

# Airbus Overhead Panel



## Push-Button & Switching Explanation

(For reference only)

### A330 & A340

# Overhead Panel Switches

## Airbus Overhead Panel Switches

### 21. AIR / PRESSURIZATION / VENTILATION

#### PACK 1



On – Pack flow control valve opens automatically except when;

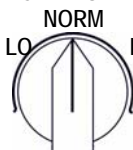
- upstream press below min.
- compressor outlet overheat
- engine start sequence (Mode selector IGN, reopen after 30s if no eng start.)
- any door is not closed and locked, a/c on gnd, an engine running.
- Onside engine fire Pb pressed
- ditching selected.

*Note: On gnd, valves reopening is delayed 30s to avoid a supplementary pack closure cycle during subsequent eng start. If there is no electrical power, the flow valves remain open and permit NORM flow.*

Off – Valve closes provided it is electrically supplied

- Fault - Valve position disagree with Selector position
- Compressor outlet overheat
  - Pack outlet overheat

#### PACK FLOW



LO- 80% (Less than 160 in Y and 200 total)

NORM – 100%

HI – 120% (abnormally hot and humid conditions)  
one bleed fail, then HI limited to 112%

*Note: When single pack ops or APU supply – auto HI*

#### COCKPIT (CABIN)



12 O'clock - 24° C The actual temp. is measured by

COLD – 18° C sensors in the cockpit, galley &

HOT – 30° C lav circuits.

COLD

HOT

#### CAB FANS



On – The 2 cabin fans (recirculation fans) run.

- cabin air blown to avionics comp. And mixer unit.

Off – The 2 cabin fans stop

## Overhead Panel Switches

Note: Should a fan failure occur, ECAM caution is activated.

# Overhead Panel Switches

## HOT AIR 1



On – Valve regulates hot air pressure

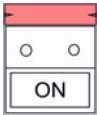
Off – Valve closes

- Fault circuit is reset
- If HOT AIR 1 Fwd cargo heat is lost

Fault – duct overheat detected (88° C)

- Valve, associated trim air valve close automatically
- FAULT Lt goes out automatically when temp <70° C, or OFF.

## RAM AIR



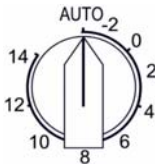
On – Illuminates white

If DITCHING Pb is in normal pos'n:

- RAM air inlet opens
- If  $\Delta p < 1$  psi: each outflow valve opens to about 50% when not under manual control. Emergency ram air directly supplied to mixer unit.
- If  $\Delta p \geq 1$  psi: each outflow valve remains normally controlled. No emergency ram air flows in.

Off – Ram air inlet closes, outflow valves return to normal position

## LDG ELEV



AUTO – System uses FMGS data to construct pressure schedule.

Other Pos'ns – Doesn't use FMGS data. Uses selected elevation.

## MODE SEL



AUTO – One of the 2 systems is controlling the outflow valve.

- 2 outflow valves.
- Each operated by 1 of 3 motors, 1 man 2 auto.
- Transfer between the 2 sys occurs 80s after ldg or if one fails. Can select stby sys by switching to MAN for > 3s then AUTO.
- Uses Ldg elev and QNH from FMGC, and press alt. from ADIRS. If FMGC data n/a the uses Capt. Baro Reference from ADIRS, and LDG ELEV selection.

MAN – Use MAN V/S CTL to control system.

FAULT Lt – Amber with ECAM when both automatic systems faulty.

## V/S CTL



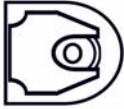
Controls the position of the outflow valves when in MAN mode.

UP – The valve(s) move toward the open position.

# Overhead Panel Switches

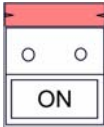
DN – The valve(s) move toward the closed position

## VALVE SEL



- AFT - The aft valve MAN controlled, fwd AUTO.
- BOTH - Both Manually controlled.
- FWD - The fwd valve MAN controlled, aft AUTO.

## DITCHING



- Normal – The system functions normally.
- ON – The following valves close; (Lt White)
  - outflow valves. *Will not close automatically if under MAN control.*
  - emergency ram air inlet
  - avionics ventilation overboard valve
- cargo compartment isolation valves
- pack flow control valves
- Cabin fans stop

**Caution:** If the ditching pb is put ON, on ground, with low pressure ground cart connected and all doors closed, a differential press will build up.

## EXTRACT



- A AUTO – On gnd, Eng 2 & 3 not running (both Eng A330);
  - the under floor extract valve is closed
  - OVBD valve is open
- T provided DITCHING is not selected.
- O - In flt, or on gnd, Eng 2 or 3 running (Eng 1 or 2 A330)
  - Underfloor extract valve open
  - OVBD extract valve closed

OVRD – underfloor extract valve closes

- OVBD extract valve partially opens

provided DITCHING is not selected.

FAULT Lt – **Amber** with ECAM when extract low flow detected in avionics bay

- Fault Lt goes out when OVRD sel

## CARGO AIR COND



- COLD - 5° C
- Mid Posn - 15° C
- HOT - 25° C

COLD                      HOT

# Overhead Panel Switches

## BULK ISOL VALVES



- ON – The inlet and outlet isolation valves open.
- valves close and fan stops if DITCHING sel.
  - valves close and fan stops if smoke in cargo compt

OFF – inlet and outlet isolation valves close, fan stops

FAULT Lt – **Amber** with ECAM when either valve not in selected position.

## HOT AIR



ON – Fan heater (fan blows onto electric element) on provided:

- Bulk cargo temp below selected temp and
- Bulk cargo door closed.

OFF – Fan heater operation is stopped. Inlet air not heated.

FAULT - **Amber** associated with ECAM message in case of:

- fan heater failure
- temp sensor failure
- BULK cargo door not fully closed
- Ventilation system failure
- Duct overheat (above 88° C) Fault goes off when temp<70° and OFF is sel.

## AIR OVHT COND FANS RESET (Overhead Maintenance Panel)



- FAULT Lt – Overheat
- Fan stopped
  - Press pb to reset.

## 23. COMMUNICATIONS

### SVC INT

OVRD (Maintenance panel)



AUTO – If ldg gear compressed, ground crew can use service interphone jacks to communicate with the cockpit.

ON – Comms possible with ldg gear not compressed

- ON light white

### MECH



Pressed – COCKPIT CALL lights up **Blue** on external power panel.

- External horn sounds.

Released – COCKPIT CALL remains lighted

- external horn stops sounding.

# Overhead Panel Switches

FLT REST (A340) / CAB REST (A340) / PURS / FWD / MID / EXIT / AFT



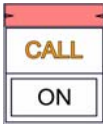
- Pressed – Pink light illuminates at area call panel
- CAPTAIN CALL appears at Attendant Indication Panel (AIP) with **Green** light.
  - High-Low chime sounds through corresponding loudspeaker

ALL



- Pressed – All stations respond as above.
- CALL ALL CAPT appears on AIP's.

EMER



- ON – Pink light at all area control panels
- CALL PRIO CAPT message on all AIP's
  - **Red** light and 3 x Hi-Lo chimes.
  - Hi-Lo Chime x 3 through all loudspeakers
  - ATT **Amber** light flashes on Audio Control Panels

ON Lt – Flashes white for emergency call from cockpit to cabin.

CALL Lt – Flashes **Amber** for emergency call from Cockpit or Cabin

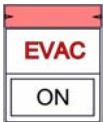
If call from Cabin to Cockpit:

- White ON light & **Amber** CALL light flash
- **Amber** ATT lights on ACP's flash
- 3 long buzzers sound in cockpit

System resets when attendant hangs up.

## EVAC

COMMAND



- ON – In the cockpit: - EVAV light flashes **Red**.
- In the cabin: - EVAC lights flash at all AIP's  
- "EVACUATION ALERT" appears on all AIP's and a **Red** light

flashes

- specific evacuation tone sounds.

OFF – The alert is stopped

The EVAC light flashes **Red** when alert is activated

# Overhead Panel Switches

## HORN SHUT OFF



Pressed – silences cockpit horn (generated when EVAC activated from cabin)

## CAPT & PURS



CAPT & PURS – Alert may be activated from Cockpit or Cabin

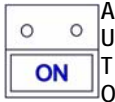
CAPT – Alert may only be activated from Cockpit

- If one of the cabin EVAC pb is pressed, cockpit horn sounds for 3 sec only.

### CAPT

## RCDR

### GND CTL



ON – CVR, DFDR, QAR are energized

- On light **Blue**

AUTO – System automatically energized

- during first 5 min a/c elec network energized

- on gnd with 1 eng running. (system auto switches from ON to

AUTO at first eng start and in case of an electrical transient)

- in flight

System automatically de-energized 5 min after last eng shutdown.

## CVR

### TEST



Pressed – If CVR energized, test circuit activated

- result visible on **Green** indicator (one LED OK)

### ERASE



Pressed (for 2 sec) – Erases tape completely if

- a/c on gnd

- parking brake on.



# Overhead Panel Switches

## 24. ELECTRICAL



### BAT 1(2)



Controls operation of corresponding Battery Charge Limiter (BCL)

**AUTO** – Automatically controls connect/disconnect of battery to DC BAT BUS by open/closing battery contactor.

Batteries connected to DC BAT BUS when:

- bat voltage  $\downarrow$ 26.5V. End of charge cycle when bat current  $\downarrow$ 4A for 10sec on gnd & 30min in flt.
- On gnd (<50kt), when batteries only are supplying a/c.
- In flt DC generation lost (limited to 7 seconds)

Batteries connected to DC ESS BUS when batteries only are supplying:-

- in flight
- on gnd (<50kt) provided bat sel to AUTO.

*Note: Batteries are normally disconnected*

*Auto cutoff logic prevents bat from completely discharging on gnd.*

*Logic – a/c on gnd*

*- main power off*

*- bat <23V for 16 sec or longer*

**OFF** – BCL not operating & DC ESS BUS not connected to bat.

- HOT buses remain supplied

**FAULT** - **Amber** with ECAM when charging current abnormal. Bat contactor opens

### APU BAT



Controls the operation of APU BCL

**AUTO** – APU BCL automatically controls closure/opening of line APU contactor.

Battery connected when:-

- charging as per bat 1(2)
- When APU start sequence initiated

**OFF / FAULT** Lt – As for Bat 1(2)

# Overhead Panel Switches

## AC ESS FEED



Normal – AC ESS BUS supplied by AC BUS 1.1 (1 A330)  
- Automatically supplied by AC BUS 2.4 (2 A330) when AC BUS 1.1(1) is lost.

ALTN – AC ESS BUS supplied by AC BUS 2.4 (2 A330)  
FAULT - **Amber** with ECAM when AC ESS BUS not electrically supplied.

*Note: If main generators are lost AC ESS BUS auto supplied by EMERG GEN or by static inverter if EMERG GEN not avail.*

## GALLEY



A AUTO – ECMU (Electrical Contactor & Management Unit) auto controls shedding of galleys if GEN failure or overload detected.

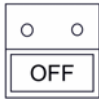
U - On gnd APU gen or external pwr supplies galleys provided no overload detected.

O OFF – All galleys are shed and water/water ice protection lost.

FAULT Lt – **Amber** with ECAM if overload is detected and auto shedding is not performed.

*Note: OFF then AUTO resets galleys that have been shed due overload. If lost due to loss of gen, no reset.*

## COMMERCIAL



OFF – Following equipment is shed:

- galleys
- passenger entertain system (music & video)
- cargo loading system
- electrical service
- escape slide lock mechanism ice protection
- water/waste (drain mast) ice protection
- lav & cabin lights
- water heater

## IDG 1 (2,3 or 4) (Integrated Drive Generator)



When pressed, IDG disconnects from drive shaft. Can only reconnect on gnd.

Caution: do not hold down for more than 3sec due damage to disconnection mechanism.

Caution: IDG disconnect inhibited when engine N2 (N3 A330) is below the low speed threshold.

FAULT Lt – **Amber** with ECAM :

- IDG oil outlet overheat (above 185° C) or
- IDG oil press low. Inhibited if N2 <14% (N3 <52% A330)
- Light extinguishes when IDG disconnected.

# Overhead Panel Switches

## GEN 1 (2,3 or 4)



Each GEN can supply up to 75KVA 3 phase 115/200V 400 hertz power. (A330 up to 115KVA per gen)

ON – Gen field is energized & line contactor closes.

OFF/R – Gen field is de-energized & line contactor opens, also resetting circuit.

FAULT Lt – **Amber** with ECAM if protection trip initiated by Generator Control Unit (GCU). Line contactor opens.

*Note: If protection trip initiated by a differential fault the reset action has no effect after 2 attempts.*

## APU GEN



Can supply up to 115KVA which is enough to power entire a/c.

ON – APU gen field is energized & contactor closes.

- Each bus tie contactor 1,2,3 and/or 4 auto close if associated gen not operative.

OFF/R – Gen field de-energized & contactor opens, resetting circuit.

FAULT Lt – Same as Lt – GEN 1 FAULT. APU GEN FAULT Lt inhibited when APU slow

## BUS TIE



A AUTO (A340) – The 5 BUS TIE contactors auto open/close according to priority logic to power all AC buses.

T - When gen is lost its BUS TIE contactor and the adjacent gen's BUS TIE

O contactor close ensuring supply to AC BUS.

- All 5 contactors close when only APU gen or 1 gnd pwr unit.
- when only 2 gens on same side supplying pwr, following contactors close:
  - the 2 contactors associated to both lost gens
  - the contactor associated to the external running gen
  - the 5<sup>th</sup> contactor (located between the left & right side)

AUTO (A330) – the 3 BUST TIE contactors open/close to provide power to all AC buses. All 3 are closed when a/c is supplied by only one eng generator or by only APU or single gnd pwr unit.

OFF – All BUS TIE contactors open.

*Note A340: Cycling BUS TIE pb on gnd inhibits NBPT function. The function may be recovered by switching OFF all a/c elec sources and resetting GPCU.*

## EXT A (Momentary Action pb)



AVAIL Lt – **Green** if all external pwr parameters are normal.

- pressing when "AVAIL" ext pwr line contactor closes

- pressing when "ON" ext pwr line contactor opens

# Overhead Panel Switches

## EXT B (Momentary Action pb)



AVAIL Lt – **Green** if all external pwr parameters are normal.  
- if APU gen off, pressing when “AVAIL” ext pwr line contactor closes.  
- pressing when “AUTO” ext pwr line contactor opens

Note 1:

\* APU has priority over EXT A & B for AC BUS 1.1 & 1.2 (AC BUS 1 A330)

\* EXT A has priority over APU for AC BUS 2.3 & 2.4 (AC BUS 2 A330)

\* APU has priority over EXT B for AC BUS 2.3 & 2.4 (AC BUS 2 A330)

\* ENG gens have priority over EXT A & B or APU

\* EXT B has priority over EXT A for AC BUS 1.1 & 1.2 (AC BUS 1 A330)

Note 2: When EXT B is AUTO, AUTO Lt remains illuminated even when APU has taken over.

## EMER ELEC PWR PANEL

### EMER GEN TEST

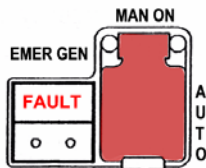


Pressed – Activates the emergency generator and connects gen to ESS network.

- This test is inhibited when slats are extended.
- Deactivation only occurs on gnd when eng 1 & 4 (1 & 2 A330) shutdown with N2 <50% (A340 & A330).

- If pressed in flight LAND RECOVERY pb will need to be ON to recover LAND RECOVERY AC and DC BUSES.

### EMER GEN MAN ON



When **Green** HYD sys powered by eng driven pump the EMERG GEN supplies:

- AC ESS BUS
- AC ESS SHED
- through ESS TR :
  - DC ESS BUS
  - DC ESS SHED

When **Green** HYD sys powered by RAT the EMERG GEN supplies:

- AC ESS BUS
- DC ESS BUS through the ESS TR.

If buses 1.1 & 2.4 (1 & 2 A330) are lost and eng 1 & 4 (1 & 2 A330) are lost the RAT extends automatically to power EMERG GEN.

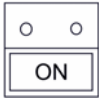
AUTO – In flight EMERG GEN auto starts if normal AC is lost.

Pressed – EMERG GEN runs.

EMERG GEN FAULT Lt – **Red** when not supplying and normal AC is lost.

# Overhead Panel Switches

## LAND RECOVERY



A340

ON – In EMERG GEN config, AC LAND RECOVERY & DC LAND RECOVERY buses are restored to power:- LGCIU 1

- SFCC 1 (no flap if powered by RAT)
- ILS 1

A330

ON – In EMERG GEN config, AC LAND RECOVERY & DC LAND RECOVERY buses are restored to power:-

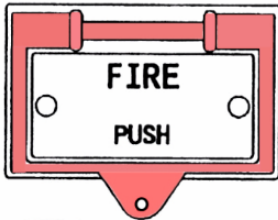
- LGCIU 1
- SFCC 1 (no flap if powered by RAT or batteries)
- ILS 1
- BSCU channel 1
- LH windshield anti ice (not if powered by RAT or batteries)
- LH LANDING light

A340 & A 330

Remaining fuel pump (if any) is lost. Pump may already be lost if below 260kt and emerg gen is powered by the RAT.

## 26. FIRE

### ENG 1(2,3,4) FIRE



When released out-

- aural warning cancelled
- squib armed
- fuel LP valve closed
- eng return valve closed
- hyd fire valve closed
- eng bleed valve close (adj eng also A340)
- pack flow control valve closed
- FADEC pwr supply cut

FIRE Lt – Red whenever fire detected

AGENT 1



AGENT 2



Both become active when ENG FIRE pb is released. Discharge when pushed.

SQUIB Lt – when ENG FIRE pb released

DISCH Lt – Amber when bottle lost pressure

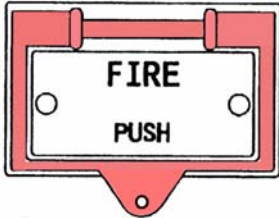
# Overhead Panel Switches

## TEST



- When pushed – continuous repetitive chime
- MASTER WARNING Lt flashes
  - ECAM ENG FIRE activated
- On fire panel – all ENG FIRE pb **Red**
- all SQUIB Lts white(provided charged)
  - all DISCH Lts **Amber**
- Fire lights come on, Eng pedestal fire lights also come on.

## APU FIRE



- When released out –
- APU shuts down
  - aural warning cancelled
  - squib armed
  - LP fuel valve closes
  - APU fuel pumps shut off (fwd & aft)
  - APU bleed valve and X bleed valve close
  - APU gen de-activated
- FIRE Lt – **Red** whenever fire detected

## AGENT



- Becomes active when ENG FIRE pb is released.  
Discharges when pushed.
- SQUIB Lt – when ENG FIRE pb released  
DISCH Lt – **Amber** when bottle lost pressure

*Note: **Red** disc at rear of fuselage signals agent not discharged overboard due to bottle overpressure.*

## TEST



As per Eng fire test.

## VENTILATION

### AVNCS

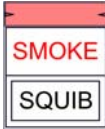


- Detection by 2 smoke detectors (ionization type) in the air extraction duct of avionics ventilation system. Each detector is linked to one of two detection loops.
- SMOKE Lt – **Red** with ECAM when smoke detected in avionics ventilation duct.

# Overhead Panel Switches

## CARGO SMOKE PANEL

### FWD AGENT (AFT AGENT)



Pressing – Squib is ignited and extinguishing agent is discharged into appropriate compartment.

- 2 bottles ignite at once
- BTL 1 discharges into comp over  $\approx$  60sec
- BTL 2, slow flow metering system ensures concentration for 280min.

The SDCU (Smoke Detection Control Unit) monitors squib integrity and bottle pressure.

SQUIB Lt - White in case of positive test.

### DISCH



BTL 1 or BTL 2 – White light when bottle is discharged

### TEST



- Pressing - smoke detectors in FWD, AFT, & BULK are tested by SDCU in sequence.
- BTL 1(2) Lts white
  - isolation valves of ventilation system close
  - SQUIB Lt white provided 1 of 2 filaments serviceable
  - SMOKE Lt (AFT,FWD CARGO, AVNCS) **Red** with ECAM & chimes

Note: *Each SDCU channel sounds its own warning which lasts about 25 seconds with a delay of about 30 seconds between them.*

# Overhead Panel Switches

## 27. FLIGHT CONTROLS

### PRIM 1(2,3)



Control the FCPC (Flight Control Primary Computers)

ON : The following functions are provided by each computer

- normal pitch
- normal lateral
- MLA
- speed brakes, ground spoilers control logic
- pitch alternate
- pitch direct
- roll direct
- yaw alternate
- ailerons droop
- abnormal attitude law
- autopilot orders
- speed computation

OFF – computer off. Off then On resets it.

FAULT Lt – Amber with ECAM when fault detected. Extinguished when OFF.

### SEC 1(2)



Control the FCSC (Flight control Secondary Computers)

ON : The following functions are provided by each computer

- pitch direct
- roll direct
- yaw alternate
- rudder trim
- rudder travel

OFF – computer off. Off then On resets it.

FAULT Lt – Amber with ECAM when fault detected. Extinguished when OFF.

### TURB DAMP



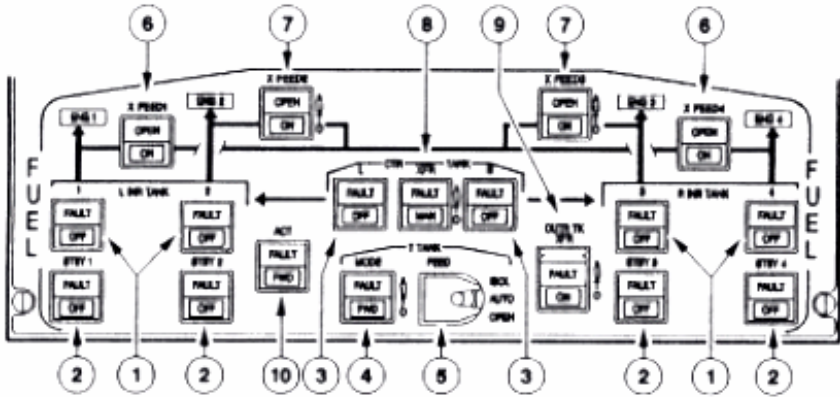
ON – Command of Turbulence damping function is added to normal law elevator and yaw damper command.

OFF – Turb damping function inhibited.



# Overhead Panel Switches

## 28. FUEL A340



### L INR TANK 1(or R)(2,3,4)



Supplies fuel from its own collector cell which it shares with a STBY pump. This collector cell is maintained full at 1,000kg for neg 'g' protection.

ON – Pump is on

OFF – Pump is off.

FAULT Lt – **Amber** with ECAM when pressure drops. Inhibited when OFF sel.

### L INR TANK STBY 1(or R)(2,3,4)



ON – Pump runs when main pump fails or off

OFF – Pump is off

FAULT Lt – **Amber** with ECAM when pressure drops. Inhibited when OFF is selected or main pump running.

### L (or R) CTR TANK



ON – Pump always runs. Valves control xfr. Pump stops when tank empty.

OFF – Pump is off

FAULT Lt – **Amber** with ECAM when:

- delivery press drops or

- trim pipe isol valve is failed open or

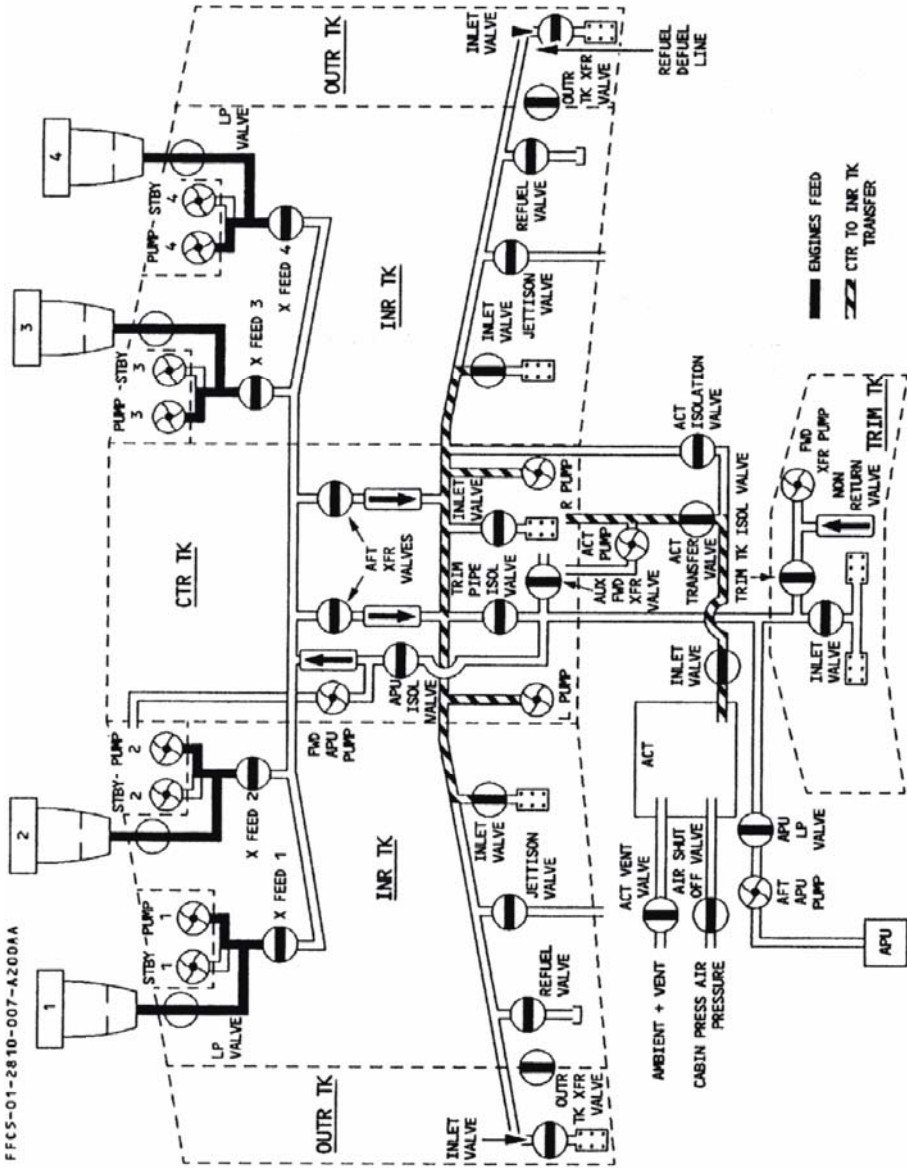
- man xfr from CTR tank is required, and INR tank qtys are > 17000kg or

- one outer, inner inlet valve failed open and INR tank qtys are > 17000kg

Fault Lt is inhibited when sel OFF.

# Overhead Panel Switches

## A340 FUEL SCHEMATIC



FFCS-01-2810-007-A200AA

# Overhead Panel Switches

## T.TANK MODE



AUTO – CG controlled by Fuel Control and Management Computer.

- Auto begins at L/G up and SLATS in – fwd XFR (failure case only). At FL 255 aft XFR to target CG -0.5%. In cruise, fwd XFR to target CG -0.5% (burn = ↑aft CG).
- Auto ends at FL 245 or <35min (FMGS) to dest. (<75min if trim fwd XFR pump failure)

Transfer from t.tank to inner tank occurs when one of the two inner tanks decreases to 4000kg and stops at 5000kg.

FWD – Manual FWD transfer to centre tank using t.tank fwd transfer pump:

- t.tank isolation valve opens
- auxiliary fwd transfer valve opens
- trim pipe isolation valve closes
- aft transfer valves closes

Note: Centre tank overflow must be manually prevented.

FAULT Lt – Amber with ECAM if : - excess aft CG based on THS

- FCMC unable to fwd transfer
- FUEL LO TEMP warning triggered

## T.TANK FEED



ISOL

AUTO

AUTO – forward transfer is stopped when trim tank is low level, to keep transfer line full

OPEN

ISOL – transfer line is isolated by closing:

- t.tank inlet valve
- trim pipe isolation valve
- t.tank isolation valve
- auxiliary forward transfer valve
- t.tank forward transfer pump stops

OPEN – Valves used for manual fwd transfer open & t.tank inlet valve open. Valves remain open for 3min after t.tank is low, to allow transfer pipe to drain.

Note: APU supply is not possible when pipe is drained.

## X FEED 1 (4)



AUTO – Valve normally closed. Both open automatically when:

- in electrical emergency config (if on RAT pump 1 only with STBY 4 as backup)
- jettisoning

ON – Valve opens

OPEN Lt – Green when fully open

# Overhead Panel Switches

## X FEED 2 (3)



- AUTO – Valve normally closed. Both open automatically when:
- in electrical emergency config (if on RAT pump 1 only with STBY 4 as backup)
  - jettisoning
  - aft transfer from inner tanks

ON – Valve opens

OPEN Lt – Green when fully open

## CTR TK TXFR



AUTO – FCMC controls centre to inner tank transfer using the inner tank inlet valve, cycling inner tank contents between full and 2,000kg below full.

MAN – Initiates centre to inner tank transfer by:

- inner tank inlet valves open.

To avoid inner tank overflow, centre tank pumps can be sel OFF.

FAULT Lt – Amber with ECAM when:

- inner tank L LEVEL and centre tank not empty, or
- FCMC unable to carry out transfer to inner tanks

## OUTR TK TXFR



AUTO – FCMC controls outer to inner tank transfer using the outer tank transfer valves, cycling its inner tank contents between 3500kg and 4000kg.

ON – Initiates outer to inner tank transfer by:

- outer transfer valves open
- outer inlet valves open

- inner inlet valves open

FAULT Lt – Amber with ECAM when:

- inner tank L LEVEL and centre tank not empty, or
- FCMC unable to carry out transfer to inner tanks
- FUEL LO TEMP is triggered

## ACT



OFF – FCMC controls the ACT to centre tank transfer. Transfer starts at slat retraction if centre tank <23,000kg. ACT transfer stops if centre tank high level sensor becomes wet and resumes when <23,000kg. ACT fuel is transferred using cabin air pressure.

FWD – Initiates manual fwd transfer to centre tank by opening:

- ACT transfer valve
- ACT inlet valve

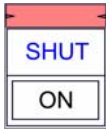
Then ACT transfer pump turns ON.

FAULT Lt – Amber with ECAM when

- WING TK LO LVL
- FCMC unable to carry out transfer to centre tank

# Overhead Panel Switches

## INR TK SPLIT L (or R)



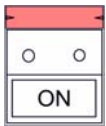
OFF – Split valve open. Inner tank used as single tank.  
 ON – Valve closes, tank split, light white.  
 - fwd part feeds inboard eng  
 - aft part feeds outboard eng and receives any XFRD fuel to the inner tank from the centre, outer or t.tank.

SHUT – Blue when valve shut

- During refueling, first inner tank high level sensor becomes wet, valve closes
- Valve reopens when fueling complete

## JETTISON

### ARM



Output rate when jettisoning is ≈ 1000kg per minute excl burn.  
 All X FEED valves automatically open.  
 All main and stby pumps run  
 Fwd transfer into centre regardless of config  
 OFF – Jettison is disarmed

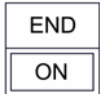
ON – Jettison armed can be activated with ACTIVATE pb.

### ACTIVATE



OFF – Jettison inactive  
 ON – Active, provided ARM pb is ON  
 OPEN Lt – Jettison valves open

## FUEL REFUEL

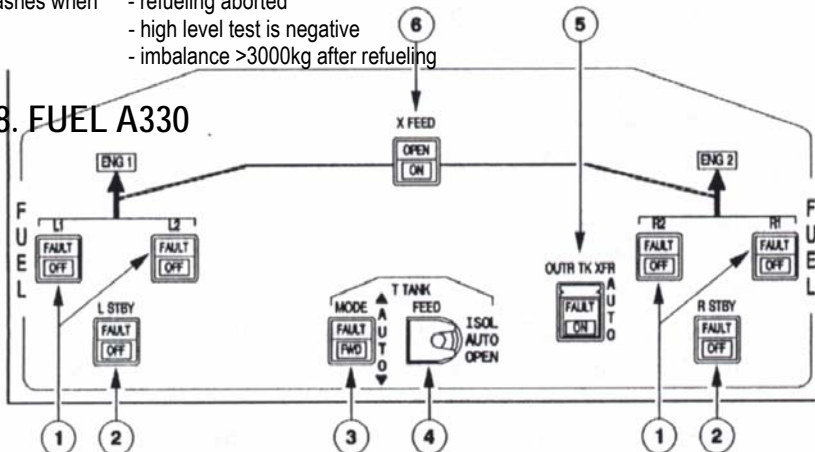


ON – Refueling according to BLOCK FUEL qty displayed on FMGS MCDU INIT B page.

END Lt - refueling complete

- Flashes when
- refueling aborted
  - high level test is negative
  - imbalance >3000kg after refueling

## 28. FUEL A330



## Overhead Panel Switches

### L 1(or R)(or 2)



Supplies fuel from its own collector cell which it shares with the other main pump and is maintained full at 1,000kg for negative 'g' protection.

ON – Pump is on

OFF – Pump is off.

FAULT Lt – **Amber** with ECAM when pressure drops. Inhibited when OFF sel.

### L STBY 1(or R)



ON – Pump runs when main pump fails or off

OFF – Pump is off

FAULT Lt – **Amber** with ECAM when pressure drops. Inhibited when OFF is selected or main pump running.

### T.TANK FEED



ISOL As per A340.

AUTO

OPEN

### OUTR TK XFR



A As per A340

U

T

O

#### X FEED 1

AUTO – Valve normally closed. Both open automatically when:

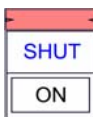
- in electrical emergency config (if on RAT pump **L2 only with pump R2** as backup)



ON – Valve opens

OPEN Lt – **Green** when fully open

### INR TK SPLIT L (or R)



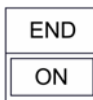
OFF – Split valve open

ON - Valve closes, tank split, light white.

- either inner tank division can be used

SHUT – **Blue** when valve shut

### FUEL REFUEL



ON – Refueling according to BLOCK FUEL qty displayed on FMGS MCDU INIT B page.

END Lt - refueling complete

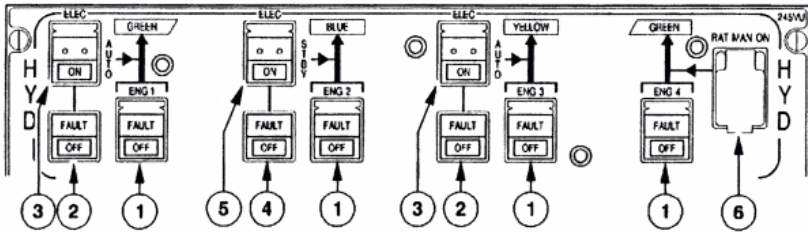
Flashes when - refueling aborted

- high level test is negative

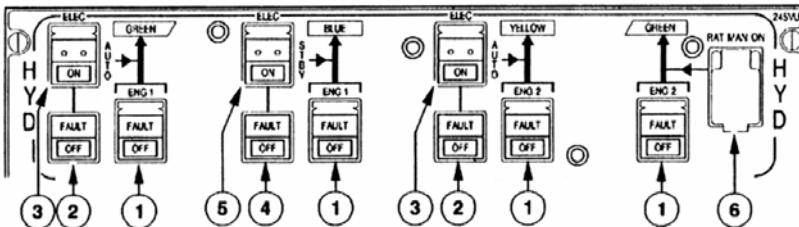
- imbalance >3000kg after refueling

# Overhead Panel Switches

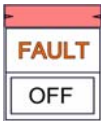
## 29. HYDRAULICS A340



A330



ENG 1 (2,3,4) PUMP



All systems have accumulators to maintain constant pressure. HP bleed air from Eng 2 (Eng 1 A330) pressurize hydraulic reservoirs and if air press too low, uses air from X-bleed duct.

ON – Pump pressurizes the system when eng is running @ 3000psi.

OFF - Pump is depressurized. Power generation stops.

FAULT Lt – Amber with ECAM if

- reservoir low level
- reservoir overheats
- reservoir low air pressure
- pump low pressure

Extinguish when OFF sel. Except in overheat case (light stays on until overheat gone)

### ELECTRIC HYD PUMPS

**GREEN ELEC PUMP** (or **YELLOW**)



AUTO – Pump is auto controlled by HSMU

- **Green** runs for 25sec if eng 1 or 4 (either A330) fails when gear lever selected up and speed >100kts
- **Green** runs on gnd when eng 1 & 4 stopped & 2 & 3 running(A340 only)
- **Yellow** runs when eng 3 (eng 2 A330) fails and FLAPS lever not at zero & >100kts. Remains until last eng shutdown.

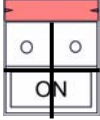
# Overhead Panel Switches

- Yellow runs when a/c on grd and cargo door manual selector in OPEN or CLOSE. (no flap movement)

OFF – pump is de-energized

FAULT Lt - **Amber** with ECAM as per ENG 1 (2,3,4) plus pump overheat in which case the pump shuts down

## GREEN ELEC PUMP ON (or YELLOW) (Spring-loaded-guarded)



AUTO – pump controlled according to ELEC PUMP pb sw.

ON – pump energized provided ELEC PUMP not sel OFF.

- Will not start after elec power interruption
- **Blue** light when supplied

## BLUE ELEC PUMP

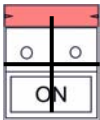


STANDBY – pump controlled by **BLUE** ELEC PUMP ON pb

OFF – pump is off

FAULT Lt – **Amber** with ECAM as per ENG 1 (2,3,4) plus pump overheat in which case the pump shuts down

## BLUE ELEC PUMP ON (Spring-loaded-guarded)

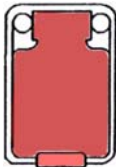


ON – pump on provided ELEC PUMP pb is not sel OFF.

- If elec power supply removed, pump remain off when power is restored

STBY – pump is off

## RAT MAN ON



Pressed – RAT extends

Auto extends when:

- AC NORM buses fail & Eng 1 & 4 fail (A340 only)

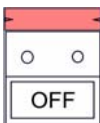
or  
- All engines fail

or  
- **GREEN & BLUE** LO LVL

or  
- **GREEN & YELLOW** LO LVL (A330 only)

## LEAK MEASUREMENT VALVES

### GBY



OFF – valve closes and HYD supply to primary flight controls is shut off.

- inhibited if speed above 100kts
- OFF light illuminates



# Overhead Panel Switches

Note: Yellow valve auto closed on ground when cargo door is operated

## 30. ICE & RAIN PROTECTION

### ANTI ICE

#### WING



Hot air is supplied from pneumatic system and heats the four outboard slats (4,5,6,7). If a leak is detected, valves auto close. Elec pwr supply failure, valves close.

ON – Blue light with WING A.ICE indication on ECAM MEMO

- Wing a.ice control valves open if pneumatic supply avail.
- On grd valves open for 30 sec only for test.
- N1 (EPR) limit Reduced
- Idle N1 (EPR) increased

OFF – valves close, ON light goes out

FAULT Lt – Amber with ECAM if

- position disagrees with selection
- low pressure detected

#### ENG 1 (2,3,4)



Hot air supplied by independent bleed from HP compressor thru open/close valve. Elec pwr supply failure, valves open.

ON – Blue light with ENG A.ICE indication on ECAM MEMO

- valve opens
- (A330 only) if EIU inop, cont. ign is automatically activated

OFF – valves close, ON light goes out

FAULT Lt – Amber with ECAM if anti ice valve disagrees with ENG pb selection.

#### PROBE/

#### WINDOW

#### HEAT

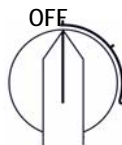


A AUTO – Heated automatically:

- U - in flight
- T - (A330) on grd (except TAT probes) with one eng running
- ~ - (A340) on grd (except TAT probes) with eng 2 or 3 running
- (Both) on grd pitot heat at low level

ON Lt – Blue light indicates probes and windows are heated

#### WIPER



At OFF, wipers out of view  
Max speed 230kts

# Overhead Panel Switches

FAST

## RAIN RPLNT



One button per side.  
Press once and timer applies measured amount  
Inhibited when on gnd & engines stopped

## 33. LIGHTS

INT LT



CTL

DOME



STORM

BRT

DIM

CTL

There are two 2-way switches to control the dome light.

- one located on rear panel near cockpit door
- one on overhead panel

*Note: On gnd, all eng stopped (ie after rejected T/O and evac), right dome light auto illuminates independently of selected posn of switches.*

NAV & LOGO



POS'N 1 & 2 – NAV & LOGO lights are ON when main gear struts are compressed or the flaps are extended 15° or more.



Lights attached to nose gear strut go out when gear is retracted  
RWY TURN OFF – Same as nose lights

A light on each wingtip and one on the tail cone.  
AUTO – Strobes on when struts not compressed



SEAT BELTS



AUTO – ON when all eng running and either slats or main gear is extended.

- Gives low tone chime
- On gnd, signs remain on after slats retracted

# Overhead Panel Switches

**NO SMOKING**



AUTO – (A330) Signs (NO SMOKING & EXIT) on when gear extended  
 - Signs off when gear retracted

AUTO – (A340) Signs (NO SMOKING & EXIT) on when gear extended or slats are extended

Note: When cabin alt is excessive (14,350ft), cabin lights come on. NO SMOKING, FASTEN SEAT BELT, EXIT signs come on regardless of their switch

pos'n.

**EMER EXIT LT**



ARM – Cabin emerg lighting illuminates if:

- DC ESS BUSS fails or
- normal a/c elec pwr fails

- The overhead emerg lights auto illuminate if AC BUS 1 fails. This gives min cabin lighting

EMER EXIT LT-OFF Lt - **Amber** when EMER EXIT LT sel is selected OFF

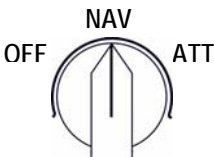
## 34.NAVIGATION

ADR 1 (2,3,4)



OFF – Air data output disconnected

FAULT Lt – **Amber** with ECAM if fault detected in the Air Data Ref.



OFF – ADIRU not energized

NAV – Normal

ATT – IR mode supplying attitude & heading.

- no nav capability
- hdg must be entered thru MCDU regularly ( approx 10 mins)

Complete realign – sel OFF for more than 5 secs. Takes approx. 10 min  
 - recommend before long range flight

Fast realign – cycle OFF then ON within 5 secs. Takes approx. 3 min

IR 1 (2,3)



OFF – inertial data output disconnected

FAULT LT – **Amber** with ECAM if fault detected.

- steady light = respective IR is lost

# Overhead Panel Switches

- flashing light = attitude & heading may be recovered in ATT mode



## Light Only

Amber when 1 or more IRS supplied by batteries.

If Amber on ground – external horn sounds

- ADIRU Lt on SERVICE INTERPHONE BAY panel

comes on.

## GPWS

Mode 1:	Excessive RoD – “SINK RATE” & “PULL UP”
Mode 2:	Excessive Terrain Closure – “TERRAIN” & “PULL UP”
Mode 3:	Altitude Loss After T/O – “DON’T SINK”
Mode 4:	Unsafe Terrain Clearance – “TOO LOW-GEAR (FLAPS, TERRAIN)”
Mode 5:	Descent Below Glide Slope – “GLIDE SLOPE”
EGPWS:	“TERRAIN AHEAD” “PULL UP”

## SYS



OFF – All GPWS alerts (1 to 5) inhibited

FAULT LT – Amber with ECAM when GPWS fault detected

Note: *ILS 1 fails, only mode 5 inhibited. No Fault Lt or warning.*

## G/S MODE



OFF – Glide slope mode (mode 5) inhibited.

## FLAP MODE



OFF – Flap mode (“TOO LOW-FLAPS”) inhibited.

- Avoids warnings with landing at Reduced flap.

- CONF 3 sel in MCDU auto inhibits warning when Flap 3 is reached

## TERR



OFF – Inhibits Terrain Awareness Display (TAD) & Terrain Clearance Floor (TCF) modes

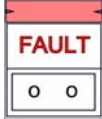
- Does not affect basic GPWS modes 1 to 5.

FAULT Lt – Amber with ECAM if TAD or TCF made fails.

# Overhead Panel Switches

## OTHER SYSTEMS

### NWS TOWING



FAULT – Red on gnd when NWS has exceeded 93° (Red light also on nose ldg gear)  
Pressed – Light goes out

# Overhead Panel Switches

## 35. OXYGEN

### CREW SUPPLY



High pressure cylinders in LH lower fuselage.

Over pressure auto supplied above 30,000ft cab alt to help prevent condensation etc

Mix of cabin air and oxy up to 35,000ft cab alt. 100% oxy above 35,000ft cab alt.

ON – Valve is open, supplying low pressure oxy.

- is normal position in flight

OFF – Valve closed. White light on.

A340 – Pneumatic latching system allows masks to fall when cab alt exceeds 14,000ft (+0, -500ft). Altimetric flow regulation device controls passenger flow rate from oxy cylinders located behind RH sidewall lining in FWD cargo compartment.

A330 – Electric latching system allows masks to fall when cab alt exceeds 14,000ft (+0, -500ft).

Oxy delivered at constant pressure by oxygen generator which last about 22 min. Oxy generation may emit heat and smoke.

### PASSENGER SYS ON

White light when system on. Remains on until RESET on maint panel is pressed.

### MASKS MAN ON



PA automatically broadcasts instruction whether MAN or AUTO deployment

AUTO - Normally in AUTO position. Masks auto drop at 14,000ft cab alt.

Pressed – Masks drop

### RESET (A340)



Maintenance crew use this pb to reset after the system has operated.

ON – White light comes on, PASS SYS ON light goes off, PA recording stops.

- System shut off valves close

- Main supply line shut off valves open

- ON light goes off when reset complete (3 sec)

FAULT Lt – **Amber** when reset failed.

### RESET (A330)



Maintenance crew use this pb to reset after the system has operated.

ON – White light comes on, PASS SYS ON light goes off

FAULT Lt – **Amber** when door latch solenoids are energized for more than 30 secs

# Overhead Panel Switches

## 36. PNEUMATIC

### ENG 1 BLEED (2,3,4)



- ON – Bleed valve opens provided:
- Upstream pressure is >8psi
  - APU BLEED pb is at OFF or APU bleed valve closed
  - No inside wing or pylon leak, overpressure or overtemp.
- ENG FIRE pb is not released
- Eng start valve closed

FAULT Lt – Amber with ECAM if:

- Bleed valve not closed during eng start
- Bleed valve not closed with APU bleed ON and for RH eng X-bleed open)

Also with auto closure of bleed and HP valves

- Overpressure downstream of bleed valve
- Bleed overheat
- Wing or eng leak on related side
- Extinguishes when ENG BLEED pb is at OFF provided failure disappeared

OFF – Bleed and HP valve close.

- OFF light white
- FAULT Lt & autoclosure signal reset

### APU BLEED



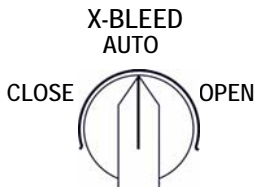
ON – APU bleed valve opens provided:

- N > 95%
- Altitude < 25,000ft climbing or < 23,000ft descending
- No leak detected on APU or LH bleed (leak RHS X-bleed would close)

ON light Blue

OFF – APU bleed valve closes

FAULT Lt – Amber with ECAM if APU leak detected



AUTO – X-bleed valve is open if APU valve open

- X-bleed valve closed if APU valve closed

OPEN – X-bleed valve is open

CLOSE – X-bleed valve is closed

# Overhead Panel Switches

## 49. APU

### MASTER SW



ON/R – Blue light

- Elec pwr supplied to APU system, ECB performs pwr up test
- APU air intake flap opens
- APU fuel isolation valve and APU LP valve open
- Fuel pumps operate (FWD & AFT)

- APU page appears on ECAM

OFF – Manual shutdown sequence:

- ON light goes off
- APU keeps running for 105 sec at 100% for cooling
- After further 15 sec (NBPT) APU shuts down and AVAIL Lt goes off
- AT N 7% air inlet flap closes

*Note: Switching OFF then ON the MASTER SW resets the ECB*

FAULT Lt – Amber with ECAM when automatic APU shutdown occurs, due to :

- Fire (on grnd only)
- Air inlet flap not open
- Overspeed
- No acceleration
- Slow start
- EGT overtemp
- Loss of overspeed protection - Underspeed
- Reserve flow
- Low oil pressure
- High oil temp
- DC power loss (BAT OFF when a/c on batt only)
- ECB failure
- No flame

### START



ON – Blue light comes on.

- When flap is fully open APU starter is energized
- N = 7% , ignition turned on
- N = 50%, APU starter de-energized

- N = 95%, ignition turned off ON light on START pb goes out AVAIL Lt comes on

APU may now supply bleed air and elec pwr to a/c.

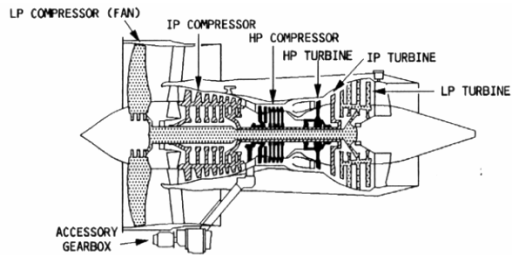
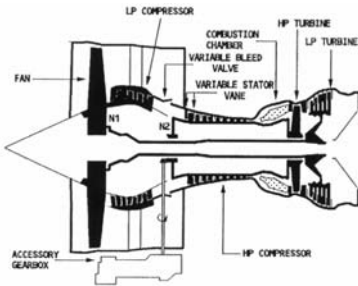
10 sec later the APU page on ECAM disappears

AVAIL Lt – Green when N reaches 95%

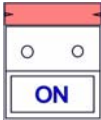


# Overhead Panel Switches

## 70. POWER PLANT A340 & 330



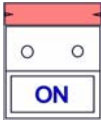
### ENG MAN START (1,2,3,4)



- ON – Start valve opens if ENG START sel is CRANK or IGN/START
- both pack valves close during start
  - start valve closes automatically when  $N2 \geq 50\%$  ( $N3 \geq 50\%$ )
  - On light Blue

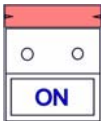
OFF – When ENG MAN START pb is set OFF during manual start, start valve closes provided eng master switch is OFF

### ENG FADEC GND PWR (1,2,3,4)



- ON – FADEC supplied for 5 min (except if ENG FIRE pb is released out or FADEC gen is avail).

### N1 MODE 1 A330 ONLY



- ON – Thrust control reverts from EPR mode of N1 rated mode.
- Following an automatic reversion to N1, rated or unrated mode, pressing the pb confirms thee mode.
  - ON light Blue.

OFF – The FADEC controls the eng in EPR mode if available.

*Note: If in N1 mode: No auto thrust, ALPHA FLOOR prot lost & FLEX T/O lost.*

Rated N1 mode - FADEC computes an EPR COMMAND depending on TLA, then convert it into a N1 COMMAND as a function of mach

Unrated N1 mode - N1 is defined as a function of TLA and altitude and is limited by FADEC to smaller of N1 max or N1 Redline (if eng data T2, total air temperature, is avail) or N1 Redline (if T2 not avail)