AIRBUS A319/320/321
Sample Oral Questions
April 1, 2001
(Updated 11/06/01)

Pre Departure

1. The captain will brief the entire crew prior to each trip, as well as any new crewmember(s) added during the trip (T or F) FOM 5.3.3

True. The briefing sets the tone for a positive working environment and as a minimum consists of introducing the crew and ensuring open communications regarding the operation.

Briefing Guidelines:
- Introduction of crewmembers
- Statement of captain's focus on safety
- Stress open communications
- Security
- Explanation of flight conditions
- Pilot announcement issues
- Review MELs that could affect cabin service
- Request flight attendants inform the captain of items that should be entered into the aircraft logbook.
- Any other considerations the captain deems necessary

2. The company requires all crewmembers to maintain and carry a valid passport on all flights (T or F) FOM 4.4.14

True. What else can I say on this one?

3. During the preflight inspection, the flight crewmember notes one of the gear collars is missing, he/she should: PHB 3.4.1

The flight may proceed if the crew ensures that all 3 gear collars/pins are removed from the landing gear.

4. Exterior Intermediate Inspection – at each intermediate stop where a crew change does not occur, one flight crew member must ensure the aircraft condition is acceptable for flight (free of damage and fluid leaks). In addition, a flight crew member must check: PHB 3.1.3

- Flight Controls – Unobstructed
- Doors and Access Panels (not in use) – Secured
- Ports and Vents – Unobstructed
- Tires – Condition and wear
- Gear Struts – Not fully compressed

5. Is it permissible to have frost adhering to the underside of the wings? PHB 3a.1.2

Frost on underside of wings is permitted if frost layer does <u>not</u> extend outside of the fuel tank area, and thickness does <u>not</u> exceed 3mm (approximately 1/8 inch).

6. What would be required if the battery voltage is less than 25.5 volts, during preflight? PHB 3.3

A charging cycle of 20 minutes is required.
- BAT 1 and 2 – AUTO
- EXT PWR - ON

Check on ECAM ELEC page, battery contactor closed and batteries charging.
After 20 minutes:
- BAT 1 and 2 – OFF
- BAT 1 and 2 Voltage – Check >= 25.5V

If battery voltage >= 25.5V:
- BAT 1 and 2 - AUTO

7. Can the aircraft's batteries be fully depleted in flight? ___ On the ground? ___ PHB 7.1.4

The battery chargers are powered any time the BAT bus is powered and provide charging when the battery voltage drops below a set value. Battery automatic cut-off logic prevents complete discharge of the battery when the aircraft is on the ground and unpowered.

Note: If, when the aircraft is on the ground, at least one ADIRU is supplied by aircraft batteries:
- An external horn sounds
- The ADIRU and AVNCS light illuminates blue on the EXTERNAL POWER panel

8. When are the aircraft's batteries connected to the DC BAT BUS? PHB 7.1.7, 7.2.2

BAT 1(2) pb – AUTO:
- APU starting (MASTER SW ON and N<95%)
- Battery voltage < 26.5 (Battery charging)
- Loss of AC BUS 1 and 2 when below 100 kts (EMER GEN not supplying)

9. What is the significance of the green collared circuit breakers on the flight deck? PHB 7.1.10

- Green – Monitored by ECAM system
- Red – Wing tip brake C/B
- Yellow – pulled in compliance with prescribed procedure on battery power only

10. Can an APU FIRE test be performed with the APU running? PHB 8.2.2

The automatic shutdown of the APU will not occur while the flight crew is performing this test.

The APU is equipped with two identical detection loops (A & B) each of which contain one heat sensing element and a computer (Fire Detection Unit). The sensing element is located in the APU compartment. The FDU issues a fire warning when both loops detect an overheat. If one loop fails, the fire warning system remains operational with the other loop. A fire warning is also issued if both loops fail within 5 seconds of each other.

The APU is equipped with one fire extinguisher which is discharged by pressing the AGENT DISCH pb on the APU FIRE panel.

On the ground, detection of an APU fire causes automatic APU shutdown and extinguisher discharge. In flight, there is no automatic APU shutdown, and the extinguisher must be manually discharged.

An APU fire is indicated by an aural CRC and illumination of the APU FIRE pb and MASTER WARN lights.

11. If WINDOW HEAT is required prior to engine start, how would the pilot select the system ON? PHB 6.1.5

PROBE/WINDOW HEAT pb:
- ON - Probes and windows are heated permanently
- AUTO – Probes/windows are heated automatically in flight, or on the ground (except TAT probes) provided one engine is running

12. What is the total usable fuel tank quantity (density at 6.676 lb/gal)? PHB 2.8.1

	A319/320	A321
Wing Tanks	27,500 lb	27,500 lb
Center Tank	14,500 lb	14,500 lb
ACT	-	10,500 lb
TOTAL	**42,000 lb**	**52,500 lb**

13. What electrical power source(s) are required to refuel the aircraft? PHB 9.1.6

A fueling/defueling point and refueling control panel is located under the right wing. The wing tanks can also be refueled through overwing refueling points. Fueling is normally accomplished automatically by pre-selecting the required fuel load on the fueling panel. External power, the APU, or battery power can be used for refueling.

14. Can APU BLEED air be selected if ground air is connected? (Yes or No) PHB 3.4.1

No. Do <u>not</u> use APU BLEED if conditioned air is connected.

15. Is it permissible for external air to be introduced into the air conditioning system with another source already supplying air to facilitate increased airflow during hot weather operations? PHB 10.1.4

No. It is possible for external air to be introduced in the system with another source already supplying air. Crews should exercise caution not to allow simultaneous introduction of external air with another source supplying the system.

16. When the PACK FLOW sel (A319/320) or ECON pb (A321) is selected LO (A319/320) or ECON (A321), the pack flow will go automatically to 100% if the cooling demand cannot be satisfied (T or F) PHB 10.4

A319/320: Flow reverts to HI regardless of selector position during single pack operation, or if the APU is the bleed source. The zone controller may override pilot selected pack flow (HI/NORM/LOW) or, it may increase APU speed or engine idle to meet temperature demands.

A321: The system delivers high flow (40% more than ECON flow) regardless of selector position during single pack operation, or if the APU is the bleed air source. If the crew selects ECON flow, and the temperature demand cannot be satisfied, the system delivers normal flow (20% more than ECON flow). The zone controller may override pilot selected pack flow (NORM/ECON) or, it may increase APU speed or engine idle to meet temperature demands.

17. What does the DITCHING pb do? PHB 10.5.4

The DITCHING pb on the pressurization panel, when selected ON, allows the pilot to close all exterior openings below the flotation line. This will enhance flotation of the aircraft in case of ditching.

System sends a "close" signal to:

- Outflow valve (if not in manual control)
- Emergency ram air inlet
- Avionics ventilation inlet and extraction valves
- Pack flow control valves
- Forward cargo isolation outlet valve (if installed)

18. What is the caution about activating the DITCHING pb on the ground with external (low pressure) air hooked up and all doors closed? PHB 10.6

If on the ground, with low pressure conditioned air connected, all doors closed, and the DITCHING pb is switched ON, a differential pressure will build up.

19. How should the ADF/VOR sel on the GLARESHIELD be positioned for all phases of flight? PHB 3.4.1

ADF/VOR Selector Switches - OFF

20. Name the three hydraulic systems and describe how they are powered. PHB 11.1.2-4

GREEN

- Engine 1 pump
- PTU

YELLOW

- Engine 2 pump
- PTU
- Yellow electric pump
- Hand pump for cargo door operation

BLUE

- Blue electric pump
- Ram Air Turbine (RAT)

21. What is the purpose of the Power Transfer Unit (PTU)? PHB 11.1.5

The PTU is a reversible motor-pump located between the Green and Yellow hydraulic systems. It enables the green system to pressurize the yellow system, and vice versa, without fluid transfer. The PTU is automatically activated when the differential pump pressure output between the green and yellow systems exceeds a predetermined value (500 PSI). On the ground, when the engines are not running, the PTU enables the yellow system electric pump to pressurize the green system. Operation of the PTU is displayed on the ECAM page and also indicated via an ECAM memo.

PTU operation is inhibited when the:

- First engine is being started (PTU operation is automatically tested during second engine start)
- Cargo doors are operated and for 40 seconds after the end of cargo door operation
- Parking brake is ON and only one ENG MASTER switch is ON
- PTU pb is OFF
- Nosewheel steering in the towing position

22. Can the EGPWS system be tested? PHB 13.4.7

To test the EGPWS, push the GPWS – G/S pb.

In flight, above 2,000' RA and below 8,000' RA:

- GPWS FAULT light illuminates on the overhead panel
- The soft "GLIDE SLOPE" aural warning sounds
- The "PULL UP" aural warning sounds (once)
- TERR FAULT light illuminates
- The terrain self-test pattern is displayed on both ND's
- The GPWS and G/S lights illuminate

On ground:

- As above, plus pressing the pb either continually or during the, "PULL UP" sequence, makes all aural warnings sound.

Note: If the flight crew presses this button briefly when a glideslope warning is on, the G/S light extinguishes and the "GLIDE SLOPE" aural warning (soft or loud) stops.

23. If your flight package includes a TPS Departure Plan you do not need a final weight and balance (T or F). FOM 9.1.2, TPS Line Training Aide

False. A final weight and balance message (ACARS/hard copy/radio relay) is required to provide data not obtainable from the TPS Departure Plan (e.g., actual weight of aircraft, actual passenger load, actual stab trim). The TPS should be used for departure only when the final weight and balance message does not cover the actual takeoff condition (different runway, anti-ice, wind, etc.).

Pushback/Taxi

24. The Full Authority Digital Engine Control (FADEC) is powered by _____. PHB 16.1.3

The FADEC controls the engine in all operating regimes for optimum fuel efficiency; maintains operating limits both in forward and reverse thrust; and provides start sequencing.

The system has its own alternator rendering it independent of the aircraft electrical system when the N_2 rpm is above a set value. If this alternator fails, the FADEC automatically switches over to aircraft electrical power.

Each FADEC is a dual channel (A and B) computer providing full engine management. One channel is always active while the other is a backup designed to takeover automatically in case of primary channel failure. Each FADEC has an Engine Interface Unit (EIU) which receives signals from various systems and sources and transmits appropriate thrust demands to the FADEC.

The FADEC maintains a reference N_1 computed as a function of throttle position, ambient conditions, and bleed configuration. It increases idle speed for bleed demands, high engine or IDG temperatures, and approach configuration. It also limits engine acceleration/deceleration thus preventing engine stalls or flameouts.

Except during engine start, the FADEC does <u>not</u> provide warning for exceeding an EGT limit.

25. During automatic start interruption, the FADEC will: PHB 16.1.6

During an automatic start, the pilot initiates the process by placing the ENG MASTER switch to ON. The FADEC controls all sequencing (pack valves, start valve, ignition, fuel valves). If an abnormal start ensues, the FADEC will interrupt the start process. This will prevent exceeding the start limit(s) and will initiate a new start sequence.

The start sequence is aborted in case of hot start, stalled start, or no ignition.

During automatic start interruption, the FADEC will:
- Terminate ignition
- Close the HP fuel valve
- Close the start valve
- Sequence additional starting attempts
- Provide fault annunciations
- Dry crank the engine

An automatic start sequence can be interrupted manually by the pilot; however, such action terminates the FADEC control and sequencing.

During an automatic in-flight start, the FADEC provides ECAM cautions; however, it does not automatically interrupt the start sequence.

26. If external electrical power is connected and being used by the aircraft, will the EXT PWR pb remain ON after engine start? PHB 7.2.2

The ON light remains illuminated even when the engine generators are supplying the aircraft.
External power has priority over the APU generator. The engine generators have priority over external power.

27. In order to expedite taxi, it is permissible for the F/O to taxi the aircraft when the captain is busy (T or F). PHB 18.2.3

False. The captain will taxi the aircraft at all times.

28. Maximum taxi speed is ___. PHB 18.2.3

Do not exceed 30 knots on straight tracks and limit speed to approximately 10 knots in turns.
40% N_1 maximum break-away thrust.

29. During taxi, if the brakes grab or you experience braking/steering difficulty, what action must be accomplished? PHB 11.5.5, 3.7

Reset the BSCU.

To reset the BSCU on the ground:
- Stop the aircraft and set the parking brake
- Turn the A/SKID & N/W STRG switch OFF for approximately 5 seconds and then back to ON
- Release the parking brake
- Accomplish a brake check after the aircraft starts moving

CAUTION: In case of complete loss of braking, refer to the QRH procedure.

30. During the FLIGHT CONTROLS check, ensure full sidestick displacement is held for sufficient time for full control surface travel to be reached. Accomplish this check in a slow and deliberate manner (T or F) PHB 3.8

True. When full sidestick (or rudder deflection greater than 22 degrees) is applied, the F/CTL page is automatically shown for 20 seconds.

31. The RAIN RPLNT pb is inhibited on the ground with the engines stopped (T or F) PHB 6.2.2

True

32. When do the A319/320 center tank fuel pumps operate in AUTO? PHB 9.1.7

A319/320: Normal fuel feed sequencing is automatic. When there is fuel in all tanks, the center tank feeds the engines first (even though the wing tank pumps operate continuously).

With the fuel MODE SEL pb in AUTO, the center tank pumps operated for two minutes after both engines are started to confirm center tank pump operation prior to takeoff. After takeoff, the center tank pumps restart when the slats are retracted and continue to operate for five minutes after the center tank is empty or until the slats are extended.

With the MODE SEL pb in MAN, the center tank pumps operate continuously. The crew must select the CTR TK PUMP pbs OFF when the center tank is empty.

A321: The fuel transfer system controls the flow of fuel from the center tank to the wing tanks, which feed the engines. The tanks empty in the following sequence:

1. ACT transfers fuel into the center tank
2. Center tank transfers fuel into the wing tanks
3. Wing tanks

With the MODE SEL pb in AUTO, the Fuel Level Sensing Control Unit (FLSCU) has automatic control of the transfer valve. When the transfer valve is open, fuel from the wing tank pumps flows through the jet pump and creates suction. This suction moves the fuel from the center tank to the related wing tank. The FLSCU automatically closes the associated center tank transfer valve when the wing tank is full. The transfer valve reopens the center tank transfer valve when the engines have used 550 lbs of wing tank fuel.

With the ACT pb in AUTO, automatic control of the transfer occurs after takeoff at slats retraction. It is initiated if the center tank high level sensor has been dry for 10 minutes and fuel remains in either ACT. Fuel transfer from the ACTs to the center tank is made by pressurizing the ACT, closing the ACT vent valves, and opening the air shut-off and inlet valves. ACT2 transfers first.

With the MODE SEL in MAN, the center tank transfer valves open. Wing tank overflow must be prevented by selecting the CTR TK XFR pbs OFF when the wing tanks are full. They must also be selected OFF when the center tank is empty.

During transfer, if the center tank high level sensor gets wet, transfer from the ACT stops. The transfer valve opens when the center tank high sensor is dry for ten minutes.

IDG cooling is accomplished by fuel. Some fuel from the high pressure pump passes through the IDG heat exchanger and returns to the respective wing outer cell (A319/320) or wing tank (A321) through a fuel return valve. The fuel return valve is controlled by the FADEC which regulates IDG temperature.

A319/320: If the outer cell is full, the recirculated fuel overflows to the inner cell. To prevent wing tank overflow when the center tank is supplying fuel, the center tank pumps automatically stop when the wing inner cell is full. This allows the wing tanks to feed the engines until approximately 1,100 lbs of fuel has been used from the applicable wing tank(s); at which time the center tank pumps resume operation.

MODE SEL FAULT (A319/A320/A321): Amber light illuminates, and ECAM caution appears when center tank has more than 550 lbs of fuel and the left or right wing tank has less than 11,000 lbs.

ACT FAULT (A321): Amber light illuminates and ECAM caution appears when the center tank has less than 6,614 lbs of fuel and one ACT has more than 550 lbs of fuel.

33. Continuous ignition is provided automatically (with the MODE selector in NORM) when: PHB 16.1.7

The ignition system, for each engine, consists of two, identical, independent circuits (A & B). Each circuit is controlled by the respective FADEC.

During automatic start on the ground, one igniter is activated and the other serves as a backup unless ignition is insufficient. The FADEC automatically alternates the use of igniters at each start. Ignition to each engine is provided and terminated automatically. During manual or in-flight automatic start, both igniters are activated.

Continuous ignition is provided automatically (with the MODE selector in NORM) when:

- ENG ANTI ICE is selected ON
- Engine flameout is detected in flight
- The EIU fails

Continuous ignition may be selected manually by positioning the ENG MODE selector to IGN/START. If continuous ignition is required after an engine is started, it is necessary to cycle the ENG MODE selector to NORM then back to IGN/START.

Takeoff

34. What is the maximum takeoff weight for the A319/320/321? PHB 2.2.2

Max Takeoff Weight	
A319	**166,400 lbs**
A320	**169,700 lbs**
A321	**205,000 lbs**

35. Using the Takeoff Performance System (TPS) Departure Plan, how can you determine the value to insert in TO SHIFT field for an intersection departure (e.g., PIT 28LX) FOM 9.4.6

Subtract the runway length corresponding to the depicted runway intersection (28LX) on the TPS from the total length of the runway (28L).

36. What configuration discrepancies will not trigger an ECAM warning or caution until takeoff thrust is applied? PHB 13.1.1

If the airplane is <u>not</u> properly configured for takeoff, the following warnings (red) and cautions (amber) are triggered when the T.O. CONFIG pb is pressed or when takeoff power is applied:

- SLATS/FLAPS NOT IN T.O. RANGE
- PITCH TRIM NOT IN T.O. RANGE
- SPEED BRAKES NOT RETRACTED
- SIDESTICK FAULT
- HOT BRAKES
- DOORS NOT CLOSED (tested only if engines are operating)

The following are only triggered when takeoff power is applied:

- PARK BRAKE ON
- FLEX TEMP NOT SET (not displayed if thrust levers are set in the TOGA detent)

37. If the ECAM message NAV FM/GPS POS DISAGREE is annunciated on takeoff or during ILS approach, the flight crew should: PHB 21-171

If the message occurs at takeoff initiation or in ILS/LOC approach (LOC green)
- DISREGARD IT

If the message occurs during non precision approach
- RNAV approach: GO AROUND or fly visually if visual conditions are met

38. What is the minimum height for autopilot engagement after takeoff (SRS indicated)? PHB 2.13.1

- **100 feet AGL**

39. If icing conditions are anticipated, or if airframe icing is occurring when should WING ANTI-ICE be selected ON? OFF? PHB 3a.1.3

Select WING ANTI ICE ON after thrust reduction altitude.
Normally, WING ANTI ICE should be selected OFF at the FAF.
If in severe icing conditions, WING ANTI ICE may be left ON for landing.

40. If the pilot does not select configuration 0 after takeoff, what action will automatically occur? PHB 12.2.4

The flaps will retract automatically at 210 knots.

Climb

41. To reduce workload and improve safety, use the full capability of the autoflight, ATS, and FMS whenever possible (T or F) PHB 18.1.2

True. Use the full capability of auto flight and FMS whenever possible. Use of the A/THR system is mandatory. If any automated system fails, malfunctions, or becomes a distraction, remove that level of automation by reverting to the basic mode. If this occurs, it is extremely important to be aware of the loss of associated protections and changes in system functionality. FMS programming should be accomplished well in advance of high workload flight phases. Both pilots will monitor the FMA during flight to verify FCU selections. During normal operation, the PF should select the onside autopilot. Do not allow set up and operation of automated systems to interfere with the primary duties of basic aircraft control, complying with ATC clearances, and maintaining outside vigilance.

42. If the pilot fails to follow the flight director command bars during manual flight what will occur? PHB 14.1.5

SPEED PROTECTION when FD orders are not followed		
CONDITIONS	**ACTION**	**CONSEQUENCE**
• FD engaged • AP OFF • A/THR active (IDLE thrust) • DES or OP DES engaged	When A/C speed is: • V_{LS} – 2 • (V_{LS} – 17 if speedbrakes extended)	• Automatic engagement of SPD mode on A/THR • FD bars are removed • Thrust is increased, speed target is regained
• FD engaged • AP OFF • A/THR active (climb thrust) • CLB or OP CLB engaged	When A/C speed is: • V_{MAX} + 4 • (V_{MAX} being V_{MO}, V_{LE}, or V_{FE})	• Automatic engagement of SPD mode on A/THR • FD bars are removed • Thrust is decreased, speed target is regained

43. In order to standardize communication during manual flight, standard phraseology is required. If the pilot flying wanted to use managed speed, he/she would announce: PHB 18.1.3

Communication During Manual Flight	
Speed	"SPEED SELECT" or "SPEED ENGAGE"
Heading/Nav	"HEADING SELECT" or "NAV ENGAGE"
Managed/Open Climb (Des)	"OPEN CLIMB (DESCENT) SELECT" or "CLIMB (DESCENT) ENGAGE"
Vertical Speed	"VERTICAL SPEED PLUS (MINUS) ___" or "ALTITUDE HOLD"
Note: • "SELECT" is always knob pulled • "ENGAGE (HOLD) is always knob pushed	

44. There are five thrust lever positions defined by stops or detents. Each of these detents represents an upper thrust limit. If a thrust lever is set between two detents, the FADEC selects _____. PHB 16.1.4

The thrust levers are used to set any thrust in manual mode or the maximum thrust limit in automatic mode. There is no mechanical connection between the levers and the engines. The position of each lever (Thrust Lever Angle – TLA) is electronically measured and transmitted to the FADEC, which computes the thrust rating limit.

There are 5 lever positions defined by stops or detents:
- Max takeoff/go-around (TOGA)
- Flex takeoff/max continuous thrust (FLX/MCT)
- Climb (CL)
- Idle
- Reverse idle and max reverse

Each of these positions represents an upper thrust limit. If a lever is set in a detent, the FADEC selects the rating limit corresponding to that detent. If the thrust lever is set between two detents, the FADEC selects the rating limit corresponding to the higher detent. This limit is displayed on the upper ECAM.

Cruise

45. What is the turbulence penetration speed at or above 20,000 feet for the A319/320, A321 PHB 2.4.1

	A319/320	A321
At or above 20,000 feet	**275 KIAS/.76M**	**300 KIAS/.76M**
Below 20,000 feet	**250 KIAS**	**270 KIAS**

46. Engine continuous ignition is automatically provided when ENG 1 or 2 anti-ice is selected ON (T or F) PHB 6.2.1

True. Continuous ignition is selected when the valve is opened and the ANTI ICE ENG pb is selected on.

47. When do the wing tank transfer valves automatically latch open? PHB 9.1.7

A319/320 Only: The wing tank transfer valves automatically latch open when the wing inner cell quantity drops to 1,650 lbs thus allowing the outer cell fuel to drain into the inner cell. The transfer valves open simultaneously in both wings and remain open until the next refueling operation. During steep descents and acceleration / deceleration, the transfer valves may open prematurely and trigger a LO LVL warning.

48. A319/320: When would the crew select the LO position on the PACK FLOW selector? When would HI be selected? PHB 3.4.1

PACK FLOW Selector (A319/320)
- LO – If number of passengers is less than 50 or for long haul flights
- HI – For abnormally hot and humid conditions
- NORM – For all other operating cases

ECON FLOW Selector (A321)
- ON – ECON FLOW if number of passengers is less than 140
- OFF – For normal flow

Note: If the APU is supplying bleed air for air conditioning, pack controllers select high flow (A319/320) or normal flow (A321) automatically, regardless of selector position.

49. After a crew oxygen mask has been used, pressing the RESET control slide cuts off the oxygen mask microphone (T or F). PHB 15.2.1

RESET/TEST control slide – The crew member presses the slide and pushes it in the direction of the arrow to test the operation of the blinker, the regulator supply, system sealing downstream of the valve, regulator sealing, and system operation. Pressing the RESET control slide after the oxygen mask has been used cuts off the oxygen mask microphone.

50. During flight, when the flight deck crewmember turns the FASTEN SEAT BELT sign off, a flight deck crewmember will: FOM 4.8.11

When the seat belt sign is turned off, a flight deck crew member will make an announcement advising passengers to keep their seat belts fastened at all times when seated.

When the fasten seat belt sign is illuminated in flight, a flight deck crew member will make an announcement instructing passengers to return to their seats and remain seated with their seat belts fastened.

51. What protections are provided during flight in Normal Law? PHB 12.1.5

NORMAL	**ALTERNATE** *With speed stability*	**ALTERNATE** *Without speed stability*	**ABNORMAL ATTITUDE**	**ABNORMAL ATTITUDE** *With return to Normal attitude*	**DIRECT**	**MECHANICAL**
Load Factor Protection	Load Factor Protection	Load Factor Protection	Load Factor Protection	Load Factor Protection		
High Alpha Protection	Low Speed Stability			Low Speed Stability		
High Speed Protection	High Speed Stability			High Speed Stability		
Pitch Attitude Protection						
Bank Angle Protection						
Yaw Damping & Turn Coordination	Yaw Damping Only			Yaw Damping Only		
					"USE MAN PITCH TRIM"	"MAN PITCH TRIM ONLY"

52. The IDG is cooled by fuel after it passes through the Hydomechanical Fuel Unit (HMU). Excess fuel is then returned to _____. PHB 16.1.5

A Fuel Return Valve (FRV) is controlled by the FADEC and ensures that there is adequate fuel flow through the IDG to satisfy cooling requirements. Excess fuel is then returned to the respective outer wing cell.

53. What are the altitude limits for the APU generator and the APU bleed air? PHB 16.3.1

The APU generator can supply 100% of load up to 25,000'. Above this altitude, there is a slight reduction in capacity. On the ground, the generator can supply the entire electrical system while it provides bleed air for air conditioning or engine start. Electrical output has priority over bleed air. Bleed air may be provided up to 20,000'. In order to improve engine thrust output, the APU can be used to pressurize the aircraft during takeoff.

Limitation: APU air bleed extraction for wing anti-icing is <u>not</u> permitted.

54. An amber THR LK flashes on the FMA. What does this indicate? PHB 14.1.12

The thrust lock function prevents thrust variations when the autothrust system fails and disengages. The thrust lock function is activated when the thrust levers are in the CL detent (MCT detent with one engine out) and:

- The pilot disengages A/THR by pushing the A/THR pushbutton on the FCU, or
- The A/THR disconnects due to a failure.

The thrust is locked or frozen at its level prior to disconnection. Moving the thrust levers out of the CL or MCT detent suppresses the thrust lock and allows manual control by means of the thrust levers.

When thrust lock function is active:

- "THR LK" flashes amber on the FMA
- ECAM "ENG THRUST LOCKED" flashes every 5 seconds
- ECAM displays "THR LEVERS … MOVE"
- A single chime sounds and the Master Caution Light flashes every 5 seconds. All warnings cease when the thrust levers are moved out of the detent.

55. When ALT CRZ is displayed on the FMA, the autopilot allows altitude to vary by _____ to minimize thrust variations. PHB 14.1.7

When the autopilot is maintaining the MCDU entered cruise altitude ("ALT CRZ" displayed on the FMA), the A/THR holds the target Mach, and the altitude varies +/- 50' to minimize thrust variations.

56. In addition to CRZ altitude, the PROG page displays optimum (OPT) and recommended maximum (REC MAX) altitudes. Under what circumstances will the use of REC MAX be prohibited? PHB 18.4.3

REC MAX altitude provides 1.3 g protection. Under no circumstances will REC MAX altitude be used when turbulence is present.

57. The FMGS will reduce the aircraft speed _3_ minutes prior to entering holding, provided speed is engaged. PHB 18.5.3

The FMS will reduce aircraft speed 3 minutes prior to holding entry. It may be advantageous to request a clearance to reduce to holding speed (green dot) immediately. This will reduce the required holding time and fuel burn at the holding fix.

58. The E/WD has priority over the SD. If the upper ECAM DU fails (or is selected off), E/WD data is automatically transferred to the lower DU (T or F). PHB 13.1.1

E/WD (Upper Display) Unit Failure – E/WD has priority over the SD. If the upper ECAM screen fails (or is switched off), E/WD data is automatically transferred to the lower screen.

SD (Lower Display) Unit Failure or One Display Unit Operative – If the lower ECAM screen fails (or is turned off), or when only one ECAM screen is operative, SD information can be temporarily displayed by:

- Pressing and holding the applicable system key on the ECAM control panel
- Pressing the ALL button on the ECAM control panel repeatedly until the desired page is displayed.

ECAM/ND Transfer – The ECAM/ND XFR switch on the SWITCHING panel allows the transfer of E/WD or SD data to the captain's or F/O's ND.

Both ECAM Display Units Failed – If both ECAM screens fail or are switched off, the E/WD information can be transferred to the captain's or F/O's ND by the ECAM/ND XFR switch. SD data can be displayed temporarily on the applicable ND by pressing and holding the applicable system key on the ECAM control panel.

59. In order to notify the flight attendants of an emergency, the flight deck crew would: FOM 7.5.4, 4.8.14

Use the flightdeck-to-cabin signals to communicate an emergency condition. On the Airbus, you would depress the Emergency Call pb. The "A" flight attendant will proceed to the flight deck immediately, while the remaining flight attendants will prepare the cabin for an emergency.

60. If an emergency is declared, the flight attendants will expect a flight deck crewmember to provide them with the TEST information. What does the TEST include? FOM 7.5.4

T = how much **T**ime is available
E = what type of **E**mergency
S = what is the brace **S**ignal
T = **T**ake special instructions

61. Is it permissible for an emergency caregiver to enter the flight deck to communicate directly with a MedLink physician? FOM 7.16.3, FOB 10-1, page 2

Medical practitioners will not be admitted to the flightdeck; communication will be via interphone.

62. If a fault is detected by the SEC or electrical power to a spoiler is lost, the spoiler(s) will: PHB 12.1.3

If a fault is detected by the SEC or if electrical power is lost, the affected spoiler(s) automatically retracts. If hydraulic pressure is lost, the spoiler(s) either remains at the existing deflection, or at a lesser deflection if forced down by aerodynamic forces. If a spoiler fails on one wing, the symmetrical panel on the other wing is deactivated.

63. When a digital computer behaves abnormally, the flight crew may be able to stop the abnormal behavior by interrupting the power supply to the processor for a short time (approx 10 seconds). Most computers can be reset with a pb; however, for some systems the only way to interrupt the electrical power is to pull the associated circuit breaker. Where would the pilot find this procedure? PHB 3b.2.1

PHB Chapter 3b – Supplemental Normal Procedures

64. What flight deck lighting is available if normal electrical power is lost? PHB 5.20.1

- Captain's instrument panel
- Standby compass
- Right dome light (provided DOME switch set DIM or BRT)

65. An ECAM action calls for the flight crew to disconnect an IDG. Can this IDG be reconnected in flight? PHB 7.1.2

Each engine drives an Integrate Drive Generator. The IDG converts variable engine speed to constant speed for optimum generator operation. The IDG oil is cooled by a fuel/oil heat exchanger. The IDG can be disconnected from its associated engine by the IDG disconnect switch. It can only be reconnected on the ground.

CAUTION:
- Holding this pb in for more than approximately 3 seconds may damage the disconnection mechanism
- Do not disconnect the IDG when the engine is not operating (or not windmilling) because starting the engine after having done so will damage the IDG.

66. In flight, if only one generator is supplying the entire electrical system, the entire galley load is shed (T or F). PHB 7.1.2

The main galley (A319/320), all galleys (A321), and in-seat power supply are shed.

67. Describe the function of the Ram Air Turbine (RAT), and when does it automatically deploy? PHB 7.1.7

If both AC bus 1 and 2 are lost and the airspeed is above 100 kts, the RAT automatically deploys and pressurizes the Blue hydraulic system, which drives the hydraulically-driven emergency generator. A generator control unit controls generator output which is considerably lower than that of the main generators.

Once the emergency generator is up to speed it will supply power to the AS ESS BUS and DC ESS BUS (via the ESS TR). During RAT deployment and emergency generator coupling (approximately 8 seconds), the batteries supply power to these buses.

After landing, the DC BAT bus is automatically connected to the batteries when airspeed drops below 100 knots. When the speed decreases below 50 knots, the AC ESS bus is automatically shed, and power is lost to the CRTs.

The RAT can also be deployed manually by pressing the EMER ELEC PWR MAN ON pb on the overhead panel. The RAT can only be stowed on the ground.

The RAT can also be extended by depressing the RAT MAN ON pb, on the hydraulic panel. This pb will cause only the pressurization of the Blue hydraulic system and will not provide emergency electrical power.

68. If EMERG ELEC PWR MAN ON is selected ON with normal A/C electrical power available, what occurs? PHB 7.1.7

If the pilot activates the RAT, during flight under normal electrical supply, it will assume electrical supply of the AC and DC ESS and ESS SHED buses. All other buses continue to be powered by their normal channels.

69. What conditions must be met for an engine fire warning to be issued? PHB 8.1.2

Each engine is equipped with two identical detection loops (A & B) each of which contain three heat sensing elements and a computer (Fire Detection Unit). The sensing elements are located in the pylon nacelle, engine core, and fan section. The FDU issues a fire warning when both loops detect an overheat in a particular area. If one loop fails, the fire warning system remains operational with the other loop. A fire warning is also issued if both loops fail within 5 seconds of each other.

The ECAM will issue appropriate messages if any component of the detection system fails. An engine fire is indicated by an aural CRC, the illumination of the ENG FIRE pb, and MASTER WARN lights.

Each engine is equipped with two fire extinguishers which are discharged by pressing the associated AGENT DISCH pb on the respective engine FIRE panel.

70. Do both cargo smoke detectors (in one loop) normally have to detect smoke before an alarm sounds? PHB 8.1.4

Both cargo compartments are equipped with smoke detector loops. The forward compartment contains two smoke detectors in the A319/320 and four smoke detectors in the A321. In the A319/320, the aft compartment contains two loops with two detectors each. In the A321, the aft compartment contains three loops with two smoke detectors in each. A Smoke Detection Control Unit issues a smoke warning when two smoke detectors of one loop detect smoke. If one smoke detector fails, the system remains operational with the other detector.

Cargo smoke is indicated by an aural CRC, the illumination of the MASTER WARN and CARGO SMOKE light on the CARGO SMOKE panel.

One extinguisher bottle supplies one nozzle in the forward compartment and two nozzles in the aft compartment. The agent is discharged by pressing either the FWD or AFT DISCH pb.

If the cargo smoke warning is activated in either compartment, the associated isolation valves close and the extraction fan stops.

Descent

71. The flight crew will make a pre-arrival announcement after leaving cruise altitude (approximately 20 minutes prior to landing). This alerts the flight attendants the sterile flight deck (NO PED sign) will occur shortly (T or F) FOM 4.8.11

True. This announcement notifies flight attendants and passengers of ETA and other appropriate information (e.g., turbulence, seat belt sign, weather, etc.).

72. An amber SPD BRK memo appears when: PHB 12.1.3

A green SPD BRK memo appears on ECAM when the speedbrakes are extended. The memo flashes amber if the speedbrakes are extended when the thrust is above idle.

73. Speedbrake extension is inhibited in which flap configuration(s): PHB 12.1.3

Speedbrake extension is inhibited if:

- SEC 1 and 3 have failed
- An elevator (L or R) has failed (only spoilers 3 and 4 are inhibited)
- Angle of attack protection is active
- Flaps are in configuration FULL (A319/320) or
- Flaps are in configuration 3 or FULL (A321)
- Thrust levers are above MCT position, or
- Alpha floor is active

If an inhibiting condition occurs, the speedbrakes retract automatically. To regain control of the speedbrakes, the inhibiting condition must be corrected and the SPEED BRAKE lever must be moved to the RET position for ten seconds.

Approach

74. What are the maximum winds for an autoland approach, landing, and rollout? PHB 2.13.3 & 2.3.1

Headwind	**30 knots**
Tailwind	**10 knots**
Crosswind other than CAT II/III	**20 knots**
Crosswind CAT II/III	**15 knots**

75. What are the maximum flaps/slats extended speeds (V_{FE}) for the A319/320/321? PHB 2.4.1

FLAPS	A319/320	A321
1	**230**	**235**
1+F	**215**	**225**
2	**200**	**215**
3	**185**	**195**
FULL	**177**	**190**

Normal Takeoff Note: At heavy takeoff weight, the S speed on the A321 may be higher than the MAX speed of CONF 1+F (225 knots). In this case, continue to accelerate. On reaching 210 knots the automatic flap retraction will occur and the MAX speed will move to 235 knots (PHB 18.3.2).

76. When configuring for approach and landing, how is the max speed for the next flap lever position depicted? PHB 13.2.4

An amber = shows the V_{FE} corresponding to the next flap lever position.

77. When cleared for an ILS approach, while still a considerable distance from the runway, you desire to delay configuration of the gear and flaps. The ONLY acceptable technique is the ____. When utilizing this technique, the distance with reference to the published fix that corresponds to 1½ dots and ½ dot respectively is ____ / ____. PHB 18.6.6

Alternate ILS Configuration Technique	
Aircraft Distance with Reference to the Published Fix	**Accomplish the Procedures Associated with:**
3 nm	1½ dots
2 nm	½ dot
1 nm	G/S Intercept
• Configure the aircraft so as to arrive 3 nm prior to the published fix with FLAPS 2 • Distance is in relation to the published fix at the LOM, OM, or their equivalent (e.g. maltese cross) on the Jeppesen Approach Chart • Applicable to ILS approaches only, <u>not</u> RNAV approaches	

78. During flight, the number 2 autopilot failed. What is your ILS approach capability? QRH OD-5

CAT 3 Single.

79. Is the A319/320/321 authorized to conduct LDA approaches? PHB 18.6.8

LDA approaches must have a usable glideslope to a DA. If the glideslope is inoperative, the approach is <u>not</u> authorized.

In order to enable the aircraft logic, the LDA with glideslope approaches have been coded in the NAV database as a LOC.

Note: An autoland from an LDA is <u>not</u> authorized. Only the LDA/DME with glideslope is available at KDCA, the Rosslyn LDA is <u>not</u> authorized.

80. The flight crew may only modify V_{APP} through the MCDU if required under what circumstances? PHB 18.6.5

- Non-normal procedure
- Ice accretion
- Anticipated windshear

Do <u>not</u> enter a V_{APP} lower than V_{LS} + 5 knots.
If landing in CONFIG 3 with ice accretion, do <u>not</u> enter a V_{APP} lower than V_{LS} + 10 knots.

Note: See FIL 4-01

81. If the published MDA on an ASR approach is not a multiple of 100, the pilot should round the minimums up to the next 100' (T or F) PHB 18.6.14

True. When the published MDA is not a multiple of 100, round it up to the next 100' (e.g., 810' is rounded up to 900'). Set this "adjusted" MDA in the FCU and use this "adjusted" MDA for the minimum descent altitude. When an intermediate step-down altitude(s) is designated, set the FCU to the step-down altitude(s), then to the "adjusted" MDA.

82. Pilots will fly all approaches with the rate of descent and flight parameter defined in the FOM, unless non-normal conditions require deviation and are briefed. The rate of descent and flight parameters include: FOM 5.10.8

Rate of Descent - By 1,000 feet AFE, the descent rate is transitioning to no greater than 1,000 fpm.

Flight Parameters - Below 1,000 feet AFE (IMC) or 500 feet (VMC), the aircraft is:

- On a proper flightpath (visual or electronic) with only small changes in pitch and heading required to maintain that path,
- At a speed no less than V_{REF} and not greater than V_{REF} + 20 (except when generated by Airbus FMGC) allowing for transitory conditions, with engines spooled up,
- In trim, and
- In an approved landing configuration

Execute a go-around when the rate of descent is excessive or the flight parameters can not be maintained.

83. The low energy warning "SPEED SPEED SPEED" protection system is only available in which flap configuration? PHB 12.1.5

Low energy warning available in CONF 2, 3, or FULL, between 100' and 2,000' AGL when TOGA not selected. Produces aural "SPEED SPEED SPEED" when change in flight path alone is insufficient to regain a positive flight path (Thrust must be increased).

84. How is ALPHA FLOOR or TOGA LK cancelled? PHB 14.1.12

ALPHA FLOOR is a protection that commands TOGA thrust regardless of the positions of the thrust levers. This protection is available from lift-off to 100 feet RA on approach.

ALPHA FLOOR calls up the following indications:

- "A FLOOR" in green surrounded by a flashing amber box on the FMA and in amber on the engine warning display as long as alpha floor conditions are met.
- "TOGA LK" in green surrounded by a flashing amber box on the FMA when the aircraft leaves the alpha floor conditions. TOGA thrust is frozen and thrust lever movement will have no effect.

To cancel ALPHA FLOOR or TOGA LK thrust, disconnect the autothrust.

Note: ALPHA FLOOR is inhibited:

- under alternate or direct flight control law.
- In case of engine failure with flaps extended

85. The weather radar has predictive windshear capability. The system operates when the aircraft is below _____ feet AGL. PHB 13.3.8

The Predictive Windshear system operates when the aircraft is below 1,500' AGL. It scans the airspace within 5 nm forward of the aircraft for windshears. When a windshear is detected, a warning, caution, or advisory message appears on the PFD and (depending on the range selected on the ND) an icon appears on the ND. Predictive windshear warning and caution are associated with an aural warning. During takeoff, both warnings and cautions are available within 3 nm. Alerts are inhibited above 100 knots and up to 50'. During landing, alerts are inhibited below 50'.

When the WINDSHEAR switch is in AUTO, the Predictive Windshear function is activated. Windshear areas are detected by the antenna scanning below 2,300' RA, even if the transceiver selector is set to OFF, and displayed on the ND if below 1,500'.

Alert Level	Aural Warning	PFD	ND
Warning (Approach)	"GO AROUND WINDSHEAR AHEAD"	W/S AHEAD (red)	Windshear icon
Warning (Takeoff)	"WINDSHEAR AHEAD" (twice)	W/S AHEAD (red)	
Caution	"MONITOR RADAR DISPLAY"	W/S AHEAD (amber)	
Advisory	Nil	Nil	

Reactive Windshear system: When a FAC detects windshear conditions, it triggers a warning:

- "WINDSHEAR" in red on both PFD's (for at least 15 seconds)
- An aural warning, "WINDSHEAR, WINDSHEAR, WINDSHEAR"

When the aircraft configuration is 1 or more, the windshear detection function is operative during:

- Takeoff – from lift-off up to 1,300'
- Approach – from 1,300' to 50'

Predictive windshear aural alerts have priority over TCAS, EGPWS, and other FWC aural warnings. They are inhibited by windshear detection by FAC and stall warning aural messages.

86. A Predictive Windshear System (PWS) icon is considered a ___ risk of hazardous convective weather. QRH OD-4

HIGH

87. With regard to a Microburst Alert issued by a tower or other ATC facility, you should know that this alert is nearly 100% accurate (T or F). FOM 10.6.3

True. If not issued specifically for your runway, consider how it may affect your flight path.

88. In dealing with windshear or potential windshear, you should know that the average windshear lasts only ___ minutes. FOM 10.6.3

Do <u>not</u> takeoff or land until conditions improve. Average windshear lasts only 10 – 15 minutes.

Landing/Go-Around

89. What is the maximum landing weight for the A319/320/321? PHB 2.2.2

Max Landing Weight	
A319	**137,800 lbs**
A320	**142,200 lbs**
A321	**171,500 lbs**

90. When should autobrakes be selected to LOW or MED? PHB 3.12

- OFF – To be used for bare and dry runways where landing distance is not a factor
- LO – To be used when moderate deceleration is required
- MED – to be used for contaminated runways or when landing distance is a factor
- MAX – <u>Not</u> to be used for landing

91. What is the hydraulic source for normal brakes, and when are they available? PHB 11.3.2

The Normal Brake system is powered by the Green hydraulic system.
Normal brakes are available when:

- A/SKID & N/W STRG switch is ON
- Green hydraulic pressure is available
- Parking brake is OFF (A319/320)

Braking is activated either manually by pilot pressure on the brake pedals or automatically through the autobrake system. Antiskid is available with normal brakes. There is no normal brake pressure indication in the flight deck.

92. When is the alternate brake system automatically selected? PHB 11.3.5

If green hydraulic pressure is insufficient, the yellow hydraulic system is automatically selected to provide alternate brakes. Braking capability is the same as normal brakes, except for autobraking. A triple brake and accumulator pressure indicator displays yellow system left and right brake pressure, as well as accumulator pressure.

Alternate brakes can also be provided without antiskid. During alternate braking, the antiskid becomes inoperative:

- with electrical power failure
- with BSCU failure
- if the A/SKID & N/W STRG switch is selected OFF, or
- if the brakes are supplied by the yellow accumulator only

If the antiskid is not available, braking is achieved by the pedals, and brake pressure must be limited by monitoring the yellow system brake and accumulator pressure indicator to prevent wheel locking. If neither normal nor alternate braking is available, the brake accumulator can provide at least seven full brake applications.

93. Full ground spoiler extension occurs during landing when: PHB 12.1.3

The ground spoilers are ARMED by raising the SPEED BRAKE lever. Ground spoiler retraction occurs when the thrust levers are at idle and the speed brake lever is down, or when at least one thrust lever is advanced above idle.

Partial Ground Spoiler Extension - During landing, partial spoiler extension occurs when:

- Reverse thrust is selected on at least one engine with the other at or near idle, and
- One main landing gear strut is compressed

This partial spoiler extension (by decreasing lift), eases compression of the second main landing gear strut, and consequently leads to full ground spoiler extension.

Full Ground Spoiler Extension – The spoilers extend automatically at touchdown of both main gear or in case of a rejected takeoff (speed above 72 knots) when:

- Both thrust levers are at idle (if the ground spoilers are ARMED), or
- Reverse thrust is selected on at least one engine with the other thrust lever at idle (if the ground spoilers are <u>not</u> ARMED)

94. Upon landing, the recommended procedure to deactivate the autobrakes system is to ___. PHB 18.7.2

If conditions permit, disengage autobrakes before 20 knots for smoother braking. The recommended deactivation of autobrake system is accomplished by depressing the brake pedals.

95. After an emergency landing when an evacuation is <u>not</u> warranted, an announcement should be made as soon as possible to inform passengers and flight attendants. The recommended wording is: FOM 7.20

"This is the captain/first officer. Please remain seated with your seat belts fastened"

96. How do you initiate the evacuation command? QRH 19

Initiate the evacuation by using the passenger address system. *"This is the captain, EVACUATE, EVACUATE"*, and press EVAC COMMAND.

Taxi-in/Parking

97. After touchdown, where will the Trimmable Horizontal Stabilizer (THS) be positioned? PHB 12.1.2

After touchdown, the system automatically sets pitch trim to zero as the pitch attitude becomes less than 2.5 degrees.

98. If available, external electrical power and air should be connected whenever the anticipated time at the gate exceeds 35 minutes (T or F) FOM 5.12.6

If the anticipated gate time is greater than 35 minutes, do not start the APU during arrival. After parking at the gate, establish external power followed by external air. Not less than 15 minutes prior to departure, start APU to allow the disconnect of external electrical power/air.

99. Opening a cabin entry/service door from the outside with the escape slides armed will ___ ? PHB 5.21.1

Each door is equipped with a single lane escape slide or slide-raft. A slide arming lever connects the slide to the floor brackets when in the ARMED position. If the door is opened from the inside while the slide is armed, the door is pneumatically assisted and the slide will inflate and deploy automatically. The slide may be inflated manually if auto mode fails. Opening the door from outside disarms the door and slide.

100. Before switching the batteries to OFF during the Securing Checklist, the crew should wait until the APU flap is fully closed. This will take approximately ___ minutes after the APU AVAIL light extinguishes. PHB 3.16

About 2 minutes after APU AVAIL light extinguishes.

ADDITIONAL MEMORY LIMITATIONS

OPERATION LIMITS

Structural Weight Limits	A319	A320	A321
Maximum Takeoff	**166,400 LBS**	**169,700 LBS**	**205,000 LBS**
Maximum Landing	**137,800 LBS**	**142,200 LBS**	**171,500 LBS**

Maximum 90 degree crosswind component (including gusts) for takeoff and landing: **29 knots**
Maximum 90 degree crosswind component (including gusts) for CAT II/III approaches: **15 knots**
Limiting tailwind component for takeoff and landing: **10 knots**
Maximum operating altitude: **39,000 feet**

SPEED LIMITS

Maximum operating airspeed (V_{MO}): **350 KIAS**
Maximum operating mach number (M_{MO}): **0.82M**
Maximum gear extension speed (V_{LO}): **250 KIAS**
Maximum gear retraction speed (V_{LO}): **220 KIAS**
Maximum gear extended speed (V_{LE}): **280 KIAS/0.67M**

Maximum Flaps/Slats Extended Speeds (V_{FE})					
FLAPS	1	1+F	2	3	4
A319/320 V_{FE}	**230 KIAS**	**215 KIAS**	**200 KIAS**	**185 KIAS**	**177 KIAS**
A321 V_{FE}	**235 KIAS**	**225 KIAS**	**215 KIAS**	**195 KIAS**	**190 KIAS**

Turbulence Penetration Speeds	A319/320	A321
At or above 20,000 feet	275 KIAS/.76M	300 KIAS/.76M
Below 20,000 feet	250 KIAS	270 KIAS

ICE & RAIN PROTECTION

Engine Anti-ice ON when OAT (Ground) / TAT (Flight): **10 degrees C or below**
(except during climb and cruise when the temperature is below –40 degrees C SAT)

Engine anti-ice must be ON prior to and during descent in icing conditions
(including temperatures below –40 degrees C SAT)

FUEL

Usable Fuel Tank Quantity		
	A319/320	A321
Wing Tanks	27,500 lb	27,500 lb
Center Tank	14,500 lb	14,500 lb
ACT	-	10,500 lb
TOTAL	**42,000 lb**	**52,500 lb**

Maximum allowable fuel imbalance between left and right wing tanks (outer + inner): **1,000 lbs**

HYDRAULICS, BRAKES, & LANDING GEAR

Maximum landing gear extension altitude: **25,000 feet**

FLIGHT CONTROLS

Maximum operating altitude with slats, or flaps and slats extended: **20,000 feet**

AUTO FLIGHT SYSTEM

Autopilot Engaged – Minimum Height: **100 feet AGL** After Takeoff (if SRS is indicated)

Maximum Winds for Automatic Approach, Landing, and Rollout	
Headwind	**30 knots**
Tailwind	**10 knots**
Crosswind other than CAT II/III	**20 knots**

POWERPLANT

Minimum oil quantity for dispatch: 12.5 quarts

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Send corrections/comments to Bob Sanford, Email: busdriver@hky.com
Unofficial Airbus Study Site: http://www.hky.com/~sanfordb/airbus.htm