



B-47E Stratojet
for X-Plane 11
USER MANUAL

Introduction

The Boeing B-47 was the first swept-wing multi-engine bomber in service with the USAF. It was truly a quantum leap in aviation history, and is the forerunner of every jet aircraft in service today. As early as 1943, Boeing engineers had envisaged a jet bomber, but were unable to overcome issues with the straight wings of the day. However, Boeing aero-engineer George Schairer was in Germany and came across some secret wind-tunnel data on swept-wing jet airplanes. He sent the information back to the United States, where engineers then used the Boeing High-Speed Wind Tunnel to develop the XB-47, which featured swept-back wings. The B-47 broke a number of records and proved to be a great strategic deterrent during the Cold War era. The B-47E is an advanced version of the original XB-47, with much more powerful J-47 engines. A grand total of 2,032 of these aircraft were built, with the last one rolling out in 1956.



Support

Should you experience difficulties or require extra information about the Virtavia B-47E Stratojet, please e-mail our technical support on tech.support@virtavia.com

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Exterior Model

About this model

This model is a conversion to X-Plane 11, with some improvements and additions, of the Virtavia B-47E made for FS2004 and FSX under the AlphaSim brand in 2006 and updated again (FSX only) in August 2017. This X-Plane version 1.0 was released in January 2019. The FSX Steam Edition version is identical to the regular FSX version. The Dovetail Games Steam portal also sells this SE version, but it lacks external markings in accordance with their policy.

The model is not intended to be the latest and greatest simulation of the B-47, indeed some aspects may seem outdated and this might cause some users to question why this is the case. The model was always a favourite with many flightsimmers since its release in 2006 and as such it seemed an obvious choice for conversion to the X-Plane platform. It was not the intention therefore to make a 'new' or 'state-of-the-art' simulation, which would incur a protracted development time and large overheads, rather this conversion is aimed at fans of the original FSX version who are now using X-Plane. The X-Plane version has most of the functions of the FSX one, but it does still lack RATO. It is hoped that we will be able to add this in a later update, once the tech side is better understood.

The exterior model has all the usual animations such as ailerons, elevators and flaps. The inboard flaps also operate with the ailerons. There are some additional animations on the model:

Canopy

Press alt-E and the canopy will raise a small amount for ventilation, it does not open fully on the B-47.

Crew Access

The crew hatch and ladder can be open or closed using shift-F1.

Bomb Bay

Press shift-F2 to open the bomb bay doors and extend the ventral slipstream deflectors.

Crew Visibility

Press shift-F3 to toggle the crew figures on and off.

Lighting

The lights are turned on and off using the appropriate switches in the cockpit.

Please refer to the cockpit section of this manual for information regarding light switch location.

Quick Tips

Starting from cold – All the required switches are at the front of the right-side console and along the right side behind the throttle levers. Switch on the Master Battery and the 4 Generator Switches and then do the following for each engine in turn : Raise the red cover, switch on the Fuel Valve, then press and HOLD the appropriate Starter Switch (in a row along the right side, behind the throttles) until the small indicator on the RPM gauge for that engine has rotated through one revolution. Then release the Starter Switch and proceed to the next engine.

Take-Off - the B-47 take-off run (without RATO) is very long, please allow for this by choosing long runway, min. 12,000ft. The flight dynamics are optimised for a 50% fuel load. Heavier or lighter loading will require some adjustment of the CG position in the Settings, light loads require up to 2 feet to the left on the slider, heavy loads up to 2 ft to the right. Do NOT try to take off with above 90,000 lbs of fuel, this would not be attempted without rocket assistance on the real B-47E. With 2 notches of flaps the B-47 will lift off automatically at 155 kts. Fuel loads over 50% may require a few degrees of nose-up pitch. Lift-off is with the fuselage level with the ground - DO NOT ROTATE, this may cause a stall. The aircraft will feel nose-heavy up to 200kts, this is normal and back pressure on the yoke will be required until flaps are raised. Above 200 kts the aircraft will handle very nicely.

Take-Off Flaps - The wing flaps have three positions: maneuvering, high-drag (approach), and high-lift (maximum). The outboard flaps assist in roll manouvers (flaperons). Always use 2 notches of flaps for take-off. There is no advantage in using full flaps for take-off. Reduce flaps to one notch after take-off and gear-up, keeping an eye on climb rate as you do so. The final notch of flaps should not be raised until 200 kts is reached. Raising flaps too soon (ie. under 200 kts) will result in very nose-heavy behaviour, leaving two notches on over 170 kts will result in extreme nose-up pitch, so flaps should be the first thing on the pilot's mind after take-off.

Approach & Landing –

Landing the Stratojet properly is a challenge. The combination of a high aspect, highly-swept wing lacking in any high-lift devices such as leading edge slats, and bicycle-type undercarriage leaves a relatively narrow window for a successful touchdown. Naturally, it is not advisable to attempt to land with a heavy fuel load, 30-50% capacity is best, although too lightly loaded brings its own difficulties such as floating, flap ballooning and bouncing.

Approach : The aircraft has no speedbrakes and little frontal drag so allow plenty of distance to slow down, use turns if necessary to bleed off speed until 220 kts is reached and you can enter the pattern.

Final : Slow to 200 kts and lower the undercarriage, extend ONE notch only of flaps. Some light ballooning may be experienced, in this case, avoid diving to compensate, level off gradually and reduce throttle until a steady rate of descent of around 300 ft/min is achieved and speed is 200 kts. The approach must be long and flat, it is NOT possible to dive in, chop throttles then flare to land the B-47. Be cautious when using the throttles, the engine spool-up time is very slow compared to modern machinery, use only small inputs when close to the ground.

Threshold : When the runway threshold is visible, allow speed to drop to 180 kts (red marker on ASI) and apply the second notch of flaps. Light ballooning may be experienced, depending on the aircraft weight. The third flaps notch is only necessary if a fuel load over 50% is carried, it will act as weak speedbrake, but do not use it if a light load is carried as it will cause a large upwards heave. It can also be used to aid retardation if touchdown was a little later than desired, although low speed is necessary to avoid ballooning. Aim to touch down as early as possible, the '47 needs A LOT of runway to land on. DO NOT attempt to fly below the red marker on the Airspeed Indicator (180 kts), below this speed is the 'mush' zone and any sudden manouvers can cause a stall. If the aircraft is very light however (ie. under 20% fuel capacity), then it can be flown safely down to 160 kts.

Landing : Check gear lights are green ! Chop throttles and allow speed to drop to 150 kts - do NOT flare – the idea is to touch down on both wheels simultaneously. Wheel contact should be not be above 150 kts as bouncing will occur, try to fly the aircraft onto the ground in a very shallow descent, less than 50ft/min. Apply brakes.

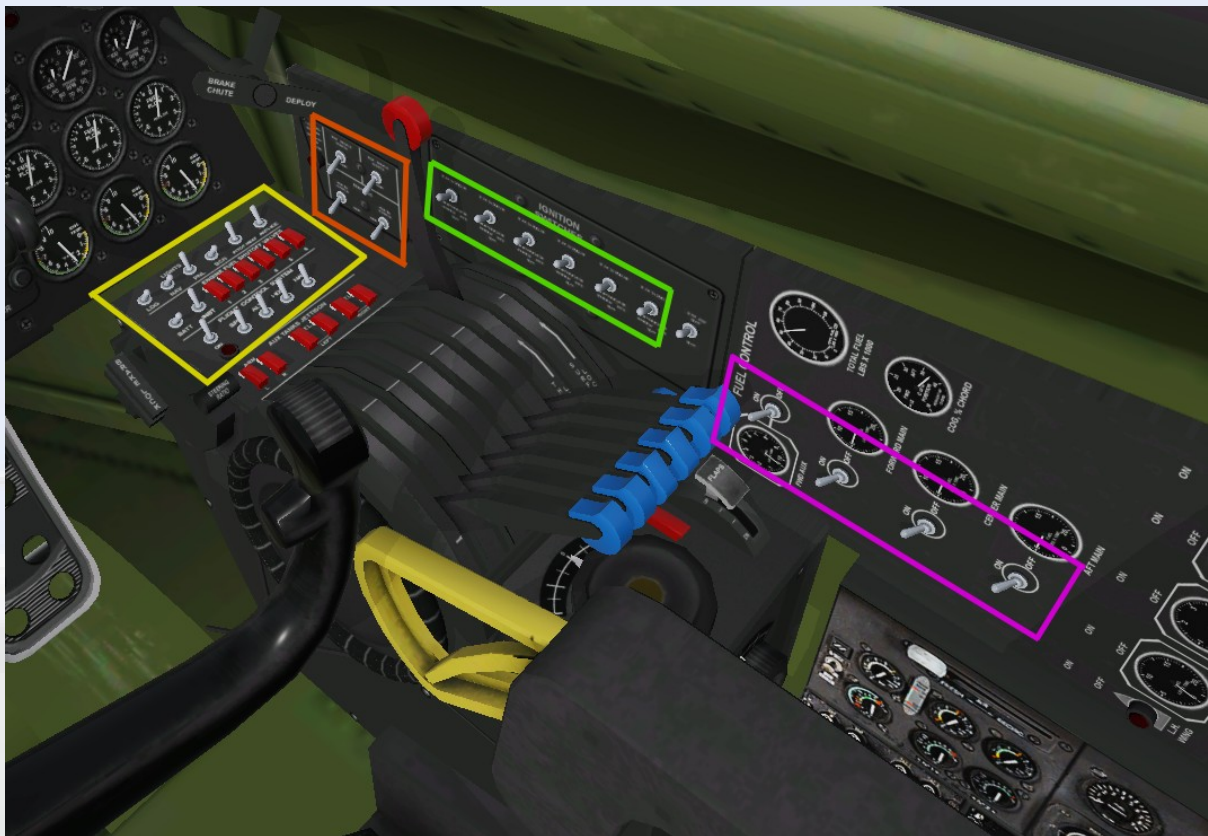


B-47E Stratojet Cockpit

Selecting 'View/Show Instrument Click Regions' in X-Plane will highlight all the clickable objects in the cockpit. If 'View/Show Instrument Descriptions' is enabled, then mousing over will reveal some text describing the object. Some of the more important manipulatable parts are shown below. The yellow rectangle indicates the bomb bay doors and canopy open/close switches. The orange circles show the rotatable knobs which control the 3 autopilot settings HDG (heading), CRS (course or NAV) and SPD which is the autothrottle setting. There is also the usual altimeter barometric pressure adjuster knob.



On the right side of the cockpit, the pilot's console carries all the switches needed for lights, autopilot, electrics and fuel cutoff switches, shown in the yellow rectangle below.



The orange rectangle highlights the four generator switches. The row of switches in the green rectangle are the starter switches. The purple rectangle highlights the fuel pump switches, these are not needed for the operation of the aircraft and are only included for authenticity.

Other manipulators on the console are the six blue throttle levers, the flaps lever and handwheels for the three trim axes. The parking brake pull lever is to the left of the autopilot and lights switch panel. Other switches are visible but these are not manipulatable at present.

B-47E Stratojet Specifications

Specifications (nominal, clean configuration)

- Engines: Six General Electric J47-GE-25 turbojets
- Thrust: 5970 lb.s.t. dry, 7200 lb.s.t. with water injection.
- Maximum speed: 607 mph at 16,300 feet
- Service Ceiling: 33,100 feet
- Combat ceiling: 40,500 feet
- Combat climb rate: 4660 feet per minute
- Combat radius: 2013 miles
- Wingspan: 116 feet 0 inches
- Length: 107 feet 0 inches
- Height: 27 feet 11 inches
- Wing area: 1428 square feet.
- Empty Weight: 79,074 pounds
- Combat Weight: 133,030 pounds
- Maximum Weight: 230,000 pounds
- Armament: Two 20-mm M24A1 cannon in tail.
- Maximum bombload: 25,000 pounds.

Speed Limitations

- Full Flaps: 250 KIAS
- Landing Gear: 450 KIAS
- Maximum indicated speed: 456 KIAS
- Maximum indicated Mach: 0.875

B-47E Stratojet Procedures

Engine Start

Use autostart to start the aircraft, or:

1. Set parking brake.
2. Set throttles to IDLE.
3. Turn OFF Pitot and Anit-Ice switches.
4. Turn ON Master Battery and all 4 Generator switches.
5. Turn ON Nav and Beacon lights.
6. Ensure engine fuel cutoff switch No. 1 is in the OPEN position.
7. Start Eng. 1 using the engine start switch (press and hold 5 sec).
8. Monitor RPM, oil pressure and EGT.
9. Repeat for remaining engines.
10. Turn ON Pitot and Anit-Ice switches as required.

Takeoff (50,000 lbs. fuel)

1. Make sure fuel level is adequate.
2. Set elevator trim neutral.
3. Set flaps to one notch down.
4. Set brakes.
5. Apply full power smoothly.
6. At 100 percent RPM, release brakes.
7. Do not rotate. The aircraft will fly itself off the runway at about 155 KIAS.

Takeoff (80,000 lbs. fuel)

1. Make sure fuel level is adequate.
2. Set elevator trim 5 deg UP.
3. Set flaps to 2 notches down (100%).
4. Set brakes.
5. Apply full power smoothly.
6. At 100 percent RPM, release brakes.
7. Do not rotate. The plane will fly itself off the runway at about 165 KIAS.

After Takeoff

1. Retract landing gear once a positive rate of climb is established.
2. Raise flaps to ONE notch.
3. Allow the aircraft to accelerate to 200 KIAS with a vertical speed of at least 1,000 feet/minute.
4. Once the aircraft is at least 1,000 feet above the terrain, retract the flaps.
5. Reduce throttle to 98% RPM.
6. Allow the aircraft to accelerate to the normal climb speed of 310 KIAS.
7. Above 15,000 feet allow the climb speed to fall until you are climbing at 220 KIAS at 40,000 feet.

Climb

Climb at 310 KIAS after completing the "After Takeoff" checklist. Above 15,000 feet, allow the aircraft to slowly decelerate until you are climbing at 220 KIAS at 40,000 feet. A climb to 30,000 feet will take about 13 minutes, use about 7,000 pounds of fuel, and cover about 100 nautical miles for a takeoff weight of 185,000 pounds.

Cruising

Use autopilot/autothrottle to set cruise parameters.

Weight	Altitude	Airspeed	Fuel Consumption	Naut. miles/1000 lbs
160,000 lbs.	30,000 feet	0.74 Mach	11,800 pounds/hour	37

Normal Descent

1. Begin descent 40 miles from the airfield.
2. Retard throttles to idle.
3. Lower landing gear observing speed restrictions.
4. Use landing gear to slow aircraft as required.
5. Limit descent rate to 6,000 fpm.
6. Limit speed to 240 KIAS.

Tactical Descent

1. Extend the landing gear for drag.
2. Monitor speed.
3. Rate of descent may exceed 10,000 feet per minute.
4. Level out 1,000 feet above target altitude and reestablish normal flight.

Landing (100,000 pounds)

1. Approach the field at about 200 KIAS with plenty of room to slow down using normal descent procedures.
2. On downwind check landing gear is down and locked.
3. Deploy flaps to first position on downwind and maintain 200 KIAS.
4. Deploy full flaps to second position on final when the runway is made.
5. Slow to approach speed of 180 KIAS during final.
6. Over airfield boundary speed should be 160 KIAS.
7. Touch down at a pitch of 2 degrees and speed of 150 KIAS.
8. The goal is to land on the front and rear mains together.
9. Brake as necessary.