

AIR SYSTEMS

- Hot bleed air
- Cold air from fan / outside
- Cold air from packs
- Mixed conditioned air
- Cabin recirculated air

Regulated pressure 44 - 52 psi

Leak detection
Single loop for APU and pylon ducts
Double loop for wing ducts

Temperature control
200°C normal temperature
150°C if wing a/ice OFF and enough for zone controller demand

PACK CTL channels
1 failed => no effect
both failed => temp 1-15°C by anti-ice valve, no ECAM indication.
Flow 120% of NORM

ZONE CTL channels
1 failed => no effect
both failed => Packs deliver 20°C.
ECAM ind lost & display **PACK REG**

AIR CYCLE MACHINE failure
Pack operates in heat exchanger cooling mode in-flight only

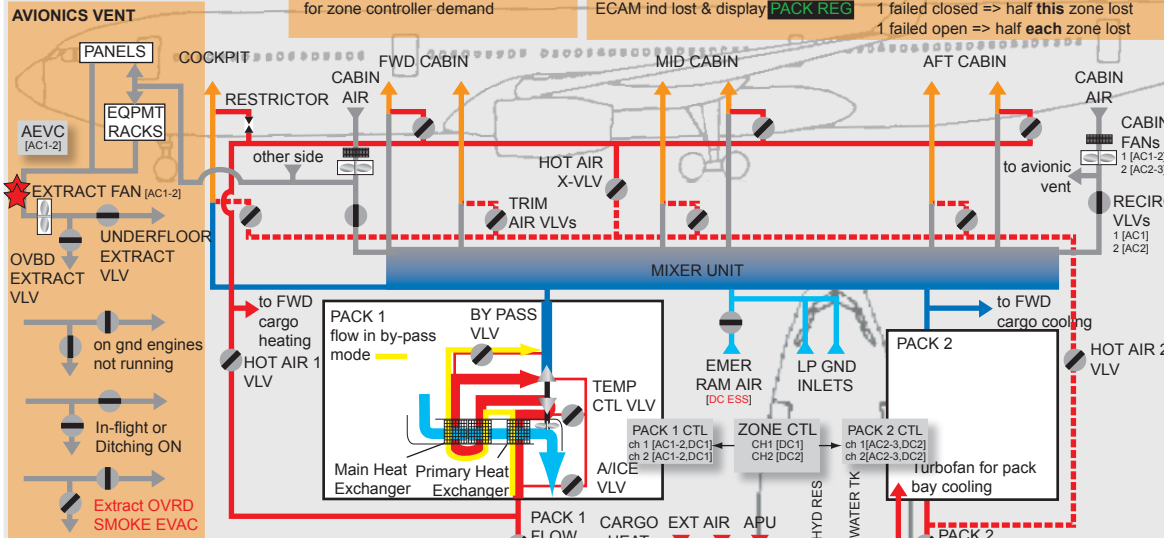
HOT AIR VLV failure
failed open => no effect
2 vlv's failed closed => no effect (X-hot)
2 vlv's failed closed => reg by PACKS

TRIM AIR VLV failure
1 failed closed => half this zone lost
1 failed open => half each zone lost

ENGINE CFM 56-5C

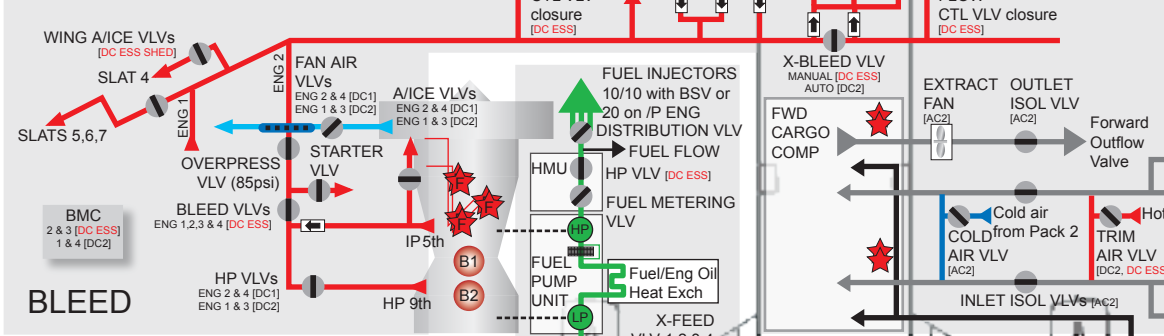
Thrust 68000lbs = ~30.8t
N1: FAN+4 Comp+5 Turb, 100%=5000rpm
N2: 9 Comp + 1 Turb, 100%=14460rpm
20 Fuel nozzles + 2 Igniters
Warm-up time 5' before T/O thrust
Cool-down time 5' or 1' if required by ops

EIUs [DC BAT]
FADECs CH A [AC ESS] ch B ENG 1&3 [AC2-3] ch B ENG 2&4 [AC2-4]
IGNITION A [AC ESS] B ENG 1&3 [AC2-3] B ENG 2&4 [AC1-2]



CAUTION, do not use HP GND air with APU bleed

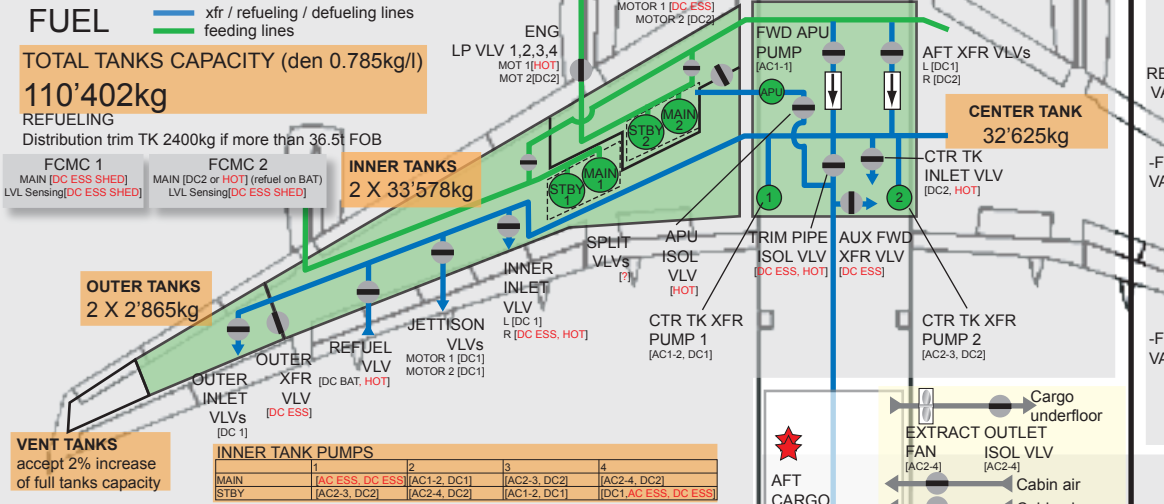
CAUTION, do not use GND AIRCOND air with air from packs simultaneously



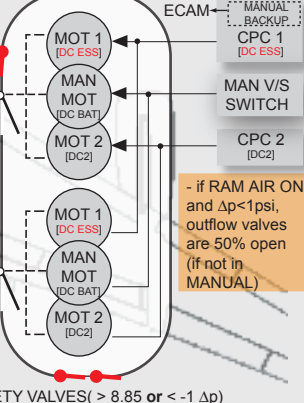
BATTERY VENT
by a venturi and an overboard vent

LAV & GALLEY VENT
by an extraction fan and an exhaust through a venturi

PACK BAY VENT
by a NACA air inlet, a bleed air driven turbofan. Controlled by the AEVC



PRESSURIZATION



FIRE PROTECTION & CARGO VENT

SDCU 1 [DC ESS SHED] SDCU 2 [DC2] SMOKE DETECTORS FIRE DETECTORS FIREX BOTTLES

ELECTRICAL SUPPLY
ENG loop A [DC ESS], loop B [DC2]
ENG BTL 1 squib A [HOT2], squib B [DC2]
ENG BTL 2 squib A [HOT1], squib B [DC2]
APU loop A [DC ESS], loop B [DC BAT]
APU BTL squib A [HOT1] squib B [DC BAT]
APU auto extinguish [HOT2]
CARGO squib A [HOT1], squib B [DC2]

OUTER TO INNER XFR
Each Outer TK cycle its Inner TK between 3500kg and 4000kg until it is empty. The valves then close after 5min. If no AUTO XFR available, manual xfr via refueling pipe and inlet valve possible.

LIMITATIONS
Take-off fuel: min 5400kg and **FUEL L(R) WING TK LO LVL** not displayed on ECAM

FUEL IMBALANCE

INNER TK	Full	max 2300kg
	Half	max 3700kg
OUTER TK	Full	max 1300kg
	1400kg	max 1400kg

FUEL TEMPERATURE

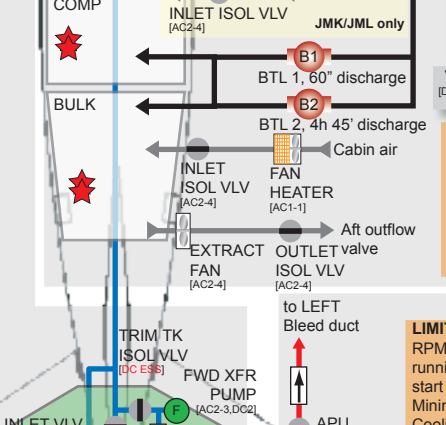
	Inner TK	Outer TK
JET A1	min -42°C	min -47°C
JET A	min -35°C	min -40°C

CENTER TO INNER XFR
The center TK pumps run continuously. Each inner TK inlet valve controls the transfer by cycling its inner TK between FULL and 2000kg below full until it is empty. Then prms & vlv's close.

CG CONTROL
AFT XFR starts if:
Gear up, Slats in, Trim TK not full, Inner > 6250kg, above FL255 and CG not on target

AFT XFR stops if:
CG = target CG - 0.5% or Trim TK full or Inner < 6250kg or FWD button pushed or MAN xfr outer-inner or center-inner.

FWD XFR starts if:
CG = target
inner = 4000kg
CG = target - 0.5%
inner = 5000kg
- 35' to dest or FL245 (or 75' if XFR PUMP u/s)
- in EMER ELEC



APU LIMITATIONS

RPM running	min 95%	max 107% (auto shut down)
EGT start		max 650°C
start EGT		max 1250°C

Minimum oil level for start: ADD at APU level indicator
Cooling after 3 start attempts: 60min
APU FUEL FLOW ~200 kg/hr

ENVELOPE
START with AC pwr up to 41'100ft
START with EMER ELEC pwr up to 25'000ft
BLEED ON 2packs max 17'500ft, 1 pack max 22'500ft
BLEED ON for engine start max 20'000ft

A340