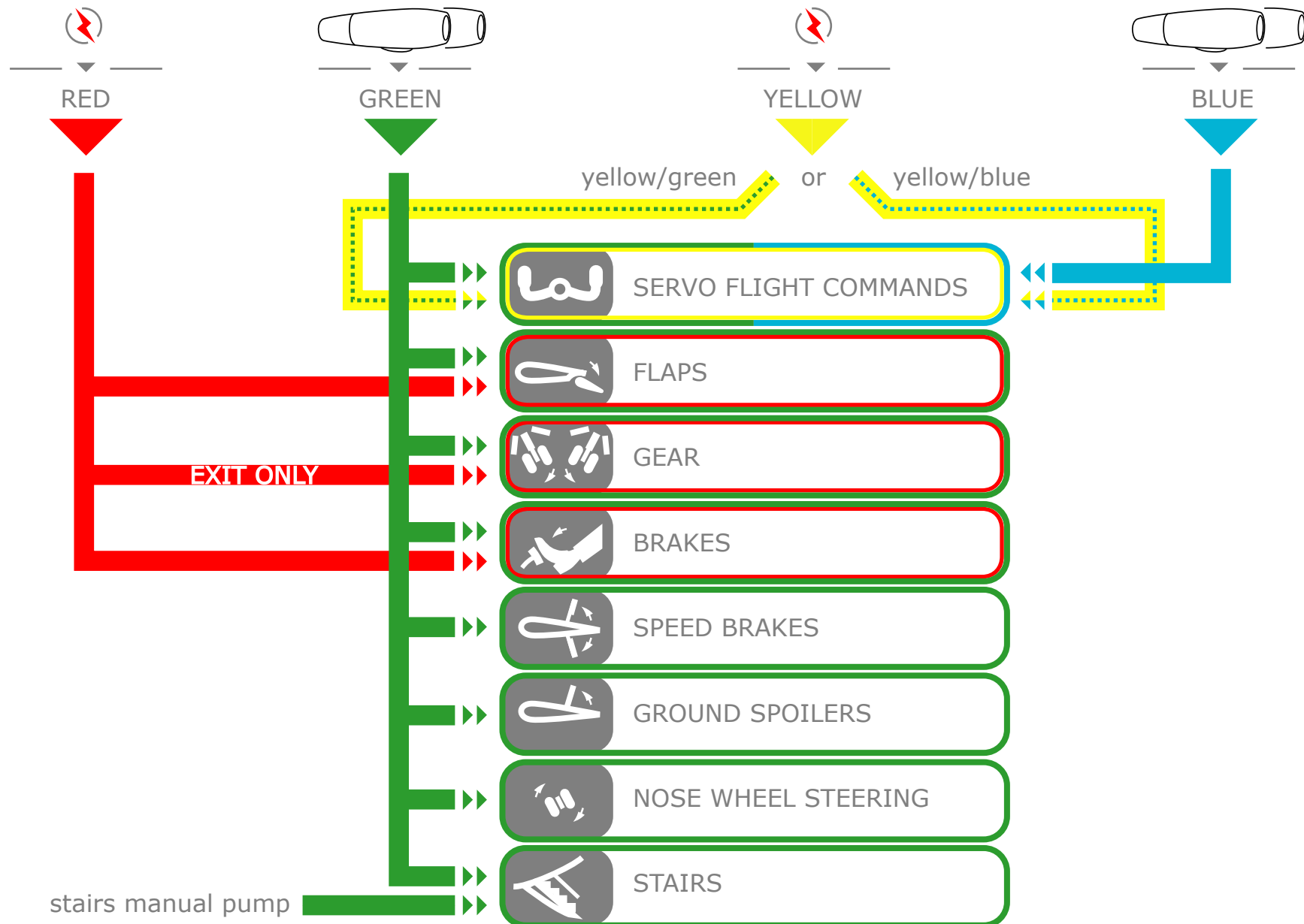
in the YELLOW circuit, 1 electro-pump to supplies pressure to the flight commands:

- either in YELLOW/GREEN (GREEN circuit failure case)
- or in YELLOW/BLUE (BLUE circuit failure case)

Because of the way it is built, it is only possible to select 1 YELLOW circuit at the same time.

A manual pump allows to open the rear stairs without any green hydraulic pressure (this pump is missing in this panel).



CIRCUITS DIAGRAM | **HYDRAULIC SYSTEM**

GREEN CIRCUIT

HYDRAULIC SYSTEM

Green circuit is the main one. It provides pressure to the flights commands and all the systems.

Green hydraulic liquid is hold in one reservoir which is pressurized with air taken from the engines.

The system is built to always keep air pressure once the reservoir is pressurized.

To work properly, the circuit needs a liquid quantity above the red mark of the liquid level indicator.

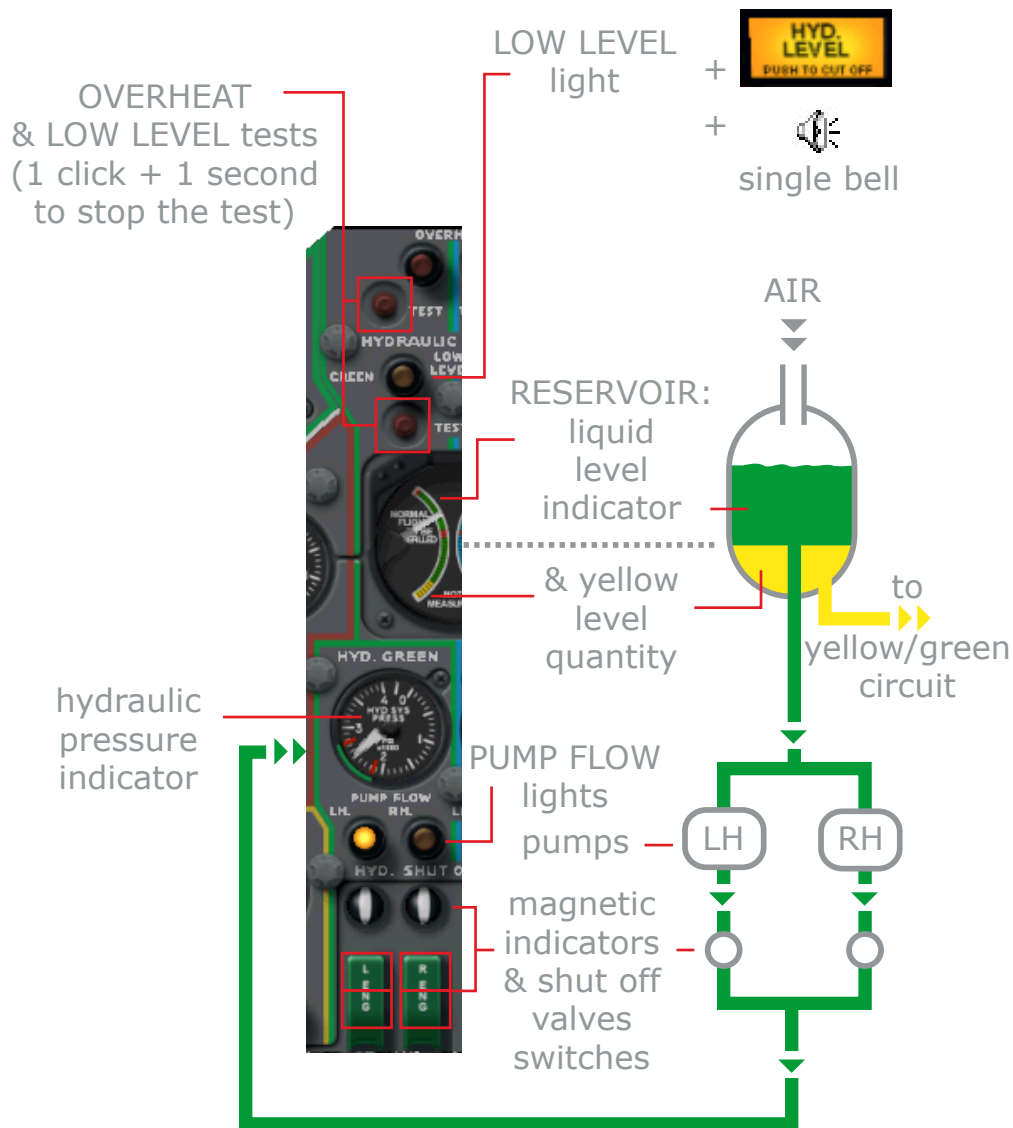
One LOW LEVEL warning light will be on in case of low hydraulic level as well as the HYD.LEVEL warning light and the single bell warning sound.

Hydraulic pressure is provided by 2 pumps (each one powered by one engine) who pump hydraulic liquid in the upper part of the reservoir.

To work properly, the system needs that pressure remains in the green part of the indicator.

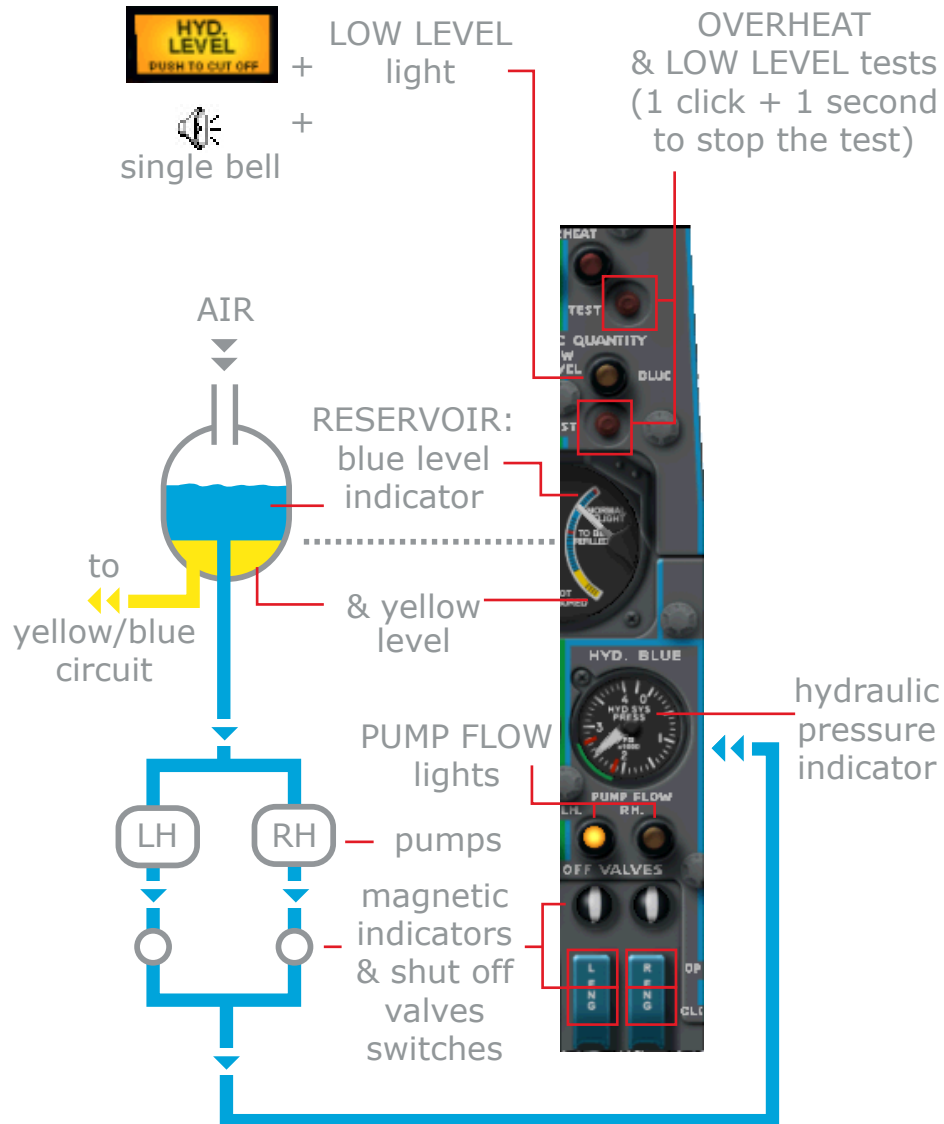
2 PUMP FLOW (hydraulic panel) warning lights show one pump low pressure. If hydraulic pressure is lower than 1750 psi in the circuit, a red GREEN LOW PR will be on in the SERVO CONTROL part of the pedestal (see the flight commands part).

Each pump could be isolated from the reservoir with a shut off valve. The position of each valve is shown by the magnetic indicators.



BLUE CIRCUIT

HYDRAULIC SYSTEM



BLUE circuit is built the same way as green one. It provides pressure to flight commands only.

Blue liquid is hold in one reservoir a little bit smaller than green one (less requirement than green circuit).

To work properly, the circuit needs a liquid quantity above the red mark of the liquid level indicator.

One LOW LEVEL warning light will be on in case of low hydraulic level as well as the HYD. LEVEL warning light and the single bell warning sound.

Hydraulic pressure is provided by 2 pumps (each one powered by one engine) who pump hydraulic liquid in the upper part of the reservoir.

To work properly, the system needs that the pressure remains around 2500 psi.

2 PUMP FLOW warning light show one pump low pressure. If hydraulic pressure is lower than 1750 psi in the circuit, a red BLUE LOW PR will be on in the SERVO CONTROL part of the pedestal (see the flight commands part).

Each pump could be isolated from the reservoir with a shut off valve. The position of each valve is shown by the magnetic indicators.

RED CIRCUIT

HYDRAULIC SYSTEM

RED circuit is the emergency one for flaps, gear exit and brakes.

Hydraulic liquid is hold in a reservoir like for the GREEN and BLUE circuits.

Red hydraulic liquid quantity is checked directly on the plexiglass window on the reservoir (not visible in this panel).

There is no low level warning for this circuit.

Red pressure is provided by one electro-pump powered by PP2 bus. The pump is selected on with a switch either on 1 or 2 position.

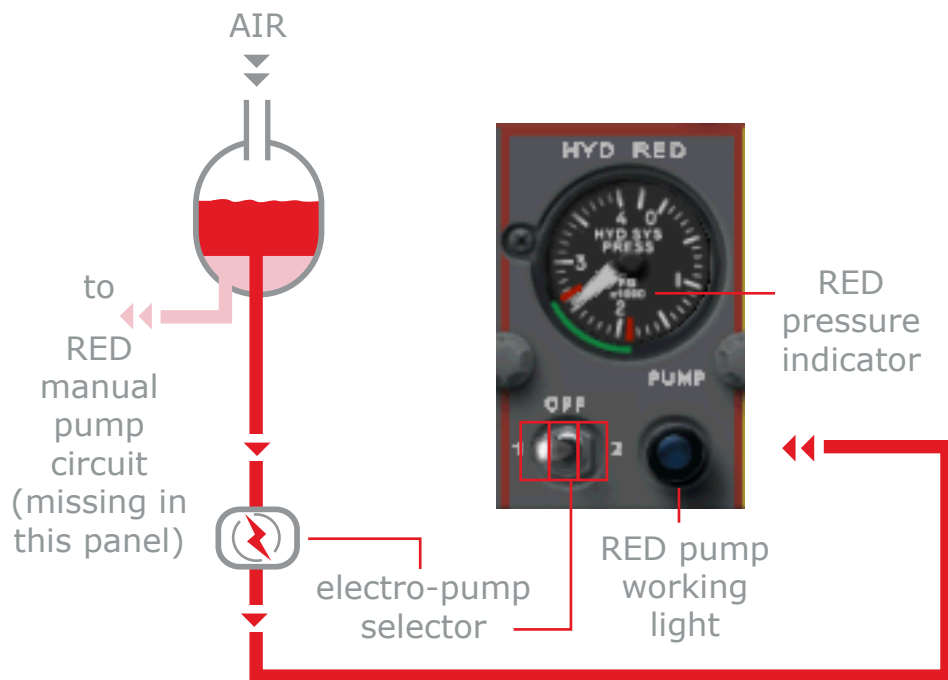
There should be always any pressure in the RED circuit. If GREEN circuit is alive, put the red selector in OFF position. There will be pressure in the circuit until any pressure will be required (by flaps, gear exit or brakes in emergency mode). In case of failure of GREEN circuit, the red selector should be set in 1 or 2 position and hold like this to power the pump in order to restore enough pressure when some is required.

A green light is on when the pump is working.

Red pressure vary depending on requirement needed by the working systems.

An indicator shows the pressure in the emergency brakes circuit.

In addition of the electro-pump RED circuit, another RED circuit with a manual pump exists in the real plane in case of failure of the electro-pump. This second RED circuit is not simulated in this panel..



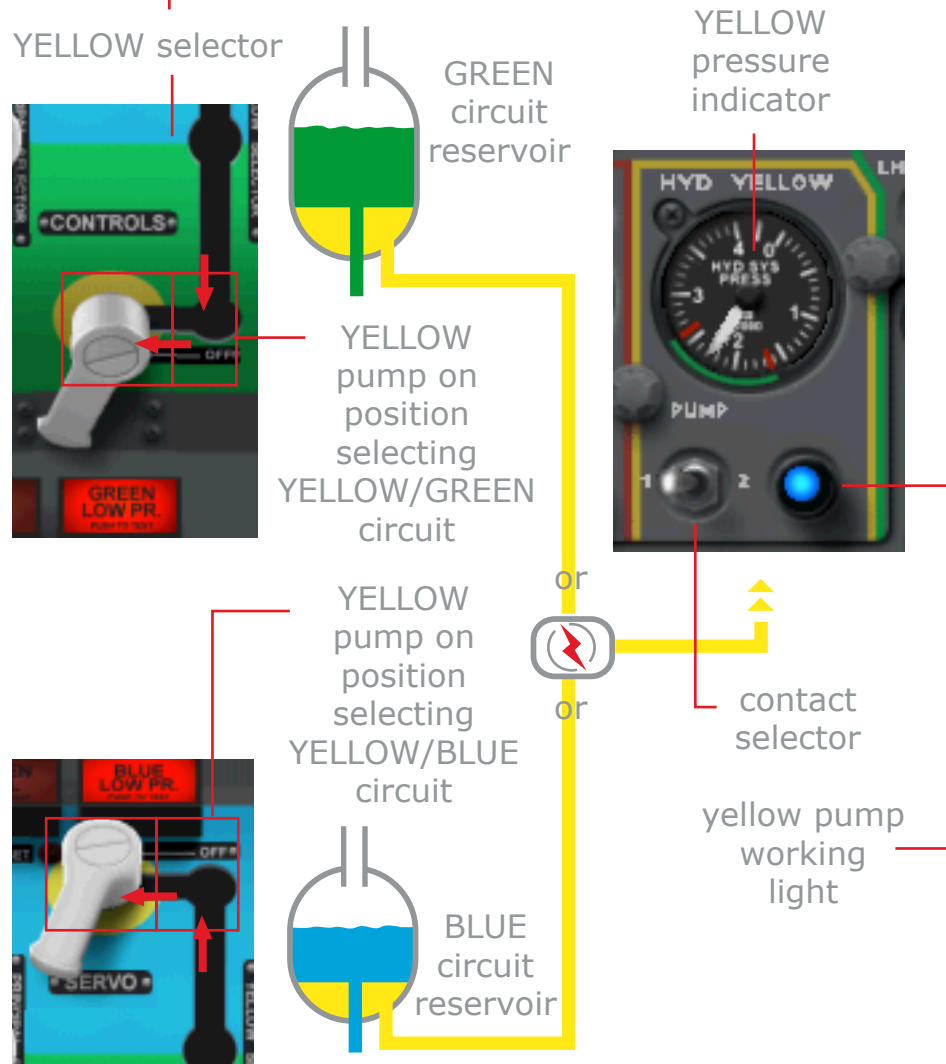
YELLOW CIRCUITS

HYDRAULIC SYSTEM

YELLOW circuit provides pressure to flight commands in case of failure of GREEN or BLUE circuit.

YELLOW/GREEN or YELLOW/BLUE circuit is powered depending on YELLOW selector position.

Pressure is provided by an electro-pump powered by PP2, it pumps in the yellow part of the corresponding reservoir.



To switch on one or the other YELLOW circuit (YELLOW/BLUE or YELLOW/GREEN), move the yellow selector (located in the SERVO CONTROL part of the pedestal) toward the red light which is on (this is the one corresponding to the failure) : GREEN LOW PRESSURE in case of GREEN circuit failure, or BLUE LOW PRESSURE in case of blue circuit failure. This will switch on the pump corresponding to the YELLOW circuit which has to be activated.

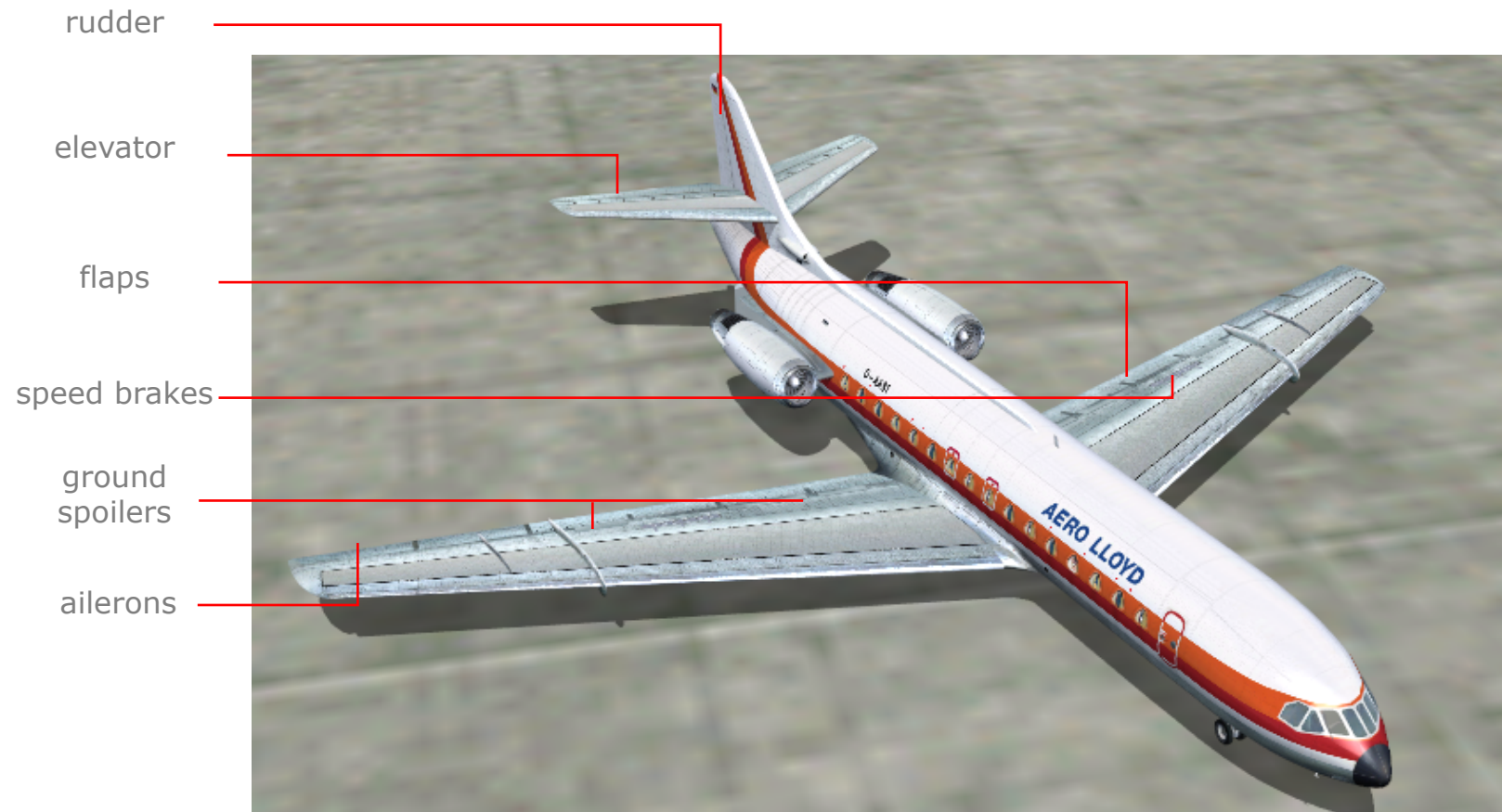
Until the yellow selector is not in up/left or down/left position (ON positions), no pump is on.

On the hydraulic panel, an indicator allows to check hydraulic pressure in the circuit.

A green light is on when the pump is working.

A contact selector with 2 positions located below each pressure indicator can be set either in 1 or 2 position without having any consequence on the simulation.

GENERALITIES | FLIGHT COMMANDS



SERVOS CONTROLS

FLIGHT COMMANDS

Commands concerning artificial feel and servos controls jam are located in the SERVOS CONTROLS part of the pedestal (displays with the HYDRAU. window).

Those 2 levers have no effect on the simulation.

In case of green or blue low hydraulic pressure, the red warning light GREEN LOW PR. or BLUE LOW PR. is on as well as the single bell warning sound and the SERVO CONTROL warning light (upper panel).

In this case, the yellow selector has to be moved toward the red warning light in order to switch on the corresponding yellow pump (see hydraulic system part). This will switch off the SERVO CONTROL warning light and this will also rearm the single bell warning sound.

This SERVO CONTROL warning light can't be rearmed with the PUSH TO CUT OFF mode so that it will be on until the green or blue low pressure is detected and the YELLOW selector is in neutral position.

Note: on ground, with engines off, the SERVO CONTROL warning is on, in the real cockpit the crew was pulling the corresponding circuit breaker in order to rearm the single bell warning sound to proceed to the pre-flight tests.

YELLOW selector

principal selector (case of servos controls jam, no effect in this panel)

artificial feel selector (no effect in this panel)

GREEN LOW PR. light

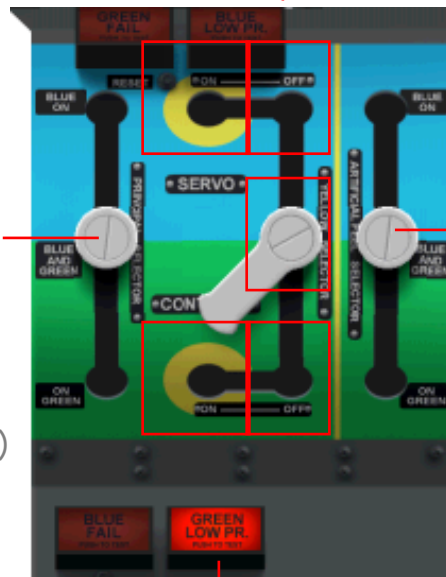
+



+



single bell



SURFACES, SPEED BRAKES AND SPOILERS

FLIGHT COMMANDS

3 indicators located at the left part of the main panel shows the ailerons, rudder and elevator positions.

For more convenience, trim position indication has been also added in the elevator indicator.

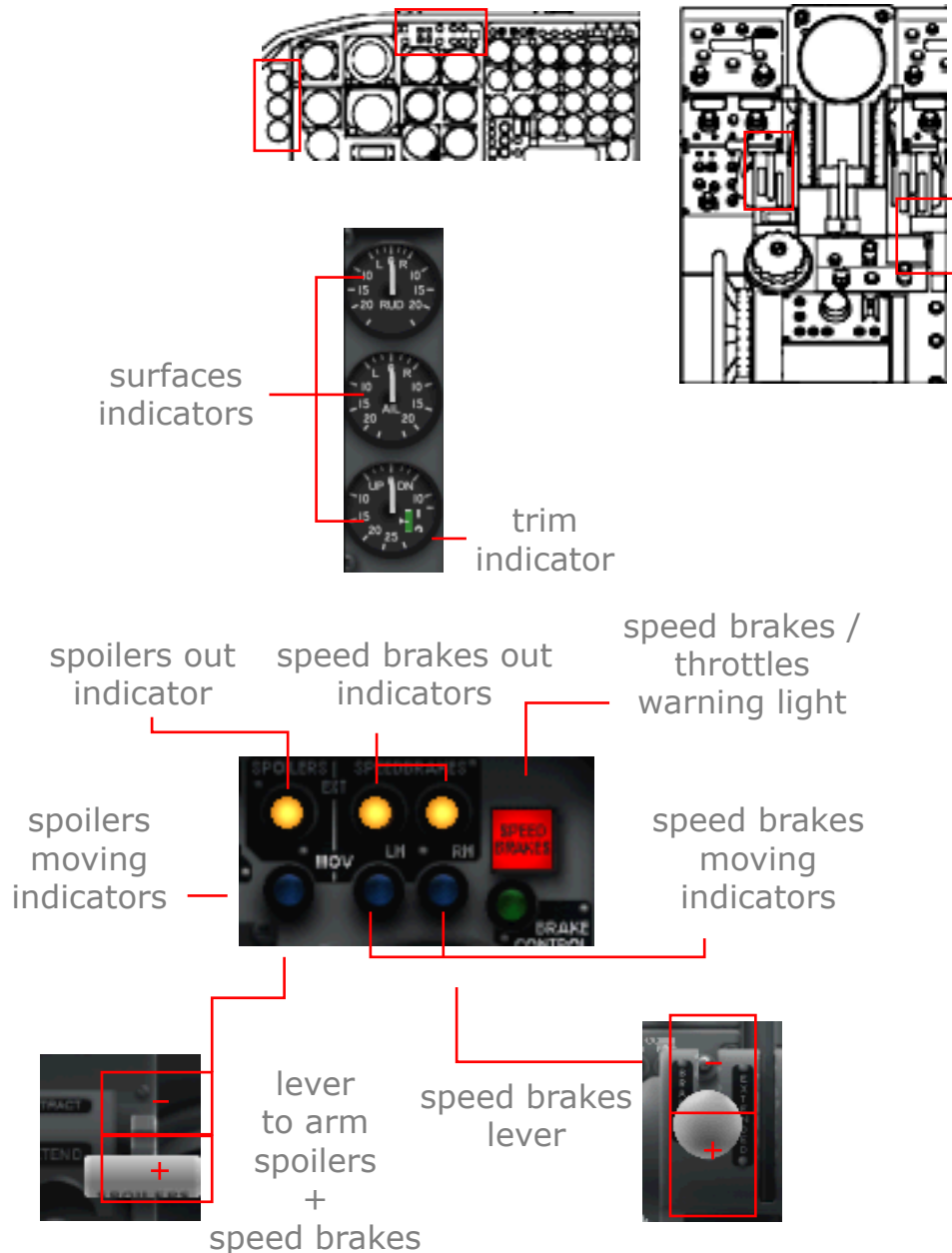
Speedbrakes could be exit in flight to decrease a too high speed (it was though recommended not to exit speed brakes at too high speeds in order to avoid uncomfortable flight for passengers, <270kts recommended). They only could be exit or not (2 positions). Speedbrakes status is indicated by 2 amber lights when full exit and one blue when moving.

A red light is on if speed brakes are out and throttle position are more than 50%.

The plane had also ground spoilers to help speed brakes to decrease speed while landing or during a rejected take off. Those surfaces automatically exit only when on ground if the SPOILERS lever has been armed in the extend position.

So that the normal procedure is to arm the SPOILERS lever in EXTEND position just before take off (spoilers AND speed brakes will automatically get out if the thrust has been lead back to idle after having been leaded out off 90%).

Put the lever back in RETRACT position just after take off and put it again in EXTEND (armed) position just before landing (both spoilers and speed brakes will deploy once the wheels touched the ground). Spoilers status is indicated by one single orange light for both with a blue one while moving.



FLAPS

FLIGHT COMMANDS

In normal use, flaps could be set to 5 positions :

- 0° up
- 5° take off (229 kts max),
- 10° take off (225 kts max),
- 20° approach (175 kts max),
- 35° autoland (150 kts max).

In normal configuration, flaps are moved with the FLAPS selector located on the pedestal (the key command F5, F6, F7 and F8 could also be used).

In case of green circuit failure, flaps could no more be moved by this selector (same thing for the key commands).

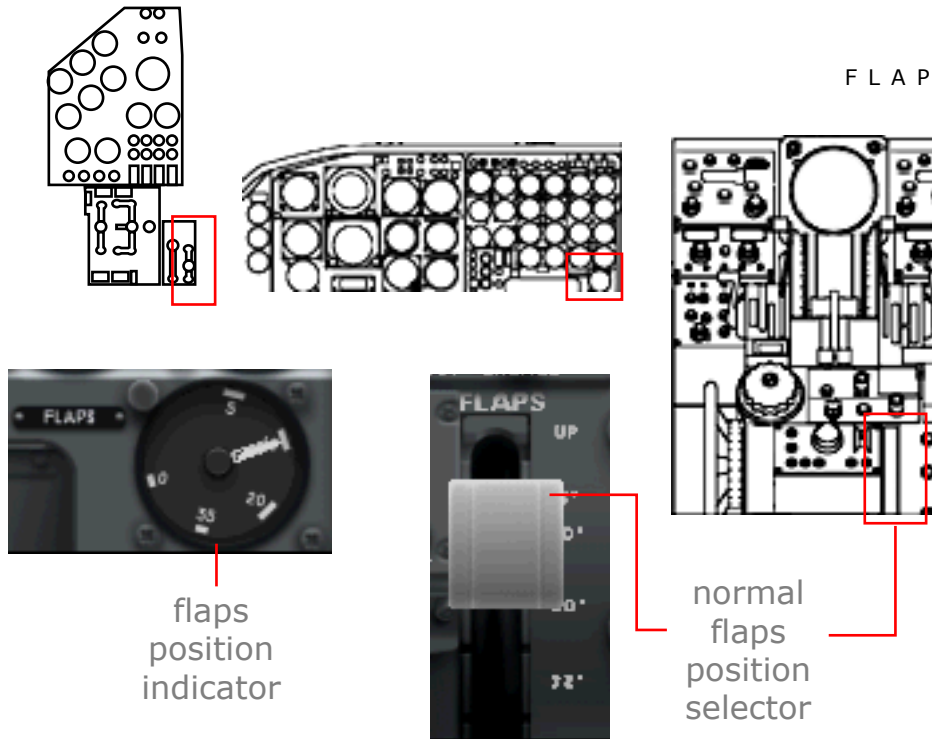
Flaps have to be moved with the RED hydraulic circuit.

To allow this, there should be enough pressure in the RED circuit.

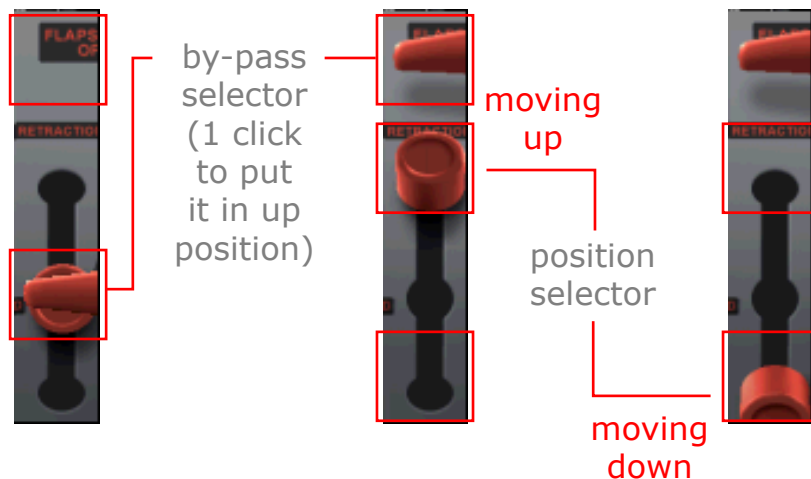
Then, the red FLAPS EMERGENCY OPERATION by-pass selector has to be set in up position (located in the right part of the real cockpit, at the right side of the SERVOS CONTROLS part in this panel).

This will then allow to move the red position selector. Put this selector in down position to move down the flaps (in up position to put move the flaps up) until the flaps will reach the required position. If so, put back the selector in neutral position (HOLD) to stop the flaps moving.

NOTE: like in reality, flaps moving with RED circuit is much slower than with GREEN circuit.



FLAPS EMERGENCY OPERATION selectors (FLAPS moving with RED circuit)



INDICATORS AND LEVERS

GEAR AND BRAKES

Gear status indicators are located on the right side of the cockpit (first officer side) in the real plane.

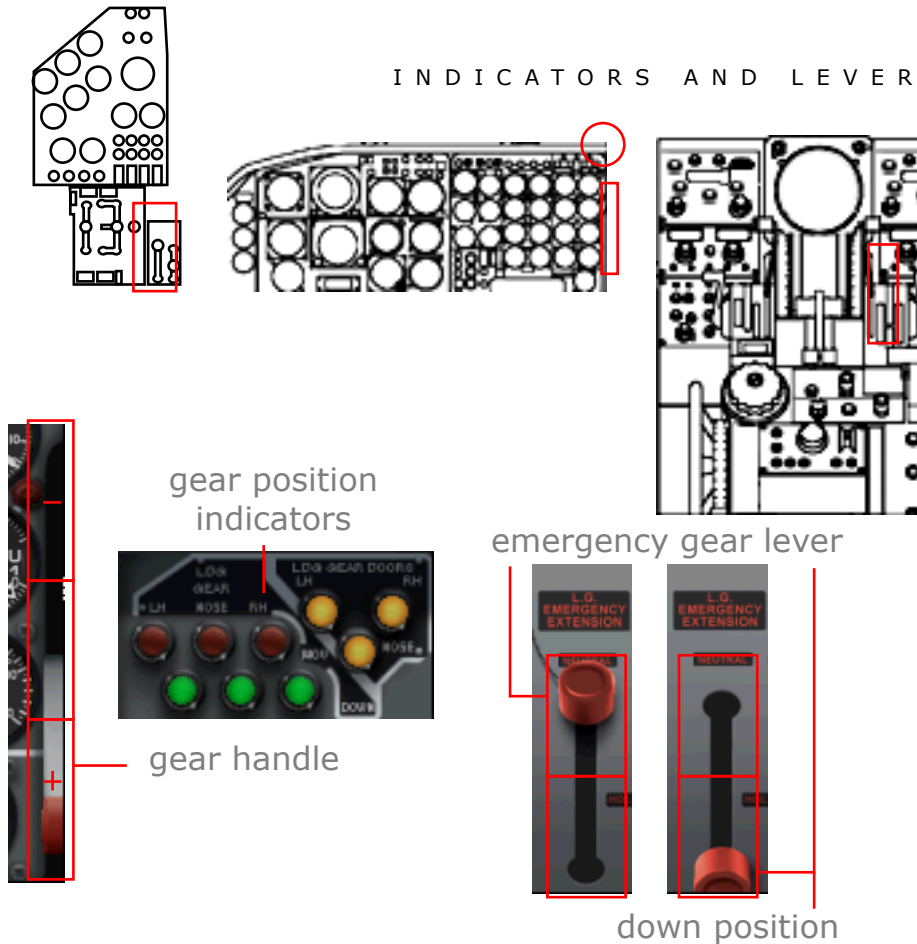
In this, panel, they are located on a separate window which automatically appears when gears are moving. It could be yet displayed or hidden manually as required thanks to the toggle click area located just above.

Gear handle which is just below the indicators window has 3 positions : UP and DOWN to lead the gear up or down and a NEUTral one which should be the normal position during flight after the gear has been locked in up position.

In case of a GREEN hydraulic failure, gear could be moved down (only) with the RED circuit.

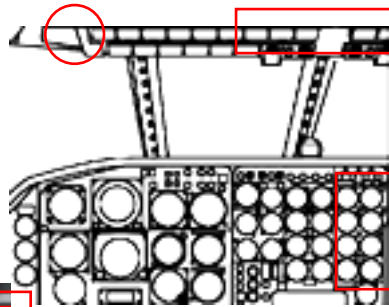
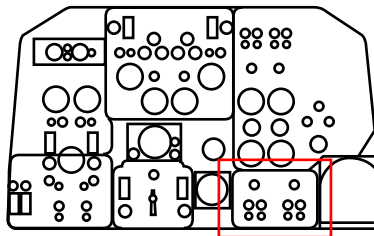
To do so, the LG EMERGENCY EXTENSION selector has to be put in down position (HYDR.SERV window).

Parking brakes could be set either with the park brake red lever located on the pedestal (1 click to engage or disengage) or with the corresponding fs key command.



CAPACITIES, INDICATORS AND TEMP.

FUEL



Caravelle 10R had 4 fuel tanks located as following :
in each wing :

- 1 main tanks of 8100 Liters (about 6400 kg)
- 1 auxiliary tanks of 1400 Liters (about 1100 kg).

The 2 fuel indicators located on top of the main panel shows fuel quantity in main tanks (in kg x 1000).

The 2 indicators located just below shows the quantity in auxiliary tanks (in kg x 100).

In case of low fuel quantity in one of the main tanks, an orange light is on in the fuel panel as well as the single bell warning sound and the FUEL LEVEL orange warning light.

Some FUEL HEAT valves allow to control fuel temperature (switches located in the upper panel but with no effect in the simulation).

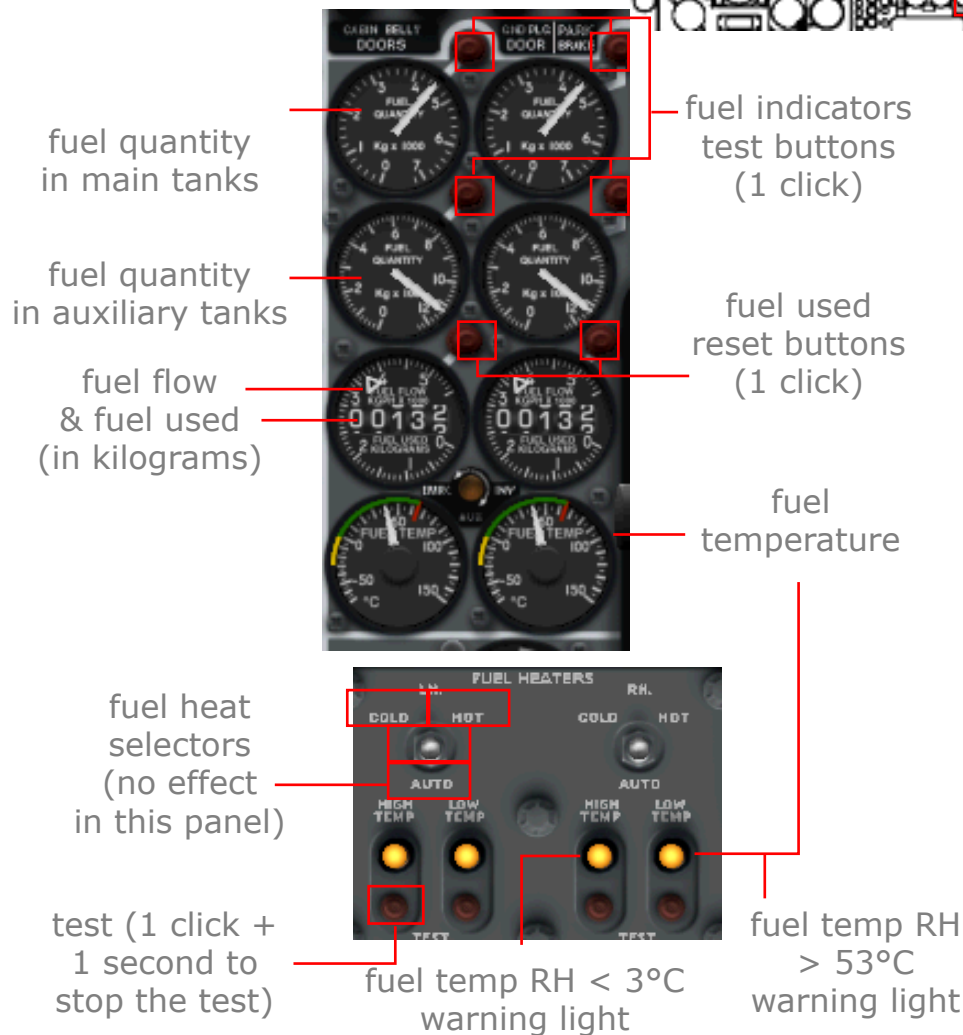
Some orange lights are on if fuel temp. is less than 3°C or overheat (+ warning sound and FUEL TEMP warning light).

FS LIMITATION : FS burns fuel in auxiliary tanks first before main ones without any way to change this order.

This does not correspond to reality in the Caravelle case.

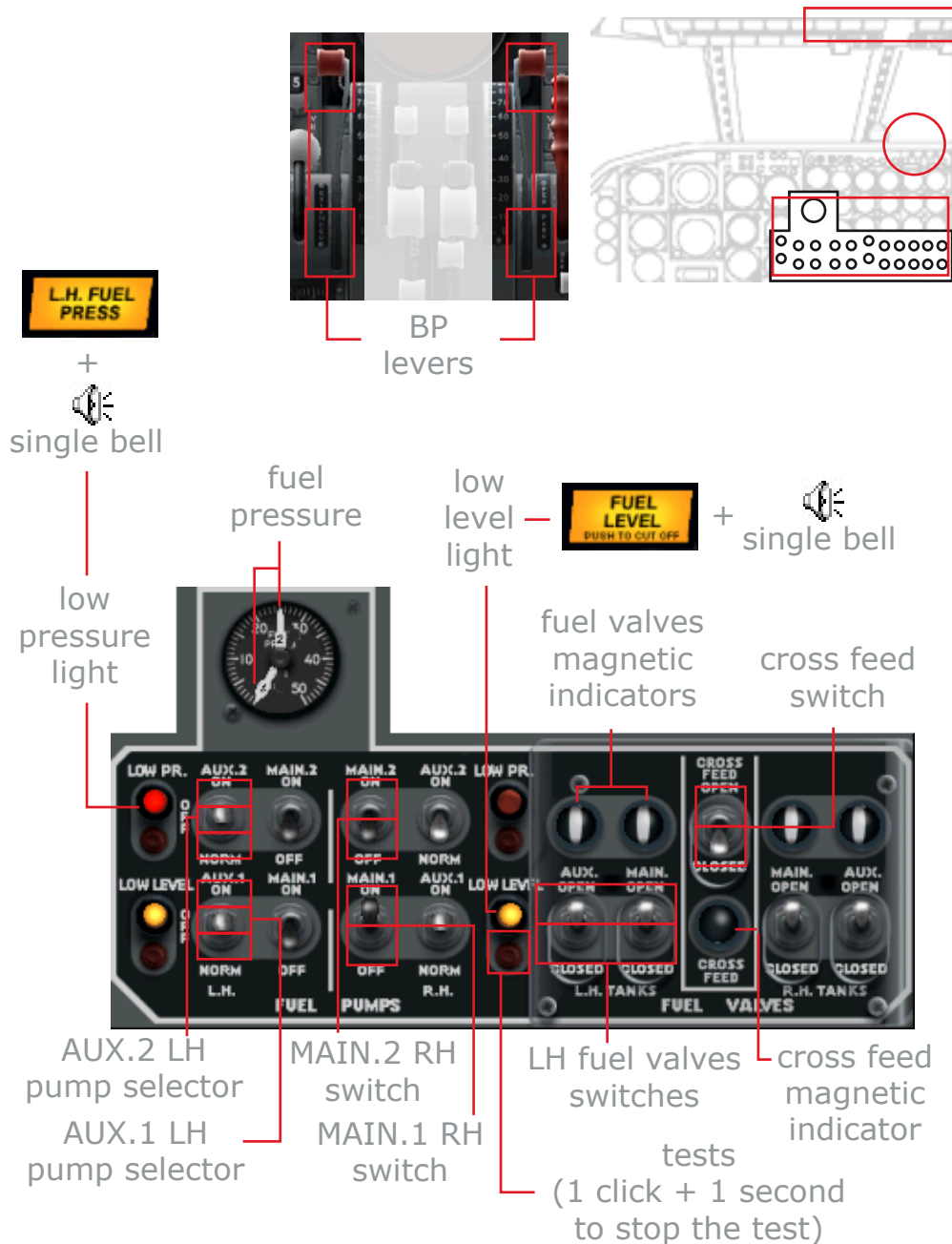
For more realism, the name of fuel tanks have been switched (between auxiliary and main) in the aircraft.cfg file to restore the real order. BEWARE that in FS fuel menu, auxiliary tanks correspond to mains and mains to auxiliary (auxiliary tanks should be always full for a normal flight).

NOTE : 1 kg = 2.204 pounds / 1 pound = 0.453 kg
1 liter = 0.264 US gallons / 1 US gal. = 3,84 liters



PUMPS, VALVES, BP LEVERS

FUEL



Each tank has 2 fuel pumps :

- AUX 1 & 2 LH for the auxiliary left tank
- MAIN 1 & 2 LH for the main left tank.

Same thing for the right tanks.

MAIN pumps are switched on and off with ON-OFF switches and AUX pumps with ON-OFF-NORM selectors. (ON = switch in up position / NORM = down position)

In NORM position, AUX pumps will automatically start working in case of:

- low fuel pressure (AUX 2 pumps) if HP lever is in ON position (see engines part)

- low fuel quantity in main tank (AUX 1 pumps)

Both AUX 2 pumps are powered with DC (this could be the batteries).

Other ones need some AC.

One CROSS FEED switch allows to supply fuel in one circuit with the other.

One FUEL PRESS indicator shows fuel pressure in each circuit before the 2 BP levers.

In case of low fuel pressure, a red light will be on in fuel panel as well as LH (or RH) FUEL PRESS warning light depending on which side the low pressure comes from (+ warning sound).

In case of low fuel level in one of main fuel tanks, FUEL LEVEL warning light will be on (+ warning sound) as well as an orange light in fuel panel depending on which side the low level comes from.

GENERALITIES & INDICATORS



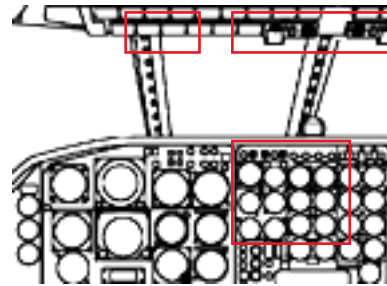
low
oil press
warnings
+

single bell



engine
fire
warning
+

fire bell



ENGINES

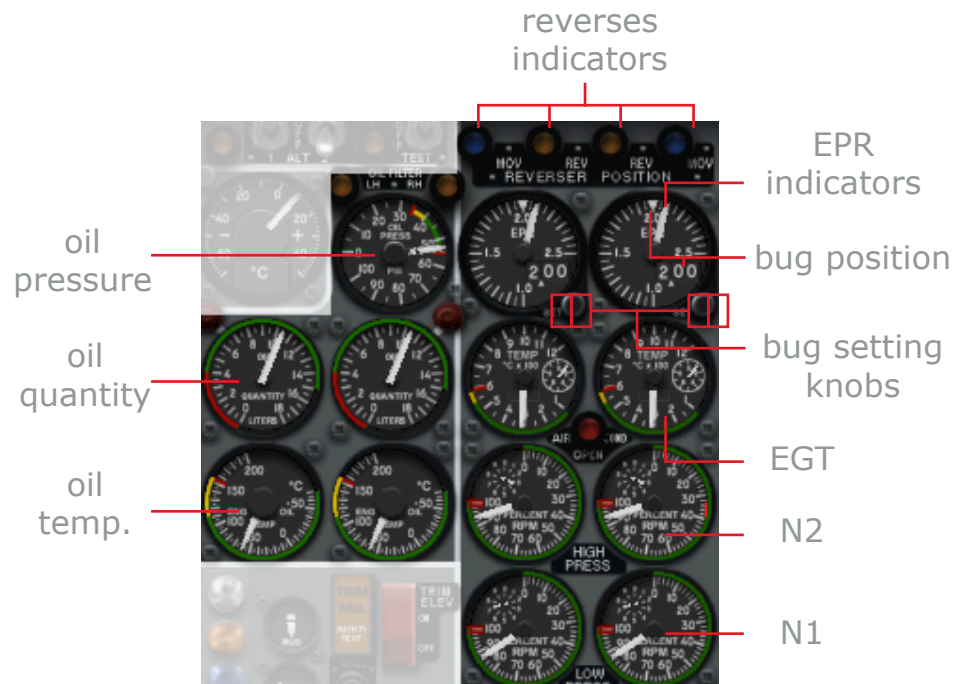
Caravelle 10R was equipped with Pratt & Whitney JT8 with reverses.

Main engines indicators are EPR (Engine Pressure Ratio) ones which is the main unit for Pratt & Whitney engines as it is always representative of the real thrust unlike N2 and N1 for those engines.

Other indicators show EGT, N2 (high pressure) and N1 (low pressure).

Unlike EPR and EGT, N2 and N1 indicators are independent from any electrical power source.

See the EPR VALUES page of the FLYING WITH 10R section for real typical EPR values.



2 indicators show the fuel flow and the fuel used in kg for each engine. Each fuel used value can be reset to 0 by clicking on the reset button corresponding to the indicator at the upper right corner of each one.

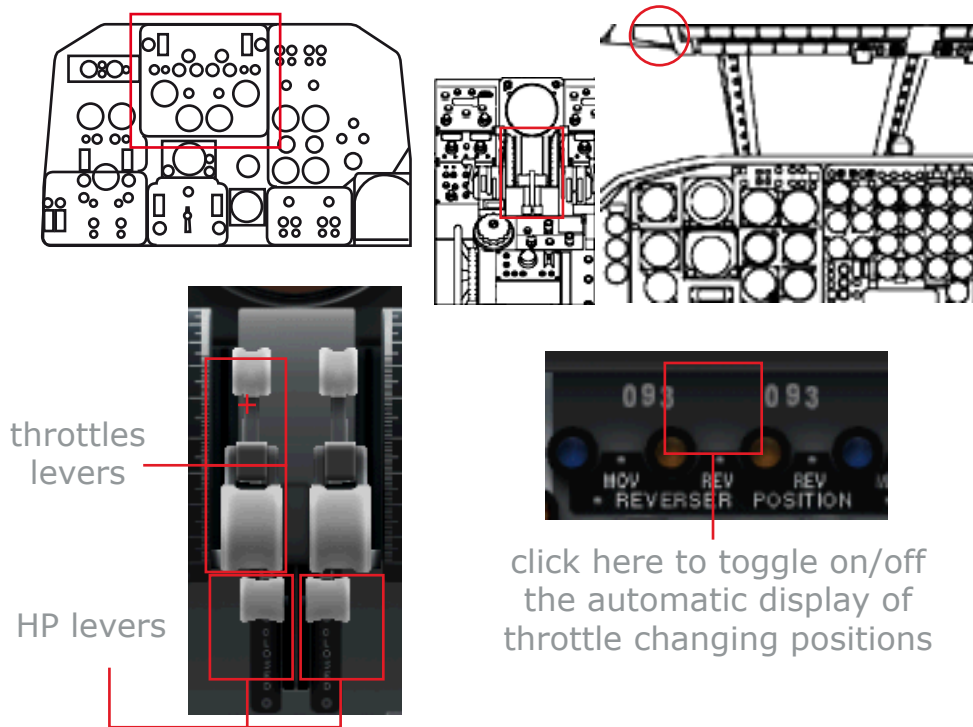
Oil indicators are located on the left side of the center engine indicators (from top to bottom : oil press 1&2, oil quantity and engines oil temperature).

An amber LH OIL PRESS or RH OIL PRESS warning lights will be on in case of low oil press if the HP fuel lever of the corresponding engine is in OPEN position (up).

A red LH or RH ENG FIRE warning lights on in case of engine fire.

4 lights (above engine indicators) will be on in case of reverse mode : 2 blue ones when in movements, 2 blue and 2 amber ones when reverse are on.

THROTTLES HP LEVERS, AIR TAKING



ENGINES

HP fuel valves are leaded with HP levers located below throttles levers. They should be set in up (open) position to start engines (see engines start section).

For more convenience in the simulation, each throttle position changing is temporary displayed (in %) just above EPR indicators. The automatic display of those values can be toggled on/off by clicking in the blank space between the left and right values.

Air is needed by various systems such as de-icing, pressurization and air conditioning.

When engines are running, air is taken from various stages compressor (6th, 8th, 13th) of each engine.

Indicators concerning air taking from engines are located in the AIR BLEED CONTROL panel located at the top center of UP3 upper panel.

AIR BLEED CONTROL panel (up3)



START UP AND SHUT DOWN

ENGINES

1

fuel pumps settings :
MAIN 1 and 2 -> ON
AUX.1 -> NORM (or ON if start up on bat.)



2

eng. start
selector
on 1 (or 2)
START/CRANK
selector
on START



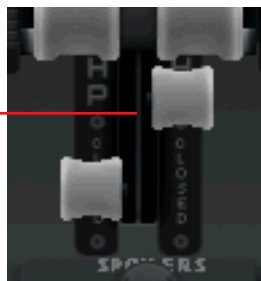
3

eng. start
button
(1 click)



4

HP lever
in open
position



eng. relight



hold click
in upper position
to relight engine
in flight

For standard engine start procedure, an external 112V electrical source must be connected to the plane.

1 - Switch on Fuel pumps (MAIN1 ON, AUX1 NORM)

2 - Toggle on the UP2 panel, at the engines start panel set the engines start selector to 1 or 2 (depending on the engine to start).

3 - set the START/CRANK selector on START position.

4 - Click (1 click) onto the red round button : High Press (N2) of the corresponding engine should raise up.

5 - Lead the corresponding HP fuel lever (located on the pedestal) in OPEN position. If not, the start up process will stop after about 60 sec, engine N2 will return to 0 and the sequence will have to be done again.

6 - The corresponding OIL PRESS and warning lights should light on a few second until N2 get stabilized.

7 - Set back the engine start selector in OFF position.

8 - Set back the START/CRANK selector to CRANK.

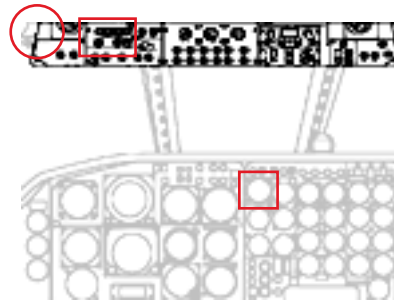
To cut off one engine, lead the corresponding engine HP lever in CLOSE (down) position.

To relight one engine when in flight, hold in up position (click and hold) the corresponding RELIGHT switch.

After having started both engines, set the electrical source selectors in PLANE BATT. and PLANE ALT position.

For engine start up from plane batteries (no external source), the battery commutator should be set in 112V position (see electrical system chapter). AUX. pumps switches should be set to ON position. Once the first engine is on, the crew should wait 4 minutes before starting the second one in order to restore batteries power.

TAT INDICATOR, SWITCH AND WARNINGS

TAT
indicator

+ single bell

ICE
warning
lightsleft engine
anti-ice
switches
& indicatorspitot heat
indicatorscaptain
pitot heat
switchstall detect
heat
switchfo
pitot heat
switch

PROTECTION AGAINST ICE

An indicator shows Total Air Temperature (TAT in °Celsius) in the center of the main panel.

TAT is different than ambient temperature at aircraft altitude as it takes in account the speed parameter. This unit is the most important as it is the one which has to be considered for icing conditions.

It could be said that under 2°C to 0°C, there is a major risk of icing conditions (as it seems there is the most of the time more or less humidity in the air).

All the anti-ice switches are located at the left part of the upper panel :

- 2 switches allow the pitot heat for captain and first officer airspeed indications. Keeping this function in OFF position could lead to loose airspeed indication as the pitot entry (which calculate speed) could be blocked with ice. A warning light comes on if the pitot heat is off when in flight or when on ground with thrust levers over 90%.

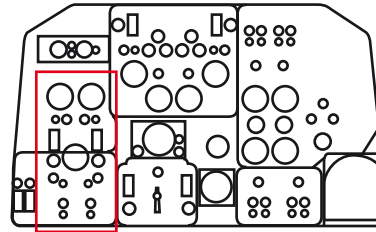
- 4 switches located above allow engine and nacelle de-ice.
- 1 central STALL DETECT switch activates de-ice for the angle of attack indication.

Magnetic indicators become white when the corresponding icing is engaged, except for the STALL DETECT one which become white only when the system is heat up, which means a few time after the switch has been activated.

If one of those anti-ice systems is not active in icing conditions, 1 amber warning will light on (on the main panel as well as on the upper one) and the single bell warning sound will be heard.

WING DE-ICE

PROTECTION AGAINST ICE



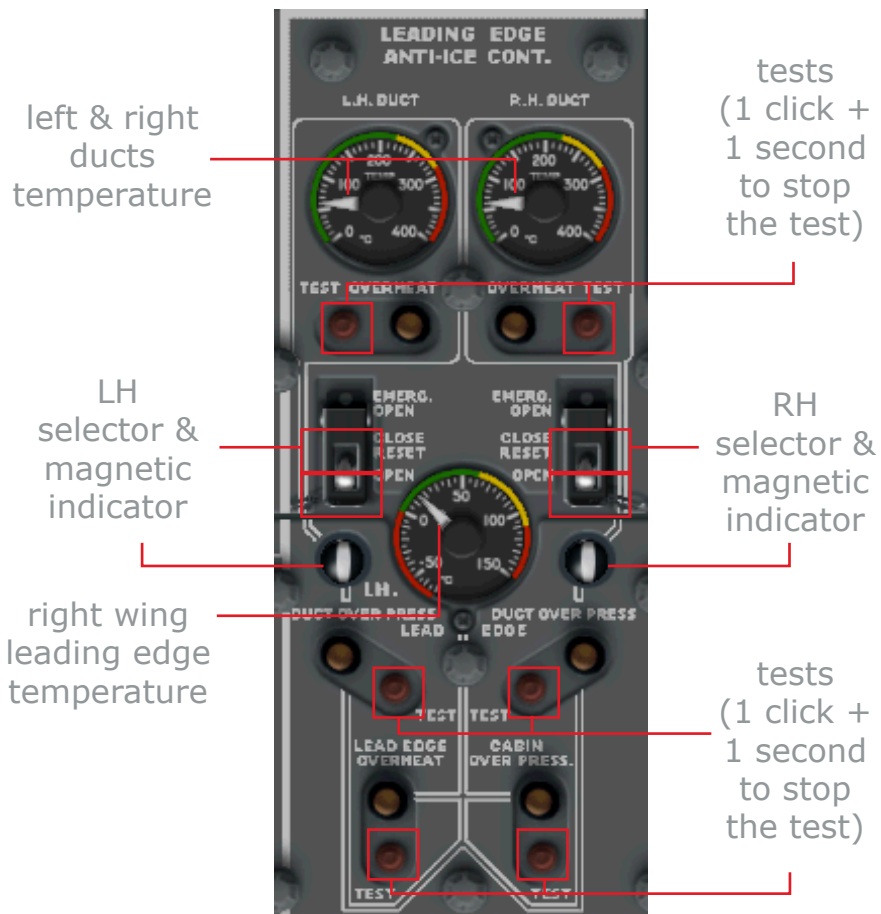
Switches and indicators of wing de-ice are located on the upper panel (UP3 window) in the LEADING EDGE ANTI-ICE CONT. part.

2 selectors activate de-icing. If not open (normal configuration), a red bonnet allows only the positions OPEN and CLOSE RESET.

If at least one selector is in OPEN position and if the plane is not on ground and some air is available, de-icing is on for the whole wings, the corresponding magnetic indicator will become white to show the corresponding valve is open.

2 indicators give air temperature in ducts and one central indicator gives temperature of the right wing leading edge.

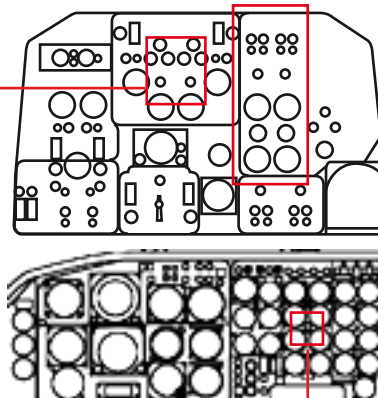
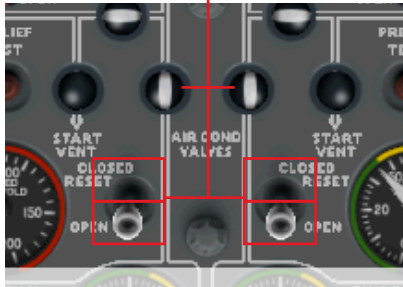
Failure of this systems are not simulated in this panel. Then, warning lights are only active for tests and the EMERG. OPEN position of the selectors (that triggers manually the system in case of failure) is not simulated.



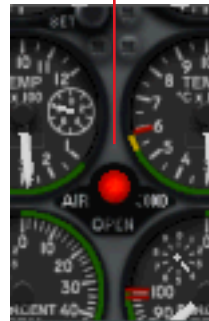
AIR CONDITIONING

AIR CONDITIONING & PRESSURIZATION

aircond valves
switches and
indicators



AIRCOND OPEN
warning light



Air is taken from the engines (see ENGINE chapter for information on main air taking valves).

Air conditioning valves switches are located at the center of Airbleed panel located on the upper panel (UP3).

In order to keep the whole engine thrust during take off or go around, aircond valves should be closed in those cases.

At the center of engines indicator panel, a red AIRCOND OPEN warning light will be on if throttles levers are leaded beyond 97% while aircond valves are still open.

Ambient temperature in cockpit and cabin is controlled in the UP3 upper panel (UP3 window).

2 selectors allow to choose an automatic or manual regulation (COLD or HOT).

In the case of automatic regulation (normal case), temperature is chosen by setting the corresponding temperature knob to a value from 0 to 8.

In the case of a manual regulation (case of automatic regulation failure), put the selector in the temporary COLD or HOT position (the selector returns to OFF but the valve holds the selected position : hot or cold).

cockpit & cabin
temperature
regulation
selectors



cockpit & cabin
duct
temperature

cockpit
& cabin
temperature
knobs

cockpit & cabin
ambient
temperature

PRESSURIZATION

AIR CONDITIONING & PRESSURIZATION

Pressurization regulation is automatic. In case of failure, it is also possible to regulate manually with the manual regulation selector (UP3 panel).

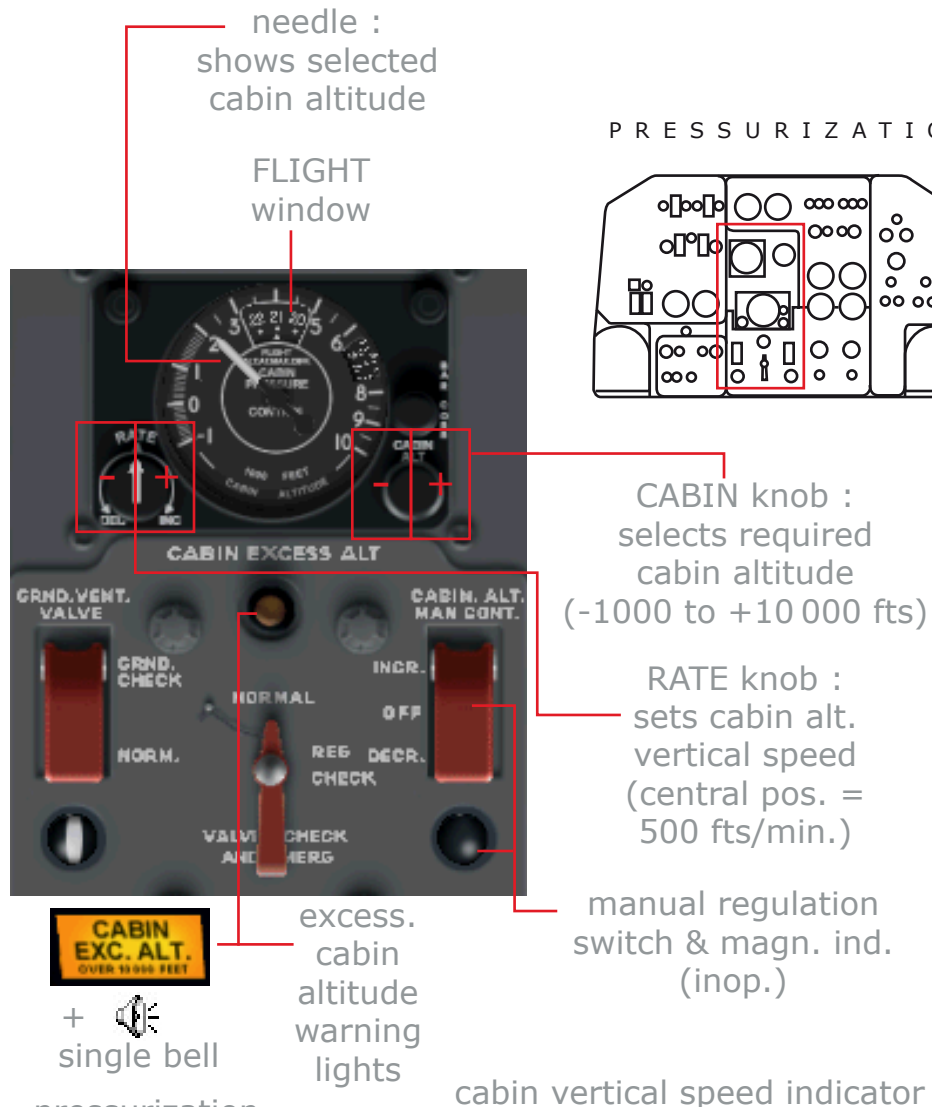
First, the crew selects the required cabin altitude for cruise with the CABIN knob, it will be shown by the needle of the regulator. Choose the altitude so that the little FLIGHT window will show a bit more than the flight plan cruise altitude. When the plane will reach altitude displayed in this window, differential pressure (between inside and outside the pressurized zone) will be at its maximum value (8 psi).

Cabin altitude vertical speed (feet/min) can be set with the RATE knob of the regulator (from 50 to 2000 ft/min.).

If the plane would go beyond the displayed altitude in the FLIGHT window or if the plane would go below the cabin altitude, valves would automatically regulate differential pressure to 8,2 psi max. or -0.3 psi min. but the cabin altitude vertical speed would follow the plane vertical speed (which could hurt ears and be quite unpleasant).

Beside the cabin regulator (UP3 panel) are located a cabin vertical speed indicator (ft/min) as well as a 3 needles indicator which gives plane altitude (feet x 1000), actual cabin altitude (feet x 1000) and differential pressure (psi).

If the system does not work above 10 000 fts, a CABIN EXC. ALT. red warning light will be on (UP3 panel) as well as the CABIN EXC. ALT. warning light (warning panel) with the single bell warning sound.



ATC, SOUND COMMANDS, CALL SIGNS

COMMUNICATIONS

ATC communication frequency (COM 1) can be set with the commands located on the pedestal.

A click area added in the upper right part of the pedestal, allows to display COM 2 and ADF 2 (see navigation part) frequencies on a little additional window.

To activate and listen to this COM 2 frequency, put the VHF 2 sound switch located in the sounds commands panel (left part of the pedestal) in up position. Because of Flight Simulator limitation, at least one COM switch must be on.

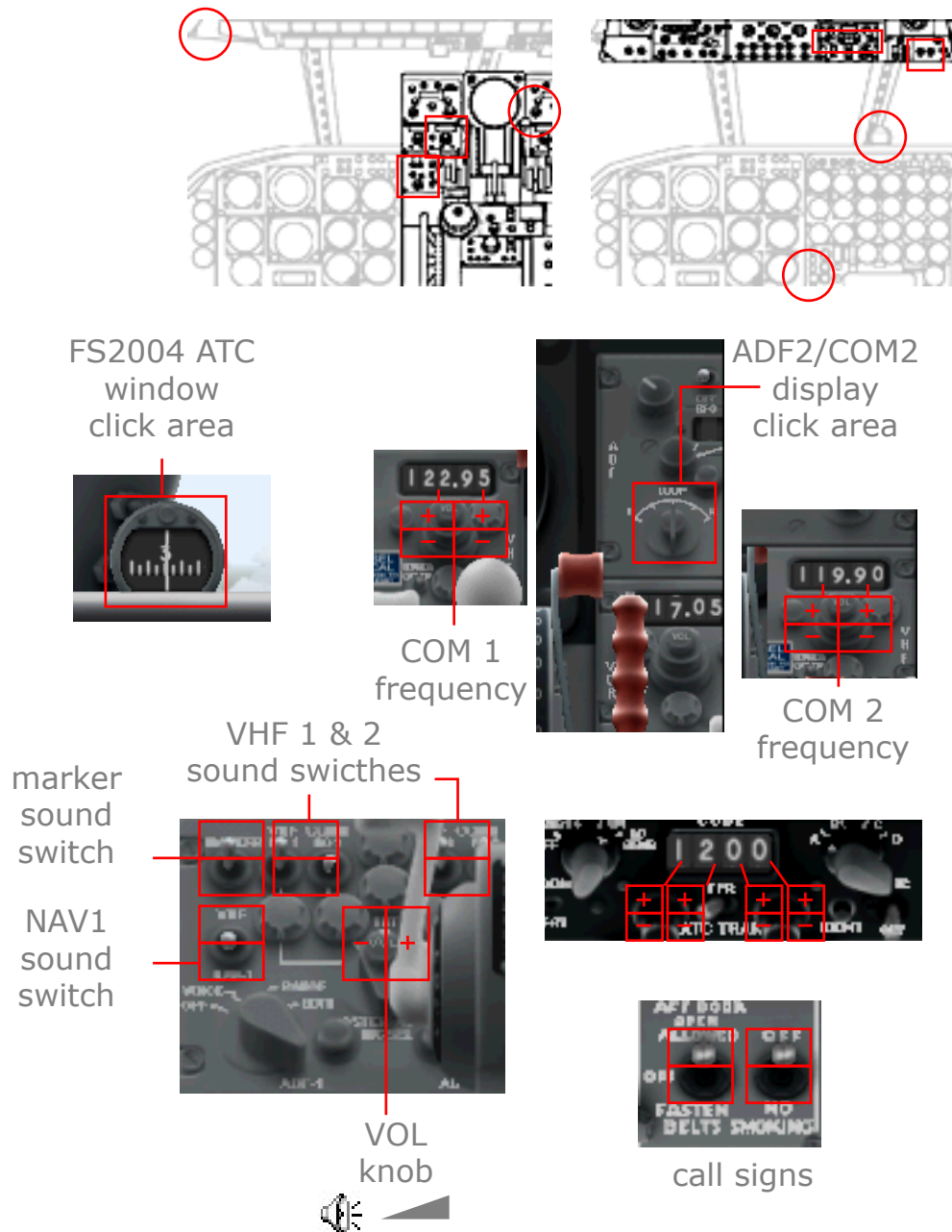
FS sound commands are located on the pedestal in this same part.

The "VOL" knob located at the center of this sound control panel allows to increase or decrease sounds volume (the ones of this panel : clicks, warning bells).

Transponder is located on the upper panel UP2.

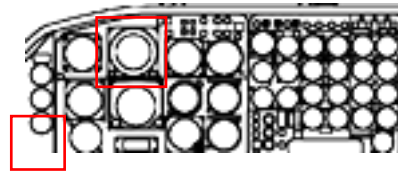
FS ATC window can be displayed and hide if clicking onto the stand by compass (central upper position on the main panel).

2 switches located at the bottom right side of the upper panel UP2 activate the "fasten belts" and "no smoking" call signs.



ADI AND FD BARS

NAVIGATION



Main ADI is HZ4 type. It could display flight director indications thanks to FD bars.

Those bars could be displayed or hidden thanks to a selector located in the lower left corner of the main panel (this selector is located on the left side of the captain position in the real plane).

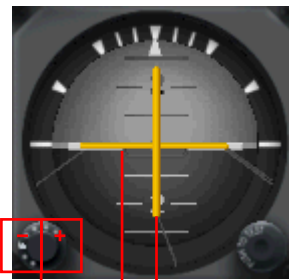
This mode could be selected in an independent way from the autopilot current status. So it is possible to display some Flight Director indications with AP off or what ever autopilot mode is active if AP is ON.

Horizontal and vertical bars show the correct attitude to hold in order to lead the plane properly according to the selected mode. Keeping those bars always centered leads to the correct attitude to follow.

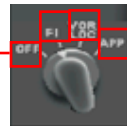


FD flag
(flight director
failure)

GYRO
flag
(failure or
no electricity)



horizontal bar
pitch trim setting button
(except in APP mode)

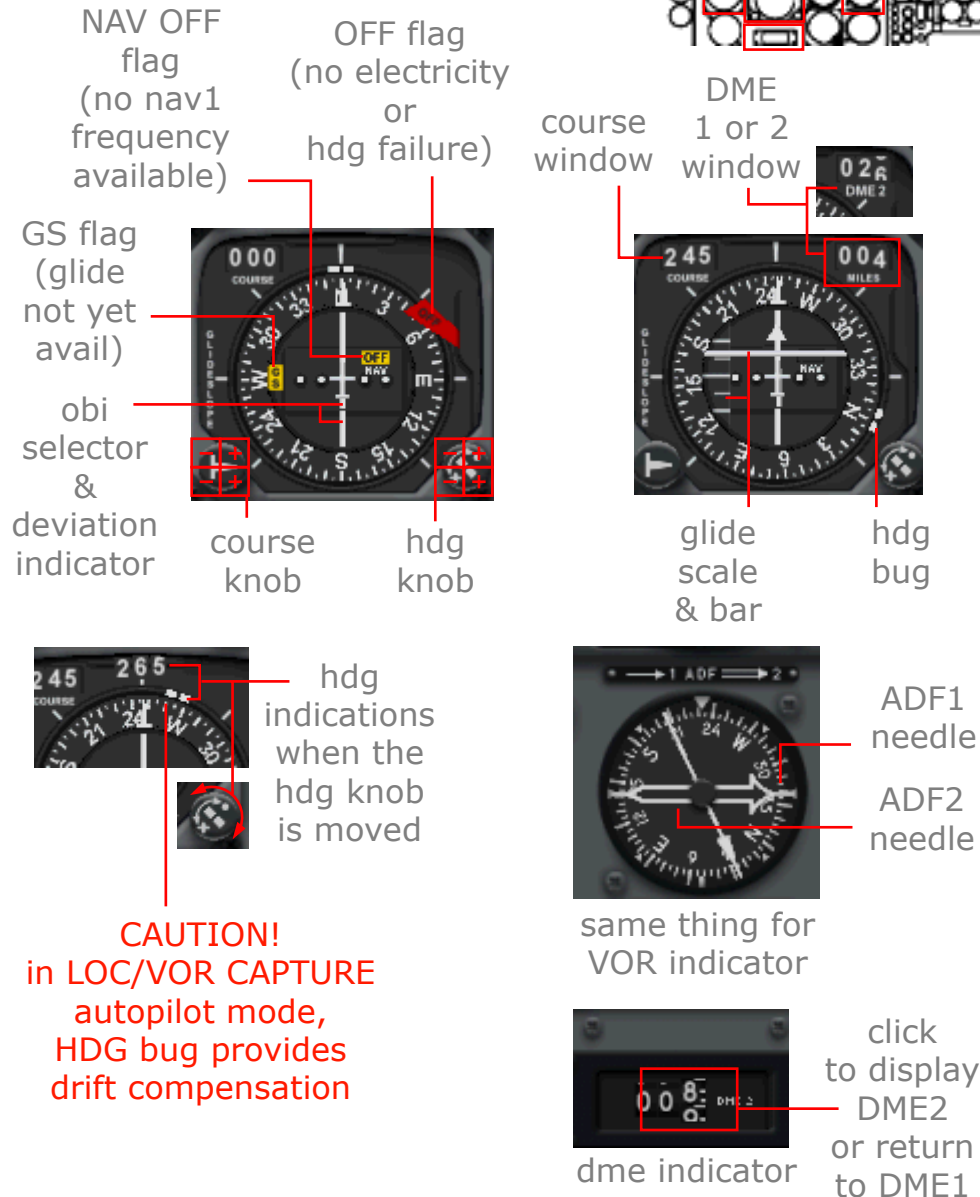


Flight Director
mode selector

- OFF : is the standby mode, bars are hidden.
- FI : shows the way to follow the selected heading in the HSI.
- VOR LOC : shows the way to follow to capture and hold a VOR or LOC according to the selected course in the HSI.
- APP : shows the same indications as VOR LOC mode as far as the vertical bar is concerned, while the horizontal bar shows indications to follow the glide slope.
- in FI, and VOR LOC modes, the horizontal bar shows the pitch attitude selected with the "pitch trim" knob located at the lower left corner of the ADI.

HSI, VOR AND ADF INDICATORS

NAVIGATION



In HSI (Horizontal Situation Indicator) a window located at the upper left part shows the selected VOR or LOC COURSE.

DME indicator is located below HSI. Clicking at the center of this indicator allows to display DME2 instead DME1 or return back to DME1. For more convenience, DME indicator has also been added in upper right part of HSI (click to display it) like in future 10B3, 11R and Super12 MHR4 HSI. It is also possible to read DME 2 (the one of the selected VOR 2) instead of DME 1 by clicking onto the DME window. The indication DME2 will appear instead of the original MILES one. Click on the same area to hide the indication and click again on the window to read back again the DME 1 indication (in the real cockpit, left HSI shows NAV1 indications while right one shows NAV2 ones).

Real panel HSI has no numerical values displayed for the selected heading. But as the HSI size could be quite small on the screen, it might be difficult to selected the correct heading checking only the bug position. So that for better convenience, an heading window will appear a few second to confirm the selected heading while moving the corresponding knob.

Various clicks areas allow to increment from 10 to 10 or 1 to 1, so that there are 4 click areas for each knob. Use the 10 increments click areas to move quickly the heading bug or course and then use the 1 unit increment areas to adjust the precise value.

VOR and ADF indicators are located on the right side of HSI (VOR indicator above ADF one).

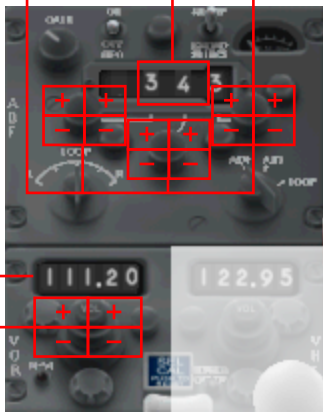
They don't have any flags in case of failure, so the HSI has to be checked to valid the infos of the VOR indicator.

NAV FREQUENCIES, RADIO-ALTIMETER, OMI

NAVIGATION

ADF1 frequency window and selector

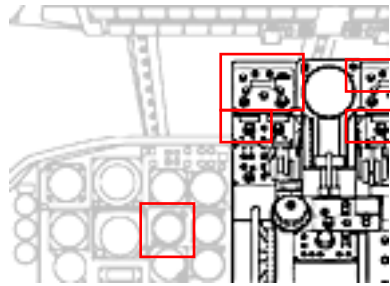
click onto the window to active/or not the decimal value



NAV1 & NAV2 frequency window and selector



ADF2 frequency window toggle click area



NAV and ADF frequencies could be set with the corresponding commands located on the pedestal (in order to show both NAV1 and 2 frequencies on the same window, left/right position of NAV and COM frequencies have been inverted in comparison to real ones).

ADF1 & 2 frequencies can be set (see communications part on how to display the window) with the corresponding buttons. By clicking onto the ADF 1 or 2 window, the right click area sets only the last unit or the decimal value.

Radio-Altitude needs to be switched on to be active.

To switch on the instrument, click on the right side of the knob/green light located at the top right corner of the indicator (where a + sign appears). Click on the left side to cut off the instrument (where a - sign appears).

When in ON position, the green light will be on in a semi-bright mode a few moment before the instrument could become active. Once activated, the green light get off, the red flag disappears and the needle indicates current radio-altitude (height from the ground).

The instrument is graduated up to 3000 ft but it still works until 5000 ft. Once above 5000 ft the instrument automatically cut off. When returning below 5000 ft, the radio-altimeter will need to be switched on once again.

A knob/amber light located at the bottom left corner of the instrument allows to set the Decision Height with the 2 click areas located at each sides of the knob. The amber light should light on when the plane reaches the selected Decision Height. A yellow bug confirm the selected value.

Inner marker
Middle marker
Outer marker



Decision Height selector & bug

RADIO-ALTIMETER :

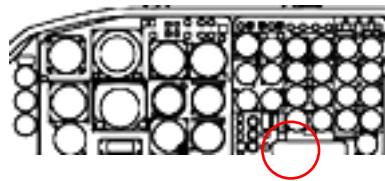


Radio Height ON/OFF switch

lights test click areas (1 click)

Marker sound can be activated/disabled with the MARKER switch located on the sound part of pedestal.

FS GPS



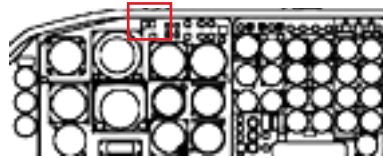
Caravelle 10R didn't have any GPS.
It is however possible to display the FS GPS on an additional window.

The link between autopilot and FS GPS is not simulated in this panel.



GROUND PROXIMITY WARNING SYSTEM (1)

NAVIGATION



Some 10R had a Ground Proximity Warning System (GPWS) which activates warning sounds when the plane is in some dangerous configuration when close to the ground.

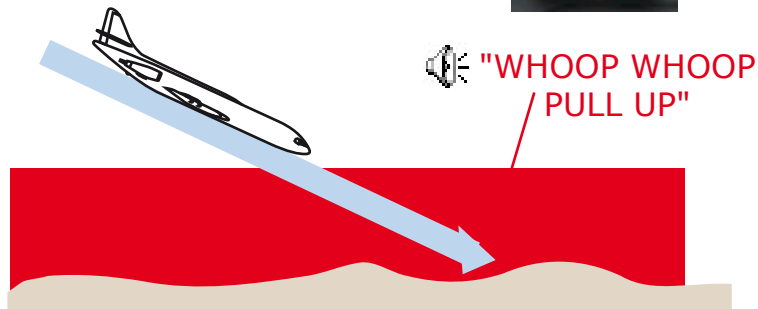
Then a sound corresponding to the situation is played and a red GPWS light (in front of the pilot) will light on.

GPWS works only when radio-altimeter is ON.

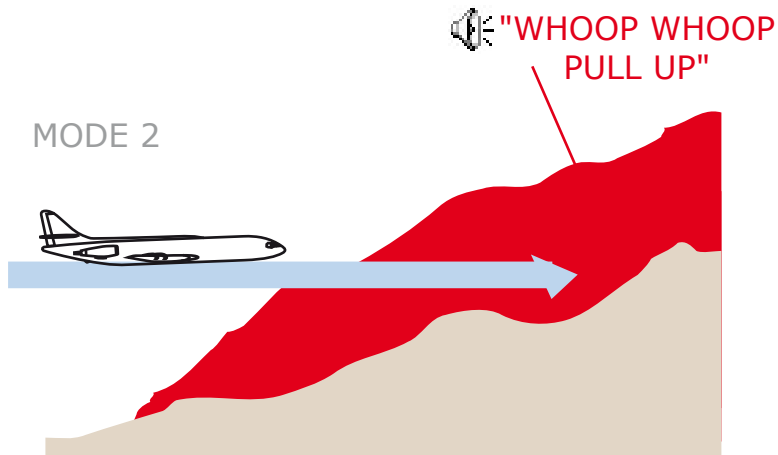
There are 5 GPWS modes depending on the following situations :

- MODE 1 : excessive descent rate
- MODE 2 : excessive proximity rate with ground
- MODE 3 : loss of altitude after Go Around or take off.
- MODE 4 : unsafe terrain clearance.
- MODE 5 : too high distance below ILS glideslope.

MODE 1



MODE 2



MODE 1 : EXCESSIVE DESCENT RATE.

This warning configuration works between 2450 fts and 10 fts radio-altitude..

Warning zone depends on vertical speed and radio-altitude.

WHOOP WHOOP PULL UP repetitiv warning sound is played.

MODE 2 : EXCESSIVE PROXIMITY RATE WITH GROUND

This warning configuration works between 30 fts and 2000 fts or 1650 fts depending on IAS.

WHOOP WHOOP PULL UP repetitiv warning sound is played.

GROUND PROXIMITY WARNING SYSTEM (2)

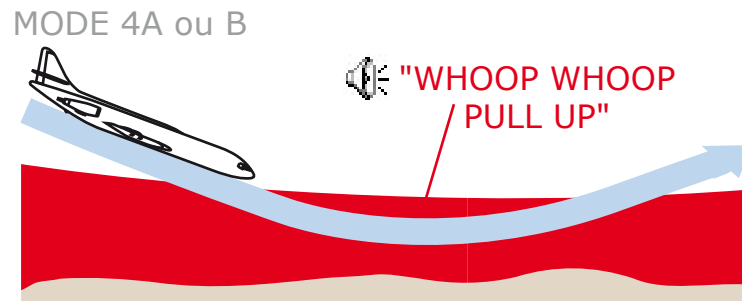
NAVIGATION



MODE 3 : LOSS OF ALTITUDE AFTER TAKE OFF OR GA.
 This warning configuration works after take off or Go Around when flaps < 5° or gear is up until 1333 fts or 667 fts radio-altitude are reached (depending on IAS).

If the plane loose altitude when in those radio-altitudes, mode 3 of GPWS is active :
 "WHOOP WHOOP PULL UP" repetitiv warning sound is played.

MODE 4 : UNSAFE TERRAIN CLEARANCE is divided in 3 MODES 4A-4B-4C depending on plane configuration.

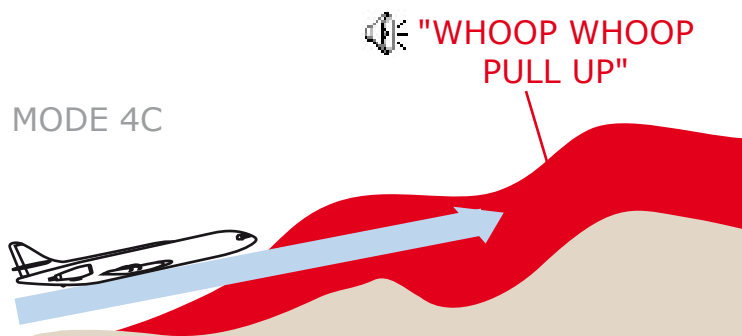


MODE 4A : GEAR UP
 This warning configuration works between 30 fts and 1000 fts or 500 fts depending on IAS.
 "WHOOP WHOOP PULL UP" repetitiv warning sound is played.

MODE 4B : GEAR DOWN BUT FLAPS NOT IN LAND CONFIG

This warning configuration works between 30 fts and 1000 fts or 245 fts depending on IAS.

"WHOOP WHOOP PULL UP" repetitiv warning sound is played.



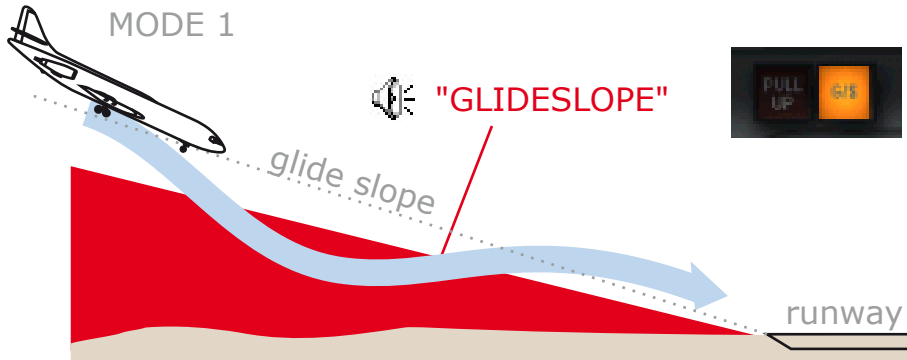
MODE 4C : UNSAFE TERRAIN CLEARANCE FOR TAKE OFF
 This warning configuration works between 30 fts and 1000 fts.

If the plane enter a zone below 75% of the higher height in memory, mode 4C of GPWS is active :

"WHOOP WHOOP PULL UP" repetitiv warning sound is played.

GROUND PROXIMITY WARNING SYSTEM (3)

NAVIGATION



MODE 5 : BELOW GLIDE SLOPE WARNING.

This warning configuration works when tracking an ILS if radio-altitude is between 1000 fts and 30 fts.

If the plane is too much below the ILS glideslope, mode 5 of GPWS is active :

- GLIDE SLOPE is played.

TEST :

The GPWS system can be tested by clicking on the GPWS TEST button (located on the UP3 panel).

If radio-altimeter and barometric calculator are ON, "WHOOOP WHOOOP PULL UP" warning sound is played followed by "GLIDE SLOPE".

GPWS INOP warning light is ON.

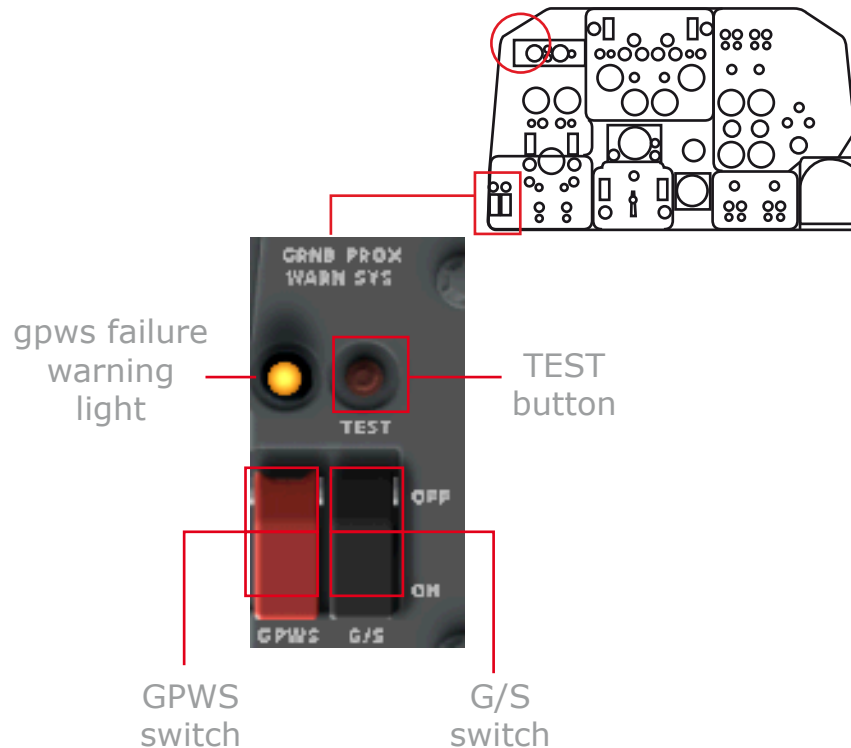
If only radio-altimeter is ON, only "GLIDE SLOPE" warning sound is played.

GPWS won't work if radio-altimeter is OFF.

All GPWS modes can be disabled by setting GPWS switch in OFF position.

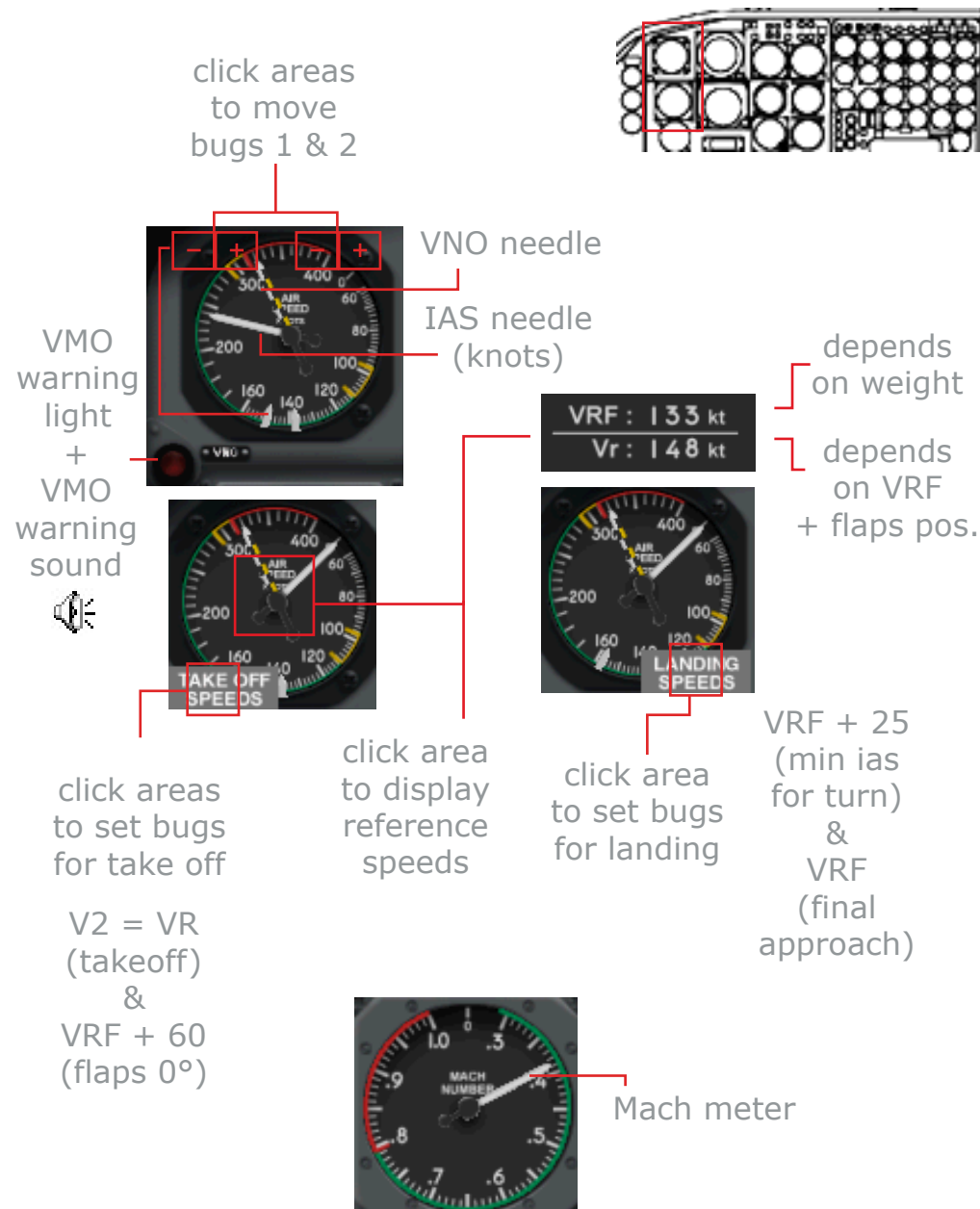
It is as well possible to disable GPWS mode 5 only by setting G/S switch in OFF position.

GPWS warning sounds come from "GPWS 98" by Wilco van Deijl.



AIRSPEED, MACHMETER AND VMO WARN

VARIOUS INSTRUMENTS



Airspeed indicator needle shows indicated airspeed (IAS, if this fs setting is chosen) in knots.

Some little white bugs could be moved to remind some specific speeds. Use the click areas located at the top left and right corners of the instruments to move the bugs.

Those bugs could be automatically set to typical values for take off and landing by clicking on the click areas located in the lower part of the instrument. A gray rectangle will appear a few seconds to confirm you set the bugs in TAKE OFF SPEEDS or LANDING SPEEDS typical configuration.

In TAKE OFF SPEEDS configuration :

- the first white bug should be set to V2 (which is also VR)
- the second one should be set to flaps up speed

In LANDING SPEEDS configuration :

- the first white bug should be set to VRF
- the second white bug should be set to VRF+ 25.

See the "HOW TO FLY WITH CARAVELLE 6R" section for more information about speeds.

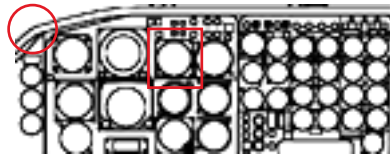
A VNO striped needle shows maximum IAS speed that shouldn't be out passed. If so, a red warning light will be on (lower left part of airspeed indicator) as well as VMO warning sound.

True air speed in MACH is shown in the Mach meter located below airspeed indicator.

To simulate co-pilot help in reality, a voice will announce speeds before take off (80kts...V1...Rotate(VR)).

ALTIMETER, CLOCK / CHRONOMETER

VARIOUS INSTRUMENTS



Altimeter needs electrical power to work. Altitude is both indicated by a 100 feet needle and a stripe for feet x 1000.

Barometric pressure to set altitude could be modified with the black knob located at the lower left corner of the instrument. 2 windows show the barometric pressure in hg for the lower one and in mb for the upper one.



altitude alert
light setting
window

altitude
alert
light

barometric
pressure
in mb and hg



baro.
pressure
setting knob
10 by 10
or unit by unit

altitude :
x100 feet

x 1000 feet

A warning light will be on and a chime will be heard between 1000ft and 150ft before reaching altitude set in SET ALTITUDE window. This window can be displayed with the clock / chronometer. If altitude is outpassed, the warning light will flash between 500ft and 1000ft beyond selected altitude.

The clock/chronometer is located on a separate window (with SET ALTITUDE window).

To set Flight Simulator time, pull down the little red switch (1 click) located at the lower right corner. Push it up (1 click) to lock time setting.

minutes hours



chrono

time setting
(if unlocked)

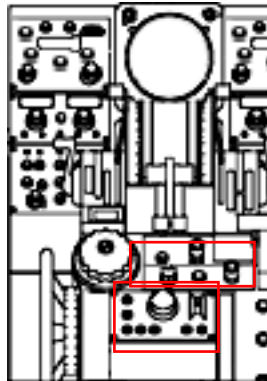
chrono reset

chrono start/stop

time setting
lock/unlock

GENERALITIES

AUTOPILOT



Autopilot is the same for every versions of Caravelle, it allows only "basic" modes (in comparison to nowadays flight management systems). This adaptation reproduces as close as possible the real one.

To be active, the READY TO ENGAGE switch located above the autopilot commands should be in NORMAL position and the green light should be on to signal that every conditions are ready to use the autopilot (light is off when ap is ON).

Autopilot can be engaged if :

- pp42, vp1 & vp2 are powered
- TADG is ON
- GREEN or BLUE hydraulic pressure is high enough
- AP READY switch is ON

Autopilot is located on pedestal so that it appears on pedestal window. However, an additional window with autopilot only can be displayed to manage autopilot without hiding main engines indicators.

Autopilot can be managed from one or the other window with the same effect on the simulation.

(see the click areas to display and hide panels parts to find the click area for this window)

(see also the ["installation with another plane"](#) part to check the aircraft.cfg is set correctly for a proper work of the autopilot)

AP ready switch



AP ready light :
 ON if AP READY switch is ON
 and AP can be engaged
 OFF if AP READY switch is OFF
 or AP READY switch is ON
 and AP can't be engaged
 or AP is engaged

THE BASIC MODES

AUTOPILOT

To engage or disengage autopilot, press (1 click) the same ENGAGE button which will light on when autopilot is engaged. It is yet possible (ONLY FOR THIS FUNCTION) to use the fs keyboard command (Z).

If the autopilot is disengaged by this way or with a button from the yoke (which exists in the real plane for quick AP disengage), a red COUPL warning and a flashing red light (AP flash) will light on together a few seconds to signal the autopilot has been cut from a different way than the master command. The single bell warning sound will also be heard.

Except for this Z command, IT IS NOT RECOMMENDED TO USE THE OTHER FS KEYBOARD COMMANDS TO ACTIVE AUTOPILOT MODES (instead of clicking onto the ap knobs) as fs default modes are quite different from the Sperry autopilot ones. This could lead to important malfunctions of the autopilot.

Once, the autopilot is engaged, the current pitch attitude (not vertical speed) is automatically hold and the wings are leaded to an horizontal position.

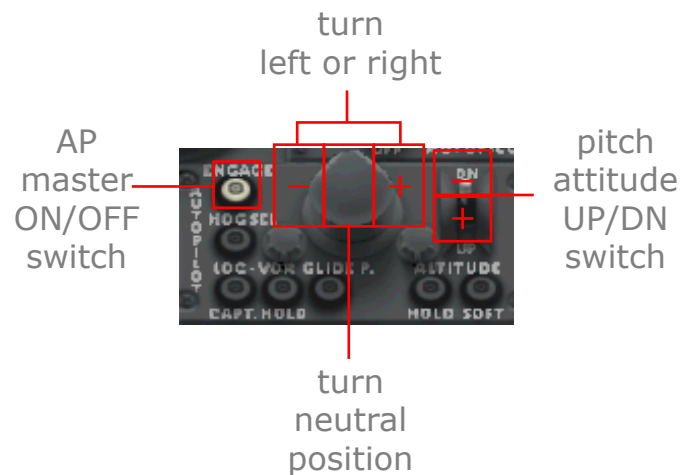
Then the yoke shouldn't be used anymore :

To control the pitch, use the little UP/DN switch located on the right part, it will slightly control the pitch attitude of the plane.

Using this switch will automatically cut off both ALT HOLD and GLIDE modes.

To turn the plane, use the TURN knob. The more you will click to the right or to the left, the more the knob will turn and the more the bank turn will be high, the max value should be around 30°. To stop the turn and return to an horizontal situation, click on the center of the turn knob.

Using this knob will not allow any HDG, VOR and GLIDE mode to be active until the knob will be centered.



AUTOPILOT MODES

AUTOPILOT

HDG SEL mode leads the plane to holds the heading selected with the HSI heading bug.

LOC/VOR CAPTURE mode captures a LOC/VOR course selected in the HSI (the plane is leaded to an interception angle of 55° , any drift correction is done manually with the HSI heading bug). **ENGAGE THIS MODE TO CAPTURE A LOC/VOR COURSE. !! SET HSI HEADING BUG ALIGNED WITH COURSE DIRECTION** more or less estimated drift correction (toward wind).

LOC/VOR HOLD mode holds a LOC/VOR course selected in the HSI (same thing as CAPTURE mode + automatic drift correction and bank limit of 15°). **ENGAGE THIS MODE ONCE ALIGNED ON THE LOC/VOR COURSE. !! DISENGAGE THE MODE BEFORE FLYING ABOVE THE VOR** (otherwise the plane will oscillate as there is no damper).

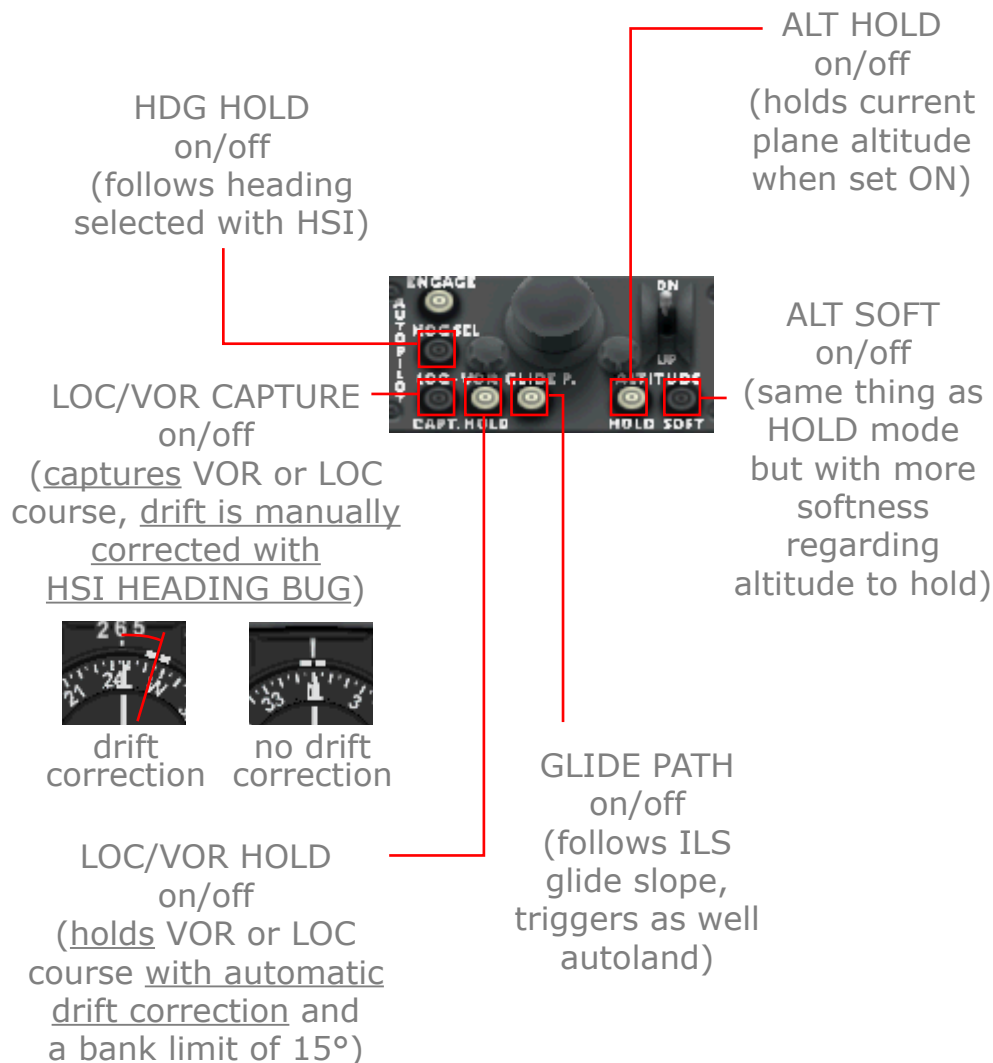
GLIDE PATH mode leads the plane down along the glide slope and set the LOC/VOR mode ON if it was OFF. **!! ENGAGE THIS MODE ONLY WHEN HSI GLIDE SLOPE BAR IS ALMOST CENTERED.**

Any action with turn knob will disengage those 4 modes. HDG and LOC/VOR modes disengages each other.

ALTITUDE HOLD mode holds the current altitude of the plane when set to ON.

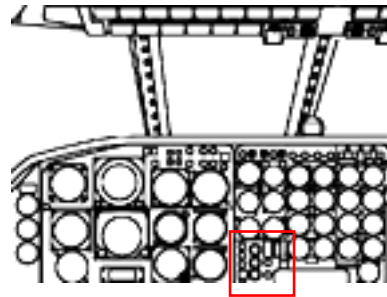
SOFT button do the same thing with a larger scale of altitude values in case of bad weather conditions.

Clicking on the UP DOWN switch or GLIDE PATH mode will disengage those 2 vertical modes.



WARNING LIGHTS AND INDICATORS

AUTOPILOT



In lower part of the main panel, indicators and warning lights give information about link between autopilot and flight commands.

3 indicators : RUD (rudder), AIL (aileron) and EL (elevator) shows, when autopilot is on, position sent by autopilot to rudder, ailerons and elevator.

A red AUTOPILOT light will be on a few seconds if autopilot is cut off by another way than by clicking on the ENGAGE button located on pedestal (yoke button, "z" key or failure).

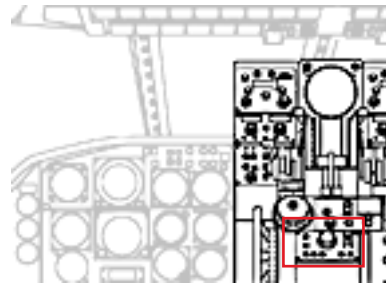
An orange TRIM FAIL warning light will be on in case of pitch trim autopilot control malfunction.

autopilot
RUD
AIL
EL
indicators



AUTOPILOT
OFF
warning
light

AUTOLAND MODE

AUTOPILOT

When GLIDE PATH mode is active, the plane is in autoland configuration.

This autoland is a category II one, which means it is not able to land the plane until ground by itself (which is cat. III which need more calculators and auto throttles as well, see Air Inter Caravelle III and Super12 versions).

Autopilot must be cut below 50 feet radio altitude in order to finally land the plane manually.

Flight Director mode selector should be set to APP position in order to get the autoland attitude with FD bars in ADI.

HSI heading bug must be set to ILS axis in case of go around. In this case, ADI vertical bar will show how to follow runway heading while horizontal bar will show the 10° go around pitch attitude.

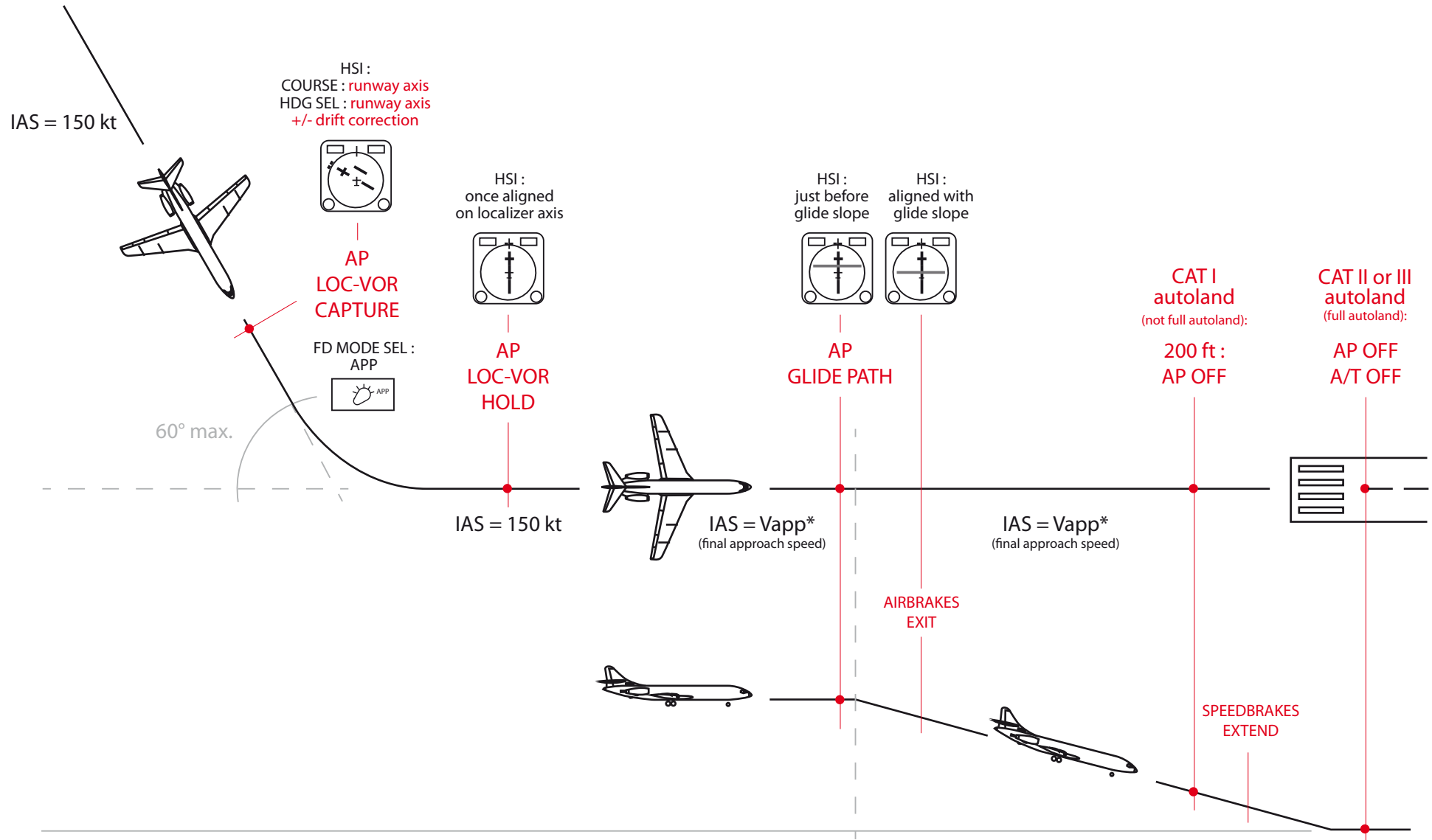


autoland
AP configuration

NOTE : autoland configuration was with speed brakes on.

The aim was to require higher RPM during final approach (in comparison to speed brakes off configuration) in order to reach more quickly the Go Around RPM if needed.

AUTOLAND MODE | AUTOPILOT



* clic on IAS indicaotr to display final approach speed (depends on weight and flaps position)

GENERALITIES

LIGHTS

External lights could be activated with the corresponding switches located at the bottom part of the UP2 upper panel.

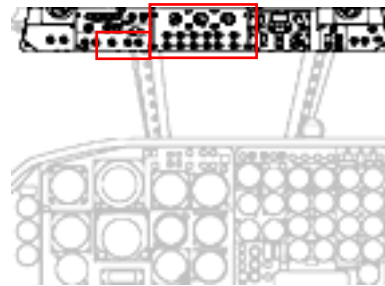
Switches functions :

- TAXI LIGHTS : toggles lights located on each side of the nose.
- LANDING LIGHTS : toggles the landing lights (located above left and right gears).
- ANTICOL : toggles the red flashing lights.
- NAV LTS : toggles the navigation lights.
- WING FLOOD : toggles wings and engines lights.

Instruments are automatically always lit at night.

Main panel lights (night only) can be toggled by clicking onto the knobs located on the UP2 upper panel.

anticol. light switch nav lights switch



flood switch
(engine+
wings)

taxi lights
switches

landing lights
switches

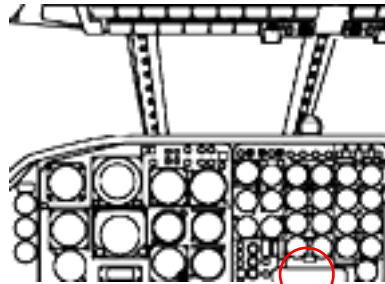


panel lights
controls



FAILURES AND STARTING WINDOW

FAILURES



A failures panel allows to trigger some failures specific to this panel for Flight Simulator.

Some of the failures could be set depending on IAS airspeed and/or time.

So that the failure will occur when both of the conditions will be ok (IAS and time are in a higher value than the ones set in the panel failure). If you want the failure to be leaded by only one parameter (IAS or time), set the other one to 0.

When the wanted parameters are set, click onto the VALID button and the failure will occur depending of the required conditions.

Some typical failures events are preprogrammed.

Select the CANCEL ALL FAILURE mode (and VALID) to stop all failures.

A COLD START option allows to cut all systems and both engines (plane in parking configuration at the beginning of the day). The EASY START option will automatically set all systems in the active configuration and start the engines.

Some systems (electrical, hydraulic and air conditioning / pressurization) could also be managed automatically by checking the corresponding option and VALID.

START AND FAILURES STATUS CARAVELLE 10-R

EASY START - all systems and engines on _____ ON OFF

COLD START - all systems and engines off (only available on ground) _____ ON OFF

ENGINE 1	fail	in	5 minutes	/ at	0 knots ias	ON	OFF	engines autostart ON OFF
	fire	in	0 minutes	/ at	0 knots ias	ON	OFF	
ENGINE 2	fail	in	0 minutes	/ at	0 knots ias	ON	OFF	

ELEC	gen 1 fail	in	0 minutes		ON	OFF	elec auto. ON OFF
	gen 2 fail	in	0 minutes		ON	OFF	

HYDRAU	green circuit fail	in	0 minutes		ON	OFF	hydr./ air auto. ON OFF

TYPICAL FAILURES EVENTS 1 _____ ON OFF

TYPICAL FAILURES EVENTS 2 _____ ON OFF

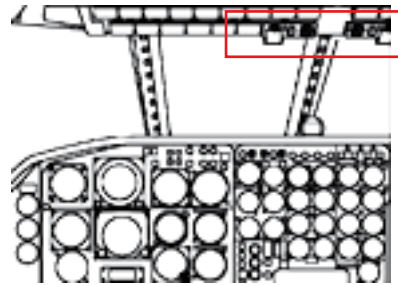
RANDOM FAILURES _____ ON OFF

CANCEL ALL FAILURES _____ ON OFF

VALID
EXIT

PROCEDURES

FAILURES



click once to
stop bell



LH ENGINE FIRE + fire bell
warning light



In case of engine fire warning:

- set the corresponding HP lever down to OFF position
- set the corresponding BP lever down to OFF position
- cut the fuel pumps corresponding to the engine on fire
- shut off the corresponding hydraulic valves
- cut the corresponding generator and alternator
- press (1 click) the extinguisher button

In case of a GREEN hydraulic failure:

- switch on the YELLOW pump (lever toward warning)
- switch on the RED pump
- move flaps with the emergency lever
- exit gear with the emergency lever



press the extinguisher
button once every steps
described in the above
procedure have been made

NORMAL TAKE OFF

FLYING WITH CARAVELLE 10R

VS = Stall speed (for a given plane configuration).

VREF = 1.3 VS.

VR = Rotation speed, depends on plane weight. This is the speed at which one the pilot should start pulling the yoke to take off.

V2 = 1.2 or 1.3 VS (optimum take off speed).

VAPP = Approach speed

VNO = max IAS speed (300 kts for 10R).

MMO = max MACH speed (M0.77 for 10R).

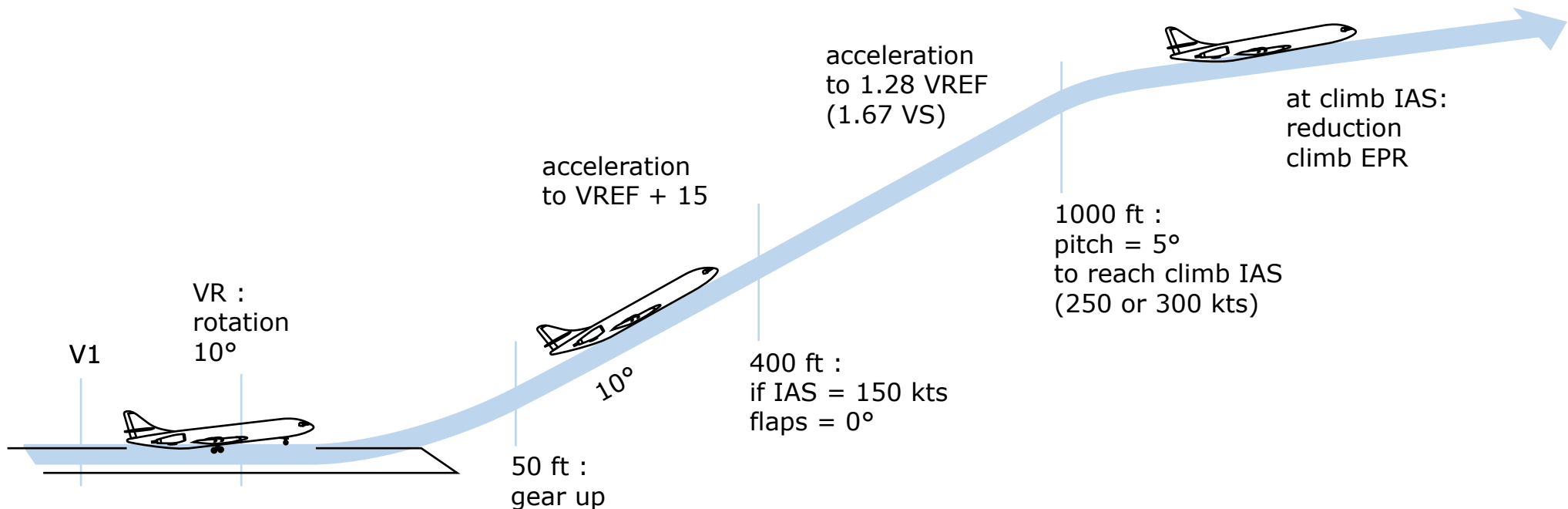
vz = Vertical speed.

The following values are real Caravelles 10R ones according to UTA documentation and procedures. The plane behavior in FS can vary from those values depending on the fly dynamics and FS limitations...

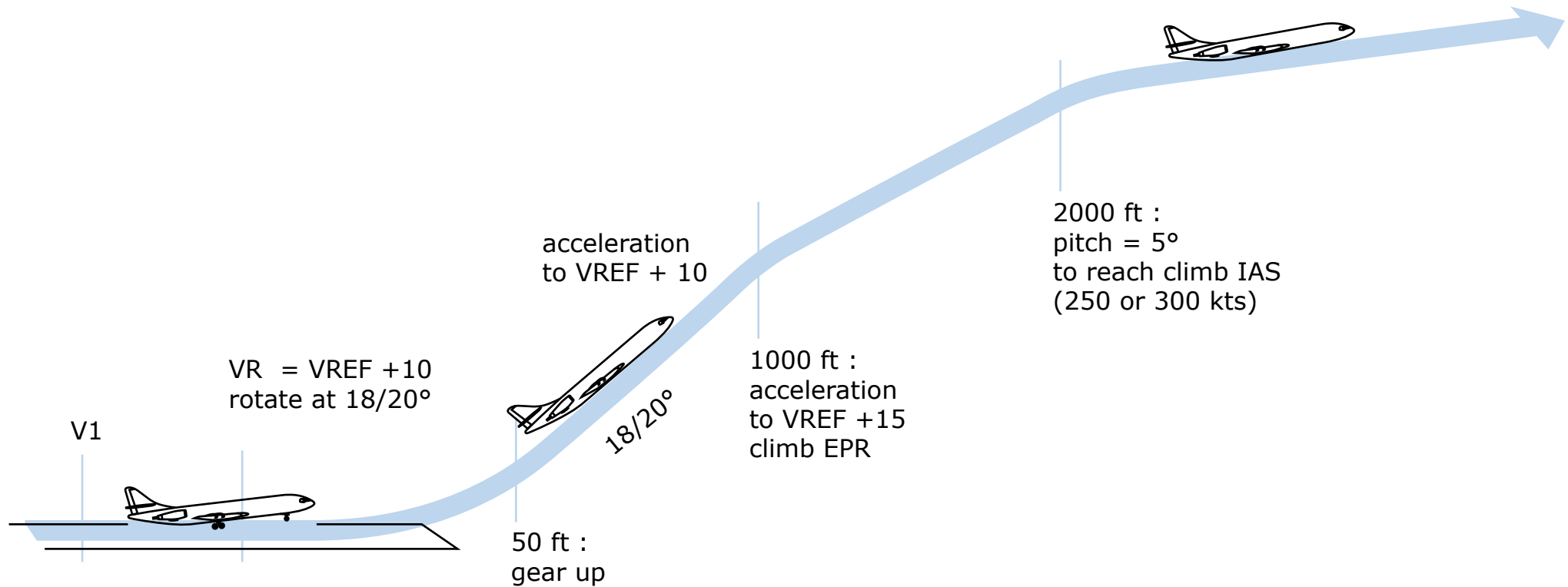
Take off speeds depend on plane's weight according to the joined fly dynamic and fuel quantity.

Clicking onto the main speed indicator will set the correct take off speeds depending on the weight (take care that the flaps have to be in the right position before this as their position affects the speeds). A reference speed is set (VRF) depending on weight, other speeds depend on this VRF.

Press F10 to display CHECKLISTS.



ANTI-NOISE TAKE OFF / SPEEDS REF. | FLYING WITH CARAVELLE 10R



Take off speeds (V2 = 1.3 VS = VREF case) :

Weight (T)	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34
V1* (IAS)	143	142	140	138	137	135	133	132	130	129	127	126	124	123	122	121	119	118	117
VR (IAS)	149	148	146	145	143	142	140	139	137	136	134	132	131	129	127	126	124	122	120
V2 (IAS)	151	150	148	147	145	144	142	141	139	138	136	134	133	131	129	128	126	124	122

* in reality, corrections should be applied to V1
depending on altitude and temperature (+ 1 to 3 kts)

CLIMB, CRUISE, DESCENT | **FLYING WITH CARAVELLE 10R****CLIMB :**

- standard : 250 kts / M.0,65
- high speed : 300 kts / M.0,65

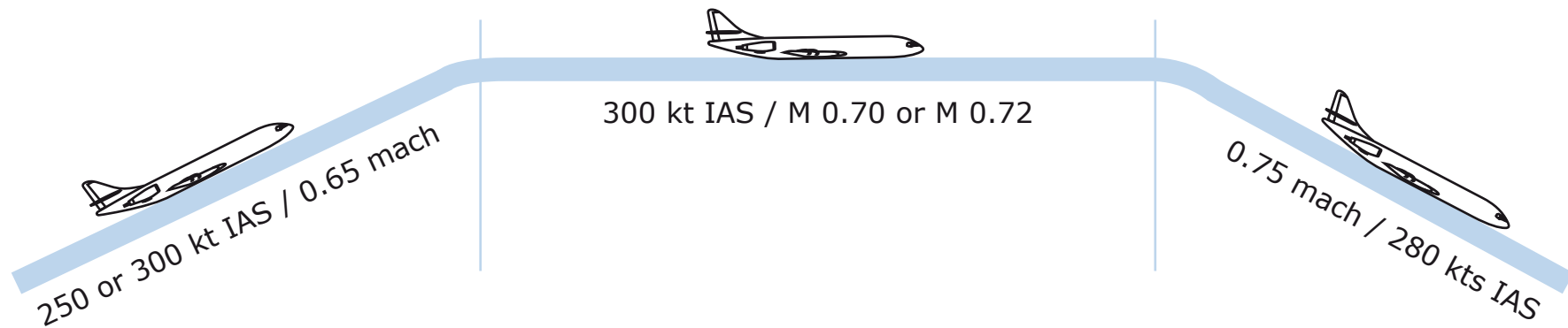
CRUISE :

- Standard : 300 kts / M 0.70 or M 0.72 depending on altitude
- Eco : 280 kts / M 0.68

DESCENT :

- standard : M.0,75 / 280 kts IAS
vz = -1700 ft/min above FL 200, -2300 ft/min below
- long range : M.0,75 / 250 kts IAS
vz = -1900 ft/min

a standard flight configuration :



APPROACH AND LANDING

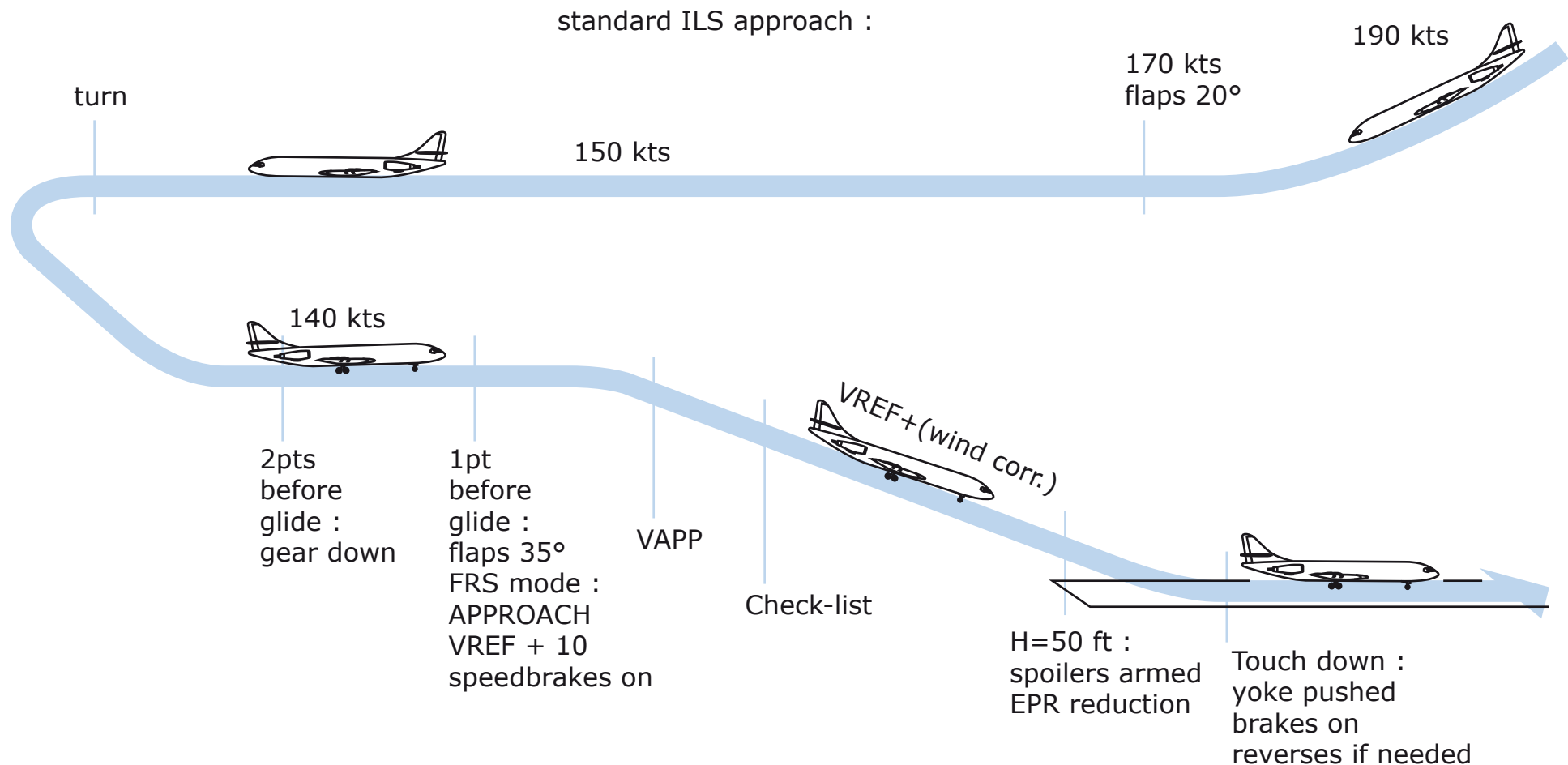
FLYING WITH CARAVELLE 10R

Approach is made at 150 kts.

Final approach (glide slope) is made at VRF (+wind correction = VAPP=approach speed).

Beginning of the runway at 50 ft (EPR reduction).

Landing occurs at VREF.



ENGINES EPR (JT8-D7)

FLYING WITH CARAVELLE 10R

TAKE OFF

	Zp / mb							
	-1000	0	1000	2000	3000	4000	5000	6000
TAT °C	1050	1013	977	942	908	875	843	812
45	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83
40	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
35	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92
30	1.93	1.96	1.96	1.96	1.96	1.96	1.96	1.96
25	1.93	1.97	1.97	1.97	1.97	1.97	1.97	1.98
20	1.93	1.97	1.97	1.97	1.97	1.97	1.97	1.98
15	1.93	1.97	1.97	1.97	1.97	1.97	1.97	1.98
10	1.93	1.97	2.00	2.00	2.00	2.00	2.00	2.00
5	1.93	1.97	2.02	2.03	2.03	2.03	2.03	2.03
0	1.93	1.97	2.02	2.06	2.06	2.06	2.06	2.06
-5	1.93	1.97	2.02	2.07	2.08	2.08	2.08	2.08
-10	1.93	1.97	2.02	2.07	2.11	2.11	2.11	2.11
-15	1.93	1.97	2.02	2.07	2.12	2.14	2.14	2.14
-20	1.93	1.97	2.02	2.07	2.12	2.16	2.16	2.16
-25	1.93	1.97	2.02	2.07	2.12	2.18	2.19	2.19
-30	1.93	1.97	2.02	2.07	2.12	2.18	2.22	2.22
-35	1.93	1.97	2.02	2.07	2.12	2.18	2.24	2.24
-40	1.93	1.97	2.02	2.07	2.12	2.18	2.24	2.27
-45	1.93	1.97	2.02	2.07	2.12	2.18	2.24	2.29
-50	1.93	1.97	2.02	2.07	2.12	2.18	2.24	2.31

Zp (line 1) = altitude at standard atmospheric pressure
 mb (line 2) = atmospheric pressure in millibars
 TAT (column 1) = total air temperature in °C

CLIMB

	Zp / mb							
	-1000	0	1000	2000	3000	4000	5000	>5000
TAT °C	1050	1013	977	942	908	875	843	
50	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64
45	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
40	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
35	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
30	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76
25	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79
20	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
15	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85
10	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88
5	1.89	1.92	1.92	1.92	1.92	1.92	1.92	1.92
0	1.89	1.94	1.95	1.95	1.95	1.95	1.95	1.95
-5	1.89	1.94	1.98	1.98	1.98	1.98	1.98	1.98
-10	1.89	1.94	1.98	2.01	2.01	2.01	2.01	2.01
-15	1.89	1.94	1.98	2.03	2.05	2.05	2.05	2.05
-20	1.89	1.94	1.98	2.03	2.08	2.08	2.08	2.08
-25	1.89	1.94	1.98	2.03	2.08	2.11	2.11	2.11
-30	1.89	1.94	1.98	2.03	2.08	2.14	2.14	2.14
-35	1.89	1.94	1.98	2.03	2.08	2.14	2.16	2.16
-40	1.89	1.94	1.98	2.03	2.08	2.14	2.19	2.19
-45	1.89	1.94	1.98	2.03	2.08	2.14	2.19	2.22
-50	1.89	1.94	1.98	2.03	2.08	2.14	2.19	2.25

MAXI CRUISE

TAT °C	EPR
60	1.42
55	1.45
50	1.48
45	1.51
40	1.54
35	1.57
30	1.61
25	1.64
20	1.68
15	1.72
10	1.77
5	1.81
0	1.85
-5	1.88
-10	1.92
-15	1.95
-20	1.99
-25	2.02
-30	2.05
-35	2.07
-40	2.10
-45	2.13
-50	2.15
-55	2.18
-60	2.21

HOW TO INSTALL THE PANEL (STANDARD INSTALL)

AFG planes are not originally built to fly in FSX, this is why installation should be done manually.

STEP 1- install AFG Caravelle 10R in [Microsoft Flight Simulator X \ SimObjects \ Airplanes](#)

STEP 2- replace the [panel](#) folder in [Microsoft Flight Simulator X \ SimObjects \ Airplanes \ AFG_Caravelle_10R](#) by the new one of your choice (4x3 or 16x9 version)

STEP 2b (panel 4:3)- default panel is in 16:9 version (so skip this step if you use a 16:9 screen). If you use a 4:3 screen, replace the [panel.cfg](#) file by the 4:3 version one in [Microsoft Flight Simulator X \ SimObjects \ Airplanes \ AFG_Caravelle_10R \ panel](#)

STEP 3- put [c10rbgt3.dll](#) file in [Microsoft Flight Simulator X \ Gauges](#) folder

OTHER PLANE WITH ANOTHER FLY DYNAMIC

This installation process is available only if you choose another plane than Allied Fs Group one to fly with this panel (despite this panel is made for AFG planes).

STEP 1- replace the [panel](#) folder in [Microsoft Flight Simulator X \ SimObjects \ Airplanes \ other_caravelle](#) \ by the new one

STEP 1b (panel 4:3)- default panel is in 16:9 version (so skip this step if you use a 16:9 screen). If you use a 4:3 screen, replace the [panel.cfg](#) file by the 4:3 version one in [Microsoft Flight Simulator X \ SimObjects \ Airplanes \ other_caravelle \ panel](#)

STEP 2- put the [c10rbgt3.dll](#) file in the [Microsoft Flight Simulator X \ Gauges](#) folder

STEP 3 - VERY IMPORTANT : SOME MODIFICATIONS HAVE TO BE MADE IN THE [AIRCRAFT.CFG](#) FILE OF THE PLANE YOU CHOOSE TO ALLOW THIS PANEL TO WORK PROPERLY WITH YOUR PLANE.

SEE THE AIRCRAFT.CFG MODIFICATIONS IN THE FOLLOWING PAGE.

The lines and values in red have to be present in the aircraft.cfg file to allow this panel to work properly.

AIRCRAFT.CFG MODIFICATIONS

HOW TO INSTALL THE PANEL (OTHER PLANES)

[ELECTRICAL]

electric_always_available=1
 // disables fs2004 default electrical system

[FUEL]

LEFTAUX=0.12, -19.23, -0.1596, 2139.800, 0.000
 RIGHTAUX=0.12, 19.23, -0.1596, 2139.800, 0.000
 LEFTMAIN=-5.6, -45.596, 0.000, 369.800, 0.000
 RIGHTMAIN=-5.6, 45.596, 0.000, 369.800, 0.000
 NUMBER_OF_TANK_SELECTORS=2
 fuel_type=2
 electric_pump=1
 // auxiliary and main tanks capacities are inverted in order
 to burn the fuel from the tanks in the actual order : fuel
 from main tanks is burned before and then auxiliary ones
 (fs2004 burns fuel from auxiliary tanks before by default)

[RADIOS]

// Radio Type=available, standby frequency, has glide slope
 Audio.1=1
 Com.1=1, 0
 Com.2=1, 0
 Nav.1=1, 0, 1 // CAUTION 2nd is 0 because no standby
 Nav.2=1, 0, 0 // CAUTION 2nd is 0 because no standby
 Adf.1=1
 Adf.2=1
 Transponder.1=1
 Marker.1=1

[AUTOPILOT]

AUTOPILOT_AVAILABLE=1
 FLIGHT_DIRECTOR_AVAILABLE=1
 DEFAULT_VERTICAL_SPEED=1000.000000
 AUTOTHROTTLE_AVAILABLE=1
 AUTOTHROTTLE_ARMING_REQUIRED=0
 default_pitch_mode=0
 default_bank_mode=0
 ...

[stall_warning]

type=0
 // STALL warning sound is managed by the .gau file

[gear_warning_system]

gear_warning_available=0
 // gear warning sound is managed by the .gau file

[attitude_indicators]

attitude_indicator.0=2

[turn_indicators]

turn_indicator.0 = 1, 0

[direction_indicators]

direction_indicator.0 = 2, 0

[hydraulic_system]

electric_pumps = 1
 engine_map = 1, 1, 0, 0

HOW TO INSTALL THE PANEL (OTHER PLANES)

```
[Flaps.0]  
type=1  
span-outboard=0.500  
extending-time=30.000  
system_type=1  
damaging-speed=280  
blowout-speed=300  
...  
flaps-position.0=0, 0  
flaps-position.1=5, 258  
flaps-position.2=10, 258  
flaps-position.3=20, 202  
flaps-position.4=35, 190
```

DESINSTALLATION

ETAPE 1- remplacer ou supprimer le dossier [panel.cfg](#) de l'avion d'AFG du dossier [Microsoft Flight Simulator X \ SimObjects \ Airplanes \](#) ou supprimer les fichiers [.bmp](#) et le fichier [panel.cfg](#) du dossier [Microsoft Flight Simulator X \ SimObjects \ Airplanes \ autre_caravelle \ PANEL](#)

ETAPE 2- supprimer le fichier [c10rbgt3.dll](#) du dossier [Microsoft Flight Simulator X \ Gauges](#)

GENERALITIES, DOORS, MINI PANEL

TECHNICAL DATAS WITH FS



MAJ E
opens and closes
rear stairs



1 click : opens
(or closes)
forward door



CABIN door light

1 click : asks for
(or removes)
airport stairs

MINI PANEL mode



Due to the way FS loads gauges, it is better not to choose the Caravelle directly from the "Create a Flight" menu. Rather create a flight [FS GEN1&2 ON] choosing first a default Flight Simulator plane (B737 for instance) and then, once the flight is loaded, you can choose the Caravelle from the "Aircraft" menu.

Gauges appears to load better that way.

When opening the panel for the first time, a sensation of windows flashing during half a second could be seen. This is due to the initialization of the whole windows before some of them get closed.

With AFG plane, plane rear stairs can be opened and closed with the key command SHIFT E.

The main forward door can be opened and closed by clicking onto the red CABIN door light (light on the left).

In both case, the CABIN red light will be on.

Airport stairs for forward door can be asked by clicking onto the red PARKING BRAKE light. The plane must be on ground with parking brake on.

For VFR landings, the Mini Panel mode (press "W" key) displays a sum up of the main panel instruments.

SCREEN RESOLUTIONS

TECHNICAL DATAS WITH FS

This panel is available in 2 screen resolution type:
4:3 and 16:9.

Use the version corresponding to your screen (4:3 = old
screen standard, 16:9 = new wide screen standard).

16:9 (wide screen) version, shows left part of the cockpit.
So that flight director mode selector is more on the lower
left part of the screen window (at its accurate position in real
cockpit) this other instrument at the left is the G force
indicator.

16:9 version (wide screen)



G force
indicator

Flight director
mode selector

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LEGAL TEXT | **LEGAL INFOS**



THIS PANEL, IS STRICTLY FREEWARE, USING THIS PANEL OR PARTS OF IT OR THE INCLUDED PLANE FOR COMMERCIAL BUSINESS (EVEN SHAREWARE) IS FORBIDDEN.

I ACCEPT NO RESPONSIBILITY IN ANY DAMAGE RESULTING FROM USING THOSE FILES.

ALL THE INFOS GIVEN IN THIS DOCUMENT ARE NOT AVAILABLE FOR REAL AVIATION.

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