

Performances and speeds

© Alex KAISER - made on a Mac using Mellel

All those performances are based on AE3007A engines

Take Off

Data:

- Field altitude : 1000ft
- Temperature : 25°C / 77°F
- No wind
- Take Off Weight : 19 tons / 42000 lbs
- No runway slope

| | |
|---|-------------------------|
| Take Off Distance Dry Runway, thrust setting T/O-1 | 1900 m / 6230 ft |
| Take Off Distance, Dry Runway, thrust setting ALT T/O-1 | 2050 m / 6725 ft |
| Take Off Distance, Wet Runway, thrust setting T/O-1 | 2200 m / 7220 ft |
| Initial climb gradient T/O-1 take off thrust mode | 3,6% |
| Initial climb gradient ALT T/O-1 take off thrust mode | 3,5% |

Data:

- Temperature : 5°C / 41°F
- Anti ice ON

| | |
|--|-------------------------|
| Take Off Distance Wet Runway, thrust setting T/O-1 | 2100 m / 6890 ft |
|--|-------------------------|

Climb

Data:

- No wind
- Weight 20 tons / 44000 lbs
- Field altitude 0ft

| | |
|--|---|
| Distance to reach flight level 290 | 96 NM |
| Maximum weight to reach FL290 within 60 NM | 15 tons / 33000 lbs |
| Fuel burn to reach FL370 | 500 to 600 kg / 1100 to 1300 lbs |
| Maximum vertical speed climb | 215kt |
| Flight Level Change logic | 240kt up to 8000ft 270kt up to 18000ft M0,56 above |
| Minimum time cruise climb | 270kt up to 24600ft M0,65 above |

- If climb is achieved at 220kt instead of FLC:

| | |
|---------------------|-------------------|
| Vertical speed gain | + 10% |
| Air slope gain | + 25 à 30% |

Cruise

Data:

- ISA + 10
- Weight 19 tons / 42000 lbs

| | |
|---------------------------------|--|
| Single engine ceiling | 12500 ft |
| Single engine recovery altitude | 18450 ft |
| Optimal Mach | 0,71 |
| VMO/MMO | 320kt / 0,78 |
| Rough Air Speed | 250kt / M0,63 whichever is higher |
| Optimal cruise level | FL260 |

Hold

| | |
|--------------------------------|------------------------------|
| Optimal level for hold | FL 250 |
| Optimal speed for hold | VFS + 10 kt |
| Fuel flow for hold | 840 kg/h – 1850 lbs/h |
| Final reserve (30 minutes) | 430 kg – 930 lbs |
| Hold speed in icing conditions | 200 kt minimum |

Landing

| | |
|--|-----------------|
| N1 thrust setting flaps 22° for approach speed | 45 – 47% |
| N1 thrust setting flaps 45° for approach speed | 60 – 67% |

Data :

- No wind
- Weight 18,7 tons / 41200 lbs
- Field altitude : 1000ft
- Temperature 25°C / 77°F

| | Flaps 22° | Flap setting difference | Flaps 45° |
|---|------------------------|--------------------------------|------------------------|
| Landing distance dry runway | 1350m / 4430ft | 35% | 1000m / 3050ft |
| Landing distance wet runway | 1550m / 5085ft | | 1150m / 3380ft |
| Minimum runway length dry runway | 2250m / 7380 ft | | 1650m / 5415ft |
| Minimum runway length wet runway | 2600m / 8530ft | | 1900m / 6230ft |
| Landing distance contaminated runway (compacted snow, 0°C) | | | 1500m / 4920 ft |
| Minimum runway length contaminated runway (compacted snow, 0°C) | | | 1725m / 5660 ft |

Go around

Data :

- No wind
- Weight 18,7 tons / 41200 lbs
- Field altitude: 1000ft
- Temperature 25°C / °F

| | |
|---|-----------------------------|
| Max landing weight for a 2,1% single engine climb gradient | 18700 kg / 41200 lbs |
| Max landing weight for a 2,5% climb gradient (including ice accretion) | 18700 kg / 41200 lbs |
| Max landing weight for a 4% climb gradient with ice accretion | 18000 kg / 39700 lbs |
| Max landing weight for a 4% climb gradient with ice accretion and anti-ice ON | 17500 kg / 38600 lbs |

Other limitations

Data:

- Field altitude: 1000ft
- Temperature 20°C / °F

- **Minimum control speeds :**

| | Vmcg | Vmca |
|----------------|-------------|-------------|
| ERJ 145 | 112kt | 98kt |
| ERJ 135 | 92kt | 97kt |

- **Stall speeds at 20 tons / lbs :**

| Configuration | Vs | Vs x 1,45 | Minimum safe speeds |
|----------------------|-----------|------------------|----------------------------|
| Flaps 0° | 127 kt | 186 kt | 180 kt |
| Flaps 9° | 115 kt | 166 kt | 170 kt |
| Flaps 22° | 108 kt | 156 kt | 150 kt |

Pitch and thrust settings

| Configuration | Normal | Single engine | Pitch |
|---|-------------------------|-------------------------|--------------|
| Clean 240kt | 65% | | 2° |
| Clean 200kt (hold) | 55%/62% | 70%/75% | 4° |
| Flaps 9°, 180kt | 62% | 75% | 4° |
| Gear down, flaps 22°, glide slope, 160kt | 55% | 70% | 2° |
| Reducing towards minimum approach speed on the glide | 45% | 55% | |
| Mimimum approach speed on the glide | 62%-67%/flaps 45 | 65%-70%/flaps 22 | 0° |
| Gear down, flaps 22°, level flight, 140kt, before circling | 70% | 85% | |
| Gear down, flaps 0°, 160kt | 65% | | |
| Gear down, flaps 0°, glide descent, 160kt | 55% | | |