



Boeing B-29 Superfortress™

USER MANUAL



Virtavia B-29 Superfortress™
Manual Version DTG 1.0

Introduction

The Boeing B-29 Superfortress™ was a giant leap forward in bomber technology and production by the U.S. during WWII. Design studies for a "super bomber" were requested by the U.S. Army Air Corp in November 1939 with a contract for the first two XB-29s™ being awarded in September 1940. The first flight took place in Seattle, Wash. in 1941. Early testing revealed problems with engine overheating which sometimes led to the total loss of aircraft and crews. These and other system and structural problems were solved with modifications made to aircraft as they moved down assembly lines. The B-29™ featured a number of firsts including a fully pressurized cabin, electronic fire-control system, and a 20,000lbs bomb load. Used primarily in the Pacific theatre B-29s™ using incendiaries burned Japan's factories to the ground. Because of the B-29s size, speed and range, it was chosen to carry the atomic bombs dropped on Hiroshima and Nagasaki, Japan in 1945. Japan surrendered shortly thereafter.

Credits

Exterior model – Virtavia

Textures – Dan Dunn of Pixl Creative

Interior model - Virtavia

Gauges – Herbert Pralle/Virtavia

Animation coding – Virtavia

Flight Dynamics - Mitch London

Engine Sounds - Sonic Solutions

Manual - Virtavia

Testing - Frank Safranek, Mitch London, Virtavia

Support

Should you experience difficulties or require extra information about the Virtavia B-29 Superfortress™, please e-mail our technical support on tech.support@virtavia.com

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Exterior Model

The exterior model has all the usual animations such as ailerons, elevators and flaps. The bomb bay doors are opened using the speedbrakes command (/key). There is no external exit door on the model, crew entry was through the nosegear well.

Crew figures

The crew figures can be toggled using Ctrl-W.

Propellers

The propeller blade pitch is animated. Ctrl-F1 is low RPM, fully coarse pitch (default condition for maximum thrust), Ctrl-F4 is high RPM, fully fine pitch, low thrust. The prop pitch switches and gauges are mousable. The prop feather switches are also mousable, they are situated on the pilot's center console. For more information on feathering the props, see section 3 on page 14.

Exterior Lighting

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 the on navigation, landing lights and both instrument and red flood lighting in the cockpit, which should ideally be switched separately.

Shift-L will toggle the nav lights and the cockpit lights.

Crtl-L will toggle the landing lights.

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

Alternative Viewpoints in FSX

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.

External View Options

It is possible to pan and zoom as normal in all external views.

Nose View



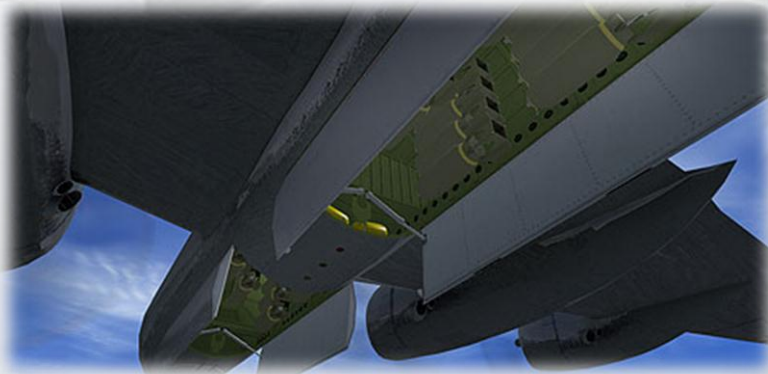
Right Wing View



Left Wing View



Bomb Bay View



Tail View



Interior Views

It is possible to pan and zoom as normal in all interior views.

Virtual Cockpit View



Copilot's Seat View



Bomb Aimer View



Center of Cockpit View



Cockpit View Looking Aft



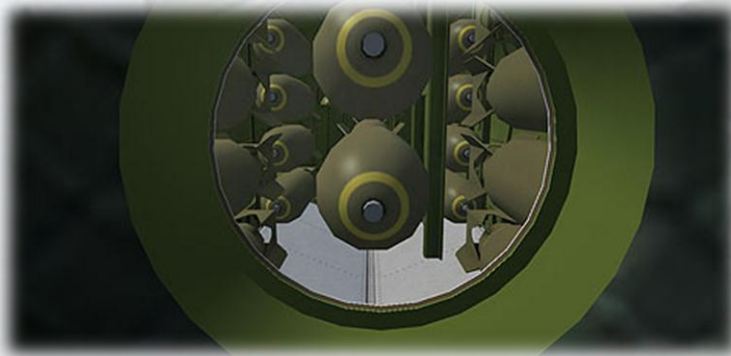
Engineer's Station View



View from Rear, Looking Forward



Bomb Bay Porthole View



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



- 1) **Airspeed Indicator.** Shows the present airspeed in Miles Per Hour.
- 2) **Turn and Slip Indicator.**
- 3) **Vertical Speed Indicator.**
- 4) **DME Indicator.** Indicates distance in miles to the tuned NAV1 station, if DME is available.
- 5) **Standby Course Deviation Indicator.** Shows deviation from the set course in degrees minus (left) or positive (right).
- 6) **Altimeter.** Standard altimeter, knob left side for Baro Setting. Use left/right mouse click, mousewheel or left click drag to adjust.
- 7) **Magnetic Compass.** Standard whiskey-type compass.
- 8) **Artificial Horizon.** The knob at the bottom right of the gauge can be used to adjust the aircraft indicator bar at the centre of the horizon ball to compensate for high AoA states.

9) **Course Deviation Indicator.** Shows deviation from the set course in degrees minus (left) or positive (right).

10) **Manifold Pressure Gauges.** Dual needles indicate vacuum pressure for left wing and right wing engines.

11) **Marker Beacon Lamp.** Will illuminate when a runway Outer Marker is detected.

12) **Sim Icons.** Quick links to FSX functions for ATC, Radios, GPS, Map, Kneeboard and Autopilot.

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) **RPM Gauges.** Dual needles indicate engine revs per minute for left wing and right wing engines.

15) **Clock.** The knob toggles Local/Zulu time.

16) **Suction Gauge.** Measures overall engine air suction.

17) **Magnetic Compass.** Standard magnetic indicator compass. The needle shows the actual heading of the aircraft in degrees.

Main Panel - copilot

All instruments are the same except the Flaps Position Indicator and the Landing Gear Position Lamps.



1) **Instrument Lights Switch.** Turns on the red illumination of the gauge faces and needles.

2) **Flaps Position Indicator.** Shows landing flaps position in degrees.

3) **Landing Gear Indicator Lamps.** The single red lamp on the left illuminates when the gear is in transit. The remaining three green lamps illuminate when the left, nose and right undercarriage is down and locked.

Center Console



- 1) **Prop Feathered Warning Lamps.** These red lamps will illuminate when the corresponding prop has been feathered using the guarded switches in (3) below.
- 2) **Prop Pitch Switches.** These switches act as small levers which adjust the propeller pitch.
- 3) **Prop Feathering Switches.** The first mouse click will raise the switch guard, then the switch can be moved which will set the prop blades to an edge-on position relative to the airflow.
- 4) **Flaps Switch.** The switch acts like a flaps lever so has to be dragged to increment the flaps position. Alternatively either the keyboard or the Flaps Gauge can be used to set the flaps position.

5) **Landing Gear Switch.** Click and drag on the switch or its cover to operate the landing gear.

6) **Autopilot Panel Indicator Lamps.** These illuminate white when the AP is on and the corresponding control surface is being moved. The lamps are marked A, E and R for aileron, elevators and rudder.

7) **Autopilot Hold Switches.** The top switch is the master AP switch which overrides the others. The remaining switches are for Attitude, Approach and Heading Hold. All other AP functions are available on the Autopilot pop-up panel accessed with the 'AP' Sim Icon or by pressing shift-2. Note that reciprocating-engined prop aircraft do not have Speed Hold in FSX.

8) **Bomb Bay Doors Switch.**

9) **Bomb Bay Doors Open Warning Lamp.**

Center Console Light Switches



1) **Formation Lights Switch.** This switch toggles the steady blue marker lights along both wings and on the fuselage.

2) **Recognition Lights Switch.** The three switches will move as one when used, they activate the tri-colored strobe-type lamps in a group between the bomb bays.

3) Navigation Lights Switch.

4) Landing Lights Switch.

5) Instrument Lights Switch.

Engineer's Station

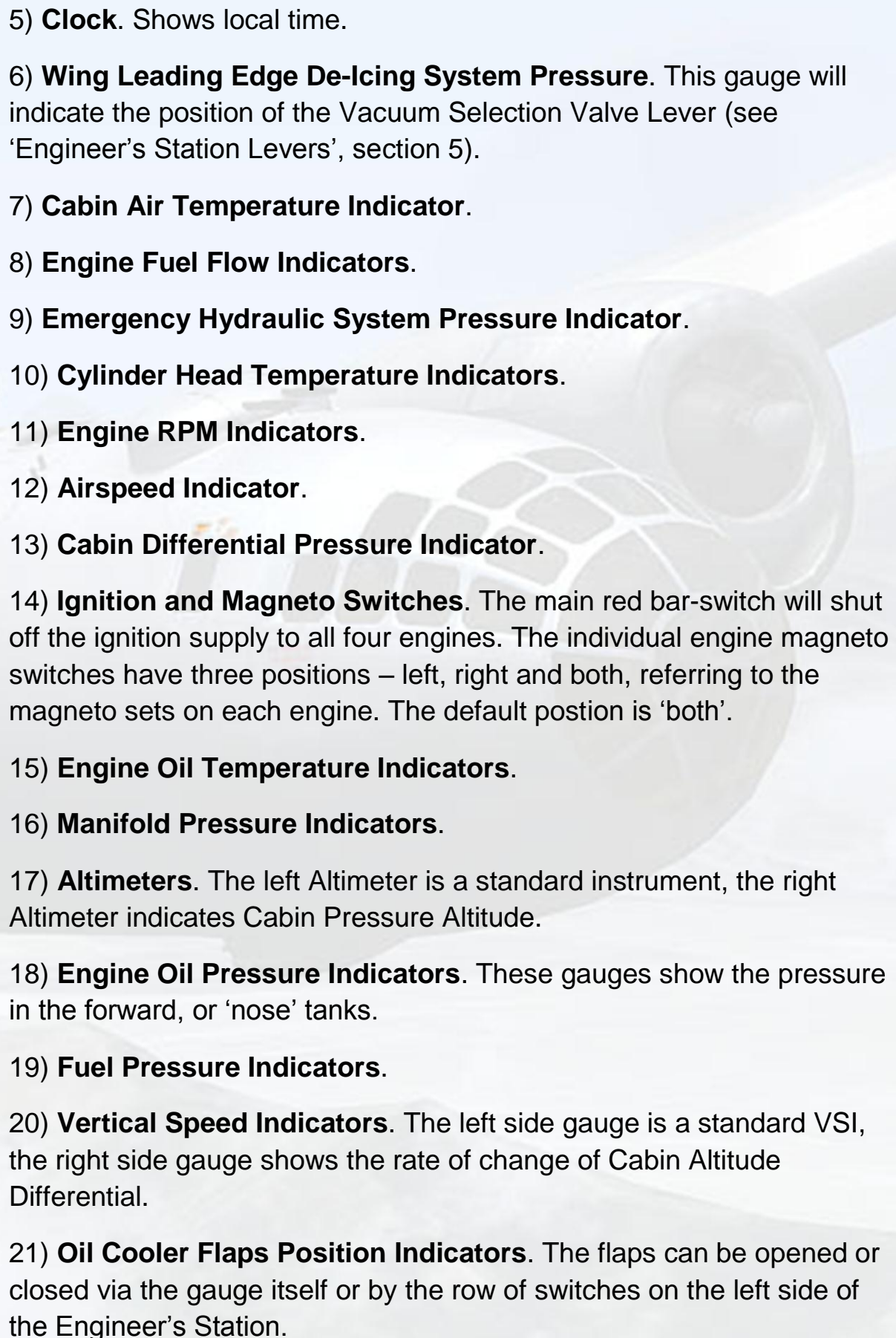


1) Main Hydraulic Reservoir Quantity.

2) Main Hydraulic System Pressure Indicator.

3) Carburetor Air Temperature Indicators.

4) Cowl Flaps Position Indicators. These are mousable and can be used to set the cowl flaps position.

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- 5) **Clock.** Shows local time.
- 6) **Wing Leading Edge De-Icing System Pressure.** This gauge will indicate the position of the Vacuum Selection Valve Lever (see 'Engineer's Station Levers', section 5).
- 7) **Cabin Air Temperature Indicator.**
- 8) **Engine Fuel Flow Indicators.**
- 9) **Emergency Hydraulic System Pressure Indicator.**
- 10) **Cylinder Head Temperature Indicators.**
- 11) **Engine RPM Indicators.**
- 12) **Airspeed Indicator.**
- 13) **Cabin Differential Pressure Indicator.**
- 14) **Ignition and Magneto Switches.** The main red bar-switch will shut off the ignition supply to all four engines. The individual engine magneto switches have three positions – left, right and both, referring to the magneto sets on each engine. The default position is 'both'.
- 15) **Engine Oil Temperature Indicators.**
- 16) **Manifold Pressure Indicators.**
- 17) **Altimeters.** The left Altimeter is a standard instrument, the right Altimeter indicates Cabin Pressure Altitude.
- 18) **Engine Oil Pressure Indicators.** These gauges show the pressure in the forward, or 'nose' tanks.
- 19) **Fuel Pressure Indicators.**
- 20) **Vertical Speed Indicators.** The left side gauge is a standard VSI, the right side gauge shows the rate of change of Cabin Altitude Differential.
- 21) **Oil Cooler Flaps Position Indicators.** The flaps can be opened or closed via the gauge itself or by the row of switches on the left side of the Engineer's Station.

22) **Emergency Hydraulic Accumulator Fill Lever.** Has no function in FSX.

23) **Engine Oil Pressure Indicators.** These gauges show the pressure in the rear tanks.

24) **Generator Gauge Selector.** Selects which Generator's output amperage is displayed on the Ammeter. Note Generators 1A and 4A are not supported by FSX.

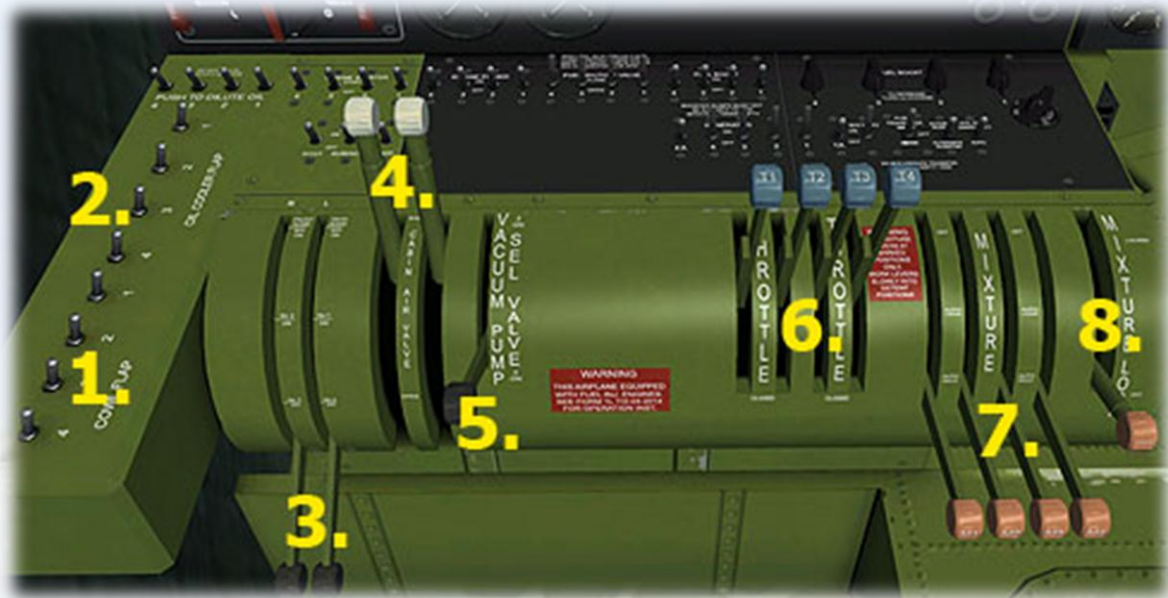
25) **Voltmeter and Ammeter.**

26) **Cabin Air Flow Indicators.** These indicate the position of the left and right manifold Cabin Air Valve levers (see 'Engineer's Station Levers', section 4).

27) **Fire Extinguisher Panel.** To extinguish a fire, first select the required engine using the round knob in the center, then click either of the two red T-bar switches to release the fire retardant into the selected engine cowl.

28) **Oil and Fuel Quantity Indicators.** The 4-position switch on each gauge selects the various tanks to be displayed on the gauge face.

Engineer's Station Levers



1) **Cowl Flap Switches.** Set flap position by clicking on BASE of switch. Switch is 'spring back' type, use left (open) and right (close) click.

2) **Oil Cooler Flap Switches.** Single click to open or close oil cooler flaps on the underside rear of the engine nacelles.

3) **Fuel Transfer Levers.** 4-position levers, not supported in FSX.

4) **Cabin Air Valve Control Levers.** 3-position levers, use left click to advance, right click to return. Lever position will be indicated on the Cabin Air Flow indicators (see 'Engineer's Panel', section 26).

5) **Vacuum Pump Selection Valve Lever.** Use left click to advance, right click to return. Lever position will be indicated on the Wing Leading Edge De-Icing System Pressure indicator (see 'Engineer's Panel', section 6). Note: most variants do not have the rubber boot type wing leading edge de-icing, although the levers are always present.

6) **Throttle Levers.**

7) **Mixture Control Levers.** When levers are pushed fully forwards, the engines will stop.

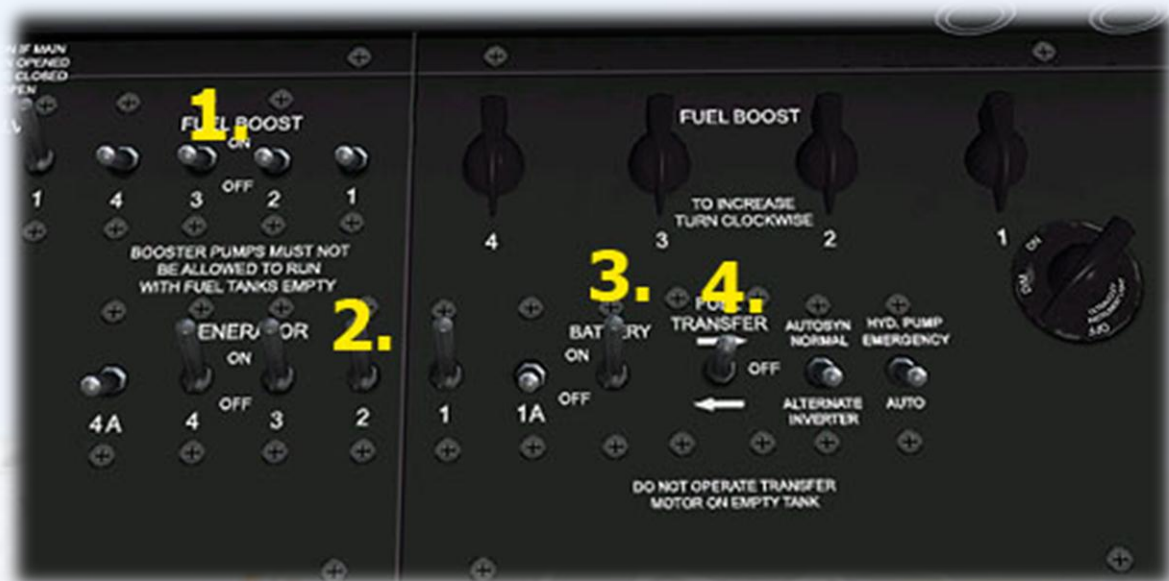
8) **Mixture Lever Lock Lever.** Not supported.

Engineer's Station Switches (left)



- 1) **Engine Starter Switches.** Click and release to operate.
- 2) **Engine Primer Switches.** Click and release to operate. Not required for engine starting.
- 3) **Fuel Cutoff Valve Switches.** Operation will shut of the fuel supply to an engine, stopping it immediately. Always use to stop the engines rather than the main ignition switch.
- 4) **De-Icing Switches.**

Engineer's Station Switches (right)



- 1) **Fuel Boost Pump Switches.** Not required for engine operation.
- 2) **Generator Switches.** Switches Generators on/off. Note generators 1A and 4A are not supported in FSX, although the switches are operable.
- 3) **Master Battery Switch.**
- 4) **Fuel Crossfeed Switch.** Not required for engine operation.

Bomb Aimer's Controls



1) **Bomb Release Lever.** The lever toggles the bombs visibility, so when clicked, the lever will move and the bombs will disappear. Note – there are no bombs in the bomb bay on the Enola Gay model.

2) **Bomb Bay Doors Lever.**

3) **Pitch Trim Wheel.** Same function as pilots' Pitch Trim Wheels.

Reference Information

Virtavia B-29 Superfortress™ Procedures

Location of Starter and Lights Switches

The starter switches are located on the left side of the Engineer's console. Light switches are on the pilot's center console rear and instrument panel top surfaces. Mouse over each switch to confirm its function.

Engine Start

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

1. Set Parking Brake ON.
2. Set throttles to IDLE.
3. Check Mixture Levers at Fully Rich position.
4. Check Fuel Valve Switches in OPEN position.
5. Check Master Ignition is ON.
6. Check Magnetos are set at 'BOTH'.
7. Check Pitot Heat switch is OFF.
8. Check Prop Pitch Switches all at fully coarse pitch.
9. Turn ON Master Battery switch.
10. Turn ON Navigation lights.
11. Start Engine 3 using the engine start switch.
12. Monitor engine RPM. Check that engine has not failed to start (caused by not leaving the switch on START long enough). Repeat for remaining engines in order 4, 2 and finally 1.

Taxi

1. Check all Generator Switches are ON.
2. Landing lights ON if required.
3. Check Bomb Bay Doors warning lamp OFF.
4. Set Parking Brake to OFF.
5. Advance throttles to begin taxiing.

Takeoff

This section assumes maximum fuel load in all tanks.

1. Check Autopilot OFF.
2. Set Pitot Heat ON.
3. Set flaps to takeoff (25 degrees on gauge).
4. Hold toe brakes ON.
5. Apply power smoothly to 2000 RPM.
6. Allow Engineer to perform Magneto check.
7. Release toe brakes.
8. Apply full throttle.
9. Rotate at 95 MPH. Take off occurs at 110 MPH.

After Takeoff

1. Apply toe brakes then set GEAR UP.
2. Check red Gear Warning Lamp is OFF.
3. At 160 MPH and 500ft set FLAPS UP.
4. Set engine RPM to 2400 for climbout.
5. Allow the aircraft to accelerate to the normal climb speed of 195 MPH. Maximum Rate of Climb at Sea Level is 900 feet/min.

Cruising

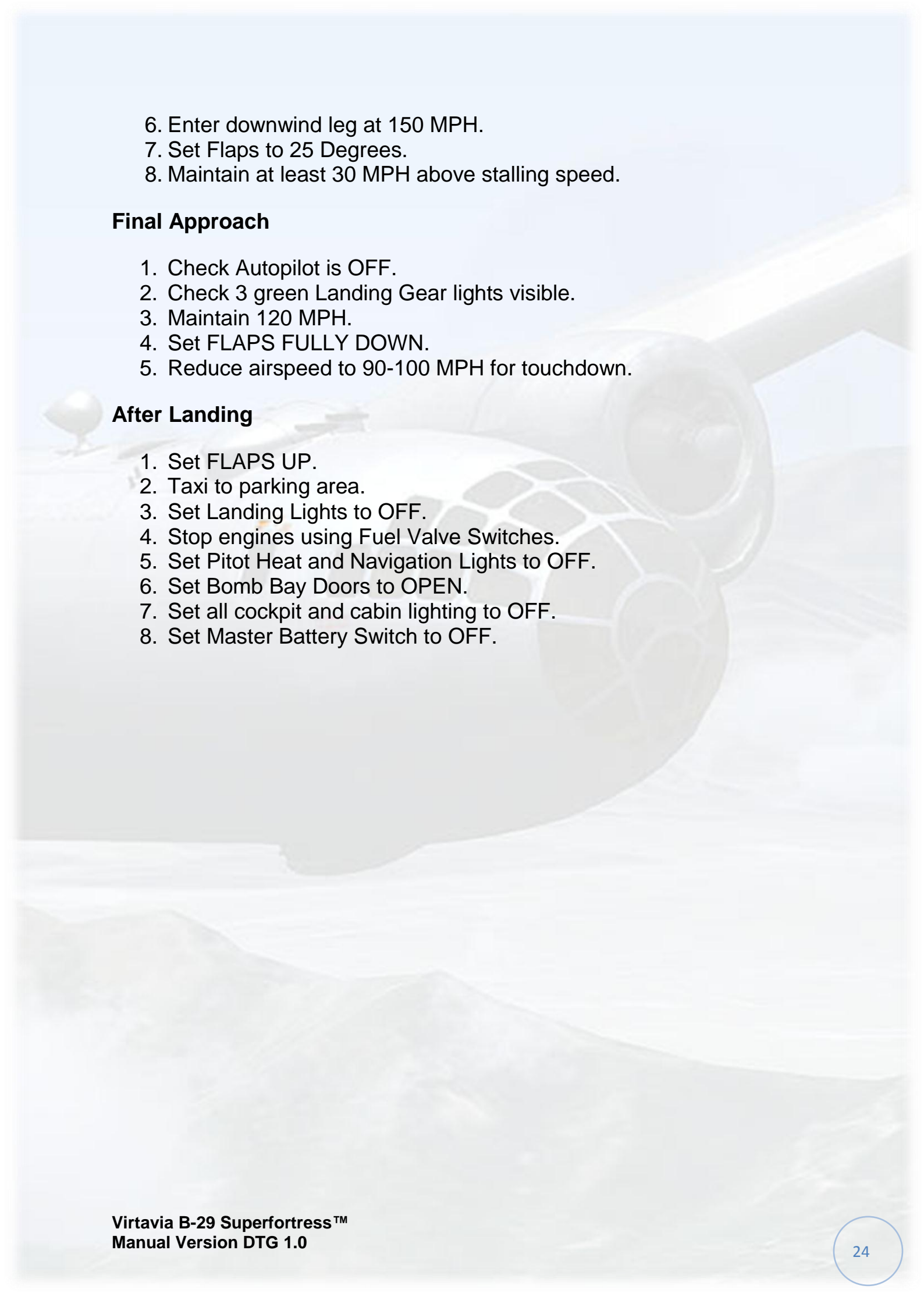
1. Level off at desired cruise altitude.
2. Leave throttles at FULL, use prop pitch to achieve 2100 RPM.
3. Adjust speed to 220 MPH.
4. Use autopilot to set cruise parameters.

Descent

1. Begin descent 40 miles from the landing zone.
2. Check Pitot Heat ON.
3. Set Formation and Recognition Lights Off, as required.
4. Set descent rate and speed as desired using the autopilot.

Landing

1. Landing lights ON, if required.
2. Set Autopilot OFF.
3. Set prop pitch to 2100 RPM.
4. Set Altimeter Baro Pressure to match field pressure.
5. At 180 MPH set GEAR DOWN.

- 
6. Enter downwind leg at 150 MPH.
 7. Set Flaps to 25 Degrees.
 8. Maintain at least 30 MPH above stalling speed.

Final Approach

1. Check Autopilot is OFF.
2. Check 3 green Landing Gear lights visible.
3. Maintain 120 MPH.
4. Set FLAPS FULLY DOWN.
5. Reduce airspeed to 90-100 MPH for touchdown.

After Landing

1. Set FLAPS UP.
2. Taxi to parking area.
3. Set Landing Lights to OFF.
4. Stop engines using Fuel Valve Switches.
5. Set Pitot Heat and Navigation Lights to OFF.
6. Set Bomb Bay Doors to OPEN.
7. Set all cockpit and cabin lighting to OFF.
8. Set Master Battery Switch to OFF.

B-29 Superfortress™ Specifications and Speed References

Specifications

- Engines: 4 x Wright R3350-23 Radials
- Horsepower: 2,200 s.h.p. per engine
- Wingspan: 141' 3"
- Length: 99'
- Tail Height: 27' 9"
- Empty Weight: 74,500 pounds
- Gross Weight: 110,000 pounds
- MTOW : 135,000 pounds
- Bomb Load: 20,000 pounds
- Armament: 12 x 50 cal.

Flight Reference Data

- Maximum speed: 357 mph
- Max. cont. cruising speed: 342 mph @ 30,000ft
- Average cruising speed: 220 mph @ 25,000ft
- Max. Range: 5,600 miles
- Combat Range: 3,250 miles @ 25,000ft w. 5,000lb bomb load
- Service Ceiling: 31,850 feet
- Max. Fuel Load: 66,000 lbs
- Max. climb rate: 900 feet per minute at Sea Level
- Time to Climb : 20,000ft in 38 mins
- Stall Speed at Sea Level, Flaps UP: 105 MPH