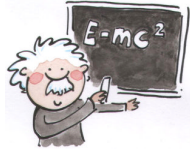


## **OVERWEIGHT LANDING**



### Ludo's Brief

- There is no procedure / Check-List in the Boeing QRH.
- Boeing does not recommend overweight autolands.
- However, overweight landings may be safely accomplished by using normal landing procedures and techniques.
- The Aircraft Maintenance Manual (AMM) requires a maintenance inspection after any overweight landing.
- There are no adverse handling characteristics associated with overweight landings.
- **An overweight landing is generally recommended under the following conditions:**
  - A malfunction that seriously affects the airworthiness of the aircraft.
  - A condition where an expeditious landing would reduce the exposure to a degrading level of safety.
  - One engine inoperative (although a one engine out condition affects the aircraft performance and handling characteristics a landing must be considered in order to reduce the exposure to additional problems with the remaining engine.
  - A serious illness on board requiring immediate medical attention.
- **An overweight landing is generally permitted under the following conditions:**
  - A landing due to failures not directly affecting the airworthiness of the aircraft.
  - An unplanned diversion.
- **An overweight landing is generally not recommended under the following conditions:**
  - Complete hydraulic failures affecting the braking performance.
  - Tire burst / failures.
  - Flight control troubles that would adversely affect the handling of the aircraft.
- Autopilots on Boeing airplanes are not certified for automatic landings above maximum landing weight. At higher than normal speeds and weights, the performance of these systems may not be satisfactory and has not been thoroughly tested.
- An automatic approach may be attempted, however the pilot should disengage the autopilot prior to flare height and accomplish a manual landing.
- Landing distance is normally less than takeoff distance for flaps 30 or 40 landings at all gross weights. However, wet or slippery runway field length requirements should be verified from the landing distance charts in the *Performance Inflight* chapter of the QRH. If adequate stopping distance is available based upon approach speed, runway conditions, and runway length, the recommended autobrake setting should be used. Remember that these distances are unfactored.
- The declaration of an emergency is not required solely for an overweight landing, but the situation that caused the overweight landing may necessitate a declaration.

- Brake energy limits **will not be exceeded** for flaps 30 or 40 landings at all gross weights.
- Analysis has determined that, when landing at high gross weights at speeds associated with non-normal procedures requiring flaps set at 15 or less, maximum effort stops **may exceed** the brake energy limits. The gross weights where this condition can occur are well above maximum landing weights. For these non-normal landings, maximize use of the available runway for stopping.
- In an emergency, should the pilot determine that an overweight autoland is the safest course of action, the approach and landing should be closely monitored by both pilots and the following factors considered:
  - Touchdown may be beyond the normal touchdown zone; allow for additional landing distance.
  - Touchdown at higher than normal sink rates may result in exceeding structural limits.
  - Plan for a go-around or manual landing if autoland performance is unsatisfactory; automatic go-arounds can be initiated until just prior to touchdown, and can be continued even if the airplane touches down after initiation of the go-around.
- In view of the increased aircraft weight, special attention shall be paid to the following items & conditions, when considering an overweight landing :
  - Pilot's physical condition : own limitation & fatigue
  - Weather : IMC or VMC, temperature, crosswind, turbulence, etc.
  - Runway: elevation, length, slope, obstructions (at both ends), width & surface condition.
  - Aircraft: serviceability of systems, flaps, etc.



- Use the longest available runway, and consider wind and slope effects.
- If stopping distance is a concern, Reduce the landing weight as much as possible to minimize stopping distance. Since the 737 does not have a fuel jettison system, weight should be reduced at the Captain's discretion by holding at low altitude with a high drag configuration (gear down) to achieve maximum fuel burn-off (up to 8,600 pounds, 3,900 kilograms per hour). Conditions permitting, consider to switch ON the APU to increase fuel burn-off.
- In the holding and approach patterns, maneuvers should be flown at the normal maneuver speeds.
- During flap extension, airspeed can be reduced by as much as 20 knots below normal maneuver speeds before extending to the next flap position. These lower speeds result in larger margins to the flap placards, while still providing normal bank angle maneuvering capability, but do not allow for a 15° overshoot margin in all cases.
- Observe flap placard speeds during flap extension and on final approach.
- Fly the airplane onto the runway at the normal touchdown point.
- Fly a normal profile & ensure that a higher than normal rate of descent does not develop.

- If a long landing is likely to occur, go-around.
- After touchdown, immediately apply maximum reverse thrust using all of the available runway for stopping to minimize brake temperatures.
- Use flaps 30 rather than flaps 40 is recommended to provide increased margin to flap placard speed.
- The pitch attitude will be about 2 or 3° higher than for Flaps 30 & care must be taken not to flare too much and allow a float to develop.
- Wind correction may be limited by the flap placards and load relief system.
- After touchdown, verify speedbrake lever UP and immediately apply maximum reverse thrust using all of the available runway for stopping to minimize brake temperatures.
- After landing, consult QRH, Performance Inflight, Recommended Brake Cooling Schedule
- After an overweight landing, Company Maintenance staff must be advised & appropriate maintenance checks carried out before further flight. (see Maintenance Manual)



- Where possible avoid landing in tailwinds, on runways with negative slope, or on runways with less than normal braking conditions.
- Do not carry excess airspeed on final. This is especially important when landing during an engine inoperative or other non-normal condition. At weights above the maximum landing weight, the final approach maximum wind correction may be limited by the flap placards and load relief system.
- Do not hold the airplane off waiting for a smooth landing. Fly the airplane onto the runway at the normal touchdown point. If a long landing is likely to occur: GO-AROUND!
- Do not flare too much and allow a float to develop.
- **Avoid** any overweight landing on a flat tire.
- Do not attempt to make an early runway turnoff after landing.