

B737NG GENERIC LIMITATIONS

- **ALTITUDE:** Maximum ZP 41 000 ft
Maximum ZP for T/O and Landing 8400 ft (Runway slopes : ± 2%)

- **WIND:** Max tailwind for T/O & Landing.....10 kt
Max demonstrated crosswind (runway dry or wet)36 kt
Automatic landing (dual channel CAT2 or CAT3 approach):
- tailwind 10 kt
- crosswind20 kt
- headwind 25 kt

- **CABIN PRESS:** Max cabin differential pressure (top of yellow band)..... 9.1 psi
Max cabin differential pressure for takeoff & landing..... 0.125 psi

With engine bleed air switches ON, do not operate the air conditioning packs in HIGH for takeoff, approach or landing.

- **AUTOPILOT:** - Do not engage A/P for takeoff < 400 ft AGL
- The A/P must be disengaged before the airplane descends more than 50 ft below the MDA (Minimum Descent Altitude) unless it is coupled to an ILS glide slope & localizer or in the go-around mode.
- No ailerons trim with A/P engaged
- The Minimum Use Height (MUH) for single channel autopilot operation is 158 ft AGL

- **MAX AIRSPEED LIMITS & FLIGHT CONTROLS**

- Speedbrake may not be deployed in flight below 1000 ft radio altitude
- Holding in icing conditions with flaps extended is prohibited.
- Flaps 15 normal landings are prohibited. A Flap 15 landing may be performed when required by a non normal procedure.

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|--------------------------------------|-----------------|
| VMO / MMO | 340 kt / .82M |
| Turbulence* | 280 KIAS / .76M |
| Maximal Flap extension altitude..... | 20 000 ft |
| Flaps 1..... | 250 kt |
| Flaps 2..... | 250 kt |
| Flaps 5..... | 250 kt |
| Flaps 10..... | 210 kt |
| Flaps 15..... | 200 kt |
| Flaps 25..... | 190 kt |
| Flaps 30..... | 175 kt |
| Flaps 40..... | 162 kt |

Alternate Flap duty cycle in flight:

- Flaps 0 -15one cycle, 5 min. off
- Flaps greater than 15one cycle, 25 min. off

Window heat inoperative (< 10000 ft)** 250 kt
Max speed with Mach Trim inoperative.... 280 KIAS/.82

* Below 15000 ft, at less than Maximum Landing Weight, a speed of 250 kt provides adequate buffet margin

** Window heat should be ON 10 min. before takeoff

- **FUEL:** - Max Fuel temperature is +49°C
- Use of Wide Cut Fuels per Class B of GE Specification D50TF2, JP-4 or Jet B is prohibited

| FUEL | FREEZING POINT (°C)* |
|--------------|----------------------|
| JET A1 (JP1) | -47 |
| JET A | -40 |
| JP-5 | -46 |
| JP-8 | -47 |

*Inflight, The fuel temperature must be maintained +3°C above freezing point

| TANKS | MAXIMUM USABLE FUEL * | | |
|----------------------------|-----------------------|--------------|--------------|
| | USG | LITERS | KG |
| Left + Right | 2576 | 9752 | 7830 |
| Center | 4299 | 16273 | 13066 |
| Non measurable usable fuel | N/A | N/A | N/A |
| TOTAL | 6875 | 26025 | 20896 |

*fuel density = 0.80

Max imbalance between L & R tanks453 kg (1000 lbs)

- Fuel crossfeed must be closed for takeoff & landing
- Main tanks 1 & 2 must be full if center tank contains more than 453 kg (1000 lbs)

- **LANDING GEAR:** Max extension270 kt / M.82
- Max retraction235 kt
- Max with gear extended..... 320 kt / M.82
- Max Tyres Speed225 MPH or 195 kt
- Tyres Specifications
- (Main LDG) H44.5 x 16.5-21/28PR/225
- (Nose Gear) 27 x 7.75-15-12PR
- Do not apply brakes until after touchdown
- Operation with assumed temperature reduced takeoff thrust is not permitted with antiskid inoperative.
- Towing operations without the use of a tow bar is restricted to tow vehicles that are designed and operated to preclude damage to the airplane steering system or which provide a reliable and unmistakable warning when damage to the steering system may have occurred.

Gear extension and retraction times :

Normal retraction..... 14 sec
 Normal extension..... 17 sec
 Alternate extension..... 19 sec

Parking brake holding time
 (fully charged accumulator 3000 PSI)..... 8 hours
 Precharge pressure..... 1000 psi

- **ELECTRICAL:** AC Power system (115 V, 400 Hz, 3-phase)

- Voltage :

- Normal..... 115V
- Maximum..... 120V
- Minimum110V

- Frequency :

- Normal..... 400Hz
- Maximum.....410 Hz
- Minimum390 Hz

- Load limit :
 - IDGs + APU Generator + External Power.....90 kVA
- IDG :
 - Max oil temperature..... 182°C
 - mini oil pressure..... 165 psi

DC Power system

- Voltage :
 - Normal..... 26V
 - Maximum.....30V
 - Minimum22V

Battery power

- Capacity.....40Ah
- Voltage.....24V

Miscellaneous

AC service outlets

(cabin, cockpit, equipt rack).....115 V, 400 Hz, 1000 W

DC service outlet (cockpit).....28 V

● **HYDRAULICS:**

- Minimum range..... 2800 psi
- Normal range 3000 psi
- Maximum (relief valve setting).....3500 psi
- Precharge pressure..... 1000 psi
- Minimum fuel for ground operation of electric pumps 750 kg
- Hydraulics quantity :
- Refill level (Sys A)..... 6.0 / 4.7 (RFL or 76%)
- Refill level (Sys B)..... 8.5 / 6.9 (RFL or 76%)
- EIS100% / 88% (on ground only)

● **ENGINES:**

- Maximum & minimum limits are red while caution limits are amber
- Engine ignition must be CONT for :
 - Takeoff & landing
 - Operation in moderate or heavy rain
 - Anti-ice operation

Maxi N1 104%

Maxi N2 105%

Max startup EGT 725°C

Max T/O EGT950°C (10 min.)

Max continuous EGT895°C

Mini oil press13 psi

Mini oil press during takeoff.....Above Yellow Arc

Mini oil quantity prior to engine start 3.2 USG / 60%

Oil consumption.....maximum 0,5 l /hour

Max oil temperature :

- Maximum momentary 165°C

- Maximum for 15 min.160 -165°C

- Maximum continuous 160°C

Starter Duty Cycle :

- First attempt2 min. ON & 20 sec. OFF

- Second & subsequent attempts.2 min. ON & 3 min. OFF

- Maximum Starter Re-engage RPM 20% N2

Reverse Thrust :

- For Landing or rejected takeoff only

- Intentional use of reverse thrust in flight or during taxi prohibited.

- Engine Start limitations :

- 1) Observe initial EGT rise + EGT within limits
- 2) Abort start :
 - a) if EGT fails to rise within 10 sec. of selecting IDLE or EGT rising quickly or approaching limits
 - b) if no N1 rotation before the engine start lever is raised to IDLE
 - c) if no oil pressure by the time the engine is stabilized at idle.
 - d) If no increase in, a very slow increase in N1 or N2 after EGT indication.

- **APU:** - APU bleed valve may be open during engine start, but avoid engine power above idle.

| | |
|-------------------------------------|--|
| APU BLEED + ELECTRICAL load | until 10000 ft |
| APU BLEED | until 17000 ft |
| APU ELECTRICAL | until 41000 ft (has always <u>priority</u> on Bleed air) |
| Minimum RPM for power delivery..... | 95% |
| Normal Operation..... | 100 - 101 % |
| Overspeed Limit..... | 107 % |
| Electrical supply..... | 90 kVA |

- **NAVIGATION & COMMUNICATION SYSTEM:**

- During VOR approaches, one pilot must have raw data from the VOR associated with the approach displayed in the HSI VOR mode no later than the FAF
- Do not operate the weather radar in a hangar or within 50 feet of any personnel or a fuel spill. (The hangar and personnel restrictions do not apply to the weather radar test mode).
- Do not use LNAV & VNAV for QFE operation
- Do not use terrain display for navigation
- Use of terrain alerting & display functions are prohibited for QFE operation
- Use of terrain alerting & terrain display functions are prohibited within 15 NM & approaching to land at an airport not contained in the GPWS terrain database.
- ADIRU alignment must not be attempted at latitudes greater than 78° 15'.
- Because of unacceptable Electro Magnetic Interference between Electronic Engine Control (EEC) and the VHF Comm. No. 2 & No. 3 antenna, do not use VHF Comm. No. 2 & No. 3 on 120.000 MHz as primary means of communications. If frequency 120.000 MHz is required, use Comm. No. 1.
- VHF Power requirements28V DC
- HF Power requirements..... 115 V AC, 400 Hz, 3-phase

- **PNEUMATICS:**

- Minimum pressure for engine start 30 psi at Sea Level (-0,5 psi/1000 ft)
- External Pneumatic Source :
- Maximum Pressure 60 psi
- Maximum temperature 232°C

- **ACCELERATION LIMITS:** Flaps UP+2.5 g to - 1.0 g
- Flaps DOWN+2.5 g to - 1.0 g

- **FIRE PROTECTION:** All Fire agents.....Halon
- Cargo Fire agent protection duration.....195 minutes

- **PASSENGER EVACUATION:** Main door emergency evacuation slide systems must be armed and engagement of each girt bar with the still fitting verified, prior to taxi, T/O and landing whenever passengers are carried.

- **WATER & WASTE:** Water tank capacity..... 235 lit. / 62.5 USG

● CARGO DOORS:

| TYPE | DIMENSIONS (m) | DIMENSIONS (in) |
|---------------|----------------|-----------------|
| Forward Cargo | 0,89 x 1,22 | 35 x 48 |
| Aft Cargo | 0,84x 1,22 | 33 x 48 |

- Do not operate the cargo door or let the cargo door stay open in winds of 65 kt or more.
- For cargo door ops with winds \geq 40 kt, damage to the cargo door could happen