IXEG

international x-plane engineering group

737 CLASSIC

Quick Start Guide
First Flight

Quick Start – First Flight

VIDEO RESOURCES

There is a YouTube video of Captain Jan Vogel performing this lesson. The video can be found at:

http://www.youtube.com

INTRODUCTION

In this quick start guide we will begin with our aircraft on the runway with the engines running and will fly a single circuit around the airport in a standard traffic pattern. For this quick start lesson, we will use the EIS equipped variant of the 737.

During this quick flight, you will become familiar with the basic, manual operation of the aircraft including the locations of commonly used controls, important speeds to maintain, requisite flap settings for specific phases of flight and typical procedures used for most every takeoff, approach and landing. The general phases of this flight will be:

- Takeoff
- Climb to 3000' above ground level (AGL)
- Turn to head downwind
- Set the aircraft up for landing
- Turn to final approach
- Land

INSTRUCTOR BRIEFING

During this lesson, you will spend a lot of time looking at and referencing the primary flight display, which we refer to as the EADI (Electronic Attitude Director Indicator). One key to flying this aircraft smoothly is to fly a “target” pitch angle. When you look at the EADI while flying, do not focus your attention on the vertical speed or the airspeed. You will reference the airspeed and vertical speed frequently as part of your instrument scans, but do not focus on it. Focus on the pitch angle and engine power (N1 is the reference). Eventually you memorize “pitch and power” values for certain aircraft states. This is the key to proficient and accurate flight. In a car you will stomp on the gas pedal until you have the speed you want, then relax to stay there, all by instinct. In a jet airliner you know just “how far to stomp the pedal” to do a certain speed.

Concentrate on setting the little square pitch reference to a certain pitch and keep it there! Once you are holding a steady pitch angle, THEN observe how the airplane responds, check your vertical speed. Is the airplane climbing? If it is, then you can lower the nose a bit and fly a new, lower pitch angle, then memorize that new pitch angle and HOLD IT THERE while you again reference your vertical speed. Look at the airspeed, if it decays, at a few percent of N1 to adjust.

Don´t forget to trim, so your pitch stays where it is if you relax the yoke. The 737 should be flown with a ginger touch of 2 fingers – if you need more, you didn´t trim correctly. Listen to videos of real 737s flying. The trim wheel is going CONSTANTLY. After a while you won´t hear the sound of it, anymore because you get used to it.

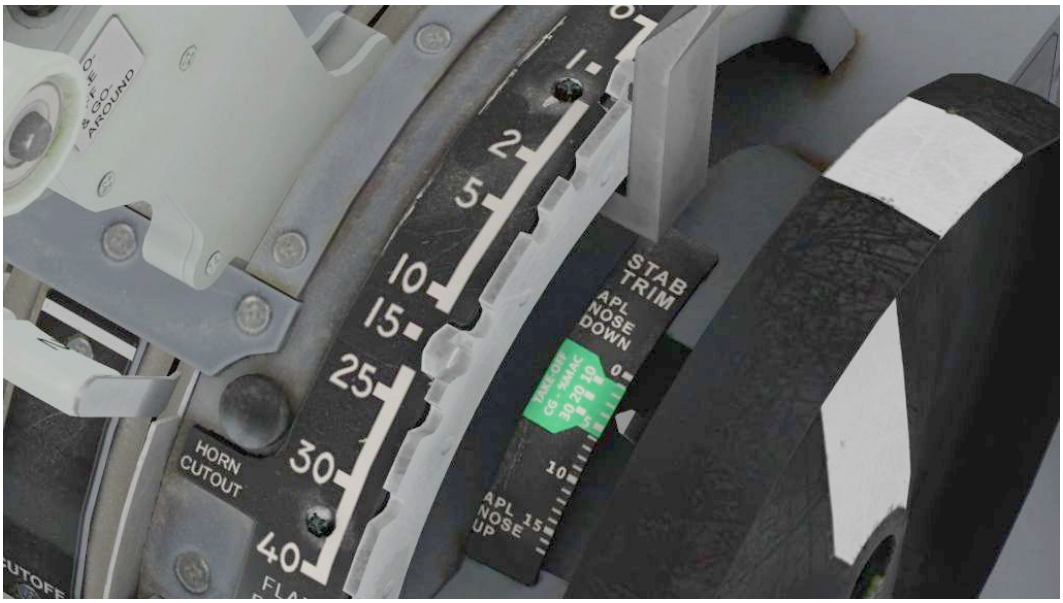
Many pilots constantly raise and lower the nose trying to chase vertical speed. We want to set a pitch angle, reference the vertical speed and then adjust pitch accordingly. Try to get in the habit of flying pitch angles, not vertical speeds. This will result in much smoother flying. In essence you will be targeting vertical speed, but will be doing so in a much more controlled manner when flying in terms of pitch angle and engine power (N1). With a little practice and some hours under your belt, you will begin to automatically know and anticipate the needed pitch and power, and the airplane will then deliver the desired performance. So let's get going!Flight operations.

PREFLIGHT

- Select the IXEG 737-300 as your active aircraft.
- Select an airport and runway with at least 2000 meters of length (6,560 feet). In this example we use EDDH runway 23
- On the *PREFLIGHT* menu, select *READY TO FLY,* then hit *APPLY SETTINGS*
- On the *GROUND SERVICE* menu. Set a combination of zero-fuel weight (suggestion 40.000kgs/88.000lbs) and fuel (2500kg/5500lbs EACH wing tank) to achieve a TOTAL WEIGHT of approximately 45.000kgs/100.000lbs, then hit refueling speed *instant*, exit the menu.
- Use the X-Plane menu *Location > Select Global Airport* to reset your plane to the airport and runway of your choice. (*if not already there*)
- Configure your joystick as desired. We recommend that you set X-Plane's *stability augmentation* to 0, and the *control-response* sliders should be at about 25%
- Ensure joystick buttons or keystrokes are mapped to the following x-plane commands:
  - *flaps up a notch*
  - *flaps down a notch*
  - *Pitch trim up/down*
  - *rudder trim left/right*
  - *aileron trim left/right*
  - *toggle thrust reverser*
  - *speedbrake extend one/retract one*

- Visually confirm commanding and operation of basic controls (via external views):
  - Wiggle ailerons
  - Wiggle elevator
  - Wiggle rudder
  - Deploy and lower speedbrake
  - Advanced thrust levers slightly, confirm increasing N1 then retard thrust levers to idle
  - Toggle “thrust reverse”. In external camera view, observe engine sleeves moving to uncover thrust reverse exhaust louvers. Don´t forget to toggle them close again!

- Set pitch trim to be 3.5 units nose-up (don´t trim outside green band for takeoff).
- Set the flap handle to 'Flaps 1'



Flaps set to Flaps 1

- Set the orange altitude bug on the altimeter to match the airport elevation.

NOTE: The orange bug only indicates in 100s of feet so set it to match the hundreds portion of the airport altitude. We will reference this altitude bug later.

Orange Altitude Bug on the ASI (Airspeed Indicator)

On the Mode Control Panel (*MCP*):

- Set the *SPEED* cursor to 140 kts
- Set the *HEADING* cursor to align with the runway heading of your takeoff runway (in EDDH its 227),
- Set the *ALTITUDE* cursor to 4000 (so it won´t interfere with our flying at 3050´).

Speed, Heading and Altitude settings on the MCP

- Release the parking brakes (default key is the 'V' key on the keyboard),

Parking Brake Lever and Red Light Indicator

Confirm that the red 'park brake light' is off.Advance the throttle levers to achieve about 90% N1. Anything between 85% and 91% will work fine. If you are using the EIS equipped aircraft and want full realism, set the engine N1 speed to match the N1 value specified above the gauges (in this case 90.5%)

Engine N1 Indicators

At 140 knots indicated, gently raise the nose to pitch = +10 degrees. As the airplane lifts off from the runway, gently (total duration target is 6 seconds) increase the pitch angle to +18 degrees.

Initial Pitch after Takeoff @ 18 degrees

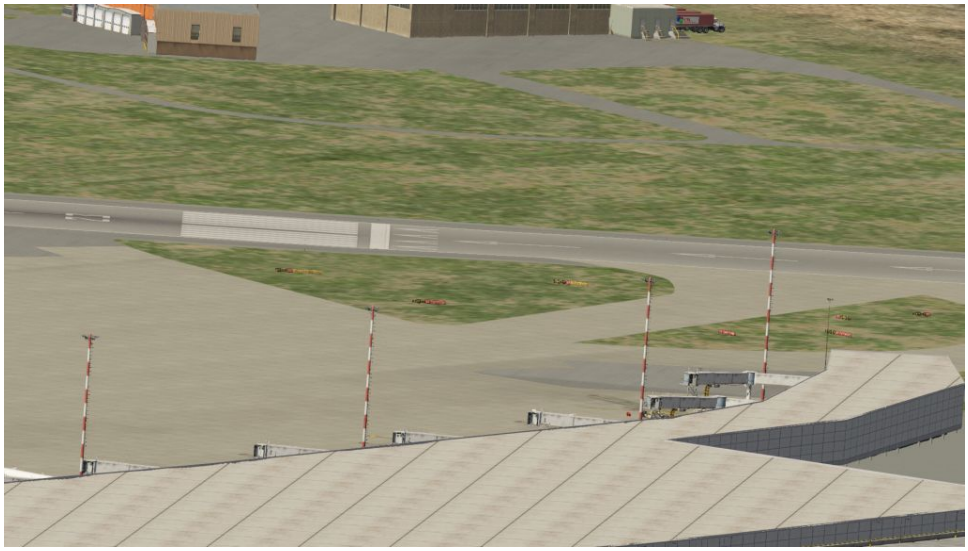
- Raise the landing gear (default key 'G') – your initial speed will be about 160 knots.
- At 1500' above the airport, lower the nose to pitch +10 degrees, this will cause the plane to accelerate.
- ALWAYS use pitch trim to relieve any pressure on the controls. Your goal is to always be able to let go of the controls, and have the airplane maintain pitch and bank. You will find yourself trimming in pitch every few seconds if you do it right.
- At 190 knots, raise the flaps to UP, keep accelerating towards 220 knots. Prepare to reduce thrust a bit (to ca. 80%N1) so you don´t accelerate too fast.

Level off at 3000 feet above the aerodrome level. Reference the orange altitude bug on the altimeter to help you determine the target altitude. For example, if your airport is at 1,256 feet MSL, you will level off at 4,256 MSL). A good pilot will know the required pitch and power for the level-off (ca. 3.0 deg nose up, 56% N1). Set these, then adjust if needed.

Leveling off at 3000 ft.

- After leveling off, turn left and hold 20 degrees of bank until you are flying the downwind heading (180^0 opposite takeoff heading – in EDDH it´s 047) – prepare to use pitch trim as you enter and exit the turn.
- Ignore the altitude alert (C-chord sound) or "OFF SCHED DESC" light if they should trigger during this mission. It the blinking altitude alert bothers you, just turn the altitude in the MCP window up a few thousand feet.
- Maintain airspeed @ 220 knots indicated.

- Look out to the left and when the threshold of your takeoff-runway (23) passes abeam, take note of the time (don´t confuse EDHI with EDDH!). We will fly downwind for 3 minutes. You can use the the stopwatch in the cockpit to track the time (click on the CHR button)



Runway Threshold Abeam

Chronometer. Start when Abeam Above Runway

- OPTIONAL: While flying downwind, you can tune the NAV 1 receiver to the ILS frequency of the active runway if it has an ILS system and observe the course deviation indicator (CDI) appear on the EADI. Since we are not flying the ILS for this lesson, the CDI would be for casual reference only. In EDDH its 111.5 for runway 23.

NAV 1 tuned to ILS frequency

- Arm the speed brake by pulling the lever ever so slowly back until the SPEED BRAKE ARMED light comes on in green just below the standby attitude indicator. It is better to use the “speedbrake down one notch” button on your joystick, as it takes less time.
- On the MCP set the speed cursor to 130kts. This will be the target speed for the final approach.

- After flying downwind for 4 minutes, turn left again and hold 20 degrees of bank until established on the runway heading. Upon completing the turn to final, you should now be flying towards the airport you took of from at approximately 15NM distance.

- Immediately reduce thrust to idle when completing the turn to final (get ready to trim and keep raising the nose as speed bleeds off!
- At 210 knots indicated, set flap handle to 'Flaps 1'
- At 190 knots, set flap handle to 'Flaps 5' (skip over 'Flaps 2', so it´s two clicks of “flaps down one notch).
- At 180 knots, begin descent with 900 feet per minute, increase power slightly. Target pitch and power for this descent phase: 2.5 deg nose up, 36% N1.
- Drop the landing gear (default key “g”)
- Once the gear is down and locked (three green lights), select flaps 15 (two clicks flaps down one notch). Get ready for a pronounced “ballooning” effect when the flaps travel to the 15 position, the sinkrate will diminish and you need to lower the nose to keep your descent rate.
- Acquire the airport visually - judge distance and vertical position visually whether you are too low, too high, or off centerline. You can also reference the glide-slope deviation and localizer deviation pointers, if you set 111.5 on NAV1 radio receiver. If you have trouble finding the airport, cheat by looking at the “local map”.

- At some point during the approach, the OFF SCHED DESC light might illuminate on the overhead panel and trigger the Master Caution light. Just press the master caution button to extinguish the light and disregard the warning. This is correct system behavior.

Off Schedule Descent Warning Light

- At 150 knots, select 'flaps 25'
- At 145 knots, select 'flaps 30' and right away add some thrust to stop the deceleration and hold @ 130 knots. This deceleration happens relatively quickly.

- Target the final approach configuration: Speed 130kts. VS 700fpm. Pitch 2 deg, N1 53%. Adjust heading, thrust and sinkrate constantly to maintain on-slope, on-speed and on-centerline.
- At 20 feet above the runway, pull back the thrust levers to idle and gently raise nose by about 3 degrees and hold it there and let the plane settle onto the runway.Immediately after touchdown, apply the brakes and reverse thrust as needed. Observe the "reverser unlocked" lights illuminate as confirmation that the reversers have deployed.

- Once stopped, set the parking brake (V). Keep doing this pattern until you feel comfortable flying it.