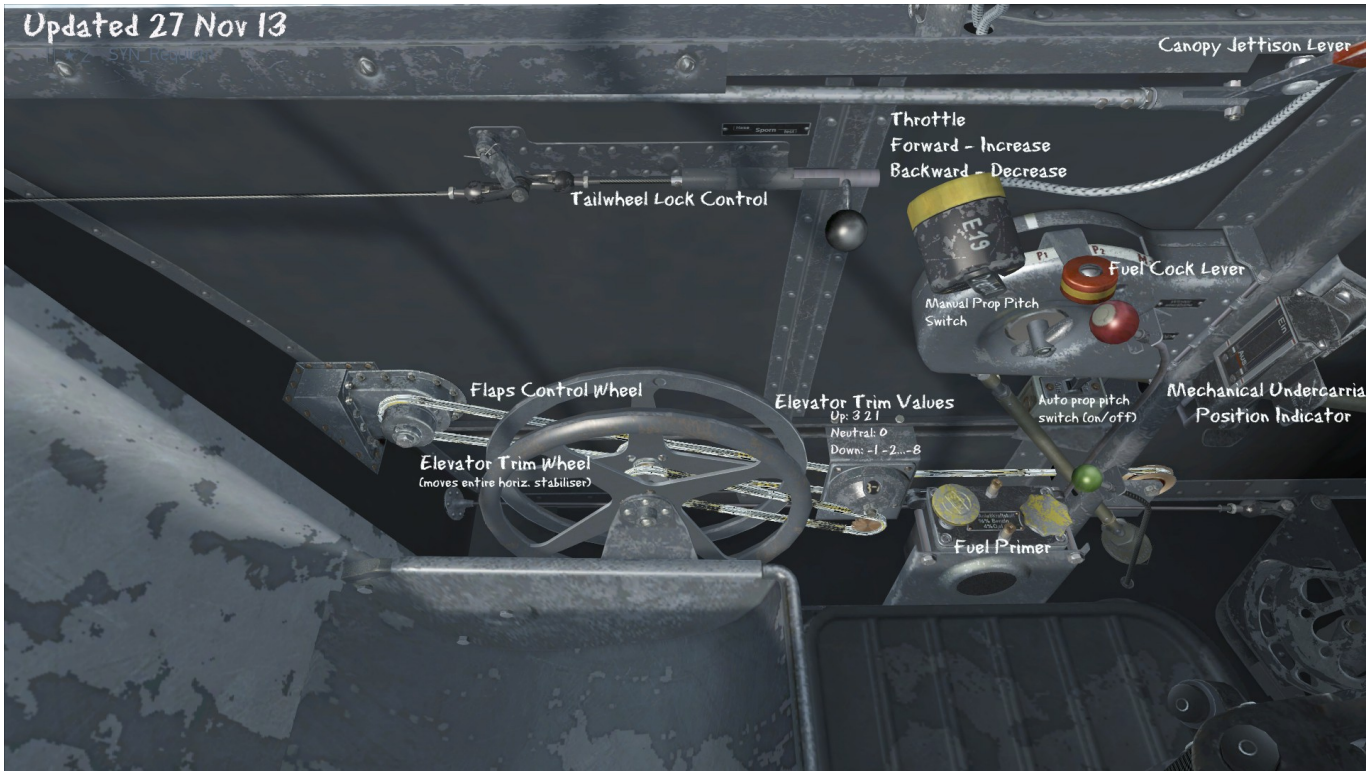
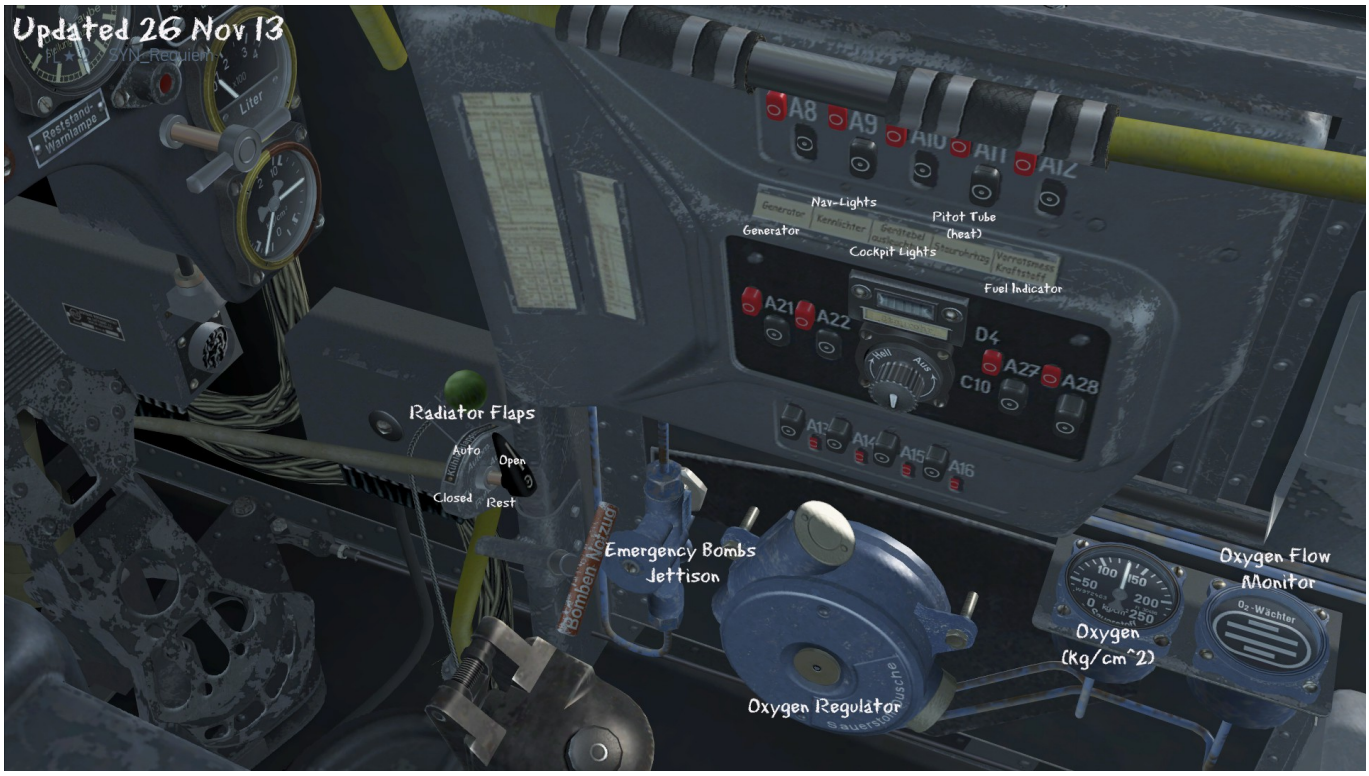
IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4

BF109F4

1 Cockpit



IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4



The lever you marked with prop-pitch is actually the fuel cock lever.
The prop-pitch is controlled by the rocker-switch on the throttle know itself.

The two way switch below the throttle is the switch for automatic propeller pitch control (on/off), in front of the throttle is the mechanical undercarriage position indicator (might be of interest).

IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4

Pour le trim, il est fonctionnel dans le 109 (pas encore dans le LaGG) et il fonctionne très bien !

Il s'agit d'une des 2 roues situés à gauche du pilote (l'autre étant pour les volets)
(http://forum.il2stur...pit/#entry57227)
Seulement attention, il y a un piège... Sur le 109, c'est tout le plan horrizontal qui bouge (comme sur les airbus moderne) et de ce fait les devs ont créés 2 commandes différentes :
une pour les trims dit classique, ca doit être quelque chose comme pitch trim
une pour les trims type Bf109 ou tout le plan horrizontal est réglable, le nom exacte de la commande est: " ***adjustable Stabilizer"*** *(vérifié et corrigé par Pollux)*
Après rien n'empêche d'affecter les même raccourcis à ces 2 options. C'est ce que j'ai fait de mon coté.

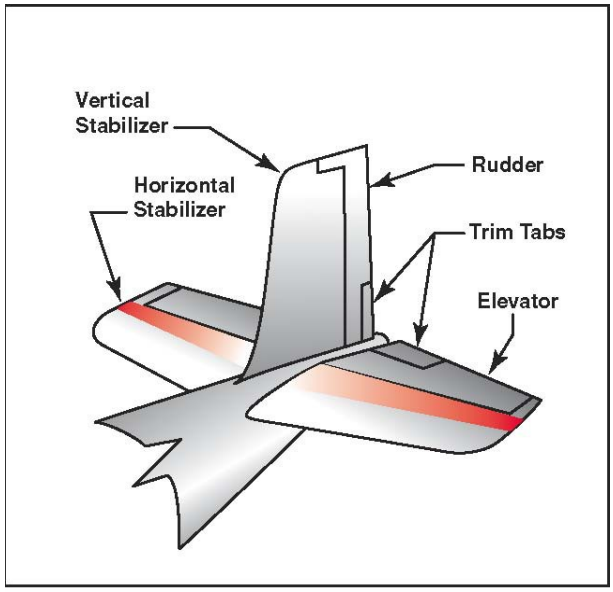
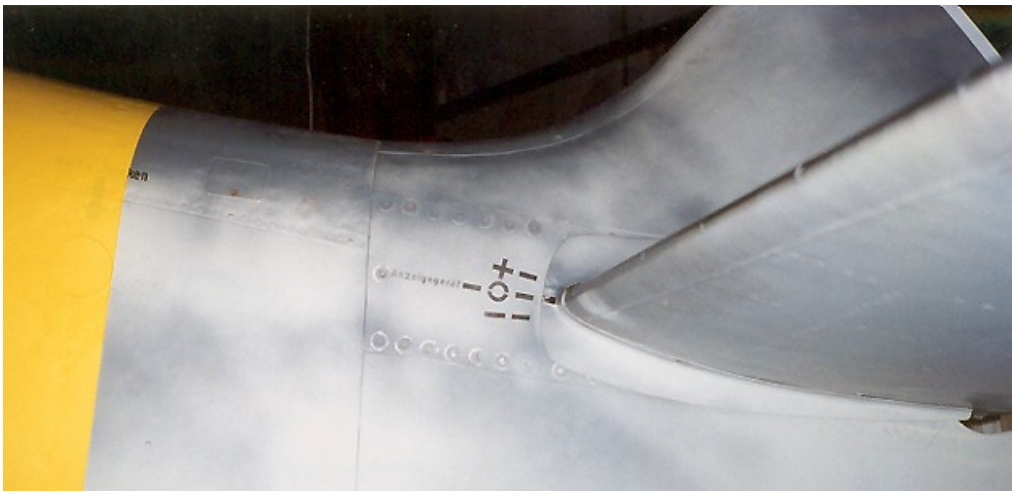


Figure 1-7. Empennage components.



Stabilisateur horizontal : il s'utilise comme un trim. Pour une altitude, une attitude et une vitesse donnée, il faut l'ajuster pour qu'en lachant le manche joystick), l'avion reste stable en tangage. Chaque fois que tu change de vitesse de croisière, ou que tu te rétabli en vol palier (une fois la vitesse stabilisée) à une nouvelle altitude, il faut refaire le réglage. Il est aussi souvent utile de l'ajuster pour une attitude donnée (en montée ou en descente). Avant l'atterrissage, il faut l'ajuster pour contrer le couple à piquer lorsque que l'on sort les volets.

2 Engine cooling system description

Heat generated by this engine is dissipated into the lipstream from two radiators, one located beneath eachwing root towards the trailing edge.
The cooling air flow is controlled by two hydraulic actuators which determine the position of the intake lip and upper and lower radiator flaps associated with each radiator.
These flaps are controlled by the rotary selector valve, set by the pilot to one of four detented positions. Both radiator flaps move in association with the wing flaps.
The valve settings are 'auf' (flaps fully open),'zu' (flaps fully closed), 'ruhe' (flaps hydraulically lockedat their current position) and 'autom'. When the flaps are at the closed position, and the wing flaps are retracted, the cooling flaps remain slightly apart, and maintain a minimum cooling flowthrough the radiators. The 'autom' setting provides for automatic modulation of the flaps position under the influence of a thermostat. This is installed in the coolant outlet pipework from the engine and normally regulates the engine coolant temperature to around 80°/85°C. At approximately 110°C, at low altitudes,the coolant may be expected to boil. The cooling system operates at elevated pressure maintained by a pressure relief valve whichoperates at approximately 1 bar.
Any outflow of coolant from this valve is piped so as to discharge immediately ahead of the exhaust stubs on the right side of the engine, where itimmediately vaporises, thereby indicating to the pilot in a direct manner that the engine has become too hot.
Under these conditions it is reported that vapour may enter the cockpit although thepilot was not aware of this. The design and orientation of this relief valve are such that positive g assists the valve to open.
Engine temperature is indicated to the pilot on a dual function gauge. This gauge normally indicates coolant temperature,unless the adjacent spring loaded button is pushed, where upon oil temperature is displayed.

> -The coolant temperature gauge is actually a combination gauge that reads coolant exit and oil intake temperature.

Yes and by default it shows coolant temp. To read the oil intake temp one had to press the little know on the right upper corner of the dial.

<u>Refroidissement</u>

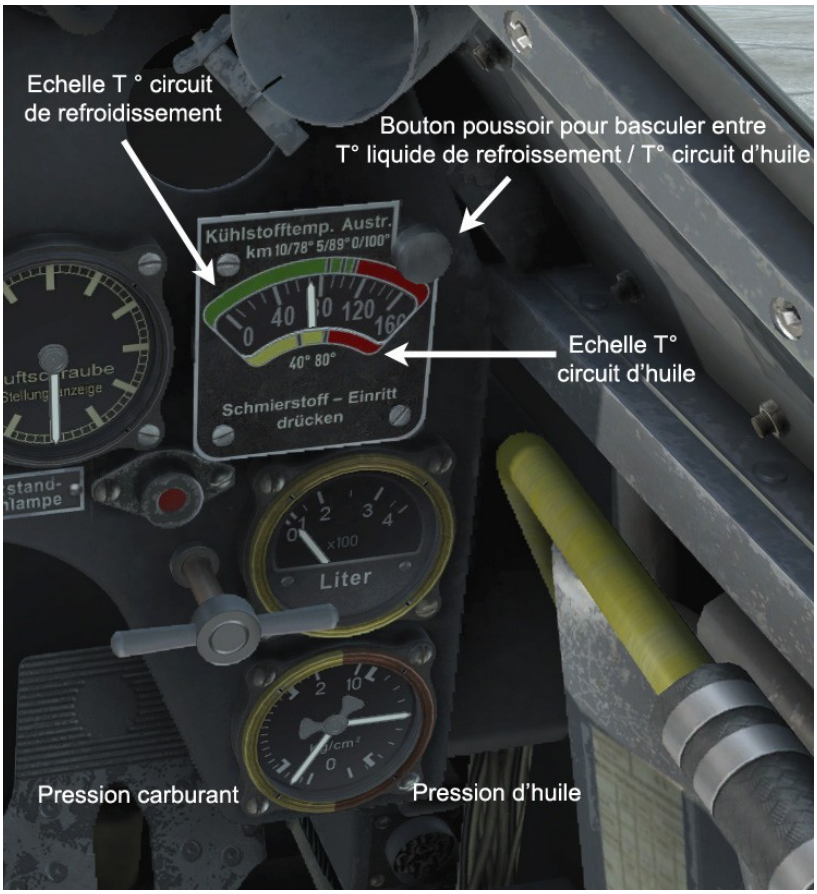
En bas à droite du cockpit se trouve la seule et unique commande concernant le circuit de refroidissement et ses radiateurs
Ce bouton à 4 positions :
Zu (fermé)
Auf (ouvert)
Ruhe (verrouillé à la position actuelle)
Autom (réglage automatique)

La chaleur générée par le moteur est dissipée dans le flux d'air à l'aide de 2 radiateurs situé sous chaque emplanture d'aile.
Le flux d'air frais est contrôlé par 2 vérins hydraulique qui détermine la position d'un volet d'entrée et de

IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4

2 volets de sortie.
Tout ces volets, sont contrôlés par un sélecteur à 4 positions régler manuellement par le pilote. Les 2 volets de sortie bougent en concordance avec les volets de bord de fuite.
La commande à donc 4 positions ! "Auf", volets plein ouvert, "Zu" volets plein fermé, "Ruhe" volets verrouillés à leur position actuelles et "Autom".
Lorsque les volets de radiateurs sont en positions fermé et que les volets de bord de fuite sont rentrés, les volets de radiateurs restent légèrement entrouvert afin de maintenir un flux d'air minimum au travers des radiateurs.
La position Autom assure un réglage automatique des volets de radiateurs grâce à un thermostat. Ce thermostat est installé sur la tuyauterie de sortie du moteur et régule en temps normal la température aux environ de 80/85 °C.
Aux environs de 110 °C, le liquide de refroidissement peut être amené à bouillir. Le circuit de refroidissement continue de fonctionner mais avec une pression plus élevée. Cette pression est maintenu dans des valeurs raisonnable grâce à une soupape de surpression qui s'actionne lorsque la pression du circuit atteint environ 1 bar.
Dans ce cas, le liquide de refroidissement évacué par la soupape de surpression est évacué à l'extérieur juste au dessus des pipes d'échappement sur le coté droit du moteur. Ainsi le liquide se vaporise immédiatement et indique de manière concrète au pilote que son moteur vient de subir une surchauffe

<u>Indication au cockpit</u> :
L'indication est assuré par une jauge à double indication. En temps normal, c'est jauge indique la température du liquide de refroidissement mais si on appuie sur le bouton poussoir situé juste au dessus et qu'on le maintient alors on affiche la température du circuit d'huile



3 Altimètre.

C'est ce qui permet de régler l'altimètre (altimètre barométrique). L'altitude affichée est directement fonction de la différence entre la pression statique à l'altitude de l'avion et la pression à l'altitude "0" (il faut la pression atmosphérique MSL pour pouvoir afficher correctement l'altitude). Il existe bien sur une autre façon, si on connait l'altitude au sol au réglage de l'appareil, il suffit alors de l'afficher. Hi...

The altimeter worked via air pressure (like a barometer). As such, at ground level, the air pressure needle will change the altitude reading indicated by the main needle. So one day, it could be set at "zero"...but the next day could read 0.1 or even -0.1, as the surrounding air pressure changes.

By turning the millibar knob at the bottom, this turned the needle, the small white indicator at the top (980...975), AND white arrow simultaneously, so the pilot/ground crew could accurately re-adjust the main indicator to "zero" before flight. They all worked in conjunction with each other.

The red triangular indicators were moved by adjusting the E/F sliders. These only indicated 100m increments, and as such they could not indicate:

- the altitude that is desired to fly on the mission
- the base and tops of cloud when flying through cloud layers.
- to indicate the elevation of obstacles along the flight route

On the later altimeters (1943 and onwards), the white arrow and red "E/F" sliders were removed, as they were never used or needed.

The altimeter has a small adjustment wheel on the bottom of the instrument. This is used to adjust the indicators according to atmospheric pressure variations. Procedure was to adjust it for airfield altitude (zero altimeter on the runway) and then for sea level 0m (set altimeter to known airfield altitude). You see the little white triangle in the middle between E and F? This is an indicator you move while setting the altimeter up. The position of this indicator was marked for the runway set-up with the red E-triangle, and for the 0m set-up with the red F-triangle. In flight, you could then switch back and forth between a display of altitude above 0m and altitude above airfield by moving the white triangle back and forth between the F and E settings.

Naturally, altitude above 0m would be more interesting in normal flight, so usually you'd use the F setting, but for landing altitude above the airfield was more interesting, so you'd use the E setting.

IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4

La molette de calage altimétrique (au centre en bas de l'altimétre) est utilisée pour ajuster l'altimètre en fonction des variations de pression atmosphérique.

Cette molette déplace également le petit triangle blanc (situé entre les index E et F voir photo)

Les positions QFE et QFF de cet indicateur sont mémorisés par le positionnement des deux index (triangle rouge E (QFE) et triangle rouge F (QFF)) .

En vol, vous pouvez basculer entre un affichage QFE ou QFF en déplaçant simplement le triangle blanc sur un des deux repérés rouges.

4 Landing Take off Flight

Start and warm up the engine

- Use throttle control to set idle power.
- Start the engine. Cold engine (especially in winter) may not work steadily and may even stall at idle power - to avoid it increase the revs slightly.
- Increase revs to 1000 RPM to warm up the engine.

Take-off

- Lower flaps for 20 degrees (4 full turns of the flaps control wheel, watch the progress by special marks on the left flaps).
- Make sure there are no obstacles on the runway.
- Smoothly increase thrust to maximum.
- Use pedals to stay on the take-off route.
- The plane tends to turn left - parry it with the right rudder pedal.
- Take off will occur at 180 km/h. Avoid early take-off, alternatively the aircraft may not respond the controls properly, and the landing gear may get damaged.
- After takeoff, gain speed of 250 km/h. then raise the gear (can be checked by the signal lamps: red - raised, green - extended and fixed).
- Retract flaps.
- Start ascending after reaching 280 km/h.
- Takeoff mode (at 2700 RPM and 1,42 ata manifold pressure) should not last longer then 1 minute.

Acsending

- Climb with engine working at 2500 RPM and 1,30 ata manifold pressure, and keep speed at 280km/h.
- Cooling liquid temperature should not exceed 115°C, oil temperature should be kept between 70°-80°C (short time maximum – 85°C).

Forward flight.

- Maximum continuous power during forward flight - 2300 RPM and manifold pressure 1,15 ata.
- At contingency rating - 2700 RPM and manifold pressure 1,42 ata - not longer than 3 minutes.
- Speed limitation.
- Maximum limit speed with flaps down - 250 km/h.
- Maximum limit speed with extended gears - 350 km/h.
- Maximum limit speed in diving - 750 km/h. Warning! Propeller pitch changes slowly that's why diving, flying at maximum limit speed, and sharp t control movements can damage the engine.

IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4

Gliding flight and landing

- Gliding speed - 220 km/h.

Infos Forums --
The take-offs and landings feel pretty good, you definitely have to be careful and work with smooth control inputs. No "on rails" feeling. A bit less punishing than the DCS P-51 and CloD aircraft.

@Peally: I approach the runway at ~200 kph. Crossing the runway threshold I've slowed down to ~180kph. Then it's just a matter of slightly pulling back onto the stick until touchdown happens at ~ 170 kph. You should then still have a lot of runway to slow down.

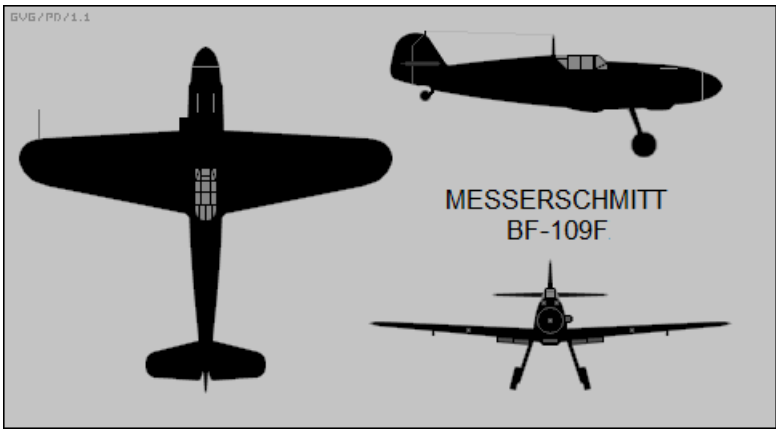
BTW the 109 in this vid was loaded with 75% fuel.

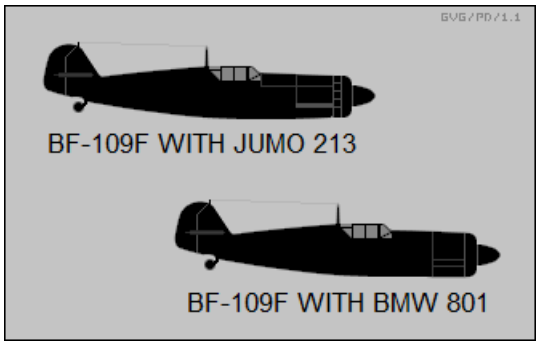
For BF-109 Cross wind landing (alph version)---forum

1) open flap 20 degree to slow down speed between 300 - 250
2) at speed 250 gear down. keep speed bet ween 250-220
3) open flap to 40 degree keep glinding speed at 220
4) for cross wind I keep my nose plane at left side of runway when meet at runway before cross head of runway
   gentle pull head up for tree point landing at speed 200 but take long time to speed drop at 180 for touchdown (gentle row rpm can help but cution for altermeter drop too fast)

when no seed bar show ,the altermeter at runway is 150 meter from sea level so at the final I forget about this point.
there is no narrow gear effect, between bf109 and LaGG3 which look very close characteristic when touch down.

5 Silhouettes





IL-2 STURMOVIK: Battle of Stalingrad
Messerschmitt Bf 109 F-4

6 Check-list--Janvier2014

Version 1.0 Dev Stage: Alpha 35/1 =38=Tatarenko

Before engine start up

1. Set Flossenstellung (adj stab) to zero
2. Nav lights on
3. Throttle to zero
4. Brakes On (back)
5. Cockpit to open
6. Flaps Up
7. *Systems to Automatic (pitch, radiators) ** not applicable yet*
8. Start Engine

Taxiing

1. Lock Tail wheel (forward). Unlock as necessary.
2. Brakes to 10%
3. Engine to 30%
4. Maintain view in front of nose by looking out of c/p
5. Keep constant speed during taxi
6. Check runway clear incl. landing a/c before joining

On Runway

1. Set brakes full on
2. Lock tailwheel (forward)
3. Close canopy
4. Check canopy is closed. Twice.
5. Flaps to take off (8 secs depression)
6. Check runway clear for t/o
7. Look behind for landing a/c
8. Right rudder
9. Release brakes
10. Full throttle
11. Slight left hand down at lift off

IL-2 STURMOVIK: Battle of Stalingrad

Messerschmitt Bf 109 F-4

Climbout

1. Retract gear once climbing
2. Retract flaps at safe alt and speed
3. Nav lights off
4. Flossenstellung (adj stab) forward
5. Reduce power to 1.2 ATA for climb.

Landing

1. Nav Lights On
2. Ensure Brakes are off
3. Flossenstellung (adj stab) to zero
4. Reduce Speed to under 300 kmh
5. Check Pattern clear
6. Full flaps
7. Gear Down
8. Check runway clear
9. Threshold 190-200 kmh
10. Apply brakes
11. Come to full stop before taxiing off the runway.
12. Open canopy for taxiing.