**B747-400F - LIMITATIONS**

### DIMENSIONS
- Wing-wing: 213' 
- Gnd-top cockpit: 32' 
- Nose-tail: 231' 
- Wing tip radius: 149'
- Captain seat-aft to BodyGear: 100'
- Minimum pavement for 180 turn: 153'
- Wing grows 12’ and passes 37’ in front of nose during turn

### WEIGHTS
- Max take: 397,600 lb max fuel at touchdown: 1100 kg
- Max l/b: 369,893 lb min fuel go-around: 2600kg
- Max land: 302,093 lb min fuel indicator error: 1800kg
- Max zfy: 288,031 lb minimum landing fuel: 5500kg
- Min main gear tire rate: 56,600 lbs min block in domestic: 10,500kg
- Min nose gear tire rate: 50,400 lbs min block in international: 10,500kg

### ENGINES (GE CF6-80C2B5F)
- Thrust: 62,100 Max EGT start: 750 (870/40sec)
- Max RPM N1: 117.5 Max EGT max continuous: 925
- Max RPM N2: 112.5 Max EGT Take-off: 960
- Minimum Engine Oil Pressure: 10psi minimum APU oil quantity: .55RF
- Minimum Engine Oil Quantity: 16 qts hyd fluid min: 0.8
- Max Eng Oil Temp: 160’ C Fuel density range: 6.0~7.1 (6.43 chart)
- Max Trans Oil Temp (15min): 160~175 C Min fuel: 3degrees above frz point of fuel
- Fuel Temp min/max Jet A: -36~+54 Fuel Temp min/max JetB: -44~+43
- Fuel Temp min/max Jet5: -43~+54 Fuel Temp min/max Jet4: -45~+43

### FLIGHT MANEUVER LOAD LIMITS
- Flaps up: +2.5G~1.0G
- Flaps down: +2.0G~0.0G

### ALTITUDES
- Max certified operating: 45,100 max APU operating: 20,000
- Max FLAP ext. altitude: 20,000 max APU pneumatic: 15,000
- Max pa T/O & Ldg: 10,000 minimum Autoland TCH: 44 feet
- A/P after take-off (Atlas): 500 AGL A/P non-prec app: 50 bio MDA
- A/P Single Channel ILS: 100 AGL

### AIRSPEED LIMITS
- Max Flaps: 280kts max RVSM: 300M
- Max Flaps 5: 260kts sidby altimeter not authorized for RVSM
- Max Flaps 10: 240kts Autoland Headwind: 23kts
- Max Flaps 20: 230kts Autoland Tailwind: 10kts
- Max Flaps 25: 205kts Autoland Crosswind: 20kts
- Max Flaps 30: 180kts CAT III CATIII crosswind: 10kts
- RDR Ratio - Single wind: 20kts max ldg gear ext: 320kts/82M
- RDR Ratio - Single wind: 10kts max ldg gear op: 270kts/82M
- RDR Ratio - Dual (eng inop): 5kts Turb Air Penet: 290~310/.82~.85M

### AIRSPEEDS
- Trail edge flaps assym/spilt: 25kts jammed stab on landing: 20kts
- Dual hydraulic failure: 20kts one engine reverse on lbg: 20kts

### MAXIMUM DEMONSTRATED CROSSWIND COMPONENTS
- TAKEOFF: Stand wtr, slush, snow, ice 15
- TAKEOFF/LANDING: NORMAL 30
- LANDING - Stand wtr, slush, snow, ice 10
- LANDING - WET 25

### SAFETY
- Upper deck: 6 passengers, 2 crew (8) taxi/take-off/landing
- Each passenger must be briefed by crewmember on the following: location/operation each exit, location/use escape harness/slide, location/use fire extinguishers/protable oxy/smoke hoods

### MISG
- Max pressure relief: 14.4 psid Max Oxy: 1200psd
- Max allowable cabin different: 0.11 psid Crew Oxy over Land: 950psd
- Brake Accum Air charge: 750psi Crew Oxy over Water: 1200psd
- glideSlope min/max: 2.5~3.25 slush/water LANDING: 1
- aileron trim prohibited with autopilot engaged: max runway slope
- use of reverse thrust in flight or to back up: PROHIBITED
- A/P diseng bio 5' unless GSILOC or G/L.../without LAND 2/3 then 100'
- Must have smoke detector operable in each main deck cargo zone if cargo in it
- Smoke barrier door must be closed for taxi, take-off, flight, & landing
- Must have enough Oxy for each occup at 25k cabin alt to nearest land, if Class E loaded
- Up-deck escape slide must be FWDM locked taxi, T/O, LDG

**IGN "ON": T/O, land, hvy rain, severs XBLC, volc dust, icy, stand water, slush**