



**CONSOLIDATED-VULTEE  
XB-46  
USER MANUAL**

# INTRODUCTION

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For the 1944 jet bomber competition, Consolidate Vultee (which became Convair) offered their model 109, which featured four Allison J-35-C-3 jet engines slung under the long straight wings in two large pods. Designated the XB-46, the first and only aircraft built made its maiden flight on 2 April, 1947. On a flight to Wright Field the XB-46 averaged 533 mph. Top speed was 548 mph at 15,000 ft. The XB-46 could cruise at 439 mph with a service ceiling of 40,000 ft. The aircraft was capable of carrying 4280 gallons of fuel and estimated range would have been 2870 with an 8000lb. bomb load. The XB-46 carried a crew of three, a pilot, co-pilot and bombardier. One of the more unusual features of the XB-46 was its pneumatic system which ran the undercarriage, bomb bay, crew doors, and brakes. No production orders were ever issued for the XB-46 as the Air Force deemed the type obsolete with the advent of the Boeing XB-47. Although it was lacking in several important areas, the XB-46 was very advanced for its time and was undoubtedly one of the most sleek-looking airframes ever to take to the air.

# INSTALLATION

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An easy installation is provided by way of an auto-installer. In regular FSX and Steam Edition FSX, the XB-46 will be installed to the default FSX folder structure. If required, the install path can be edited in the Installer Dialogue to reflect a custom installation path such as E:Games\FSX\ for example. Extras such as this manual will be installed into [FSX]/Virtavia. A start menu entry will also be made, with an uninstaller should you ever wish to remove the product.

The Prepar3D version is installed into the following location :

C:\Program Files (x86)\Virtavia\Virtavia XB-46

The folder 'Virtavia XB-46' needs to be moved into the SimObjects\Airplanes folder of P3D, which can be found here :

C:\Program Files\Lockheed Martin\Prepar3D v(x)\

'x' will be the version number, eg v3 or v4.

A folder called '\_Effects' can be found in the aircraft's folder, this contains the custom .fx files and their textures which also need to be copied into the Effects folder of P3D. Copy the contents, not the \_Effects folder itself.

In P3D, the manual is also stored within the aircraft's folder structure.

# CREDITS

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Exterior/Interior model, textures and user manual – Virtavia

Gauges – Herbert Pralle/Virtavia

Flight Dynamics - Mitch London

Engine Sounds - Sonic Solutions

Testing - Frank Safranek, Mitch London



# SUPPORT

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Should you experience difficulties or require extra information about the Virtavia XB-46, please e-mail our technical support on [tech.support@virtavia.com](mailto:tech.support@virtavia.com)

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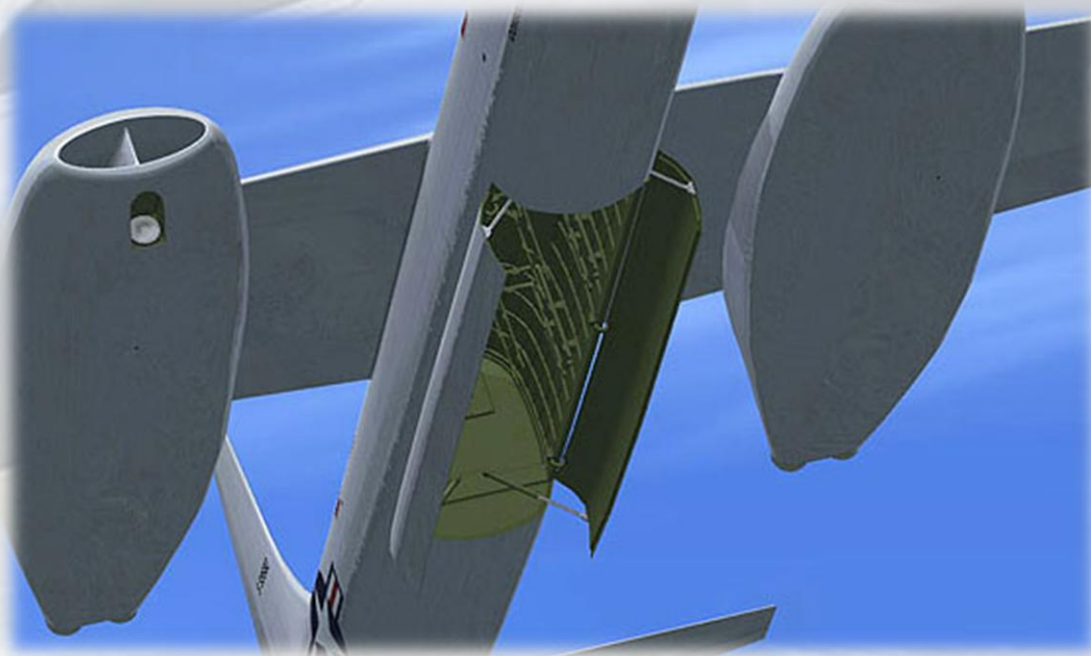
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# EXTERIOR MODEL

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The exterior model has all the usual animations such as ailerons, elevators, rudder and landing flaps. There are no speed brakes fitted to the XB-46, this function is reserved for the bomb bay doors. There are spoilerons on the upper surfaces of the wings, these operate with roll input at the same time as the ailerons. They are not used to slow the aircraft.

## Bomb Bay



The spoiler key (FSX default is forward slash '/') is used on the XB-46 to open the bomb bay doors. The 2<sup>nd</sup> Exit command (shift-E+2) is used to toggle the visibility of the bombs.

## Exit

*Shift-E*: Crew entry door, left side

## Crew figures

The crew figures can be toggled using Ctrl-W.

# LIGHTING

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Pressing the L key will turn on all lights. You may however wish to turn them on using the appropriate switches in the cockpit, as the L key also turns on the navigation and both instrument and red flood lighting in the cockpit, which should ideally be switched separately.

The XB-46 only has a single landing light on the right-side engine nacelle. No rotating beacon or tail light light was fitted.

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

# ALTERNATIVE VIEWPOINTS IN FSX

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There are several different ways of looking at the aircraft and the cockpit, select these alternative views by right-clicking in an empty area and picking the 'Aircraft' menu for external views and the 'Cockpit' menu for views inside the cabin. It is possible to zoom and pan as normal in these alternative views. Cycle through the available ones by pressing the A key.

## Moving Around the Cabin

Shift-Enter and Shift-Backspace : moves up and down

Ctrl-Shift-Enter and Ctrl-Shift-Backspace : moves side to side

Ctrl-Enter and Ctrl-Backspace : moves back and forwards



# VIRTUAL COCKPIT FUNCTIONS

## MAIN PANEL • LEFT SIDE



- 1) **Landing Gear Switch.** Use by dragging with the mouse like a small lever to extend or retract the undercarriage.
- 2) **Instruments and Cockpit Lights Switches.** 'Panel' controls the instrument faces only, 'Cabin' controls the general red flood lighting. There is no panel or console text illumination in the XB-46.
- 3) **Whiskey Compass.** A simplified backup compass.
- 4) **Artificial Horizon.** The right side knob cages the indicator.

5) **Sim Icons.** Quick links to FSX functions for ATC, Radios, GPS, Map, Kneeboard and Autopilot. The leftmost icon will toggle the control yoke.

6) **Clock.**

7) **Airspeed Indicator.** Shows the present airspeed in knots. The small window shows the current Mach number. The red markers indicate, in MPH ascending order, stall full flaps & gear down, stall flaps and gear up, max. permissible speed at sea level (full fuel assumed).

8) **Gyro Compass.** A standard G2 gyro compass indicator, the fixed aircraft pointer indicates the present direction of flight against a rotating compass card. The smaller compass disc at the center reads magnetic North and would be used to check proper functioning of the gyro compass. The knob at the lower right of the gauge can be used to set the autopilot heading hold, the small yellow pointer indicates the current value. Note the pointer will disappear into the lower half of the casing so it is preferable to use the pop-up autopilot panel to set all AP values.

9) **Machmeter.** Standard Machmeter. The yellow and red markers indicate caution and maximum Mach respectively.

10) **Altimeter.** Standard altimeter, knob right side for Baro Setting. Use left/right mouse click, mousewheel or left click drag to adjust.

11) **Turn and Slip Indicator.**

12) **Vertical Speed Indicator.**

13) **Fuel Quantity Indicators.** The XB-46 has fuel tanks in the fuselage only. There are two pairs of tanks situated forward and aft of the bomb bay. These are marked (from nose to tail) Front FWD, Front AFT, Rear FWD and Rear AFT. The Front FWD tank only drains when the other three are empty, these all drain simultaneously.

14) **Engine Fuel Pressure Indicators.** Dual needles indicate the fuel pressure for each pair of engines.

15) **Landing Gear Indicator Lamps.**



16) **Pneumatic Pressure Indicator.** Displays the pressure of the main and secondary pneumatic systems. The XB-46 used air pressure for all surfaces and the undercarriage. There were no hydraulic systems.

## MAIN PANEL • RIGHT SIDE



- 1) **Flaps Position Indicator.** Shows flaps position and is mouseable.
- 2) **Gust Lock Device.** (for information only – not animated). This simple device was used to hold the control yoke in a forward position when parked in order to depress the elevators so that wind gusts did not lift the tail. The pilot held the yoke forward then pulled the telescopic tube across to the left so it prevented the yoke from returning to center.

3) **Engine RPM Indicators.** Dual needles indicate the RPM for each pair of engines.

4) **Bomb Bay Door Indicator Lamps.** The top single lamp stays lit when the doors are open. The lower two lamps only light up when the doors are in transit, ie. unlocked.

5) **Tail Pipe Temperature Indicators.** Dual needles indicate the temperature of the exhaust gas for each pair of engines.

6) **Engine Bearing Temperature Indicators.** Dual needles indicate the temperature of the main engine bearings for each pair of engines.

7) **Trim Indicator.** This gauge is mousable and can be used to adjust roll, pitch and yaw trim.

8) **Pneumatic Pressure Indicator.** Displays the pressure of the emergency pneumatic system.

9) **Engine Oil Pressure Indicators.** Dual needles indicate the oil pressure for each pair of engines.

10) **Fuel Boost Pressure Indicators.** Dual needles indicate the fuel boost pressure for each pair of engines. These are only active when the boost pump for each engine is used (see item (12), next section).

11) **Nose Wheel Steering Indicator.** The needle shows the angular position of the nose wheel. Only works when on the ground.

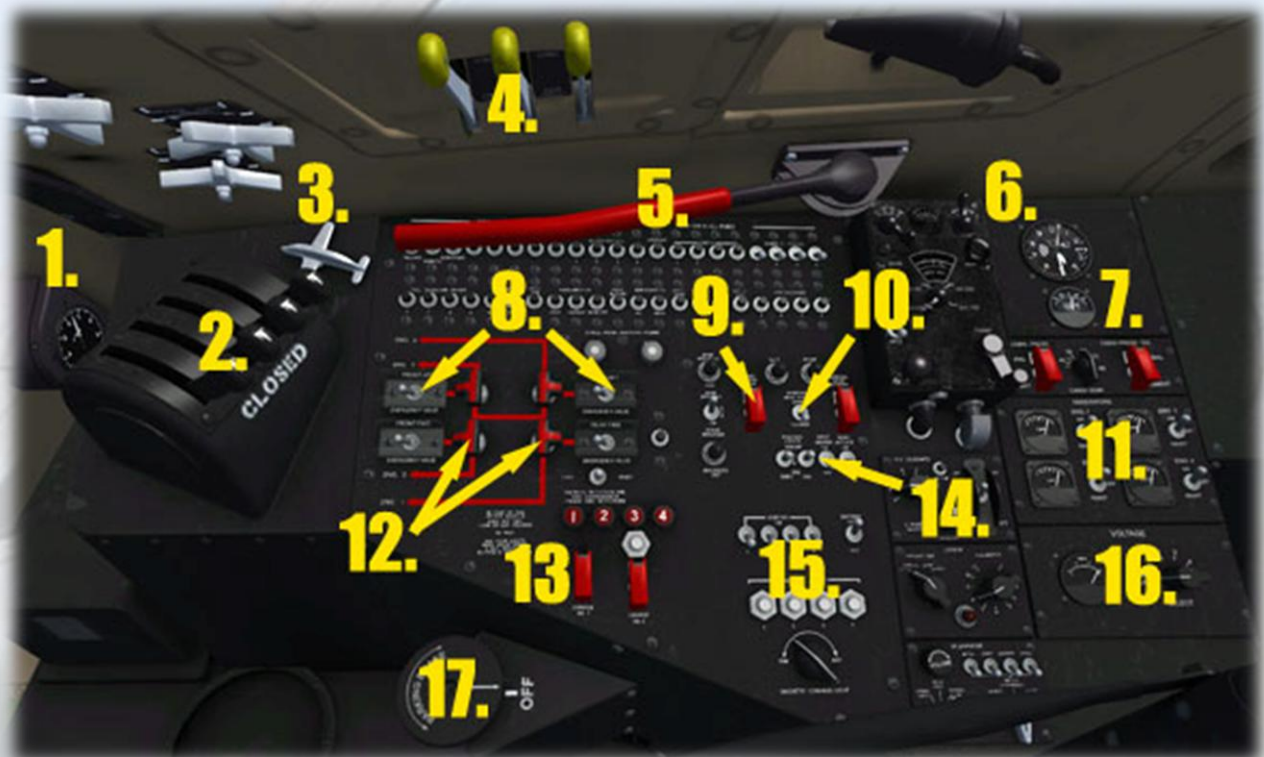
12) **Nose Wheel Steering Air Pressure Indicator.**

13) **Radio Magnetic Indicator.** A standard RMI with the larger needle for indicating the direction of the tuned NAV 1 station and the smaller needle for indicating the direction of the tuned NDB. The yellow heading bug indicates the current autopilot heading setting.

14) **Landing Lights Switch (not shown).** Each pilot's control yoke has a single toggle switch for the landing lights.



# PILOT'S CONSOLE



1) **Accelerometer.**

2) **Throttle Levers.** Click and drag the levers to increase or decrease the RPM of the engines.

3) **Trim Control Switch.** The small aircraft can be used to adjust the pitch trim. In the real XB-46, the switch could also be used for roll and yaw trim adjustment.

4) **Cabin Pressure Control Levers.** The first lever can be used to dump the cabin pressure. The other two levers are animated but have no function in FSX.

5) **Emergency Landing Gear Lever.** (for information only, not animated).

6) **Cabin Pressure Altitude Indicator.**

7) **Outside Air Temp. Indicator.** The mouse tooltip displays the temperature in both Centigrade and Fahrenheit.

8) **Fuel Valve Switches.** These are the main fuel cutoff switches for each engine.

9) **Bomb Bay Doors Switch.** Toggles the doors open / closed.

10) **Engine Residual Heat Doors Switches.** Open/close the flaps on the top of each of the engine nacelles.

11) **Electric Panel.** Each engine has an ammeter and a generator on/off switch.

12) **Fuel Boost Pump Switches.** These knobs switch each engine between using all the current in-use tanks (default position) and a single tank allocated to each engine. This peculiar arrangement was specific to the XB-46 for unknown reasons.

13) **Engine Fire Extinguishers.** The indicators will illuminate if an engine is on fire. The switch marked 'Emergency Valve' must first be set to the correct nacelle (left or right), then one of the two guarded switches is used to release the extinguishing agent. The test button can be pressed at any time to test the Engine Fire Warning lamps.

14) **Exterior Lights, Pitot and Anti-Icing Switches.**

15) **Starter Switches.** Each engine is started by first turning its ignition switch ON, then pressing the starter switch (Fuel Valve is also ON at this point, of course). Once the engine has started, the starter switch is turned OFF, then the ignition switch is set back to OFF (the order is important as the ignition switch inhibits the operation of the starter switch).

16) **Voltmeter and Selector Knob.** The knob is advanced by left-clicking and returned by right-clicking. Position zero is master battery voltage only, the subsequent positions display voltage for each of the four generator outputs (one per engine).

17) **Parking Brake Control.**

18) **Rear Cockpit (not shown).** Gauges and switches are identical to the front panel. There is a NAV-GPS selector switch on the radio receiver to the right side of the copilot's seat.



## REFERENCE INFORMATION

### **Virtavia XB-46 Procedures**

#### Location of Starter and Lights Switches

The starter and lights switches are located at the pilot's right side console. Mouse over each switch to confirm its function.

### **Starting Engines**

Use Ctrl-E (autostart) to start the aircraft, or:

1. Set Residual Heat Doors OPEN.
2. Check Bomb Bay Doors are CLOSED.
3. Check Crew Entrance Hatch is CLOSED.
4. Check Anti-Ice Switches are OFF.
5. Check Generator Switches are ON.
6. Set throttles to IDLE.
7. Check Fuel Valve Switches in OPEN position.
8. Set Ignition Switches to ON.
9. Check Pitot Heat switch is OFF.
10. Set Master Battery switch ON.
11. Set Navigation Lights switches to ON.
12. Check Parking Brake ON.
13. Start Engine 1 using the engine start switch.
14. Monitor engine RPM. Check that engine has not failed to start.
15. Turn engine 1 Starter OFF.
16. Repeat process for remaining engines.
17. Turn all Ignition Switches OFF.
18. Check temperatures & pressures.

### **Taxi**

1. Set Parking Brake OFF.
2. Advance throttles to begin taxiing.
3. Conduct brake test.

## Takeoff

1. This section assumes maximum fuel load in all tanks.
2. Check Autopilot OFF.
3. Set Pitot Heat ON.
4. Set flaps to takeoff (20 %).
5. Set nose-up Pitch Trim as required.
6. Apply power smoothly to full throttle.
7. Take off occurs at approx. 125 MPH IAS.

## After Takeoff

1. At 140 MPH raise GEAR.
2. At 160 MPH raise FLAPS.
3. Set Residual Heat Doors CLOSED.
4. Allow the aircraft to accelerate to the best climb speed.

## Cruising

1. Level off at desired cruise altitude.
2. Reduce throttle setting.
3. Adjust speed to cruise (435 MPH at 35,000ft).
4. Set autopilot to cruise parameters.

## Descent

1. Begin descent 40 miles from the airfield.
2. Check Pitot Heat ON.
3. Set Residual Heat Doors OPEN.
4. Set descent rate and speed as desired using the autopilot.

## Approach

1. Set Autopilot OFF.
2. Set Altimeter Baro Pressure to match landing zone pressure.
3. Enter downwind leg at 200 MPH.
4. Lower Landing Gear.
5. Set Flaps to 20%.
6. Set Landing Light to ON (if required).



## Landing

1. Check Autopilot is OFF.
2. Maintain 140 MPH.
3. Set Flaps FULLY DOWN.
4. Adjust throttles to compensate for drag.
5. Visual check airfield is safe for landing.
6. Touchdown speed is 130 MPH.

## After Landing

1. Flaps FULLY UP.
2. Check Landing Light is OFF.

## Shutdown

1. Set Parking Brake ON.
2. Set Fuel Valve Switches to OFF
3. Set Residual Heat Doors to CLOSED.
4. Set Pitot Heat and Navigation Lights to OFF.
5. Set Panel and Cabin Light Switches to OFF.
6. Set Generator Switches to OFF.
7. Set Master Battery Switch to OFF.

## XB-46 Specifications and Speed References

### **Specifications**

- Crew: 3
- Engines: 4 × Allison J35-C-3 turbojets, 4,000 lbf each
- Wingspan: 113'
- Length: 105' 9"
- Tail Height: 27' 11"
- Wing Area 1099 sq. ft.
- Ordnance : 2 x 50 cal. M2 Browning machine guns in tail (not fitted). Up to 22,000 lbs of bombs in internal bomb bay.

### **Flight Reference Data**

- Maximum indicated speed : 422 kts ASL (491 mph) ASL, 474 kts (545 mph) @ 15000ft with 50% fuel
- Maximum Mach : 0.74
- Normal cruising speed / altitude : 382 kts (439 mph) @ 35,000ft
- Max. Combat Range : 3,000 nautical miles (8,000 lb bomb load)
- Max. Combat Ceiling : 40,000 ft
- Weight Empty : 40,020 lbs
- Weight Fully Fuelled : 75,200 lbs
- Weight Maximum Takeoff : 95,600 lbs
- Stalling Speed – flaps up : 132 mph
- Stalling Speed – full flaps : 106 mph