

Just Flight

BATTLE *of* BRITAIN

Me 109



Pilot's Notes

Also available from Just Flight

BATTLE *of* BRITAIN
Spitfire



Just FlightTM

Taking flight simulation to new heights

www.justflight.com

Expansion for Flight Simulator X: Steam Edition

Please note that Flight Simulator X: Steam Edition must be correctly installed on your PC prior to the installation and use of this Me 109 simulation.

BATTLE *of* BRITAIN

Me 109

PILOT'S NOTES

CONTENTS

INTRODUCTION	2
ACCESSING THE AIRCRAFT	4
UPDATES AND TECHNICAL SUPPORT	4
JUST FLIGHT NEWS	4
INCLUDED AIRCRAFT	5
The 'Emil'	5
Models in this simulation	8
GETTING TO KNOW THE Me 109E4	15
COCKPIT GUIDE	19
FLYING THE Me 109	22
COPYRIGHT	32

Me 109



INTRODUCTION

Welcome to our simulation of the Me 109E4, Germany's front line fighter in 1940. Its primary role in the Battle of Britain was to protect the massed German bomber formations over the English Channel, and as a result it spent most of its time in combat with RAF Hurricanes and Spitfires, low on fuel and hampered by orders to stick close to the bombers.

These early machines had only minutes of flying time available over enemy territory before having to run for home. Despite this, the 'Emil' scored heavily against the RAF and was, along with its pilots, much respected by British airmen.

In this simulation we have attempted to capture the essence of flying a Me 109, with its cramped cockpit, limited visibility and that notoriously narrow undercarriage which claimed the lives of so many inexperienced pilots when wrestling with the aeroplane's ground handling characteristics.

It's by no means an easy aircraft to fly, but once mastered you will find it a most rewarding experience.

Also included in this package is the 'tropicalised' version with sand filters fitted to the intakes. The Me 109 saw service in all theatres of WWII and was very active in desert conditions in the Africa campaign.



BATTLE *of* BRITAIN



Me 109



ACCESSING THE AIRCRAFT

To access the aircraft:

1. Click on 'Free Flight'
2. Select 'Just Flight' from the 'Publisher' drop-down menu
3. Select 'Just Flight' from the Manufacturer drop-down and choose one of the variants

Tick the 'Show all variations' box to see all the available paint schemes.

UPDATES AND TECHNICAL SUPPORT

Please check the News and Support pages on our website at justflight.com for news about updates for this add-on and our other products.

Please contact the Just Flight Support team (www.justflight.com/support) if you have a query about the Me 109.

If you have an issue specific to FSX: Steam Edition, please send an email to support@dovetailgames.com.

JUST FLIGHT NEWS

To get the latest news about Just Flight products, sign up for our newsletter and regular emails at justflight.com/newsletter.

You can also keep up to date with Just Flight via Facebook (facebook.com/justflight) and Twitter (twitter.com/justflight).



BATTLE of BRITAIN

INCLUDED AIRCRAFT

The 'Emil'

A pioneer of early glider design and manufacture, Willy Emil Messerschmitt designed a frail little touring aeroplane that was destined to become the father of Germany's front line fighter of the early 1940s. The Me 108 had the characteristic narrow undercarriage and other features which would give clues to the design of the great fighter to come.

Ironically it was a British engine - a Rolls-Royce Kestrel - which powered the prototype, as no German engine could reach the required power output at that time. Eventually the locally made Daimler Benz 601A would be the powerplant of choice for the 'Emil' but not without severe weight penalties.

Thanks to his considerable experience in glider design, Messerschmitt had designed a light, flexible and immensely strong airframe to carry the heavy engine and cope with the substantial increase in horsepower - a 400 HP increase over the prototype and 400 lbs of extra load.

Originally the Me 109 was to have machine guns just in the nose, with an experimental cannon firing through the centre of the spinner. The wings were therefore very thin, giving the now famous and elegant 'glider' profile from a head-on view. On learning of the RAF's new eight-gun fighters, however, the Luftwaffe decreed that guns must be mounted in the wings, and bulges were added to accommodate the bulky ammunition drums of the two 20mm cannon. After many tangles with the higher orders of the Nazi party, who favoured Heinkel's designs, the WWI ace Ernst Udet was instrumental in getting Messerschmitt's design adopted by the Luftwaffe as the 'new generation' fighter.

In an attempt to free the wings of unnecessary loading, the undercarriage was positioned very close to the fuselage, and in fact the assembly itself was incorporated into the fuselage unit at manufacture. One unfortunate weakness in the design was this extraordinarily narrow undercarriage, making the 'Emil' very easy to ground loop and tip over on landing. In fact 5% of all Me 109s built were destroyed or written off in landing accidents.

Although the aircraft was immensely strong, it had to endure a procession of upgrades and ever heavier powerplants, armament and equipment throughout its life. Messerschmitt's elegant glider design eventually became an all-round warhorse for the Luftwaffe and was used in a variety of roles, from free-ranging fighter to heavily laden ground attack fighter/bomber.

That said, the early models with their delicate, slim profiles and gutsy powerplants were formidable opponents for the bulkier, heavier Hurricane and more than a match for the new Spitfires.

Me 109



By the beginning of hostilities, the Luftwaffe had 850 Me 109Es on strength, and over twice as many in action over the Channel by 1940. By the end of the war the Messerschmitt Me 109 was the most widely produced fighter aeroplane of any nation. It's worth noting that if it had not been for the German High Command's insistence that its fighters were "there to protect the bombers" and the Gruppen had been allowed to range freely against the RAF, the ensuing story might have been very different.



1/JG3 was heavily committed during the Battle of Britain. This machine was flown by Luftwaffe ace Plt. Hptm. Hans von Hahn and is depicted at the height of the Battle in September 1940.



BATTLE of BRITAIN



Messerschmitt Me 109E4 JG26, flown by Luftwaffe ace Adolph Galland, perhaps the most famous of the Luftwaffe pilots. It was said that Galland smoked 20 cigars a day and wrote orders giving him permission to smoke while flying on a mission! His was the only Messerschmitt with a cigar lighter and a cigar holder for when he was on oxygen. As Kommodore of JG26, he led the unit during the more difficult months of the Battle of Britain. By the 25th of September Galland was one of the leading aces in the Luftwaffe with 40 victories; he shot down his 50th aircraft on the 1st of November and was awarded the Eichenlaub.

Specifications

Wingspan: 32 ft 4 1/2 in
Wing area: 174 sq ft
Length: 28 ft 4 1/2 in
Height: 8 ft 2 1/2 in
Weight: 5,875 lbs (take-off)
Powerplant: Daimler Benz DB601N, 1200 HP, direct fuel injection
Propeller: Three-blade variable pitch
Armament: Two wing-mounted MG FF cannon (60 rounds per minute) and two 17.9mm machine guns mounted in the nose (1,000 rounds per minute, later reduced to 500)

Performance

Maximum speed: 560 KPH @ 14,500 ft
Cruise speed: Maximum 375 KPH
Climb speed: 3,510 ft/min
Range: 410 miles
Service ceiling: 36,500 ft
Note: The Messerschmitt Me 109E4 has no specific mixture control, being automatic. For efficient mixture operation be sure to set 'Enable Automixture' in the FSX Realism settings drop-down menu.

Me 109



Models in this simulation

We have attempted to provide something of the variety of schemes which were applied to the Me 109E4.

The air forces of countries such as Japan , Spain, Italy and Russia also flew the 'Emil'. The Me 109 had cut its combat teeth in the Spanish Civil War of 1938/9 and Japan evaluated the design for its campaigns in the Pacific.

One captured machine even flew with British markings as a test aircraft to acquire invaluable data against the Spitfire and Hurricane.

The Me 109E4 was commonly armed with two machine guns and two cannons, but an experimental third cannon, firing through the propeller spinner, was used on its predecessor, the E3. Although removed from the E4, the hole remained in the spinner.



1. Me 109E4 of 3./JG2 displaying the yellow and blue 'Horrido' pennant on the nose, later to be adopted by Helmut Wick as his personal emblem





2. Flown by Oblt. Albrecht Drehs. Force landed at Hengrove near Margate, Kent, on 12 August



3. 'Yellow 13' Me 109E4 of 9./JG54



4. As flown by Hptm. Freiherr Gunther von Maltzahn, GruppenKommandeur of II./JG53. The red cowling band was dispensed with once von Maltzahn was made Geschwader

Me 109





5. *Stab JG2, based at Beaumont-le-Roger, France, in August 1940. As flown by Oberst Harry von Bulow-Bothcamp, Geschwader Kommodore*



6. *Japanese testing aeroplane from the Kawasaki factory, October 1941*



7. *The Soviet Messerschmitt Me 109 is one of several supplied under the Soviet-German Pact in 1940*



BATTLE of BRITAIN



8. The 'White 6' was captured by the French on 30 May, 1940



9. Spanish nationalists. Pilot: Oblt. Hans Schmoller-Haldy, March 1939. Personal beer mug pilot insignia



10. I./JG3, based at Grandvillers, France in September 1940. Pilot: Hptm. Hans von Hahn





11. Stab JG26, based at Audembert, France, in September 1940.
Pilot: Major Adolf Galland, Geschwader Kommodore



12. Stab JG2, based at Beaumont-le-Roger, France, in October 1940.
Pilot: Major Helmut Wick, Geschwader Kommodore



13. 'Yellow 35' assigned to Grupul 7 Vanatoare. The aircraft was lost at Stalingrad at the end of 1942



BATTLE of BRITAIN



14. North Africa/Libya Spring 1941. Pilot unknown



15. Pilot: Group Commander II./JG27 Colonel Gustav Rodel. Libya, Summer 1941



16. Stab II/JG54, crash-landed at Chapel Holding, Small Hythe, Tenterden, Kent, on 12 October, 1940. The pilot, Oblt. Bernard Malischewski, was captured unhurt

Me 109





17. *Tropical 1./JG27*



BATTLE *of* BRITAIN

GETTING TO KNOW THE Me 109E4

Simulator set-up

To enjoy this simulation to the full, we strongly recommend that you set up your host simulator in the following way:

Load up your desired aircraft, airport, time of day and so on in the usual way.

Using the Slew function (with the Y keystroke) position your aircraft on a concrete apron or grass area.

Enter the VC cockpit mode and turn everything off - battery, magnetos, fuel selectors etc. Also pull all levers such as prop, mixture and throttle to their zero limits.

You should now have what is called a 'cold and dark' cockpit.

In the outside view, press Shift-E, Shift-E+2 and Shift-E+4. This will open the canopy and the radio hatch and remove the engine cover to expose the Daimler Benz V12 engine.

You are now ready to get acquainted with the aeroplane.

Walkaround

In Spot view rotate your view around the aeroplane slowly, from the front.



The narrow track of the undercarriage is immediately apparent, as well as the amazingly thin, elegant wings, that enormous nose housing the big Daimler Benz DB601 V12, and the two machine guns mounted atop the engine. Two 20mm cannons, one mounted on each wing, complete the aircraft's formidable armament.

Me 109



Moving around to the left, or port, side, you will see that the side-hinged cockpit canopy is open. The radio hatch reveals the radio equipment.

From the port side of the aircraft, you can see the aft equipment hatch open (Shift-E+2).



BATTLE *of* BRITAIN

The massive V12 DB601A engine is exposed and so is the propeller hub with the spinner removed. Note how the machine guns are arranged in troughs immediately in front of the windscreen section.



Me 109



From the starboard (right) side of the aircraft, you can clearly see how well this slim, delicate aeroplane was built to handle the enormous power of the engine. It is a tribute to Messerschmitt's genius in airframe design.



From the rear you can see the fabric covering of the rudder blade, soon to become the easel for kill markings and other markings pertaining to the skills of the pilot.

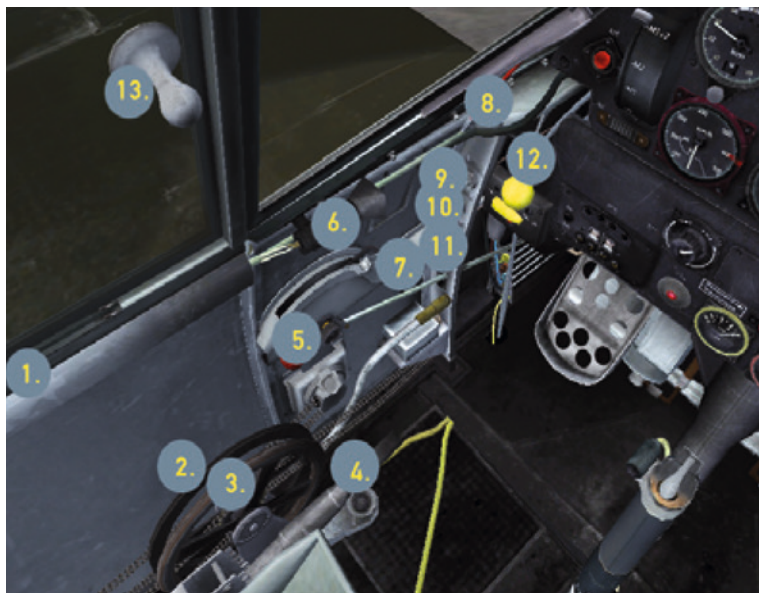
Now enter the cockpit and get acquainted with the controls of your Me 109E4.



BATTLE of BRITAIN

COCKPIT GUIDE

Left side



1. Canopy lock button
2. Flap wheel
3. Elevator trim tab wheel adjuster
4. Seat raising lever (this also adjusts the viewpoint)
5. Cowl flap lever
6. Panel lights (click to turn on panel lights only)
7. Throttle
8. Canopy ejection lever (you will need to refresh the aircraft to replace the canopy)
9. Emergency starter
10. Emergency ignition lever
11. Emergency engine stop
12. Fuel cock lever
13. Window slider. Slide back to open the side windows



Main Panel

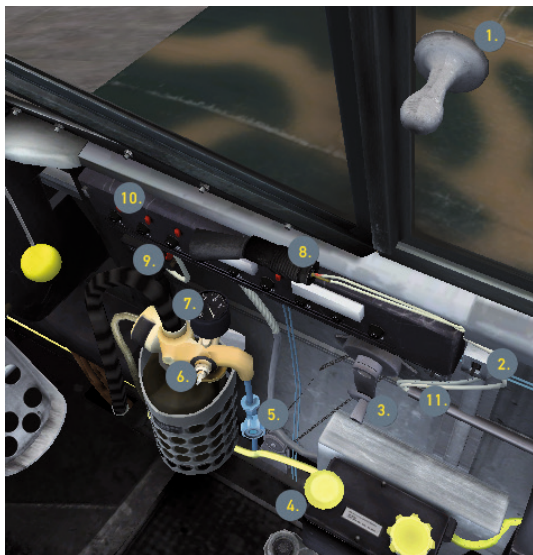


1. Starter switch
2. Magnetos
3. Altitude gauge and Kollsman knob
4. Clock
5. Gyro compass
6. ASI (Airspeed Indicator) in KM/H
7. Turn and slip indicator
8. Propeller pitch control
9. Cockpit light dimmer (visual function only)
10. FUG VII radio controls (visual function only)
11. Stall warning
12. Fuel level
13. Low fuel level warning lamp
14. Oil temperature
15. Fuel pressure/oil pressure gauge (yellow = fuel pressure, red = oil pressure)
16. Gear indicators
17. Coolant temperature
18. Landing gear lever
19. Emergency landing gear lever
20. RPM gauge
21. Manifold pressure gauge
22. Gun sight dimmer (click to dim or brighten the gun sight)
23. Sim icons (contains the Load-out Manager)
24. Propeller pitch indicator
25. Filter pump control lever
26. Gun sight filter control



BATTLE of BRITAIN

Right side



1. Window slider (slide back to open the side window)
2. Fuel pump switch
3. Oil cooler flap winder
4. Primer switch
5. Oxygen valve (visual function only)
6. Oxygen meter valve
7. Oxygen flow gauge
8. Right-hand side panel nav light
9. Battery master switch
10. Fuse panel (visual function only)
11. Pitot heat switch



FLYING THE Me 109

Begin with a cold, dark cockpit (or just hit Ctrl-E and take off!)

Pre-start

Close the cockpit cover and lock it. Open side glass as required.

Using Shift-E combinations, close all external hatches, engine and gun covers.

Check that the undercarriage selector lever is down, the indicator lights showing green.

Check the fuel contents.

Open main fuel cock.

Switch on pitot tube heater.

Test for free movement of flying controls.

Ensure parking brake is on.

Battery switch to ON.

Starting

Check fuel cocks open.

Magnetos OFF.

Open the throttle about one third of its travel.

Propeller control to 100%.

Prime engine with a few strokes of the priming handle.

Check fuel pressure.

Switch magnetos to ON, M1 and M2.

Pull the starter and hold until the engine fires.

Once the engine starts and runs evenly, pull throttle back to idle at 500 RPM.

Check oil and fuel pressures.

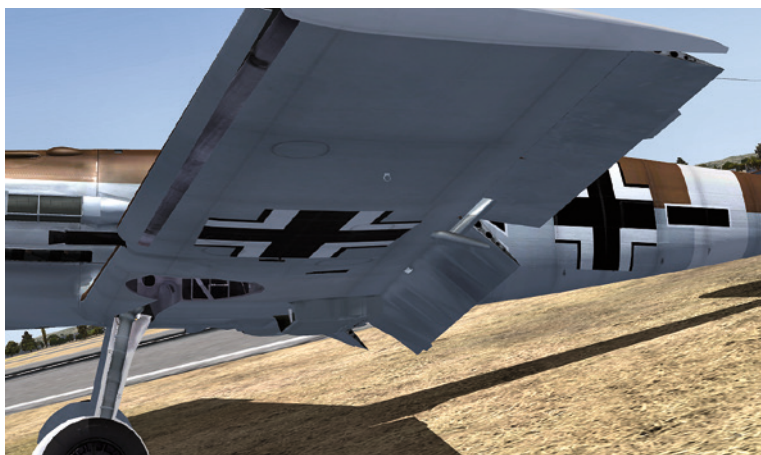




Warm-up and taxi

Check oil pressure, fuel pressure and temperature gauges for normal operation.

Check flaps operation. You will notice that at full flap the ailerons actually droop and the forward slats are automatically deployed.



Me 109

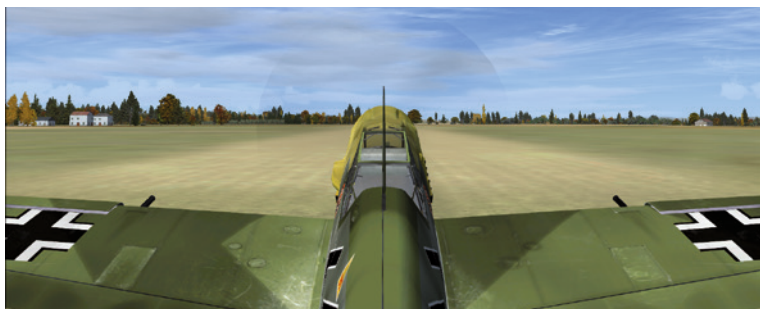


Open radiator flaps once engine is at temperature.

Check ignition, M1 and M2 alternately.

Check electrical systems, lighting and all lamps.

Release the parking brake and open throttle slowly to start moving. Use a weaving motion when taxiing to get a better view of where you are heading. Switch to 'Approach view (cycle through the views using the A key until you are at 'Approach')



WARNING: The narrow track of the undercarriage is a trap for the unwary. Make turns at slow speed and be careful not to overstress the undercarriage legs. Many novice pilots were injured - or worse - in accidents while taxiing the Me 109; 5% of Me 109s were written off in ground accidents.



BATTLE of BRITAIN

Pre-take-off

Parking brake set.

Elevator trim wheel at neutral.

Propeller control to 100%.

Flaps UP.

Fuel pump OFF.

Canopy closed and locked.

Take-off

Check slats are open (20 degrees).

Release the brakes. (Opening the throttle with brakes on is dangerous as the Me 109 will tend to nose over resulting in a ground loop.)

Open the throttle steadily to maximum take-off power.

As you accelerate, apply rudder to counteract swing.

The tail will lift first and at around 110-120 KPH a small amount of back pressure on the stick will get you airborne.



Me 109





Allow the climb to reach 100 feet before retracting the undercarriage.

Climb at 250 KMH to altitude.

Once at altitude, re-trim the controls for neutral handling.



CAUTION: The trimming controls in an Me 109E are very powerful and it is easy to start 'chasing the needles' by overuse of the trimming controls. Adjust carefully and slowly to achieve the correct 'hands-off' condition. NEVER trim the aeroplane using the VSI. Use the trim position gauge and AHI for visual reference, but it is usual practice to align the horizon using those other important instruments - your eyes.

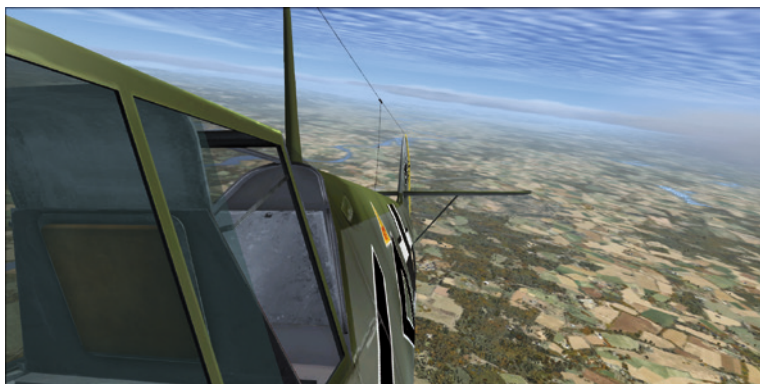


The leading-edge slats of the Messerschmitt will deploy automatically at speeds below 145 KPH.

This actively increases the lift of the wing and assists in low speed handling.



Check your rear view for the enemy! (Observe the antenna wires fluttering in the slipstream as you hurtle along.)



Me 109

27



Performance limitations

Maximum permissible dive speed

750 KPH @ 3,000 RPM (do not intentionally exceed for any lengthy period)

Stall Speeds

Undercarriage and flaps up: 120 KPH

Undercarriage and flaps down: 98 KPH

Do not extend flaps above 250 KPH indicated

Do not extend gear above 350 KPH indicated

Spinning

Recovery is standard (opposite rudder, stick forward). Ensure you have adequate altitude before spinning deliberately: at least 10,000 ft, and preferably 15,000 ft.

Aerobatics

The following minimum speeds should be observed if engaging in aerobatics:

Loop: entry at 450 KPH

Roll: 402 KPH

Half-roll off loop: 418 KPH

Climbing roll: 515 KPH

Approach and land

Reduce speed to 145 KPH.

Undercarriage DOWN.

Flaps DOWN.

Fuel pump ON.

On finals, reduce speed to 120 KPH with full flaps.

Aim to reach the landing strip threshold at around 113 KPH.

When cycled, the views control will present various views of the aircraft from close quarters. The 'Approach' view is especially helpful for approach and landing and it is highly recommended that pilots use this view when landing.



Balance the aircraft with trim and throttle to arrive at the strip in a 'three-point' attitude, closing the throttle. Trying to land on main wheels only may result in a ground loop. Remember that the Me 109E is a very difficult aeroplane to land and great care must be taken.

Due to risk of ground looping, touch down and apply brakes CAREFULLY once the tail wheel is firmly on the ground. Hold the stick back firmly when on the ground to ensure this.

Once safely on the ground, handling is very good. The Me 109E will taxi quite fast and judicious use of differential braking and throttle can result in very tight turns.



Me 109



Shut down and park

Raise the flaps and switch off the fuel pump.

Open the oil and radiator cooling flaps.

Idle engine for one minute and close throttle.

Turn off the fuel cocks.

Pull the rapid shut-down lever to shut down the engine.

Switch off all electrical items and the main battery switch.

Open the canopy, exit the aeroplane and make a visual check of the airframe and flying surfaces.



Basic controls and functions

VC Hood latch or Shift-E - Open canopy

VC red ball - Jettison canopy

VC door latch or Shift-E+3 - Opens the pilot door

Shift-E+2 - Opens the radio hatch and removes pilot from exterior view, if on ground

Shift-E+4 - Opens the engine cover and exterior starting plug cover

Shift-2 - Brings up the radio panel

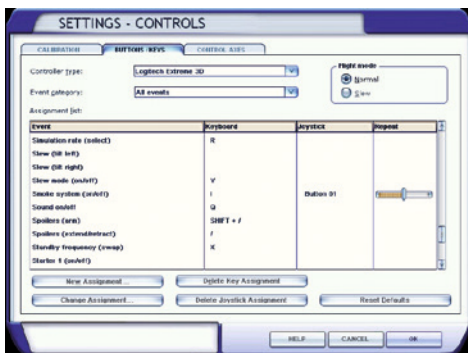
Shift-1 - Brings up a basic 2D 'flying panel'

A novel feature of this simulation is the way in which the antenna wire will react to the slipstream. There is a rearward view - 'wind in the wires' - built in to show this.



We have also included a variety of optional ordnance and equipment fitted to this aircraft. It is selected from the icon menu mounted on the right side of the main instrument panel. Once the Load-out icon is clicked, a selector panel will open. Just click the various red light buttons to load the ordnance, tank or combination you require. A check in the exterior view will show the combination fitted to the airframe.

Guns - The guns on the Me 109 are all controlled by the 'Smoke system on/off' command in the list of FSX control assignments. By default this is assigned to the 'I' key on your keyboard, but we would suggest that you use the New Assignment button to also assign it to your joystick trigger and set the Repeat slider to the 50% setting.



Me 109



COPYRIGHT

©2015 Aeroplane Heaven, Just Flight Limited. All rights reserved. Just Flight and the Just Flight logo are trademarks of Mastertronic Group Limited, 1st Floor, Benjamin Street, London EC1M 5QG, United Kingdom. All trademarks and brand names are trademarks or registered trademarks of the respective owners and their use herein does not imply any association or endorsement by any third party.



BATTLE *of* BRITAIN

Also available from Just Flight

BATTLE *of* BRITAIN
Spitfire



Just Flight[™]

Taking flight simulation to new heights

www.justflight.com

Just Flight[™]

Taking flight simulation to new heights

www.justflight.com