

B-17 Flying Fortress "The Mighty Eighth"



Introduction

They called it 'The Mighty Eighth', the US Army Air Force 8th Bomber Command. The force that flew daylight missions over occupied Europe, striking at specific military targets with pinpoint accuracy. The danger was that enemy fighters and flak sites could clearly see them. The solution was massive defensive bomber formations that had to fight their way there and fight their way back. *B-17 Flying Fortress 'The Mighty Eighth'* recreates that era in a Second World War simulation that gives you total control of every aspect of the strategic air war (including the opposition fighters).

You'll learn to fly the legendary B-17G '*Flying Fortress*' and feel the power and grace of the massive four-engine bomber. You can also be one of the escort fighter pilots and pilot the P-38 '*Lightning*', the P-51 '*Mustang*', or the P-47 '*Thunderbolt*'. In addition, you can take on the role of the Luftwaffe and jump into the cockpit of the German interceptors: the Bf 109, FW 190, and the jet powered Me 262!

This is the ultimate tactical crew management game, as you become an expert at all ten B-17 crew positions. Take off and land the massive bomber, shoot from all turret positions, navigate across a realistically mapped Europe, send radio messages, carry out bomb runs, release the bombs and watch them hit the target!

B-17 Flying Fortress 'The Mighty Eighth'. The complete WW2 strategic air war flight simulation

The Flying Fortress is Born!

When newspaper reporters were first shown model 299 in Boeing's Seattle factory on 16th July 1935, the aircraft simply took their breath away.

"A regular fortress", one of them said, "a fortress with wings!"

Boeing liked the name that was used in the headlines and so decided to register 'Flying Fortress' as a trademark.

Commissioned by the US Army Air Corps (USAAC), the aircraft specifications were those for a 'battleship for the skies': a multi-engine bomber capable of 200 to 250 mph at 10,000 feet with a cruising speed of 170 to 200mph, a range of 6 to 10 hours and a service ceiling of 25,000 feet.

When thirteen Model 299s were received by USAAC they were designated YB-17s. Y stood for evaluation, B for bomber and 17 because this was the seventeenth bomber design the USAAC had accepted. This was to prove an aircraft that exceeded all specifications for speed, range, climb and load carrying performance.

As it was becoming evident that the US would become involved in the war in Europe, it was not long before the first orders were placed with Boeing for the production of the turbo-equipped B-17Bs. This was another major feature of the B-17: its adaptability to further development. Thirty-nine B-17Bs were delivered when the war broke out in 1939, followed by 38 B-17Cs and 42 B-17Ds – these included new improved designs that could give 323mph top speed at 25,000 feet.

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Boeing eventually took note of any design faults in the early types and then produced what was in effect, a completely new bomber, the B-17E, with its distinctive large tail fin and much improved firepower. Boeing was to build 512 B-17Es before they designed the B-17F – the first truly battle-ready Flying Fortress. In the summer of 1942 the first B-17F rolled off the production line, Boeing were eventually to build 3,405 of them. This was the aircraft that flew most of the unescorted raids into Europe.

The B-17G was the final development of the bomber design. All-in-all 8,680 B-17Gs were built equipping 108 squadrons of the 8th Air Force, 20 squadrons of the 15th Air Force in Italy and 200 to be used by the RAF.

Most of the men who had flown a B-17 knew that it was a rugged aircraft, "She'll fight her way through to the target, do the job, take anything thrown at her and then do her damndest to get you home", stated a pilot after inspecting a large hole in the plane's fuselage after a successful mission.

It was calculated that the average life of a B-17 flown by the US 8th Air Force was 215 days: for 119 days it was non-operational, for 49 days it was under repair and for 47 days it flew missions. Such was the fury of aerial combat in the skies over Europe that it was notable if a B-17 survived 25 missions in its first year.

In total the 8th Air Force received 6,500 B-17Gs. In March 1945 it could send 2,370 of them into combat operations. By the end of the war a total of 1,301 B-17Gs had been shot down or reported missing in action.

Your First Combat Mission

Starting Off

After the opening animation screens you will see the Main Menu screen.

Game Options



New Game

Before you do anything else you must check the status of the Navigation realism. **Navigation** is an important factor in the simulation. The aircraft can fly three levels of Navigation Complexity: Historical, Easy or Flawless but for this guide you will be flying with Flawless navigation.

- Click on the Game Option icon (top left) a red light will switch on when selected and then click on the Continue button (bottom right). You will be taken to the Game Difficulty/Realism menu screen.
- Select the second icon down on the left (marked 1,2,3) and then click on the Continue switch.

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- Scroll down the list to Navigation Complexity and make sure this is set at 'Flawless' and then click on the Continue switch.
- Click on the return to previous screen switch (bottom left) to return to the Main Menu screen.
- Now select to play a New Game (the icon of the B-17 – lower left).
- Click on the icon (a red light will switch on when selected) and then click on the Continue button (bottom right).

You will be taken to the Game Options screen.

- Select to Play a Single Bomber Commander Campaign (the single aircraft icon – top left) and flip the Continue switch (lower right).

You will now be taken to the Eighth Air Force Division screen. Here you can choose which Bombardment group and which Squadron in that Group you want to join. Different Bombing Groups are based at different airfields across England.

- Select the 401st Bombing Group from the left hand panel.
- Select the 612th Squadron from the right hand panel.

The lower graphic panels will show the insignia of the Bombing Group and the specific Squadron you have chosen.

At the bottom of the screen is a Campaign Start panel (covering the period December 1st 1943 to February 10th 1945). This is where you choose the campaign length.

- Click in the panel until it shows the date March 1st 1944.
- Flip the Continue switch (bottom right).

You will now be taken to your bomber Name and Nose Art selection screen.

- Click on a 'nose art' name for your bomber (click and drag the scroll bar to view all options in the left panel). The picture will be shown on the right hand panel.
- Now click on the Bomber Name panel (top), delete the default name with the backspace key and type in your own choice of name for your bomber and press Return/Enter. Try to match it to the nose art you have chosen.
- Flip the Continue switch (bottom right).

Your next stop is your Crew screen. This shows the current crew for your B-17. Remember that you are in overall charge of the ten-man crew and the one bomber.



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- Click on the round, red button to reshuffle all the names and faces.
- Click on the top left portrait (the Bombardier) and the bombardier's name will appear in the central panel
- Click inside the name panel and delete the name using the Backspace key
- Type in a new name (it could be your own) in the two panels and press Return/Enter to confirm each part of your name after typing it.
- Flip the Continue switch (bottom right) and you will be taken to the HQ Corridor screen.

bomber
commander's
office

mission
briefing



This screen gives access to various mission planning and briefing screens. If you were playing the Squadron Commander game you would be able to plan all strategic operations but you, as Bomber Commander, will NOT have access to mission planning. But you do have your own office.

- Click on the door on the far left of the HQ Corridor and you will enter your office (you must try to be a bit more tidy!).

Here you will find information about your crew and your bomber.

- Click on the book on the left of your desk and you will open the Crew Information File. The first page will open on the Bombardier details and will show the name you inserted in the Crew screen. Clicking on the tabs along the side of the book will show details for all ten crew (coded by position: TG – Tail Gunner, N – Navigator etc).
- Click away from the pages and the book will close
- Click on the book on the right of the desk and the Bomber Information File will open.

This shows the details of the bomber you renamed. This is a new campaign so there will not be any details of any previous missions.

- Click anywhere away from the book to close the file.
- Click on the windows to go outside to Inspect Bomber and you will be taken to your Jeep.

A clipboard will show the name of your bomber

- Click on the B-17's name on the clipboard. This will take you to the aircraft waiting at its dispersal point in the 3D world. Inspection is particularly useful when you have returned from a mission and want to see the damage your bomber has sustained. Full camera views are available:

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Numeric Keypad

Plus + and Minus -	=	Zoom in / Zoom out
Arrow keys	=	move the view left/right/forward/backward
PageUp/ PageDown	=	tip view up/down
Home / End	=	move camera up and down
Ins /Delete	=	rotate view left and right.

Mouse

Alternately, you can use the mouse (with the right mouse button pressed in to zoom in/out and the left mouse button pressed in to rotate view.)

- Press Return to return to the jeep bonnet. This contains the Crew Management File.
- Click on the Crew Management File.

This shows a summary of the crew's abilities. A cross 'X' shows the correct job of each crew member, a slash '/' shows a competence in another job. It's here that you can reassign your crew and manage their abilities as the campaign begins to take its toll and injuries accumulate. To change a crewman's job, click on the slash and it will become a cross. To ground a crewmember assign him to ground duties. Note that other crew positions will be automatically adjusted to fit in with your choices.

- Click on the right hand page to turn it over and you will see details of each crewman's skills. These will improve as each man gets more and more mission experience.
- Click away to close the book and click on the bunch of keys to return to the airbase. You will be returned to the HQ Corridor screen.

Now you have examined all aspects of your crew and bomber, you'd best be briefed about your first mission.

- Click on the passageway to the near left to enter the Briefing Room.

Film Screen



Map

Read
Mission
Briefing

The Briefing Room gives you all the current information available about your target (or targets) and the routes there and back.

In the centre of the stage there is a projector screen where you can view a reconnaissance over fly of your Primary Target.

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- Click on the film screen and watch the film carefully. In this quick guide you'll be sitting in the Bombardier's seat during the bomb run so it'll help if you recognise the target.

When the film has finished you will return to the Mission Briefing room.

- Click on the Map on the right of the stage to see bomber route, the target and the route back.

The Map can be controlled by using the numeric keypad keys:

Plus + and Minus -	=	Zoom in / Zoom out
Arrow keys	=	move the map left/right/up/down
PageUp/PageDown	=	tip map up/down
Ins/Delete	=	rotate map left and right.

Alternately, you can use the mouse (with the right mouse button pressed in) to move the map in all directions.

The map shows Waypoints, Initial Points, Primary, Secondary, Tertiary targets (if available) and Rally Points. The red arrows show the direction of travel.

- Place your mouse cursor on a gold waypoint pyramid marker (you might have to tip and zoom in the map view) and you will see the height the bomber formation should be flying at when it hits that particular waypoint (you might have to zoom in with numeric keypad + key).

- Press the Return/Enter key to leave the map and return to the Briefing Room.

You've now seen a recon film and the route to the target but you've still to read all the target details.

- Click on the green Mission Briefing file on the desk in front of you.

This opens on the Mission Summary page that includes details on the Primary and Secondary targets, type of bomb selected, distance to travel and fighter escort details.

- Click on the right hand page of the Mission Briefing file and it will turn to show the Primary Target details including Flak Strength, Fighter Strength and Target Intelligence.
- Click again on the right-hand page to view details of the Secondary Target.
- When you have read about the mission targets click on the right hand page again.

You will now be asked to sign that you have read and understood the target/mission details.

- Click on the line (marked by an X) and a signature will appear.
- Click away from the book to close the Mission Briefing file and return to the Mission Briefing room.

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Now let's begin the mission.

- Click on the door on the right of the Mission Briefing hut (Start Mission) to enter the 3D simulation.

computer
control icon



Now you've made it to the aircraft dispersal point. The B-17 has bombs loaded, fuel tanks are full and all the crew are ready for the off. You will see an outside view of the aircraft and the game will be in computer-controlled mode (a small computer icon will be shown on the lower right of the screen). Note that the default is always computer control whenever a view or crew position is changed.

Use the numeric keypad controls + / - to zoom in and out on the B-17, the arrow keys to move left /right /up /down. PageUp to tip up and PageDown to tip down the view. Ins and Del will rotate the view left/right. Or you can move the mouse, with the right mouse button pressed in for zooming in/out or the left mouse button pressed in to tip the view up/down and rotate the view.

Before you can do anything you must give the orders to begin the mission.

- Press F1 to go inside the aircraft

You will now be just behind the Pilot / Co-Pilot seats on the flight deck. To give the Begin Mission order you must go to the Radio Operator station.

- Press Keyboard key [6] and you will jump to the Radio Operator's compartment view. You will now see the Radio Operator sitting at his station with a highlight around him. You now need to go to the Radio Operator's Instrument View. You can do this in two ways:
- Either - move your mouse cursor to the right side of the screen (in the middle area) to reveal a bank of five view icons. The current view is lit with a red light (the figure icon).
- Click on the fourth icon down (the dial icon).
- Or - with the Radio Operator selected (highlighted) press key [I].
- Or - Press keyboard key 6 and then press key [I].

This will bring up the Radio Operator's Instrument View (a radio set and two message books).

- Click on the 'Outgoing Messages' book (on the left) and it will open.
- Look for the Begin Mission order.

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Before you can do anything you must take control away from the computer AI. This is a feature of B-17. Everything will work on computer control but if you want to influence a position or character, you must take manual control.

manual
control



- Press key M and the 'computer controlled' icon will disappear and be replaced by the manual control symbol (a 'hand' icon). You are now in control of the Radio Operator.
- Find the Begin Mission order and click on it. It will be issued (and therefore be crossed out, or disappear from the messages list).
- Click away from the book and you will return to the Radio Operator's Instrument View.

You should see and hear a message to Start Engines.

- Hover the mouse pointer to the right of the screen (near the centre) to open the View Menu panel. This is available in all internal B-17 screens.

- Select the second icon down on the View Menu panel and you will return to the Compartment View (or press key C)

You will now hear, or already have heard the four engines firing up.

- Press keyboard key 3 to go to the Pilot's compartment view.
- Press F2 to go to an outside view to see the aircraft taxiing to its take off position.

Note that, if you return to the Radio Operator's position he will now be back in computer control – this applies to all crew management position in the simulation.

The B-17 will now taxi to the main runway, followed by the rest of the squadron.

- Watch this from the outside view (using the mouse or numeric keypad controls).
- Use the camera keys especially the zoom out feature to see the whole airfield.

The bomber will taxi to the main runway followed by the rest of the squadron and take up a position at the head of the take off runway. It will stop briefly for the final checks to be carried out then it will speed up and take off. Note that the B-17s may not taxi to the nearest runway for takeoff – instead they will taxi to the runway that will allow them to take off facing into the wind.

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The landing gear will retract and the other aircraft in the squadron will follow the leader. Your B-17 will circle until the other bombers form up with it.

You can '**pause**' the simulation at any time by pressing the Pause/Break key.

The **Home** key will speed up the simulation 2, 4 or 8 times.

The **End** key will slow down the simulation (if things are happening too quickly) 2, 4, 8 times or Pause the game.

The **Return** key will advance the simulation to the point where all the B-17's are formed up in midair.

Once in the air and in formation, the B-17 will head for the target, perform the mission to the best of the crew's current ability, defend itself against any attack, and try to return home and land.

If you want to skip large chunks of the simulation when nothing important is happening, press the **Return/Enter** key to Time Skip. You cannot skip when there is an important game event happening (flak attack, fighter activity etc).

You need not do anything if you don't want to. But the fun of this simulation is that you can jump into **any** position and take over manual control of that job! Similarly, you can jump into the escort and enemy fighter cockpits and dogfight with your enemy. Or, you can simply admire the views of the aircraft crossing a fully mapped Northern Europe!

In this brief guide we'll jump into a variety of positions

You should still be in external view, in the B-17 squadron formation.

- Skip time (press Return/Enter) as much as you can to speed up the 'getting there' procedure. If you are unable to skip time that means that a 'game event' is happening, such as escort fighters scrambling, flak firing or enemy fighters engaging you in combat.

Now let's look at the Pilot and Co-Pilot controls

- Return to the Pilots' Compartment view by pressing F1.

You should be on the flight deck just behind the Pilot and Co-Pilot. (If you are not press key 3 and select Compartment View from the right hand pop-up menu.)

- Select the Pilot (if he's not already selected) by clicking on the figure on the left.

All members of the crew have their own set of specific views. The Pilot has an Action view (accessed by pressing key A) which drops you into his seat looking out of the front window and left/right in the virtual cockpit), and an Instrument view (press key I) showing the fully functioning cockpit dials. All these views can be also accessed via the View Menu panel by hovering the mouse cursor on the central right edge of the screen.

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In addition, some crew positions have additional instrument views that relate to their jobs. The Pilot and Co-Pilot have specific close up instrument views (F5, F6, F7, F8 and F9).

- Press key A to access the Pilot's Action view. Look left/right in the virtual cockpit using the Joystick Hat.
- Press key I to access the Instrument view.

This is a fully functioning B-17 cockpit with dials, switches, levers etc all working.

- Press **F5** to see the **Co-Pilot's instruments**.
- Press **F6** to see the close-up **engine dials**.
- Press **F7** and **F8** to see the close-up **Pilot's dials/switches**.
- Press **F9** to see the close up of the **Startup** and **cooling instruments**.

Note: Do not operate any of these instruments in manual mode until you understand more about the B-17 simulation controls (see the complete manual).

Now let's have a tour of the different crew positions.

- Return to the Pilot's Compartment view (Key C or use the View Menu panel).

All stations in the simulation have a pre-set key, which can take you to the station provided a crewmember is manning it:

- ☐ Bombardier
- 1** Navigator
- 2** Cheekgunner
- 3** Pilot
- 4** Co-Pilot
- 5** Engineer / Top Turret Gunner
- 6** Radio Operator
- 7** Ball Turret Gunner
- 8** Left Waist Gunner
- 9** Right Waist Gunner
- 0** Tail Gunner

- Press keyboard key ` and you will jump to the Nose Compartment.

This is where the Bombardier and the Navigator work. Note that key ☐ has also selected and highlighted the Bombardier. If you press key **1** the Navigator will be highlighted.

- We've already seen the Pilots' compartment (see earlier) so to continue with the tour, press key **5**. This will take you to the Engineer/Top Turret gunner compartment next to the bomb bay.

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Note that because of his position the Engineer/Top Turret gunner is obscured by the bombs and is not shown fully, but you can just see his legs highlighted.

- Press the Action view (key **A**) and you will see the Top Turret view.
- Press key M to take control of the top turret and rotate/fire the guns using your joystick. Notice the realistic tracer path but do not shoot at your own aircraft!
- You've already seen the Radio Operator's compartment (key **G**) so try pressing key **H** and note that because you were in the Top Turret Gunner's Action view, you have jumped immediately into the Ball Turret Gunner's Action view.
- Press key **C** or click on the second icon down on the View Menu panel to see the Compartment view.

You will now see the two waist gunners with an almost obscured highlight of the Ball Turret gunner's position close to the feet of the Right Waist Gunner.

- Now select one of the Waist Gunners (click on one of them or press key **8** or **9**), and go to his Action view (key **A** or View Menu panel third icon down). You will be in position in front of the machine gun.
- Select manual control (key **M**) and fire the machine gun.
- Now return to the Compartment view by pressing key **C**.

The final compartment is where the Tail Gunner lives.

- Select keyboard key zero **0** and key **A** to view the Tail Gunner's action view. Press key M to take over control and try firing the machine guns.

Getting Around

There various ways to navigate around the aircraft positions.

1. At the top of the screen is a Crew Portrait pop-up panel that allows you to jump to any member of the crew by clicking on his portrait.
 2. To the left of the screen is a Crew Task pop-up panel that allows you to jump to any crew task (Navigation, Bomb Aiming/Dropping, Flying (as Pilot) etc.).
 3. At the bottom of the screen is a panel that pop-up only in Compartment View that allows you to jump into the main B-17 compartments.
- Return to the Tail Gunner's compartment view (key **0** and key **C**).
 - Place the mouse cursor at the top of the screen and this will show a pop up panel with portraits of the crew in 1-10 order (see above). This allows you to left-click on the portrait to jump to and select another named crewman in his compartment.

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Warning Red Text

Throughout the mission you may hear speech from the crew giving headings (Navigator to Pilot) etc. This will be shown at the bottom of the screen in ordinary text. You have merely to note what is being said. However there will be times when you will be prompted to perform a task (such as during an enemy fighter attack) to man the machine guns etc – in this case Red Text will appear when the message is heard. If you click on the red text you will jump immediately to the action station most associated with that message. For example, if you see red text message 'Bandits at 6 o'clock, level' and you click on the text, you will jump to the tail gunner's station in action view. Either watch the tail gunner fire his gun at the enemy fighters or press M to take control and fire the gun yourself.

Now let's look at where the aircraft is headed and jump to the Navigator's station.

- Open the top panel and click on the second portrait from the left – this is the Navigator. You are currently in Compartment view, so you will jump to the aircraft nose section (where the Bombardier also lives). The Navigator will be highlighted to show that he is the selected crewman.
- Press key I to access the Navigator's Instrument view. This will show his desk and instruments: the Radio Compass, the Drift Meter (see later) and the Map.
- Click on the Map (on the left of the screen) and you will jump to the Map screen.

This map is very similar to the mission briefing map but it also has a track of the plane's position (a green aircraft icon at the correct height and an aircraft shadow to show position across the ground) and its projected course (a broken blue line) and its actual course across the map (a broken and diminishing green line). All map controls are the same as for the map in the Briefing Room (see above). You are flying on Flawless level so the actual course flown by the aircraft will not differ from the mission briefing, but if you were to fly Easy or Historical navigation complexity you would have to adjust position by referring to the map and the outside views see the **Navigator School** in the **complete manual**.

- Exit the Map screen by pressing key [C] to go to the Compartment view.
- Select the Bombardier by clicking on him or pressing key ' (the crewman sitting right in the nose of the compartment) and he will be highlighted.
- Press the instrument key [I] to view the Norden bombsight.

This is a complex piece of equipment that can locate and lock on to targets efficiently as long as it is given the correct data and used properly. For actual details of manual bombing see the Bombardier School in the complete manual, but for now let's look through the sight.

- Press the Action View key [A]. You will be looking at the ground (or the sea) through the bombsight.

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In this tutorial you will not drop bombs manually; you will leave the crew Bombardier to do this for you.

- Return to Compartment view by pressing key **[C]**.

Skip Time

The simulation allows you to skip large chunks of time by pressing the Return/Enter key but you might not be allowed to 'skip' if a game event is happening.

Accelerate Time

You can also accelerate time by pressing the **Home** key (3 levels of speed up) or slow down time by pressing the **End** key (3 levels of slow down).

Throughout this time the Navigator will give the Pilot instructions about new turn headings and waypoints and the pilot will respond. You need do nothing in this guide but let them get on with it!

Eventually you will reach the last turn before the target (the Initial Point). Check this on the Navigator's map. This is the straight line run to the target. Now control of the aircraft is passed to the Bombardier. You may hear him call out "We're on the bomb run" or "I have the plane". Now make sure the Bombardier is selected and jump into the Bombardier's Action view (key **[A]**).

You might have to be patient here depending on the length of the bomb run but watch carefully as the target is sought out by the AI controlled Bombardier, then acquired and locked into position.



You'll notice two marker blocks on the right of the bombsight that are slowly approaching each other. When they meet, the release light will come on and the bombs will be dropped. The view will switch automatically to the bomb bay where you will see the bombs dropping.

- When this happens press **F6** (to see the bombs in the air) and **F6** again to view the bombs hitting the target. Xxx they are not armed xxxxWhat???
- Use the mouse with left/right buttons pressed in to view the target from various angles or zoom.
- Press **F1** to return to the Bomb Bay.

You've now looked at all the B-17 positions. Why don't you take a flight in one of the many fighters available in the simulation?

- Press key **F2** to get an exterior view of the B-17.

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In the Bomber Commander mode only one bomber can be selected out of the six in the squadron. In the Squadron Commander game you can select all six bombers.

- Your B-17 will be centred in the middle of the screen
- To access the fighters, hover your mouse pointer on the extreme left side of the mid-screen. This area will show a pop-up menu with a white icon representing your B-17, your fighters (if there are any on your mission) and the enemy fighters types (if there are any around).
- If there are any friendly fighters around, click on the icon to jump to an outside view of the fighter.
- Press **F1** to enter the cockpit of the fighter.
- Press key M to take control of the fighter and fly around (be careful and check the keyboard/joystick controls on the Key Guide).

Take a moment to examine the **detailed cockpit** and fully functioning dials, levers and joystick.

- Press the Joystick Hat to view the virtual cockpit. Along with the Instrument Snap view on CTRL + I, and the Snap view toggle, which will allow you to look around the cockpit freely, or snap to preset views with the Joystick Hat.
- Press key **F2** to go to the outside view (you'll still be in control!)
- Press key **[M]** to return to AI control.

- Return to your B-17 by accessing the B-17 icon in the pop-up panel
- Press **F1** to go back into your B-17

Crew Management

You've now looked over the basic areas of the bomber simulation. Now let's look at aspects of crew management that you'll need to know when things get rough and you experience casualties or emergencies such as fires.

Crew can be told to takeover other crew positions, and made to perform certain actions in emergencies (apply first aid, unjam guns, take over in case someone panics etc.). If all else fails, they can be ordered to bail out!

Make sure you're in the nose section in the Compartment view (you can see the figures of the Bombardier and the Navigator).

- Select the Bombardier by clicking on him and check that he is highlighted,
- Place your mouse cursor on the Bombardier and **right** click.

This will open an icon 'rose'. All these icons are instructions you can issue to individuals; all 10 crew in the B-17 can be given these types of orders (but they do vary depending on the job).

- Place your mouse cursor on a few of the icons and read the pop-up tooltips associated with these icons.

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The central icon is the instruction you are issuing (such as 'Move To' a different position). If you click on the central icon the instruction will change (Give First Aid, Repair, Use, Bail Out etc).



If you select Give First Aid and you see a portrait (or portraits) with a red cross on – that means there is a crewman who requires first aid. Click on the injured crew portrait and the selected crewman will go to him and help.

If there is a fire additional icons with pop-up tooltips will show which fire extinguishers can be used in what compartments. Remember to put out fires as soon as you get a warning (or see smoke). Fire is your worst enemy aboard the B-17! It destroys equipment, injures crewmembers and spreads from compartment to compartment through the plane. If the fire ever reaches certain points in the Bomb Bay or the Flight Deck, then your B-17 will be destroyed.

The Bombardier also has control of the Chin Turret that's located just under his bombsight station. This is useful when he has completed the bomb run and can function as a defensive gunner on the dangerous journey back home.

Now, let's change his 'job' to that of a chin turret gunner.

- Right click on the Bombardier and open the icon rose. The central icon will be the Move To (walking man) order (if it isn't then right click on it until it is).
- Move your mouse cursor to the top of the 'rose' and click on the Chin Turret icon (the pop-up tooltips will confirm this) and left click.

The Bombardier will now move the chin turret controls over the bombsight.

- Press key A to access the Chin Turret Action view and you will see the chin turret sight.
- Press key M to get manual control of the Chin Turret and fire off a few rounds.
- Now, with what you've already learnt, try to make the Bombardier return to his Bombsight (note that the Norden Bombsight icon will have replaced the chin turret icon in the topmost position of the icon 'rose').

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Returning Home

After releasing their bombs the aircraft will go to the Rally Point and then take the route marked on the mission map home (check this on the Navigator's map view). Again, except in 'flawless' Navigation complexity, your Navigator will need to check the map to the actual geography. This is a dangerous time when all gunners have to be alert; you may be attacked by fighters or flak. This is a good opportunity to try out the gunners' stations and to get an understanding for the zones around the B-17 that each gunner can defend.

Be careful not to shoot at your own aircraft in the formation and note that, if the guns jam, you can attempt to unjam them in the following way:

- Return to compartment view (Key [C])
- Right click on the gunner figure to open his 'icon rose'
- Right click on the icon in the middle until you see the 'Repair' spanner and click on the 'Unjam' guns icon that appears above it.

Gunners will call out bandits on the Clock System with 12 o'clock in front of the aircraft, six o'clock behind, and nine o'clock on the left etc. Level means level with the aircraft high and low are relative to the B-17's level flight.

Unless something happens to the Pilot, the B-17 will be flown back to base and landed.

Mission Debriefing

At the end of the mission (when the aircraft has come to a halt) you will be taken to the Mission Debriefing hut.

- Click on the mission debriefing file to view details of your recent mission performance (click on the page to turn it).

Here you'll find all details of the mission analysed and you may be informed of any medals and promotions.

You have now completed your first combat mission in a B-17.

The Training Missions

If you have completed the guide above, you will have already been on a complete mission and had a quick taster of action. The more complex levels of the simulation however depends on your own skills and so, to improve these skills, the game provides a set of Training Missions (use of bombsight etc.). Remember to have the Key Guide to hand when attempting these missions.

- Select New Game.
- Select Choose a Training Mission (the middle panel on the right) and you will go to the mission selection screen.
- Look at the panel at the top of the screen to access a training mission topic (you can scroll down the list by clicking on, holding down and dragging the right hand slider).
- Select the training topic you want to practice and the mission brief or set of tasks will be shown in the lower panel.

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- Scroll this panel to read full details of what you have to do.
- Flip the Continue switch (lower right) to jump into a Training Mission..

You will be taken into the 3D world so that you can perform the training exercise without risk to life and limb.

Mission 1: Taxi and Take Off

Your aircraft is on its dispersal point at an airfield with engines running, wheel brakes set, tailwheel locked and flaps fully raised. This is simply an exercise in taxiing the B-17 to the main runway and then performing a take off. It's here that you will learn basic ground handling skills and take off procedures. The mission will end once you get to 1,000 feet pull in your gear and raise your flaps.

- Press key **[M]** to take control
 1. You will not be able to see much of the runway from the pilot's position (just like the real thing) so you're advised to stay in outside view when manoeuvring the B-17 to the runway (**F2** with camera keys).
 2. Use the Pilot Helper function (Key H), this will give you taxi waypoints to meet, and direct you to the most sensible runway.
 3. Set the plane up for take off by applying half flaps (Shift + **[F]**), releasing the Parking Brake (Shift + **[P]**) and unlocking the Tail Wheel (Shift + **[T]**).

4. Use all camera views (especially the zoom in /out functions) to see where the main runway is.
5. Steer left- right using the Rudder controls (keyboard or joystick)
6. Stop at the top of the runway, lock your tailwheel (T)
7. Throttle up full using keyboard or joystick controls
8. Ease the aircraft gently into the air and perform a shallow climb
9. Raise gear (Up Arrow)
10. Raise flaps (Key **[F]**)

Mission 2: Approach and Landing

You are on the approach to the main runway of the airfield. All engines are running, gear and flaps are fully raised. You are in the Pilot's seat behind the controls of the B-17 as it turns onto final approach. You will need to follow the correct approach and ease the bomber onto the runway. The mission ends once you've landed brought the aircraft to a complete halt.

- Press key **[M]** to take control
 1. Use the external camera views for maximum visibility
 2. Locate the main runway where you will land (it should be lined up in front of you)
 3. Drop main gear (Shift + Up Arrow)

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4. Ease up on the all engine throttle
5. Lower flaps (Shift + **F**)
6. Glide in to the runway and land all three wheels
7. Cut throttle as plane rolls
8. Once the aircraft has stopped moving put the Parking Brake on (Key **P**)

Mission 3: Feathering / Restarting an Engine

An unfeathered engine adds drag, could cause a fire or even sever the propshaft so it's very important to learn how to feather an engine in flight. You are flying above the airfield at an altitude of 5,000 feet and airspeed of 155 mph (IAS). The engines are running, gear and flaps are fully raised. You must feather engine number 1 and then restart it, all while maintaining speed and altitude. If you drop below 1,000 feet you will fail this mission.

Note that if you leave the plane in automatic for this mission, the AI will stop you flying into the ground whilst you are concentrating on your instrument panel.

1. Go to the Pilot's Instruments view in the cockpit (Key **I**).
2. Click on the large, round red button marked "1"
3. Find the fuel system switches above the pedestal and turn off the left most column.

4. Click and move the Turbo-Supercharger and Throttle to zero for Engine 1.

Number one engine should now be feathered

5. Switch to the Action view (key **A**) and look to the left to verify that Engine 1 has been feathered. The prop will have turned visibly, and will not be spinning as fast as the other prop.
6. Locate the fuel system switches above the pedestal and turn on the leftmost column.
7. Click on the large, round red button marked "1"
8. Set the throttle and Turbo speeds to match the other three engines.

At this point the engine has started and is developing the same thrust as the others – the mission is successful.

Mission 4: Bombing – Good Conditions

In this mission you must locate the target and release the bombs as accurately as possible. You will be the Bombardier just at the beginning of the bomb run. The Norden bombsight is already configured with altitude and speed correctly. Altitude is 8,000 feet, and airspeed 155mph (IAS). All engines are running well, gear and flaps are fully raised. The weather is good, altitude is low and there is no flak or fighter opposition to worry about.

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- Press key **[M]** to take control
 1. Wait for the Bombardier to report that you are "On the bombrun"
 2. Press the spacebar to go to the Bomb Panel
 3. Click the Bomb Indicator button ON
 4. Click ON – Bomb Bay Doors, Bomb Arming, Autopilot and the four rack switches
 5. Press the spacebar to return to Norden bombsight view
 6. Press Key A to go to Bombardier's Action View (you will be looking through the bombsight)
 7. Make sure you are in Search Mode (The yellow light should be lit)
 8. Use your joystick or keyboard keys control to locate the target and click joystick button to lock on the target
 9. Adjust by unlocking target and readjusting control then lock again.
 10. Watch the two markers close towards each other
 11. When they meet press the Bomb Release button
 12. Watch the bombs drop from the bay and then press F6 to view the target from above and F6 again to view target from ground level (use mouse left button to zoom in and right hand button to move around target).

Mission 5: Bombing – Poor Conditions

In this mission you must fly a mission to a target and bomb it. The weather is more overcast and more like normal European cloud cover. The altitude is 18,000 feet, which is average for a run on a defended target, but there is no flak or fighter opposition. The bomber mission starts just before the Initial Point of the bomb run so you must carry out the full calibration of the bombsight.

- Press key **[M]** to take control
 1. Wait for the Bombardier to report that you are "On the bombrun"
 2. Press the spacebar to go to the Bomb Panel
 3. Click Bomb Indicator button ON
 4. Click ON – Bomb Bay Doors, Bomb Arming, Autopilot and the four rack switches.
 5. Press spacebar to return to Norden bombsight view
 6. Press key **[1]** to jump to Navigator and press on Action view Key **[A]**
 7. Press key **[M]** to take control (of the Navigator)
 8. Check Drift meter – a point on the ground must travel consistently along one of the drift meter lines. Read off the Drift in Degrees (e.g. -26°)
 9. Press Key I, then press key ` to return to the Bombardier

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- Press key **[M]** to take control (of the Bombardier)
 10. Enter the value on the Drift Meter dial of the Norden Bombsight by clicking and dragging the needle
 11. Use your joystick or keyboard keys control to locate the target and click the joystick button to lock on target
 12. Adjust by unlocking target and readjusting control then lock again.
 13. Watch the two markers close towards each other
 14. Watch the bombs release from bay and then press **F6** to view target from above and **F6** again to view target from ground level (use mouse left button to zoom in and right hand button to move around target).

Mission 6: Gunnery

You are in the air above the airbase at an altitude of 12,000 feet and at an airspeed of 150mph IAS. The Navigator is in his alternative position on the Cheek gun.

You must shoot at a target B-17. It will come up alongside you in various positions to cover all gun positions. You should experiment with 'leading a target' and the effects of range on bullet arcs. You must hit the bomber with 50 rounds from each position but don't worry about doing any damage – all guns are loaded with special 'paint' rounds.

You will begin in the Chin Turret position in the Bombardier's gun station.

- Press key **[M]** to take control (of the Top Turret Gunner)
 1. Wait for the target B-17 to appear
 2. Aim and fire. When 50 hits are recorded you will not be able to fire anymore and have to move on.
 3. Press **F2** to get an outside view of the B-17
 4. Press the **]** key to select the target B-17 and use the Camera keys to look at the 'colourful damage'
 5. Press **[** to select your B-17 and press **F1** to return to Chin Turret station
 6. Repeat the above for all gun positions in this order: (Don't forget you can use the positions toolbar on the left of the screen to swap more quickly between the manned stations!)

Chin Turret, Cheek Gun, Ball Turret, Left Waist Gun, Right Waist Gun and Tail Gun.

7. When you have succeeded in hitting the B-17 with all guns the mission will end.

All Training Missions will be debriefed. You will be told in the Debriefing File if you have achieved the required competence.

B-17 Flying Fortress "The Mighty Eighth"



The Fighter Escorts

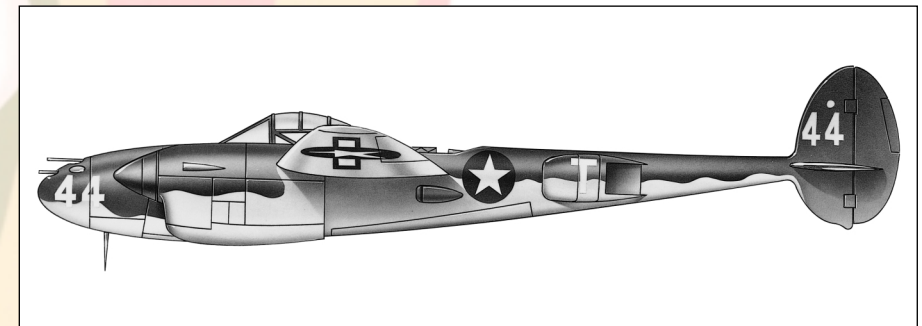
The task of the fighter escort squadrons is to give the heavy bombers maximum protection to and from their target. This means that the fighters have to stay with the bombing force as long as possible. Each fighter squadron has three or four flights stepped down behind the lead flight so that all can keep an eye on the leader. Flights are kept 150 feet apart with individual aircraft 40 feet from each other.

As soon as they achieve formation, P-38 Lightnings and the P-47 Thunderbolts immediately turn on their long distance drop tanks, while the P-51 Mustang uses up about 30 gallons from its main tanks to maintain balance before turning to wing drop tanks.

Pilots have to avoid any supplementary combat activity because this will mean that the long distance drop tanks have to be jettisoned and the bomber fleet abandoned. On rendezvous with the bombers three fighter squadrons are allocated to each combat wing. One squadron is divided and positioned ahead and above the bombers; another squadron also splits and takes up position above and about a mile away on either side of the formation. The last squadron climbs 4000 feet directly above the force and ten miles into the sun, trying to anticipate the standard enemy fighter strategy of diving out of the sun's glare. The escort fighters weave or orbit so that they can stay in touch with the slower bombers.

The main fighter combat tactic used by both sides is to use the sun's glare to achieve surprise in diving attacks, turning into an enemy, tightening a turn to get behind him, rolling away and diving to escape a dangerous situation. But as in all things, the tactics depends on the individual aircraft's performance.

P-38 Lightning



Built by:	Lockheed
Aircraft Type:	Long range fighter /bomber/single-seater
Dimensions:	37' 10" Length; 52' 0" Span
Engines:	2 Allison V-1710s-89/91
Max Speed:	402 – 414 mph*
Cruise Speed:	250 – 320 mph*
Ceiling:	40 – 44,000 feet*

B-17 Flying Fortress "The Mighty Eighth"



Combat Radius: 275 – 350 miles (2,260 miles with drop tanks)*
Fixed Weapons: 4 nose-mounted .50 calibre Browning machine guns
1 nose mounted 20mm Hispano cannon

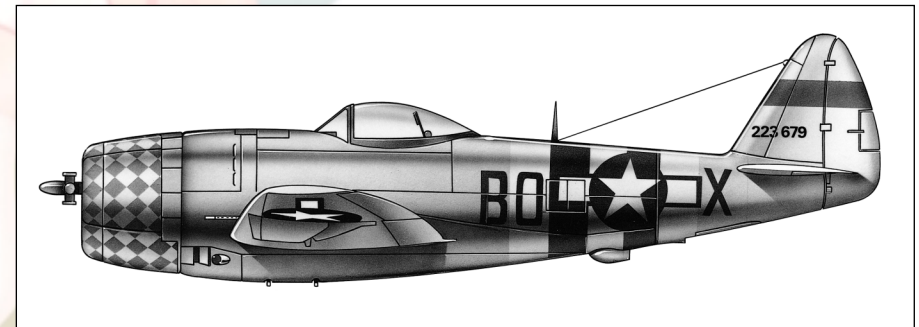
* Models H to J

The P-38 Lightning was the first American fighter to be designed as a long-range, high-altitude interceptor. However, due to technical difficulties, it did not achieve its intended role. The P-38 did however perform well when used as a tactical fighter-bomber; it had the range, the heavy armament and could carry a heavy bomb load. At low altitude the P-38 could manoeuvre well against the best of the German fighters and was often referred to as the 'Twin-Tailed Devil' by the German pilots.

The P-38 also proved itself competent for long-range escort and reconnaissance missions and was an effective aircraft for ground support. The Lightning was difficult to destroy for if one engine was taken out, the other engine could easily support it.

This fighter is most vulnerable when alone, so try to avoid one-on-one dogfights. Try to work with a wingman, using hit and run strategy. If an enemy gets on your tail, try to exploit the P-38's manoeuvrability – ditch the bogey with a series of sharp turns, then head for the clouds. The P-38 will not perform well in a dive because of severe tail buffeting.

P-47 Thunderbolt



Built by: Republic Aviation Corporation
Aircraft Type: Fighter / Fighter – bomber; Single-seater
Dimensions: 36' 1" Length; 40' 9" Span
Engine: Pratt & Whitney R-2800 Double Wasp
Max Speed: 419 – 436 mph*
Cruise Speed: 210 - 275 mph*
Ceiling: 41,000 feet
Combat Radius: 275 – 315 miles*
Fixed Weapons: 8 wing-mounted .50 calibre Browning machine guns

* Models C to D

B-17 Flying Fortress "The Mighty Eighth"

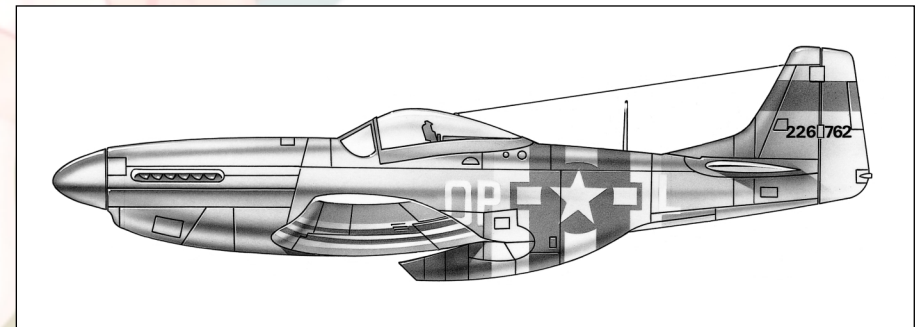


Often referred to as the 'Jug' by its pilots, the P-47 was designed around the new Pratt & Whitney R-2800 Double Wasp 2000 hp radial engine – the most powerful at the time. It was also equipped with a turbo supercharger that gave full power even at an altitude of 30,000 feet, allowing the P-47 to outperform all German fighters at high altitude. The aircraft also served as a low altitude fighter-bomber making use of its heavy firepower and its ability to sustain heavy damage.

The P-47's main weakness is its poor rate of climb but this is more than compensated for by its first class diving ability. Use this feature to regain height rapidly – once you lose momentum from the dive, climb in gentle turns and not in a steep, straight ascent.

Flying the Thunderbolt, your best defence is to initiate the attack. Use the plane's superior speed and the quickness of its dive to make a pass at an enemy, and then drop sharply away. When threatened in combat, if all else fails and you can't shake off an attacker, take comfort in the fact that the P-47 can take a lot of punishment before it gives up the ghost.

P-51 Mustang



Built by:	North American Aviation
Aircraft Type:	Fighter / Single-seater
Dimensions:	32' 3" Length; 37' 0" Span
Engine:	Packard Rolls-Royce Merlin V-1650-3/7*
Max Speed:	439 – 437 mph*
Cruise Speed:	210 - 320 mph*
Ceiling:	42,000 feet
Combat Radius:	450 miles (750 miles on drop tanks)
Fixed Weapons:	4 – 6* wing-mounted .50 calibre Browning machine guns

* Models B to D

B-17 Flying Fortress "The Mighty Eighth"



Considered by many to be the best fighter of the war, the Mustang began life with an Allison engine as an underpowered, low-altitude attack aircraft. But when it had the Rolls-Royce Merlin 61 engine installed it was transformed into an excellent high altitude escort fighter. With a pair of drop tanks, the Mustang could escort from England to anywhere in Germany. Entering service in 1944 this was an aircraft that became the vital lifeline for US bomber crews throughout the rest of the war.

With its vast range, great manoeuvrability and a speed no other fighter can beat, the P-51 is the shining star of the USAAF, taking more 'kills' than any other plane.

The Merlin engine gives you the power for quick, steep climbs and the Mustang has the firepower to take care of any situation, plus it's accurate and stable in a dive.

Beware that the P-51's guns can jam during tight turns (the ammo belts cause the gun breech to block). It's also very vulnerable to enemy ground fire due to an easily punctured cooling system.

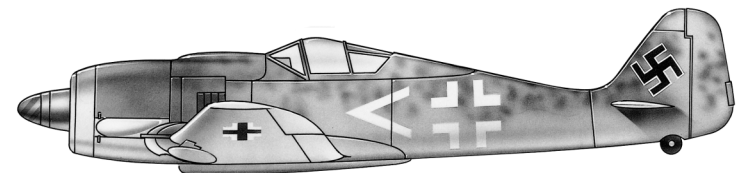
The Luftwaffe

From the earliest days of combat flight, Germany has always been a leader in military aviation technology and during the 1920s and 1930s the country was consumed with a passion for flight. State funded flying and gliding clubs (military aviation was banned under the Treaty of Versailles at the end of WW1) were to be a fertile source of many future pilots and, on the advent of war in 1939,

Germany entered with a decided edge in technology and aerial combat skills.

The Germans did not build warplanes in the 1920s but they did organise the personnel and facilities that would slot in when they did. Civilian aircraft models were designed that could easily be converted into a military function. In 1935, the German government announced the formation of a new air force, the Luftwaffe, and began full-scale production of warplanes. State of the art innovations such as beacons and radio stations were developed to help night flights and the Spanish Civil War was used as a proving ground to test out the new planes and strategies. When the war began Germany was the most advanced power in aviation in the world.

FW 190



B-17 Flying Fortress "The Mighty Eighth"



Built by: Focke-Wulf Flugzeugbau
Aircraft Type: Fighter / Single-seater
Dimensions: 8.8m – 10.24m* (29'0" - 33' 5"*) Length; 10.5m (34' 5") Span
Engine: BMW 801D / Jumo 213A*
Max Speed: 654 km/h – 685 km/h* (408 – 426 mph*)
Cruise Speed: 480 km/h – 518 km/h* (298 - 321 mph*)
Ceiling: 11,400m – 12,000m (37,403' – 39,372')*
Combat Radius: 266km – 282km (165 – 175 miles)*
Fixed Weapons: 2 cowling mounted 13mm MG131 cannon
2 wing-mounted (inner) 20mm Mauser MG151 cannon
(A8 only) 2 wing-mounted (outer) 20mm Mauser MG151 cannon

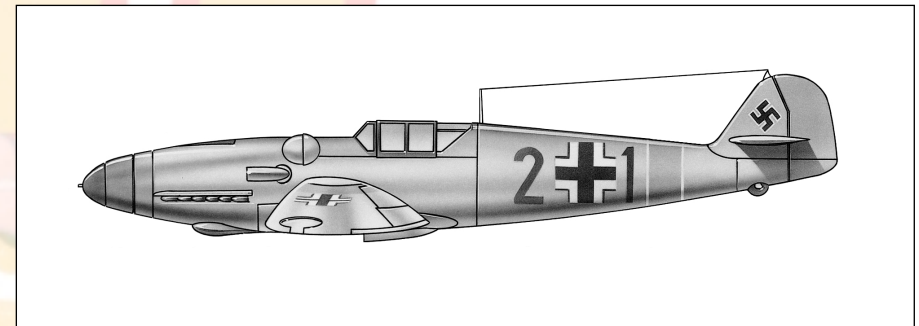
* Models A8 - D9

The Focke-Wulf 190 is thought to be Germany's best fighter of the war. When the first version entered service in 1941, it showed marked superiority to its opponents in almost every aspect. The FW 190 could out run, out turn and out climb anything it encountered. However the later models were mainly intended for bomber interception and so carried more firepower and armour making them considerably heavier and less manoeuvrable. Heavily armed with four 20mm cannons and two machine guns this proved to be the Allied bombers' most feared adversary.

The FW-190 is a great fighter to fly, giving excellent visibility, an unequalled rate of roll and easy take offs and landings. In flight, it reacts quickly to the slightest command and can climb and dive with ease. The improved turning of the D models, impressive armament, compact shape and superior handling make this an excellent fighter for medium altitudes.

Against the US heavy bombers you must employ a frontal assault strategy by flying high and fast to gain position ahead and above, then turning and diving towards the approaching targets and levelling out at the last minute. Timed right you'll get about 15 seconds to fire before you are forced to dive away. If you are attacked in a turn you can use your superior rate of roll to flick over into a dive.

Bf-109 (Me-109)



B-17 Flying Fortress "The Mighty Eighth"



Built by: Messerschmitt
Aircraft Type: Fighter / Single-seater
Dimensions: 8.8m – 9.05m* (28' 4" - 29' 8")* Length;
9.9m – 9.92m* (32' 4" - 32' 7") Span
Engine: Daimler-Benz DB 601N
Max Speed: 570 km/h – 727 km/h* (354 – 450 mph)*
Cruise Speed: 483 km/h – 590 km/h* (300 - 366 mph)*
Ceiling: 11,000m – 12,500m (36,100' – 41,000')*
Combat Radius: 200km – 240km (125 – 150 miles)*
Fixed Weapons: (E4)
2 wing-mounted 20mm Mauser MG151 cannon
2 cowl-mounted 7.92mm Solothurn machine guns
(G6)
1 engine-mounted 20mm Mauser MG151 cannon
2 cowl-mounted 13mm MG131 cannon
(K4)
1 engine-mounted 30mm Mauser MG151 cannon
2 cowl-mounted 13mm MG131 cannon

*Models E4 – G6 – K4

The Messerschmitt Bf-109 served as the Luftwaffe's standard single-seater fighter from 1936 to the end of the war. It was the forerunner of all modern combat fighters, completely outclassing all pre-1935 rivals. It was not an easy plane to fly, it had weak landing gear and high wing loading but it benefited from a capacity to take on technological developments to increase engine power, firepower and armour.

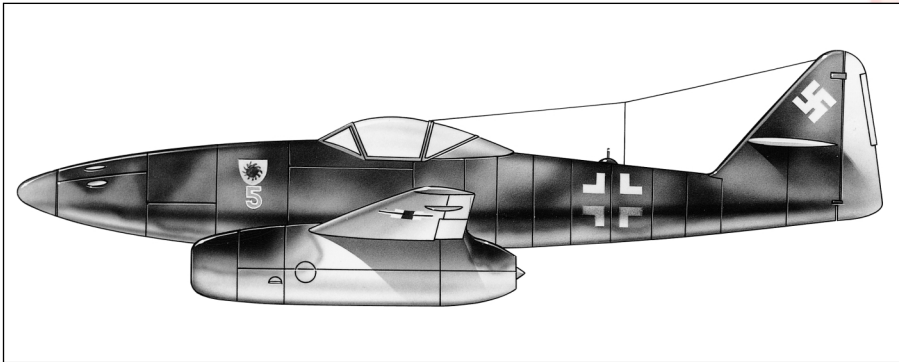
Quicker, lighter and more stable than many of its contemporaries this was a very tough aircraft but was always a nightmare to fly. From take off to landing you have to fight for control as it pulls to the right, requiring a delicate balance between elevators, rudder and throttle on take off. This is made doubly difficult by a high ground angle that makes visibility in taxiing extremely limited. Landings are also perilous because the 109 does not respond well to last minute corrections and may crash when approach speed is too low.

A useful strategy for a Bf-109 pilot is to take advantage of the negative-g roll that leaves Spitfires and Hurricanes shooting at air. However it's a plane that is vulnerable to deflection attacks (the armour is 4 feet behind the pilot's seat), and to fire from below hitting the coolant reservoirs. Use its speed and renown durability to escape from difficult situations.

B-17 Flying Fortress "The Mighty Eighth"



Me-262



Built by:	Messerschmitt
Aircraft Type:	Fighter / Single-seater
Dimensions:	10.6m (34'9") Length; 12.5m (41' 0") Span
Engine:	2 Junkers Jumo 109-004B-4 turbojets
Max Speed:	868 km/h (540 mph)
Cruise Speed:	670 km/h (416 mph)
Ceiling:	11,448m (37,560')
Combat Radius:	241km (150 miles)
Fixed Weapons:	2 fuselage-mounted 30mm MK108 cannon (above nose) 2 fuselage-mounted 30mm MK108 cannon (below nose)

The first combat jet aircraft to be actively used in WW2, the Me-262 was faster than anything the Allies could put into the sky in 1944. It could rip through bomber formations and turn well at high speed, out-performing any pursuing escort fighter. However, its development and widespread use was stifled by the lack of competent pilots, the scarcity of fuel and German failure to recognise its full combat potential at an early stage. When it did appear, in October 1944, it was a stunning success. Heavy bomber gunners did not have time to aim, let alone fire, and even the fastest Allied fighter was left behind. Unfortunately, the Me-262 pilots were themselves unused to combat at such high speeds and often chose to slow down for the actual attack (and it was then that they were most vulnerable to conventional bomber defences).

Beware that the Me-262 is slow to accelerate and not very manoeuvrable, Allied pilots may try to attack you when you are most vulnerable – during take off and landing.