A320 System Limitations

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Alle Angaben ohne Gewähr

Nur für die nichtgewerbliche Desktop Flugsimualtion geeignet.

The A320 aircraft must be operated in compliance with the limitations given in the Airplane Flight Manual (AFM).

The A320 aircraft is certified in the public transport category (passengers and freight) for day and night operations, in the following conditions, when the appropriate equipment and instruments required by the airworthiness and operating regulations are approved, installed and in an operable condition:

- VFR and IFR
- Extended overwater flight
- Flight in icing conditions.

Minimum flight crew required to operate the A320 aircraft : 2 pilots.

ICING CONDITIONS DEFINITION

Icing conditions exist when the OAT on the ground and for takeoff, or when TAT in flight, is 10°C or below and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet and ice crystals).

Icing conditions also exist on the ground and for takeoff when the OAT is 10°C or below when operating on ramps, taxiways, or runways where surface snow, standing water, or slush may be ingested by the engines or freeze on engines, nacelles, or engine sensor probes.

MAXIMUM OPERATING ALTITUDE

- Slats and flaps retracted: 39800 ft.
    - This is the maximum altitude at which it is possible to maintain cabin pressure altitude below 8000 ft.
- Slats and/or flaps extended: 20000 ft.

MANEUVER LIMIT LOAD FACTORS

- Slats and flaps retracted: -1 to +2.5 g.
- Slats and/or flaps extended: 0 to +2.0 g.

AIRSPEEDS LIMITATIONS

VMO/MMO – MAXIMUM OPERATING LIMIT SPEED

- VMO = 350 kt IAS
- MMO = M 0.82

VLO – MAXIMUM SPEED DURING LANDING GEAR EXTENSION/RETRACTION

- VLO = 220 kt IAS (DURING LANDING GEAR RETRACTION)
- VLO = 250 kt IAS (DURING LANDING GEAR EXTENSION)

VLE/MLE – MAXIMUM SPEED WITH LANDING GEAR LOCKED DOWN

- VLE/MLE = 280 kt IAS / M 0.67

VFE – MAXIMUM SLATS/FLAPS EXTENDED SPEEDS OR OPERATING SPEEDS

Flight Phase	Slats Position	Flaps Position	Flaps Lever Position	VFE
Intermediate approach	18°	0°	1	230 kt IAS
Takeoff 1+F	18°	10°	1	215 kt IAS
Approach and takeoff	22°	15°	2	200 kt IAS
Approach, takeoff and landing	22°	20°	3	185 kt IAS
Landing	27°	40°	FULL	177 kt IAS

TAILWIND

- Maximum tailwind for takeoff and landing: 15 kt

TOWING

- During towing, ±85° of nosewheel travel must not be exceeded.
- Mechanical stop is designed at ±95° of nosewheel travel.

CABIN PRESSURIZATION

- Maximum safety relief differential pressure: 8.6 PSI.
- Maximum negative differential pressure: -1 PSI.
- The ram air inlet must only be opened when the cabin differential pressure is less than +1 PSI.

AUTO FLIGHT

Flight Management System

- The FMGS has been demonstrated to comply with applicable airworthiness requirements, including FAA AC 20-130A, for a navigation system integrating multiple navigation sensors, when operating with aircraft position based on:
    - IRS position and GPS update, or
    - IRS position and radio navaid update, or
    - IRS position only.
- FMGS also complies with the airworthiness requirements (listed in AFM) for –
    - RNAV Operations
    - RNP Operations
- Compliance with the applicable airworthiness requirements does not constitute an operational approval. Such authorization must be obtained by the operator from the appropriate authorities. >> Operational approval required for – PBN.

ELECTRICAL

- Maximum continuous load per generator (100%): 90 KVA
- Maximum continuous load per TRU: 200 A

FUEL

- The fuel system (A320-200N) has been certified with: JET A, JET A1, JP5, JP8, RT, TS-1 and N° 3 JET.
- Fuel loading varies with specific fuel gravity without any fuel weight limitation.

Tanks	**Fuel Quantity**	**Fuel Weight (0.785 Kg/L)**
2 Wing Tanks	15476 L	12148 kg
1 Center Tank	8248 L	6474 kg
Total	**23724 L**	**18622 kg**

HYDRAULICS FLUID

- Maximum Operating Pressure : 3000 PSI ± 200 PSI

TIRE SPEED

- Maximum tire speed: 195 kt (ground speed).

NAVIGATION

- Satellite Based Augmentation System (SBAS)
    - MMR hosts the Satellite Based Augmentation System (SBAS) equipment. The MMR complies with TSO C145d/ETSO C145c associated with SBAS capability. The MMR is compatible with all regional SBAS systems.
- Inertial Reference System (IRS)
    - IRS are compliant with the position accuracy criteria of AC 25.4 and FAR 121 appendix G for a flight time up to 16 h (i.e. in excess of the aircraft range).
    - Ground alignment of the IRS has been demonstrated to be acceptable between 73° North and 73° South.
- Reduced Vertical Separation Minimum (RVSM)
    - Aircraft have been certified capable to participate in RVSM operations according to JAA TGL 6 and FAA 91-RVSM requirements.
    - Compliance with the standard noted above does not constitute an operational approval. Such authorization must be obtained by the operator from the appropriate authorities.
- Mode S – EHS Enhanced Surveillance
    - The transponder mode S Enhanced Surveillance (EHS) has been demonstrated to comply with airworthiness requirements (mentioned in AFM).
- Mode S – ADS-B Out Enhanced Surveillance
    - The transponder mode S extended squitter, Automatic Dependent Surveillance – Broadcast (ADS-B) Out function, has been demonstrated to comply with airworthiness requirements (mentioned in AFM).
    - Compliance with the above does not constitute an operation approval. Such authorization must be obtained by the operator from the appropriate authorities.

APU

- One Allied Signal APU 131-9[A].
- Maximum EGT: 675 °C
- Maximum for start:
    - 1090°C at altitudes below 35000 ft
    - 1120°C at altitudes at or above 35000 ft
- Maximum rotor speed: 107%
- Oil Specifications – Model Specification 31-12048A-3A.

POWER PLANT

MAIN ENGINES

- 320-216 – Two CFM 56-5B6/P or CFM 56-5B6/3 or CFM 56-5B6/P with “TI HPC Kit”
- 320-251N – Two CFM LEAP-1A26

ENGINE PARAMETERS

Operating Condition	Time Limit	ENG Indicated EGT Limit	Max Speed N1	Max Speed N2
Air Starting	—	875 °C	—	—
Ground Starting	For ground starts (automatic or manual), a 60 s pause is required between successive cycles. A 15 min cooling period is required, subsequent to three failed cycles.	750 °C	—	—
Maximum Continuous	CONT.	1025 °C	—	—
Takeoff and Go-around – **Normal**	5 min	1060 °C	101 %	116.5 %
Takeoff and Go-around – **One ENG OUT**	10 min	1060 °C	101 %	116.5 %

CROSSWIND

- Engine crosswind limit at takeoff: 35 kt (gust included).

OIL

- Engine oil specification
  - CEO – Service Bulletin CFM56-5B N°79-001.
  - NEO – Service Bulletin CFM LEAP-1A N°79-0001.
- Minimum Oil Pressure
  - CEO – 13 PSI
  - NEO –
    - 17.4 PSI at Idle Thrust (from 55% N2 to 74% N2)
    - 29 PSI at Maximum Continuous Thrust (116.5% N2)
- Maximum Temperature – CEO/NEO
  - 140°C for continuous operation
  - 155°C for transient operation (limited to 15 min)

OTHERS

- The selection of the thrust reversers in flight or their preselection before touchdown is prohibited. On ground, backing the aircraft with use of reverse thrust is not permitted.
- The engine anti-ice must be ON during all ground and flight operations when icing conditions exist or are anticipated, except during climb and cruise when the temperature is below -40°C SAT. The engine anti-ice must be ON prior to and during descent in icing conditions, including temperatures below -40°C SAT.
- Do not rely on airframe visual icing cues to turn engine anti-ice on. Use the temperature and visual moisture criteria specified for the icing conditions.