

BOEING 737 NG FUEL PLANNER
BY
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INSTRUCTIONS:

1. To obtain the fuel calculation you have to fill out the yellow boxes as explained:

TRIP: nautical miles (NM) from origin to destination. It can be calculated with any route planner as those recommended on the final section of this manual. It's strongly recommended to include the SID and STAR in the calculation, as precise the distance calculation, as precise is the fuel planner.

Note: by default the fuel planner shows the maximum range of the aircraft, it's for easier knowing if the aircraft is able to do the route you wish to fly.

ALTERNATE: nautical miles from destination to alternate airport. Usually great circle or direct route distance is used.

INTERNATIONAL: if it's an international flight, type YES, if it's a domestic flight type NO. When you indicate it's an international flight, the planner will automatically add contingency, this is 10% of the fuel necessary from origin to destination (trip), plus 30 minutes holding at 1500ft above the alternate airport. When you indicate a domestic flight, it only adds fuel for 45 minutes flying at cruise speed.

APU TIME: add the time you estimate the APU will be on. It has to be calculated in minutes. Usually the APU is turned on 10 minutes before starting engines.

Most of the time GPU and external air are used; these burn less fuel than APU. If you are planning a bleeds off takeoff, an ETOPS flight or the aircraft is in an airport with no GPU or Air conditioner unit, use this box to add the time you estimate operating with APU on.

TAXI TIME: add the time you estimate for taxi, usually 10 minutes are added. It may be more if distance to runway is very long or some delay due to traffic is expected. Time must be indicated in minutes.

EXTRA: This is the fuel added at dispatcher or captain's discretion. Usually some extra is required if route deviations, speed or flight altitude changes are expected due to weather or traffic. If necessary estimate the minimum, more

Fuel weight requires more fuel burn. This box may be also used to add tankering fuel.

WIND COMPONENT: type en route wind component, this may be calculated with OPUS or active sky software. A negative wind component (-) means headwind, resulting in a greater flight time. A positive wind component (+) means tailwind and shorter flight time.

2. Blue boxes provides data about fuel required, average speed, approximate times, reserve fuel and take off fuel.

FUEL ON BOARD: total fuel you have to carry on the aircraft, it's also known as "block fuel" and "ramp fuel". Usually quantity is rounded. i.e: 15340→15400.

Note: Boeing 737 has 3 fuel tanks, one main tank in the fuselage and 2 wing tanks; these have to be loaded first. Main tank is used only when wing tanks are full.

T.O FUEL: fuel quantity right at the moment you start the takeoff roll, it's also known as minimum brake release fuel. This is the minimum legal fuel required for departure.

ARRIVAL FUEL: fuel at the moment you land at the destination. It is takeoff fuel-trip fuel.

MINIMUM RESERVES: It's the sum of alternate fuel plus holding fuel (30 or 45 minutes). If you estimate landing with less than this minimum reserve, you must declare an emergency.

This is the data we have to type in the RESERVE box on the FMS. i.e: if minimum reserves are 5000lb, just type 5.0 on the FMC.

TAS: this is true air speed.

GS: this is ground speed, it changes due to the wind component.

EET: estimated enroute time, it is from takeoff roll to landing.

RESERVE TIME: this is the conversion of arrival fuel to minutes.

TIME TO EMPTY: total time of fuel on board. It includes trip, reserves and extra fuel.

CONTINGENCY: 10% of trip, it's automatically added when you indicate an international flight.

ALTERNATE TIME: approximate time from destination to alternate airport.

3. Green box shows total fuel on board (FOB), an OK flag is showed. If maximum aircraft fuel capacity is exceeded, an "EXCEEDS MAX FUEL" flag is displayed and the green box turns red.

4. This fuel planner has been made based on the average fuel consumption of the aircraft in every phase of the flight.

I have decided cost index 20, because it calculates average speeds the 737 is operated, some real world airlines use this cost index.

5. This fuel planner has been designed according to F.A.R rules.

6. Do not use for real flight.

7. Webs and software recommended:

PMDG Boeing 737 NGX:

<http://www.precisionmanuals.com>

Active sky:

<http://www.hifitechinc.com/>

OPUS:

<http://www.opussoftware.co.uk/opusfsi.htm>

Simbrief, virtual flight dispatch:

<http://www.simbrief.com/home/>

TOPCAT:

<http://www.flightsimsoft.com/>

Weather satellite map:

<http://weather.msfc.nasa.gov/GOES/>

<http://aviationweather.gov/obs/sat/intl/>

Airport info, METAR, TAF, NOTAMS:

<http://www.acukwik.com/>

NOTAMS:

<https://www.notams.faa.gov/dinsQueryWeb/>

Noise abatement departure procedures (NADP):

<http://www.boeing.com/boeing/commercial/noise/list.page>

ETOPS circles:

<http://www.gcmap.com/>

NAT's (North Atlantic Track):

<http://blackswan.ch/nat/>

<https://www.notams.faa.gov/common/nat.html?>

NAT tutorial:

<http://ivao.es/uploads/edc729c67d61a163f0b781c55df08007.pdf>

PACOTS, WESPAC, SOPAC, CEP (routes over the Pacific ocean):

<https://www.notams.faa.gov/dinsQueryWeb/> (select Pacific tracks).

<http://zak.vatusa.net/awy/routes.htm>

PACOTS tutorials:

http://zak.vatusa.net/tutor/pacots_tutorial.htm

<http://stevenairspace.com/pacots-tutorial/>

<http://vuelovirtual.wordpress.com/2012/02/11/vuelos-transoceanicos/>

Real flight routes USA and Canada:

<http://flightaware.com/>

Route planners:

<http://www.simroutes.com/fb2/ParseRoute.aspx>

<http://rfinder.asalink.net/free/>

Europe route planner:

<http://www.vatroute.net/>

Fuel planner:

<http://fuelplanner.com/>

USA navigation charts:

<http://skyvector.com/>

<http://airnav.com>

Additionally, you can find charts from other countries in their own AIP, you can also find them in the respective IVAO or VATSIM FIR.

I hope to contribute to getting our virtual flights closer to the real world,

Happy flights!

Larry Bueno.
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