



Boeing 777-300ER For XP10 Manual

Zroman.

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Animations: Zroman

Flight model: Zroman

Hello there, I am Zroman. The creator of this magnificent aircraft. Before we get into the aircraft, allow me to say a few words. I'm merely a freshman student in Toronto, and a busy one at that, but I do like x-plane very much and it is a hobby that I enjoy working on.

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Introductions

The original 777 concept started in the 1970s as a widebody tri-jet to compete with the DC-10 and L-1011 widebody aircraft. The original unveiling was of a Tri-jet model with a range of roughly 5600 NM. By 1988, Boeing had decided that the new aircraft, then dubbed the 767-x would become a whole new model, the 777. At this point, Boeing started issuing offers to major airlines about this new concept.

DESIGN

Boeing introduced a number of advanced technologies with the 777 design, including fully digital FBW controls, fully software-configurable avionics, Honeywell LCD glass cockpit flight displays, and the first use of a fiber optics avionics network on a commercial airliner. Boeing made use of work done on the cancelled Boeing 7j7 regional jet, which utilized similar versions of the chosen technologies. In 2003, Boeing began offering the option of cockpit computer displays.

Fly-by-wire

In designing the 777 as its first fly-by-wire commercial aircraft, Boeing decided to retain conventional control yokes rather than change to sidestick controllers as used in many fly-by-wire fighter aircraft and in many Airbus airliners. Along with traditional yoke and rudder controls, the cockpit features a simplified layout that retains similarities to previous Boeing models. The fly-by-wire system also incorporates flight envelope, a system that guides pilot inputs within a computer-calculated framework of operating parameters, acting to prevent stalls and overly stressful maneuvers. This system can be overridden by the pilot in command if deemed necessary.

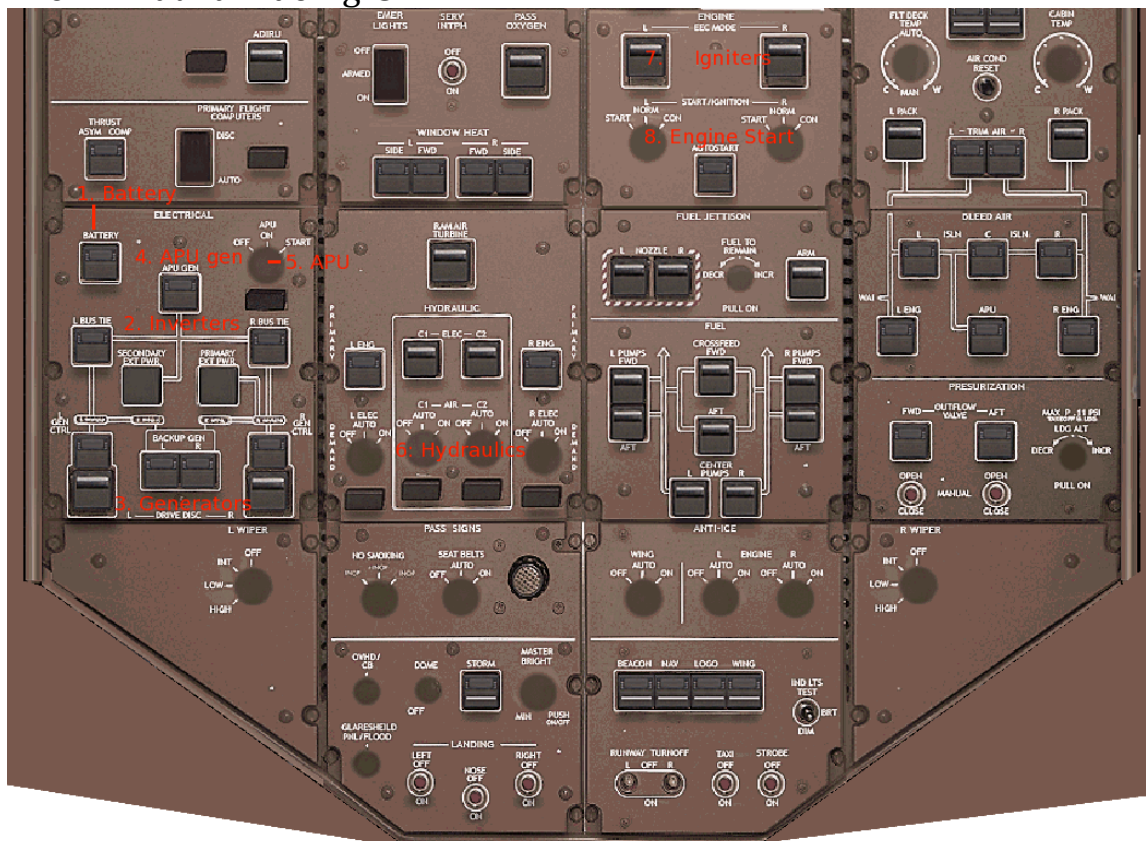
Airframe and systems

The 777's wings feature a supercritical design that is swept back at 31.6 degrees and optimized for cruising at Mach 0.83 (revised upward after flight tests to Mach 0.84). The wings are designed with increased thickness and a longer span than previous airliners, resulting in greater payload and range, improved takeoff performance, and a higher cruising altitude. Folding Wingtips were offered when the aircraft was launched, to appeal to airlines who might use gates made to accommodate smaller aircraft, but no airline purchased this option.[[]

The airframe incorporates the use of composite materials which comprise nine percent of its original structural weight. Elements made from composite material include the cabin floor and rudder. The main fuselage cross-section is circular and tapers rearward into a blade-shaped tail cone with a port-facing auxiliary power unit. The aircraft also features the largest landing gear and the biggest tires ever used in a commercial jetliner. Each tire of a 777-300ER six-wheel main landing gear can carry a load of 59,490 lb (26,980 kg), heavier than other wide-bodies such as the 747-400. The aircraft has triple redundant systems with only one system required for landing. A ram air turbine – a small retractable propeller which can provide emergency power – is also fitted in the wing root fairing.

Startup

The aircraft features a full sized OH panel, however only the essential buttons have been added to the panel, since I don't exactly know what I am doing ☺.



Alright, you might have to zoom in a bit to see each button, but here's the gist.

1. Turn on the Battery. This will start up all your avionics and lights and bells and whistles
2. Turn on the inverters, labeled L and R bus tie
3. Turn on the generators
4. Turn on the APU GEN
5. Turn on the APU
6. Turn on the hydraulics
7. Turn on the igniters
8. Hold the engine start buttons to start up each engine.

The plane should've now started up and the engines should be spooling. Please don't start the engines until you are away from the gate and pushed back.

Taxiing and Takeoff

This aircraft is MASSIVE, and don't forget it! When taxiing, there is a high chance of running on to grass in sharp turns. The plane is designed to be able to take sharp turns all the way until 30 kts, at which point it becomes less controllable.

Standard Taxi procedures call for you to have lowered your flaps during pushback. Flap detents are 5, 10, 15, 20, 25, 30. Takeoffs are often done at flaps 5, 10 or 15. When taxiing, be aware that your plane has a huge backside that can swing around.

Takeoff

Alright, you've made it to the runway! I'm impressed. Now, to push the aircraft into the sky, make sure the following things are done:

1. Your autopilot is set for the correct heading, altitude and vertical speed (roughly 2000 fpm)
2. Your flaps are down and locked
3. Your speedbrakes are armed
4. Your autobrakes are set to RTO
5. All doors are shut
6. All lights are on
7. Anti-ice as necessary.

Now, you're ready for takeoff. Push the throttles halfway up and make sure they are synced. Once that is done, push them to full and release the brakes, allow the plane to roll forward. Control the heading with rudder and aileron as necessary.

At VR, roughly 150-180 kts depending on weight, pull the plane's nose upwards and DO NOT EXCEED 10 degrees upwards. Raise the gears once the plane is at 100 feet and turn on the autopilot. Set your plane to follow the heading or intercept the LNAV flight path. Once above 500 feet, engage FLCH for 240 KTS and reduce thrust.

Controlled climb

As marked by the poorly drawn arrow in the below image, the handles of the throttle should be pulled back to that screw. At this point, the plane will be flying with the engines at a safe cruising power and not the 100% N1 that could very literally rip the engine apart! Once FLCH is engaged, you can relax until 10000 feet. At that point, increase speed to 320 kts in increments of NO MORE THAN 20 kts to prevent an

interruption in climbing or even a descent. At 30000 feet, switch to MACH. The plane flies at MACH .85. There it is, you're now flying the 777-300ER. Now brace for a heavy landing!



Landing and Approach Speed.

Still here? Damn, you're determined! Alrighty. This part of the flight is the most crucial so I'll say a few words. "A good landing is one you can walk away from" in other words, DON'T SCREW THIS UP!

Typically, the ATC controller will guide you towards a runway to perform an ILS approach. This means that there will be instruments to guide you down to landing.

Some basic guidelines:

1. The 777-300ER lands at 161 kts when fully loaded with passengers and carrying 1.0 hours of fuel
2. The flaps should be completely lowered by 1500 feet. If your plane is not stable by then, go around and try again.
3. The localizer and autopilot should be disengaged at 200 feet, although this plane can do an autoland.
4. Reverse thrust should be turned on AFTER the main wheels touch the ground.

Alright, so let's talk approaches. First of all, you should know how to set an ILS frequency and use the LOC feature on your aircraft, being able to do it on the XPFW or XP-jets 777s are enough. Now, after intercepting the localizer, you'll want to start slowing down to your landing speed, which is 161 kts at 558000 lbs. during approach, the plane's nose should be tilted upwards by 2 degrees.

Ground Services:

This aircraft is one of the few in x-plane that come with animated ground servicing. (my 747s, 767s, a321 and 737s will most likely feature ground services.) the ground services are controlled by the mixture knobs for controlling the engines. If the number 1 mixture knob is turned off, then the mobile stairs will be visible. If the number 2 knob is off, then the cargo truck is visible. The ground services are controlled by sliders. SHIFT+F1 through F6.

The 777 with Ground services activated.

