IL★2 STURMOVIK

CLIFFS OF DOVER BLITZ

DESERT WINGS TOBRUK

Short Manuals

TEAM FUSION SIMULATIONS

Table of Contents

De Havilland DH.82 Tiger Moth

General characteristics

- **Crew:** 2
- **Length:** 23 ft 11 in (7.29 m)
- **Wingspan:** 29 ft 4 in (8.94 m)
- **Height:** 8 ft 9 in (2.67 m)
- **Wing area:** 239 sq ft (22.2 m^2)
- **Empty weight:** 1,115 lb (506 kg)
- **Armament:** (A-1) 1x Vickers K Wingmount (.303 in)
  (A-2) 1x Schwarzlose MG M.7 (7.92 mm)
- **Bombs**: (1940 & A-1/2) 8x GP 20 lb Mk III

Starting, taxi, and take-off procedures

Apply chocks (k)
Open fuel cock (c, k)
Magnetos on (outside the cockpit on the left) (c, k)
Mixture lever to 100% (fully forward) (default)
Open throttle to 10%
Start engine by pressing 'i' (default)
Leave engine to idle on 10% throttle for at least 1 minute
Open throttle firmly and quickly to 100%. Adjust throttle to prevent engine stall
Keep engine at 1600 rpm for up to 1 minute
Close throttle to 10%
Remove chocks
Slowly increase power until aircraft starts to move
Steer by using left/right rudder inputs and throttle (p, k)
No brakes on this aircraft
Use ailerons in **opposite** direction for tighter turns
To take off, smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
Do not attempt to take off early, allow aircraft to fly off the ground naturally
At approx. 55–60 mph take-off and avoid climbing too steeply

Engine management

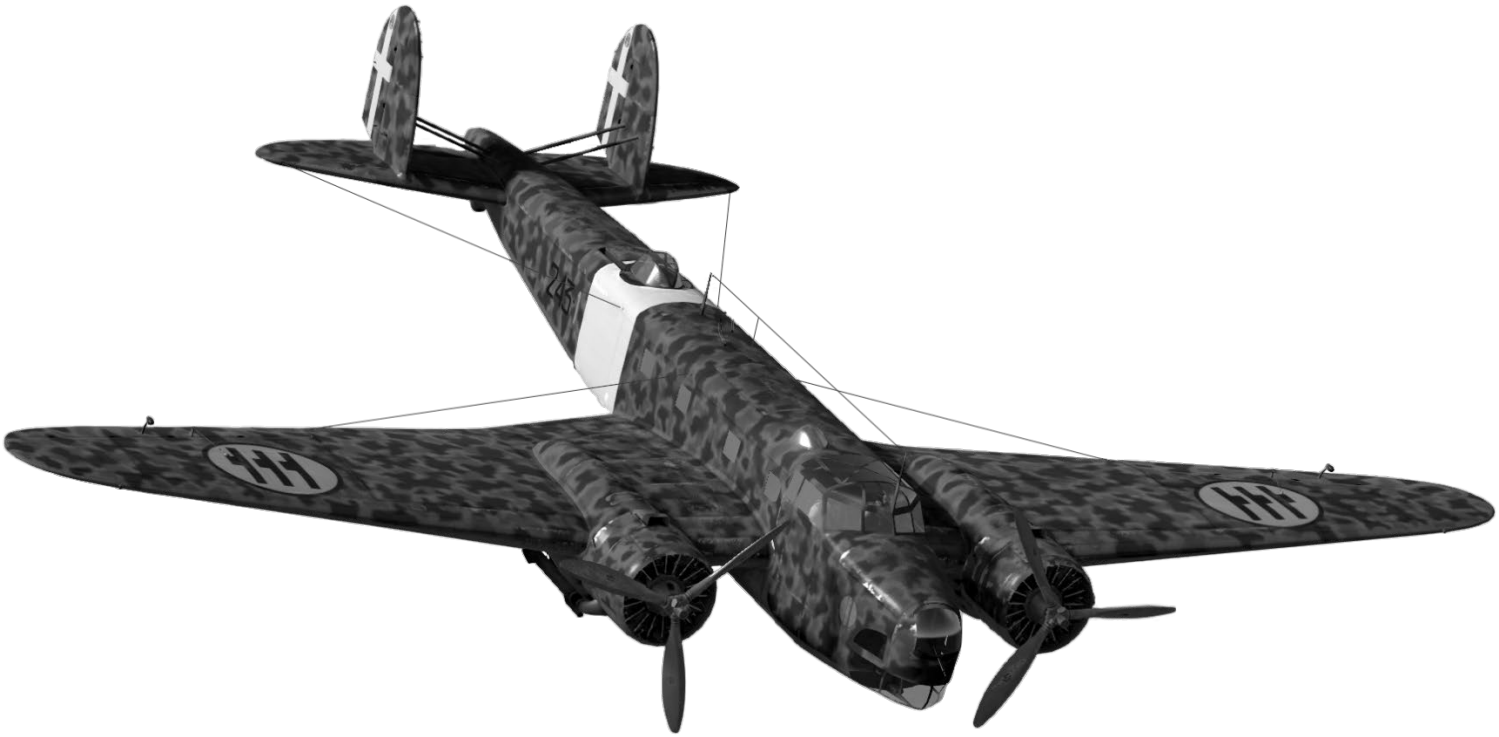
Settings for:	RPM	Speed
Cruise	1900 - 2050	80 - 90 mph
Climb	2100 **(30 min.)**	60 mph
Highest speed	2350 **(5 min.)**	107 mph
Never exceed 60 lb. per square inch oil pressure		

Landing procedure

Use throttle to adjust speed
On final approach reduce speed to approx. 55–60 mph for touchdown, apply gentle rudder skid to bleed off speed
After touchdown use light rudder inputs to steer until aircraft comes to a stop (p, k)
Remember there are no brakes on this aircraft
Use ailerons in **opposite** direction for tighter turns **after slowing down**
Apply chocks and turn off fuel cock and magnetos to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Fiat BR.20 Cicogna



General characteristics

- **Crew:** 5
- **Length:** 16.68 m (54 ft 9 in)
- **Wingspan:** 21.56 m (70 ft 9 in)
- **Height:** 4.75 m (15 ft 7 in)
- **Wing area:** 74 m^2 (800 sq. ft)
- **Empty weight:** 6,500 kg (14,330 lb)
- **Armament**: Defensive; 2x Breda S.A.F.A.T (7.7 mm)
  1x Breda S.A.F.A.T (12.7 mm)
- **Bombs**: 12x 100 – T, 100 kg 12x 50 – T, 50 kg
  12x 100 – M, 100 kg 4x 25 – T, 250 kg
  2x 500 – M/T, 500 kg 2x 800 – T, 800 kg

Starting, taxi, and take-off procedures

Apply chocks. Set magnetos on M 1+2 (k)
Set propeller pitch to 'Full fine' (levers fully forward 100%) (default) (c, k)
Ensure oil- and air radiators are closed (default) (c, k)
Select 'All Engines' (k) and open throttle to 10% **only**
Select engine 1 (k) and start (k), repeat with engine 2
Select 'All Engines' (k), leave engines to idle on 10% throttle for **at least four minutes**
Set 'Boost Cut-Out' to 'On' (c, k)
Open throttle firmly and quickly to 100%, then throttle back to 0%
Repeat until engines run smoothly then close throttle
If engines stop, repeat starting procedure
When oil temperature reaches 18°C aircraft is ready to taxi
Open oil radiator to 50% and air radiators to 100%
Release chocks (k)
Press once on brakes to release them (k, p)
Slowly increase power until the aircraft starts to move
Steer by using rudder and brakes (k, p)
On runway, lower flaps to 1st position (white quadrant on right side of cockpit) (k)
Apply chocks (k), open throttle to 110%, then release chocks (k)
Use light rudder inputs to steer
As speed increases tail will lift. Pull control stick back slightly to prevent nose over
At approx. 150–160 km/h increase back stick pressure to take-off
Raise undercarriage (c, k) and flaps (k)
Do not exceed 820mmHG/2200 rpm for more than three minutes

Engine management

Settings for:	Radiators (cowling flaps/oil)	ATA mmHG	RPM
Cruise	50% / 50%	670	2100
Climb	100% / 50%	740	2100 **(30 min.)**
Highest speed	as required (check temp.)	820	2200 **(3 min.)**
Never exceed temperatures of 260 °C cylinder head and 100 °C for oil			

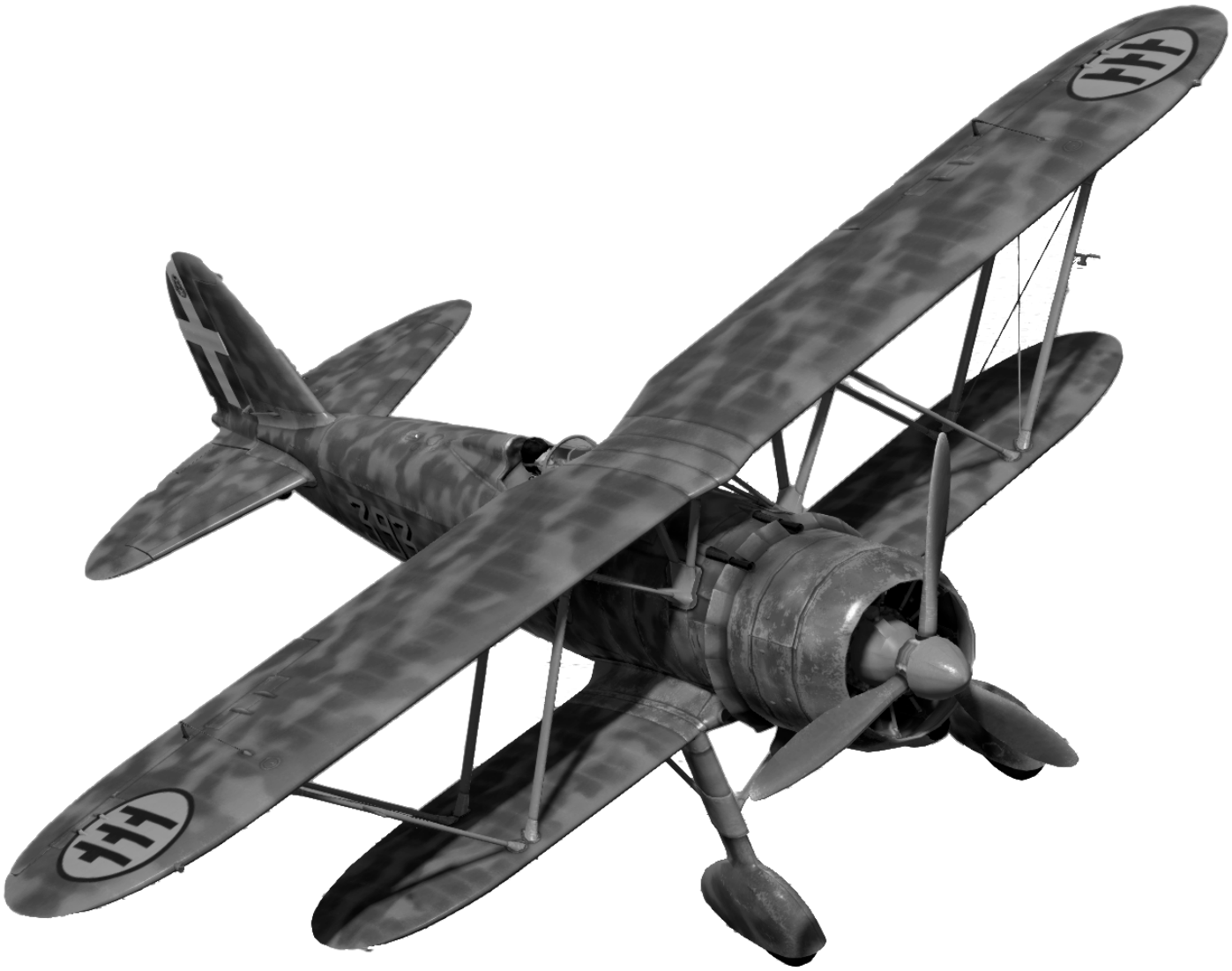
Landing procedure

Ensure 'Ventral Gunner Position' is stowed for landing
Slow aircraft speed to approx. 230 km/h / 2200 rpm
Select Flaps to 'full down' and lower undercarriage (c, k)
Approach airfield at approx. 175 km/h, reducing to approx. 165 km/h at runway threshold
Do not go below 155 km/h and fly aircraft onto the runway
After touchdown steer with rudder and brakes once aircraft has slowed down (p, k)
Apply chocks, set mixture to 0% and magnetos on M 0 to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals

Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Fiat CR.42 Falco



General characteristics

- **Crew:** 1
- **Length:** 8,25 m (27 ft 1 in)
- **Upper Wingspan:** 9.7 m (31 ft 10 in)
- **Lower Wingspan:** 6.5 m (21 ft 4 in)
- **Height:** 3.585 m (11 ft 9 in)
- **Wing area:** 22.4 m^2 (241 sq ft)
- **Empty weight:** 1,720 kg (3,791 lb)
- **Armament:** 2x Breda S.A.F.A.T (12.7 mm)
- **Bombs**: (Trop) 2x Semi AP 50 – T, 50 kg

Starting, taxi, and take-off procedures

Apply chocks. Set magnetos on M 1+2 (k)
Open both radiators to 100% (c, k)
Set prop pitch to fine (100%)
Turn temperature selector to position 5 (c, k)
Turn on boost cut-out (k)
Apply 8% throttle
Start engine (k, default key is 'i')
As soon as engine kicks in, open full throttle
Wait until engine stops shaking, then reduce throttle to 25%
Wait one minute for the engine to warm up to 30°C
Push to full throttle (110%). After coughing the engine will begin to run smoothly
Immediately reduce throttle to 0%
Remove chocks (k)
Press brakes once to ensure they are disengaged (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate with 110% throttle to approx. 160 km/h then pull stick smoothly to take-off
Reduce prop pitch to 75% (c, k)

Engine management

Settings for:	Cowl Flaps / Oil	ATA mmHG	RPM
Cruise	75% / 75%	720	2200
Climb	100% / 100%	790	2400
Highest speed	50% / 50%	890 (*)	2520
Never exceed 260 °C engine temperature in position 2 and 100 °C for oil			

(*) with WEP enabled (k)

Landing procedure

Reduce speed to below 200 km/h
Maintain approx. 180 km/h
Increase prop pitch to 100%
Open both radiators full (c, k)
Touchdown speed approx. 140–150 km/h
Maintain slight back pressure on joystick until low speed to avoid nosing over
Steer by using rudder and brakes (p, k)
Apply chocks, set mixture to 0% and magnetos on M0 to finish sortie (c, k)

Fiat G.50 Freccia

General characteristics

- **Crew:** 1
- **Length:** 8.01 m (26 ft 3 in)
- **Wingspan:** 10.99 m (36 ft 1 in)
- **Height:** 3.28 m (10 ft 9 in)
- **Wing area:** 18.25 m^2 (196.4 sq ft)
- **Empty weight:** 2,015 kg (4,442 lb)
- **Armament:** 2x Breda S.A.F.A.T (12.7 mm)

Starting, taxi, and take-off procedures

Apply chocks. Set magnetos on M 1+2 (k)
Open both radiators to 100% (c, k)
Set prop pitch to fine (100%)
Turn temperature selector to position 5 (c, k)
Turn on boost cut-out (k)
Apply 8% throttle
Start engine (k, default key is 'i')
Wait one minute for the engine to warm up
Push to full throttle (110%). After coughing the engine will begin to run smoothly
Immediately reduce throttle to 0%
Remove chocks (k)
Press brakes once to ensure they are disengaged (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate with 110% throttle to approx. 160 km/h then pull stick smoothly to take-off
Raise undercarriage (c, k)

Engine management

Settings for:	Cowl Flaps / Oil	ATA mmHG	RPM
Cruise	65% / 55%	720	2200
Climb	100% / 100%	790	2400
Highest speed	50% / 50%	890 (*)	2520
Never exceed 260 °C engine temperature in position 5 and 100 °C for oil			

(*) with WEP enabled (k)

Landing procedure

Reduce speed to below approx. 200 km/h
Lower flaps on approach (two stage) (c, k)
Lower landing gear (two stage) (c, k)
Maintain approx. 200 km/h
Increase prop pitch to 100%
Open both radiators full (c, k)
Touchdown speed approx. 150–160 km/h
Maintain slight back pressure on joystick until low speed to avoid nosing over
Steer by using rudder and brakes (p, k)
Apply chocks, set mixture to 0% and magnetos on M0 to finish sortie (c, k)

Macchi C.202 Folgore

General characteristics

- **Crew:** 1
- **Length:** 8.85 m (29 ft 0 in)
- **Wingspan:** 10.58 m (34 ft 9 in)
- **Height:** 3.49 m (11 ft 5 in)
- **Wing area:** 16.82 m^2 (181.0 sq ft)
- **Empty weight:** 2,350 kg (5,180 lb)
- **Armament:** 2x Breda S.A.F.A.T (12.7 mm)

Starting, taxi, and take-off procedures

Apply chocks. Set magnetos on M 1+2 (k)
Open both radiators (c, k)
Set MAS (c) to 'A' (automatic)
Open fuel cock (c, k) to 'Aperto'
Start engine (k, default key is 'i')
Open flaps to 20° (c, k)
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Maintain back pressure on joystick: The C.202 is **very** prone to nose over
Steer by using rudder and brakes (p, k)
On runway engage WEP (c, k) accelerate with full throttle to approx. 170 km/h then pull stick smoothly to take-off
Raise undercarriage and flaps (c, k)

Engine management

Settings for:	Radiators (water/oil)	ATA	Prop Pitch	RPM
Cruise	75% / 75%	1.23	A	2200
Climb	100% / 100%	1.35	S	2400 **(5 min.)**
Highest speed	50% / 50%	1.45 (*)	S	2400 **(1 min.)**
Never exceed a temperature of 100 °C for water and 105 °C for oil				

(*) with WEP enabled (k)

Landing procedure

Reduce speed to approx. 200 km/h
Lower flaps (c, k) and two stage landing gear (c, k)
Open both radiators full (c, k)
Touchdown speed approx. 150–160 km/h
Maintain slight back pressure on joystick until low speed to avoid nosing over
Steer by using rudder and brakes (p, k)
Apply chocks, lower fuel cock to 'Chiuso' and set magnetos on M0 to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Heinkel He 111

General characteristics

- **Crew:** 5
- **Length:** 16.4 m (53 ft 10 in)
- **Wingspan:** 22.6 m (74 ft 2 in)
- **Height:** 4 m (13 ft 1 in)
- **Wing area:** 87.6 m² (943 sq ft)
- **Empty weight:** 8,522 kg (18,787 lb)
- **Armament:** Defensive; 6x MG 15 (7.92 mm)
- **Bombs**: (H-2) 8x SC 250 8x SD 250 32x SC 50
  (H-6) 2x Lufttorpedo LT F5b 2x SC 500
  2x SC 1000 'Hermann'
  (P-2) 8x SC 250 8x SD 250 32x SC 50

Starting, taxi, and take-off procedures

Apply chocks and set magnetos on M 1+2 (k)
Select both engines (by default)
Open oil and water radiators to 100% (c, k). Set fuel cocks to 'Both' (c, k)
Ensure prop pitch for both engines are on 12 o'clock (k) (by default)
Select engine 1 (k) and start it (k, 'i' by default), repeat with engine 2
Select both engines (k)
Throttle up – observe RPMs to ensure both engines are in sync – throttle back to 0%
Remove chocks (k)
Slowly apply throttle and taxi using rudder and toe-brakes to steer (p)
Once aligned on the runway, apply chocks (k), lock tailwheel (optional) (k)
Ensure oil and water temperatures are at least 40°C before taking off
Throttle to 100% and release chocks. Steer with rudder and gentle toe brakes
Take off at approx. 150 km/h, do not let speed get to 200 km/h
Raise undercarriage immediately after lift-off (k)
Reduce to 1.23 ata and remain at or below 2300 rpm during climb out (c, k)

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.23	2300 **(30 min.)**
Highest speed	As required	1.3	2400 **(5 min.)**

Landing procedure

The He-111 bleeds speed slowly and floats, much more than other aircraft
Fully Open oil and water radiators to 100% (c, k)
Fly a very flat approach and ensure speed is at or below 200 km/h early in approach
Lower flaps once speed is below approx. 200 km/h (c, k)
Lower undercarriage (c, k)
Come over runway threshold at approx. 150 km/h
Touch down at approx. 140–150 km/h, **gradually** apply back stick pressure to avoid nose over
Use rudder to keep straight until under approx. 100 km/h then **cautiously** apply toe-brakes
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks and set magnetos on M 1+2 (k)
Select both engines (default)
Open oil and water radiators to 100% (c, k). Set fuel cocks to 'Both' (c, k)
Ensure prop pitch for both engines are on 12 o'clock (k) (default)
Select engine 1 (k) and start it (k, 'i' by default), repeat with engine 2
Select both engines (k)
Throttle up – observe RPMs to ensure both engines are in sync – throttle back to 0%
Remove chocks (k)
Slowly apply throttle and taxi using rudder and toe-brakes to steer (p)
Once aligned on the runway, apply chocks (k), lock tailwheel (optional) (k)
Ensure oil and water temperatures are at least 40°C before taking off
Throttle to 100% and release chocks. Steer with rudder and gentle toe brakes
Take off at approx. 150 km/h, do not let speed get to 200 km/h
Raise undercarriage immediately after lift-off (k)
Reduce to 1.15 ata and remain at or below 2300 rpm during climb out (c, k)

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.1	2200
Climb	100% / 100%	1.15	2300 **(30 min.)**
Highest speed	As required	1.35	2400 **(5 min.)**

Landing procedure

The He-111 bleeds speed slowly and floats, much more than other aircraft
Fully Open oil and water radiators to 100% (c, k)
Fly a very flat approach and ensure speed is at or below 200 km/h early in approach
Lower flaps once speed is below approx. 200 km/h (c, k)
Lower undercarriage (c, k)
Come over runway threshold at approx. 150 km/h
Touch down at approx. 140–150 km/h, **gradually** apply back stick pressure to avoid nose over
Use rudder to keep straight until under approx. 100 km/h then **cautiously** apply toe-brakes
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks and set magnetos on M 1+2 (k)
Select both engines (by default)
Open oil and water radiators to 100% (c, k). Set fuel cocks to 'Both' (c, k) and both superchargers forward to 'Automatic'
Ensure prop pitch for both engines is on 100% (k)
Select engine 1 (k) and start it (k, 'i' by default), repeat with engine 2
Select both engines (k)
Throttle up – observe RPMs to ensure both engines are in sync – throttle back to 0%
Remove chocks (k)
Slowly apply throttle and taxi using rudder and toe-brakes to steer (p)
Once aligned on the runway, apply chocks (k), lock tailwheel (optional) (k)
Ensure oil and water temperatures are at least 40°C before taking off
Throttle to 100% and release chocks. Steer with rudder and gentle toe brakes
Take off at approx. 150 km/h, do not let speed get to 200 km/h
Raise undercarriage immediately after lift-off (k)
Reduce to 1.25 ata (c, k) and set prop pitch to to achieve 2400 rpm during climb. Prop pitch will automatically change to RPM at this setting

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.25	2400 **(30 min.)**
Highest speed	As required	1.4	2600 **(1 min.)**

Landing procedure

The He-111 bleeds speed slowly and floats, much more than other aircraft
Fully Open oil and water radiators to 100% (c, k)
Fly a very flat approach and ensure speed is at or below 200 km/h early in approach
Lower flaps once speed is below approx. 200 km/h (c, k)
Lower undercarriage (c, k)
Come over runway threshold at approx. 150 km/h
Touch down at approx. 140–150 km/h, **gradually** apply back stick pressure to avoid nose over
Use rudder to keep straight until under approx. 100 km/h then **cautiously** apply toe-brakes
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Junkers Ju 87

General characteristics

- **Crew:** 2
- **Length:** 11.10 m (36 ft 5 in)
- **Wingspan:** 13.805 m (45 ft 3.5 in)
- **Height:** 4.01 m (13 ft 2 in)
- **Wing area:** 31.900 m^2 (343.37 sq ft)
- **Empty weight:** 2,712 kg (5,980 lb)
- **Armament:** 2x MG 17 (7.92 mm). Defensive; 1x MG 15 (7.92 mm)
- **Bombs** (central): 1x SC 250 1x SC 500 1x SD 250 1x SD 500
- **Bombs** (wings): 4x SC 50

Starting, taxi, and take-off procedures

Apply chocks (k) Magnetos on M 1+2 (c, k)
Open fuel cock (Fuel Tank Selector to 'Both') (c, k) and set supercharger fully forward to 'Automatic Mode' (0%)
Open oil and water radiators (c, k)
Set propeller pitch fully forward (c, k)
Start engine by pressing 'i' (default)
When oil at 15°C and water at 30°C ready for take-off
Remove chocks (k) and release brakes
To taxi, slowly increase power until the aircraft starts to move
Steer by using toe brakes and rudder
Open throttle to 100% (1.35 ata 1 min. max. limit)
Use light rudder inputs to steer
As speed increases pull control stick back slightly to prevent 'nose over'
At approx. 155–160 km/h take off, adjust to 1.15 ata/2300 rpm for climb out

Engine management

Settings for:	**Radiators**	**ATA**	**RPM**
Cruise	80%	1.0	2200 (up to 6000 m)
Climb	100%	1.15	2300
Highest speed	40%	1.35	2400 **(1 min.)**
Never exceed 95 ^{0}C water and 90 ^{0}C oil temperature			

Landing procedure

Fully open both 'Oil' and 'Water' radiators, set supercharger to automatic mode once under 1500m
Lower flaps on approach
Set propeller pitch to 'full fine' (100%) on final approach
Touch down speed approx. 150 km/h
Use light rudder inputs to steer
After touchdown keep back pressure on joystick to avoid nosing over
Steer by applying rudder and toe brakes carefully (c, k)
Apply chocks and turn off fuel cock to finish sortie (c, k)

Junkers Ju 88

General characteristics

- **Crew:** 4
- **Length:** 14.4 m (47 ft 3 in)
- **Wingspan:** 20 m (65 ft 7 in)
- **Height:** 4.8 m (15 ft 9 in)
- **Wing area:** 54.5 m^2 (587 sq ft)
- **Empty weight:** 8,350 kg (18,408 lb)
- **Armament:** (C-1/2/4) 3x MG 17 (7.92 mm), 1x MG FF/M (20 mm)
  (C-4 Late) 3x MG 17 (7.92 mm), 3x MG FF/M (20 mm)
  (C-4 Late) Defensive; 2x MG 15 (7.92 mm)
  (A-1) (C-1/2) Defensive; 3x MG 15 (7.92 mm)
  (A-5) Defensive; 4x MG 15 (7.92 mm)
- **Bombs** (front bay): (A-1/5) 18x SC 50
- **Bombs** (rear bay): (All variants) 10x SC 50
- **Bombs** (wings): (A-1/5) 2x SC 250 2x SD 250 4x SC250
  4x SD 250 2x SC 500 2x SD 500

Starting, taxi, and take-off procedures

Apply chocks (k), set magnetos on M 1+2 (k)
Select both engines (by default)
Open oil and water radiators to 100% (k), set fuel cocks to 'Both' (c, k)
Ensure prop pitch for both engines are on 12:00 (k) (default), dial is on engines
Select engine 1 (k) and start it (k, 'i' by default), repeat with engine 2
Select both engines (k)
Throttle up – observe RPMs to ensure both engines are in sync – throttle back to 0%
Remove chocks (k) and release brakes
Slowly apply throttle and taxi using rudder and toe-brakes to steer (p)
Once aligned on the runway, apply chocks (k), lock tailwheel (optional) (k)
Throttle to 100% and release chocks. Steer with rudder and gentle toe brakes
Take off **above** 160 km/h – do not let speed exceed 180 km/h on the ground
Apply **gentle** back stick to take-off – keep speed above 200 km/h when airborne (c, k)
Immediately after lift-off raise undercarriage and reduce pitch to 11:30 position (c, k)
Reduce throttle to approx. 90%

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	40% / 40% (on deck) 75% / 75% (altitude)	1.1	2200
Climb	100% / 100%	1.15	2300 **(30 min.)**
Highest speed	As required	1.35	2400 **(1 min.)**
Never exceed temperature of 95 °C for water and 90 °C for oil			

Landing procedure

Fully open oil and water radiators to 100% (c, k)
Reduce speed to below 250 km/h
Lower two-stage flaps (c, k)
Lower undercarriage (c, k),
Set prop-pitch to 12:00 position
Maintain approx. 200 km/h by adjusting throttle, trim aircraft (c, k)
Touch down at approx. 180 km/h, maintain back stick pressure to avoid nose down
Under 100 km/h steer with rudder and toe-brakes (p, k)
Apply chocks, turn off fuel cocks, set magnetos to M 0 to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks (k), set magnetos on M 1+2 (k)
Select both engines (default)
Open oil and water radiators to 100% (k), set fuel cocks to 'Both' (c, k)
Select prop pitch to 'Constant Speed'(k) and set to 100%
Select engine 1 (k) and start it (k, 'i' by default), repeat with engine 2
Select both engines (k)
Throttle up – observe RPMs to ensure both engines are in sync – throttle back to 0%
Remove chocks (k) and release brakes
Slowly apply throttle and taxi using rudder and toe-brakes to steer (p)
Once aligned on the runway, apply chocks (k), lock tailwheel (optional) (k)
Throttle to 100% and release chocks. Steer with rudder and gentle toe brakes
Take off **above** 160 km/h – do not let speed exceed 180 km/h on the ground
Apply **gentle** back stick to take-off – keep speed above 200 km/h when airborne (c, k)
Immediately after lift-off raise undercarriage and reduce prop pitch 85% (c, k) to maintain 2400 rpm and 1.25 ata

Engine management

Settings for:	Radiators	ATA	RPM
Cruise	40% (on deck) 75% (altitude)	1.15	2250
Climb	100%	1.25	2400 **(30 min.)**
Highest speed	As required	1.4	2600 **(1 min.)**
Never exceed temperature of 95 °C for water and 90 °C for oil			

Landing procedure

Fully open oil and water radiators to 100% (c, k)
Reduce speed to below 250 km/h
Lower two-stage flaps (c, k)
Lower undercarriage (c, k),
Maintain approx. 200 km/h by adjusting throttle, trim aircraft (c, k)
Touch down at approx. 180 km/h, maintain back stick pressure to avoid nose down
Under 100 km/h steer with rudder and toe-brakes (p, k)
Apply chocks, turn off fuel cocks, set magnetos to M 0 to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Messerschmitt Bf 108 Taifun

General characteristics

- **Crew:** 2
- **Length:** 8.29 m (27 ft 2 in)
- **Wingspan:** 10.5 m (34 ft 5 in)
- **Height:** 2.3 m (7 ft 7 in)
- **Wing area:** 16.4 m^2 (177 sq ft)
- **Empty weight:** 806 kg (1,777 lb)

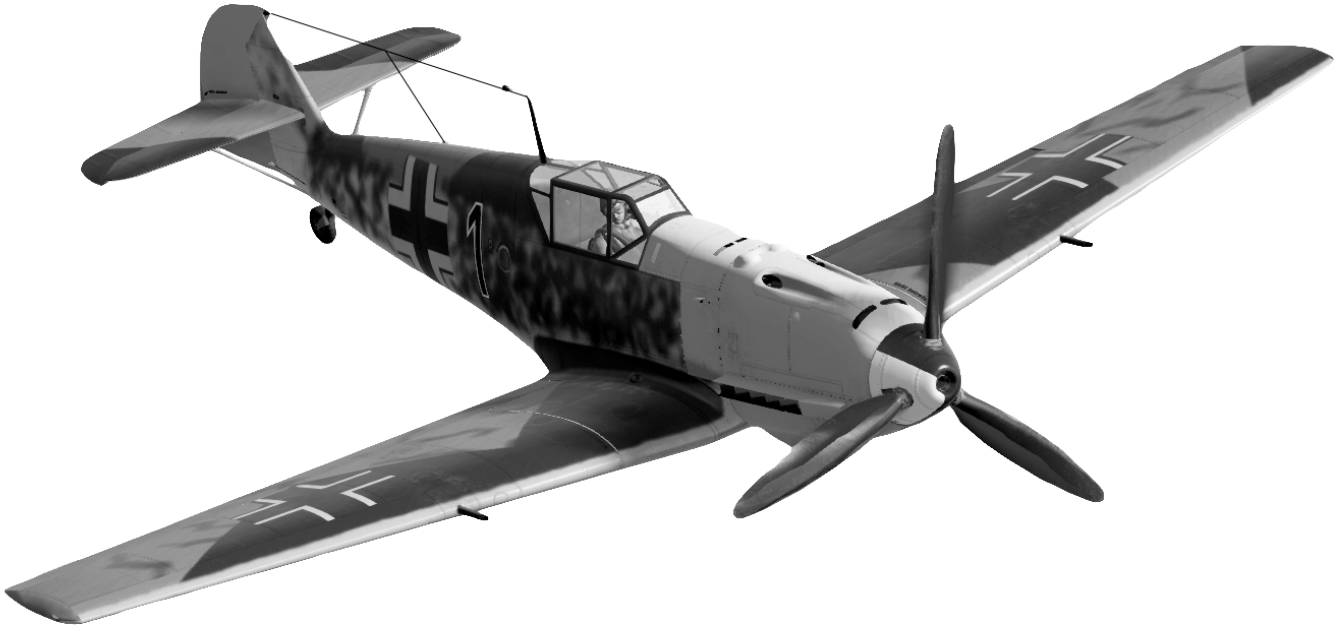
Starting, taxi, and take-off procedures
Apply chocks (k),
Set magnetos to M 1+2 (c, k)
Switch fuel cock to 'Center' (c, k)
Start engine (default key is 'i')
Remove chocks (k)
Open flaps to 15° (c, k)
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Before take-off ensure canopy is closed (c, k)
To take off smoothly increase throttle to 100%
Use light rudder input to steer (p)
As speed increases pull stick slightly back to prevent nose-over
At approx. 110 bis 120 km/h take off, raise under carriage (c, k) and flaps (c, k)
Do not exceed 2000 U/Min

Engine management

Settings for:	**RPM**	**Speed**
Cruise	1800	220 km/h
Climb	1850	170 km/h
Highest speed	2200	307 km/h
Never exceed 350 km/h or 2300 rpm nor 85 ^{0}C oil temp		

Landing procedure
Below 190 km/h lower flaps (c, k)
Below 180 km/h lower landing gear (c, k)
Trim nose up
Final approach with approx. 130 km/h
Maintain slight back pressure on stich to avoid nose-over
Carefully steer with rudder and toe-brakes (p, k)
Apply chocks and turn off fuel cocks (c, k)

Messerschmitt Bf 109 E



General characteristics

- **Crew:** 1
- **Length:** 8.64 m (28 ft 3.5 in)
- **Wingspan:** 9.87 m (32 ft 3.8 in)
- **Height:** 2.60 m (8 ft 5.3 in)
- **Wing area:** 16.20 m^2 (174.37 sq. ft)
- **Empty weight:** 2,010 kg (4,431 lb)
- **Armament:** (E-1 & /B) 4x MG 17 (7.92 mm)
  (E-3) 2x MG 17 (7.92 mm), 2x MG FF (20 mm)
  (E-4/7 & 4/B) 2x MG 17 (7.92 mm), 2x MG FF (20 mm)
- **Bombs**: (E-1/B & E-4/B) 4x SC 50 or 1x SC 250

Starting, taxi, and take-off procedures

Apply chocks (k) Magnetos on M 1+2 (c, k)
Open fuel cock (c, k)
Set propeller pitch clock to 12:00 (c, k)
Fully open both oil and water radiators (c, k)
Open throttle to 10%
Start engine by pressing 'i' (default)
To taxi remove chocks (k) and release brakes
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Ensure canopy is closed before attempting take off (c, k)
To take off smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
As speed increases pull control stick back slightly to prevent nose-over
At approx. 180–185 km/h take off, raise undercarriage and avoid climbing too steeply
Once approx. 200 km/h are reached adjust propeller pitch (k)

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.23	2300
Highest speed	As required check temp.	1.40 1.30	2400 (**1 min.**) 2400 (**5 min.**)
Never exceed 100 ^{0}C water and 105 ^{0}C oil temperature			

Landing procedure

Fully open both oil and water radiators (c, k)
Lower flaps on approach at approx. 250 km/h (c, k)
Lower landing gear at approx. 250 km/h (c, k)
Set propeller clock to 12:00 (c, k), do not exceed 1.3 ata and 2400 rpm
Touchdown speed approx. 165 km/h
Maintain slight back pressure on joystick to avoid nose-over (p, k)
Use light rudder inputs to steer
Apply toe-brakes carefully until full stop (p, k)
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Starting, taxi, and take-off procedures

Apply chocks (k) Magnetos on M 1+2 (c, k)
Open fuel cock (c, k)
Set propeller pitch clock to 12:00 (c, k), for E-4/B set to 'Manual'
Fully open both oil and water radiators (c, k)
Open throttle to 10%
Start engine by pressing 'i' (default)
To taxi remove chocks (k) and release brakes
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Ensure canopy is closed before attempting take off (c, k)
To take off smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
As speed increases pull control stick back slightly to prevent nose-over
At approx. 180–185 km/h take off, raise undercarriage and avoid climbing too steeply Once approx. 200 km/h are reached set propeller pitch to cruise, for E-4/B set to 'Automatic'
Do not exceed 1.30 ata/2400 rpm for more than five minutes (k)

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.23	2300
Highest speed	As required check temp.	1.45 1.35	2500 (**1 min.**) 2400 (**5 min.**)
Never exceed 100 ^{0}C water temperature and 105 ^{0}C oil temperature			

Landing procedure

Fully open both oil and water radiators (c, k)
Lower flaps on approach at approx. 250 km/h (c, k)
Lower landing gear at approx. 250 km/h (c, k)
Set propeller clock to 12:00 (c, k) (not for E-4/B)
Do not exceed 1.30 ata and 2400 rpm
Touchdown speed approx. 165 km/h
Maintain slight back pressure on joystick to avoid nose-over (p, k)
Use light rudder inputs to steer
Apply toe-brakes carefully until full stop (p, k)
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Starting, taxi, and take-off procedures

Apply chocks (k) Magnetos on M 1+2 (c, k)
Open fuel cock (c, k)
Set prop pitch to 'Manual' (k)
Set propeller pitch clock to 12:00 (c, k)
Fully open both oil and water radiators (c, k)
Open throttle to 10%
Start engine by pressing 'i' (default)
To taxi remove chocks (k) and release brakes
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Ensure canopy is closed before attempting take off (c, k)
To take off smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
As speed increases pull control stick back slightly to prevent nose-over
At approx. 180–185 km/h take off, raise undercarriage and avoid climbing too steeply
Once approx. 200 km/h are reached set propeller pitch to 'Auto' (k)

Engine management

Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.23	2300
Highest speed	As required check temp.	1.40 1.30	2500 **(1 min.)** 2400 **(5 min.)**
Never exceed 100 ^{0}C water temperature and 105 ^{0}C oil temperature			

Landing procedure

Fully open both oil and water radiators (c, k)
Lower flaps on approach at approx. 250 km/h (c, k)
Lower landing gear at approx. 250 km/h (c, k)
Set prop pitch to 'Manual' (k), set propeller clock to 12:00 (c, k)
Do not exceed 1.30 ata and 2400 rpm
Touchdown speed approx. 165 km/h
Maintain slight back pressure on joystick to avoid nose-over (p, k)
Use light rudder inputs to steer
Apply toe-brakes carefully until full stop (p, k)
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks (k) Magnetos on M 1+2 (c, k)
Open fuel cock (c, k)
Set propeller pitch mode to 'Manual' (k)
Set propeller pitch clock to 12:00 (c, k)
Fully open both oil and water radiators (c, k)
Open throttle to 10%
Start engine by pressing 'i' (default)
To taxi remove chocks (k) and release brakes
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Ensure canopy is closed before attempting take off (c, k)
To take off smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
As speed increases pull control stick back slightly to prevent 'nose over'
At approx. 180–185 km/h take off, raise undercarriage and avoid climbing too steeply
Once approx. 300 km/h is reached set propeller pitch mode to 'Auto' (k)

Engine management

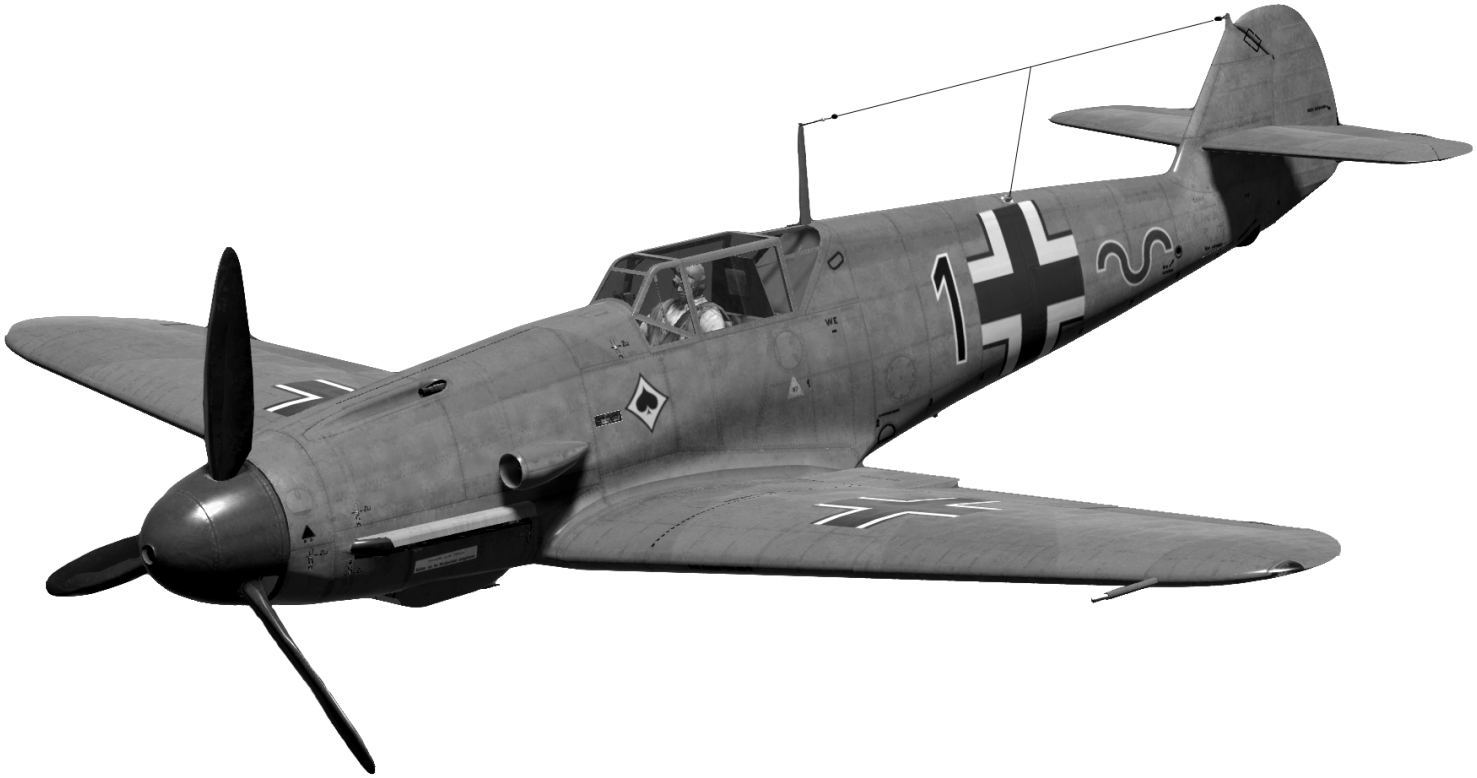
Settings for:	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.25	2400
Highest speed	As required check temp.	1.35	2600 **(5 min.)**
Never exceed 100 ^{0}C water temperature and 105 ^{0}C oil temperature			

Landing procedure

Fully open both oil and water radiators (c, k)
Lower flaps on approach at approx. 250 km/h (c, k)
Lower landing gear at approx. 250 km/h (c, k)
Set propeller pitch mode to 'Manual' (k)
Set propeller pitch clock to 12:00 (c, k)
Use throttle to not exceed 1.30 ata / 2400 rpm for more than five minutes
Touchdown speed approx. 165 km/h
Maintain slight back pressure on joystick to avoid nose over (p, k)
Use light rudder inputs to steer
Apply toe-brakes carefully until full stop (p, k)
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Messerschmitt Bf 109 F



General characteristics

- **Crew:** 1
- **Length:** 8.94 m (29 ft 3.3 in)
- **Wingspan:** 9.97 m (32 ft 7 in)
- **Height:** 2.45 m (8 ft 0.3 in)
- **Wing area:** 16.10 m^2 (173.29 sq. ft)
- **Empty weight:** 2,080 kg (4,585 lb)
- **Armament:** (F-2/4) 2x MG 17 (7.92 mm), 1x MG 151 (15 mm)
  (F-4) 2x MG 17 (7.92 mm), 1x MG 151 (20 mm)
  (F-4 & /R1 & /Z) 2x MG 151/20 (20 mm) Gondola

Starting, taxi, and take-off procedures

Apply chocks (k), open fuel cock (c, k), Magnetos on M 1+2 (c, k)
Set propeller pitch clock to 12:00 (c, k)
Set radiators to 'Automatic' (c, k) (close air filter door on trop. version)
Open throttle to 10%, start engine by pressing 'i' (default)
To taxi remove chocks (k) and release brakes
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Ensure canopy is closed before attempting take off (c, k)
To take off smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
As speed increases pull control stick back slightly to prevent nose-over
At approx. 180–185 km/h take off, raise two-stage undercarriage and avoid climbing too steeply

Engine management

Settings for:	**Radiators**	**ATA**	**RPM**
Cruise	Automatic	1.15	2300
Climb	Automatic	1.25	2400
Highest speed	Automatic	1.35	2600 **(1 min.)**
Never exceed 110 ^{0}C water temperature and 80 ^{0}C oil temperature			

Landing procedure

Fully open both oil and water radiators (c, k) (close air filter door on trop. version)
Lower flaps and two-stage landing gear on approach at approx. 250 km/h (c, k)
Touchdown speed approx. 175 km/h
Maintain slight back pressure on joystick to avoid nose over (p, k)
Use light rudder inputs to steer
Apply toe-brakes carefully until full stop (p, k)
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Starting, taxi, and take-off procedures

Apply chocks (k), open fuel cock (c, k), Magnetos on M 1+2 (c, k)
Set propeller pitch clock to 12:00 (c, k)
Set radiators to 'Automatic' (c, k) (close air filter door on trop. version)
Open throttle to 10%, start engine by pressing 'i' (default)
To taxi remove chocks (k) and release brakes
Slowly increase power until aircraft starts to move
Steer by using rudder and toe-brakes (p, k)
Ensure canopy is closed before attempting take off (c, k)
To take off smoothly increase throttle to 100%
Use light rudder inputs to steer (p, k)
As speed increases pull control stick back slightly to prevent nose-over
At approx. 180–185 km/h take off, raise two-stage undercarriage and avoid climbing too steeply

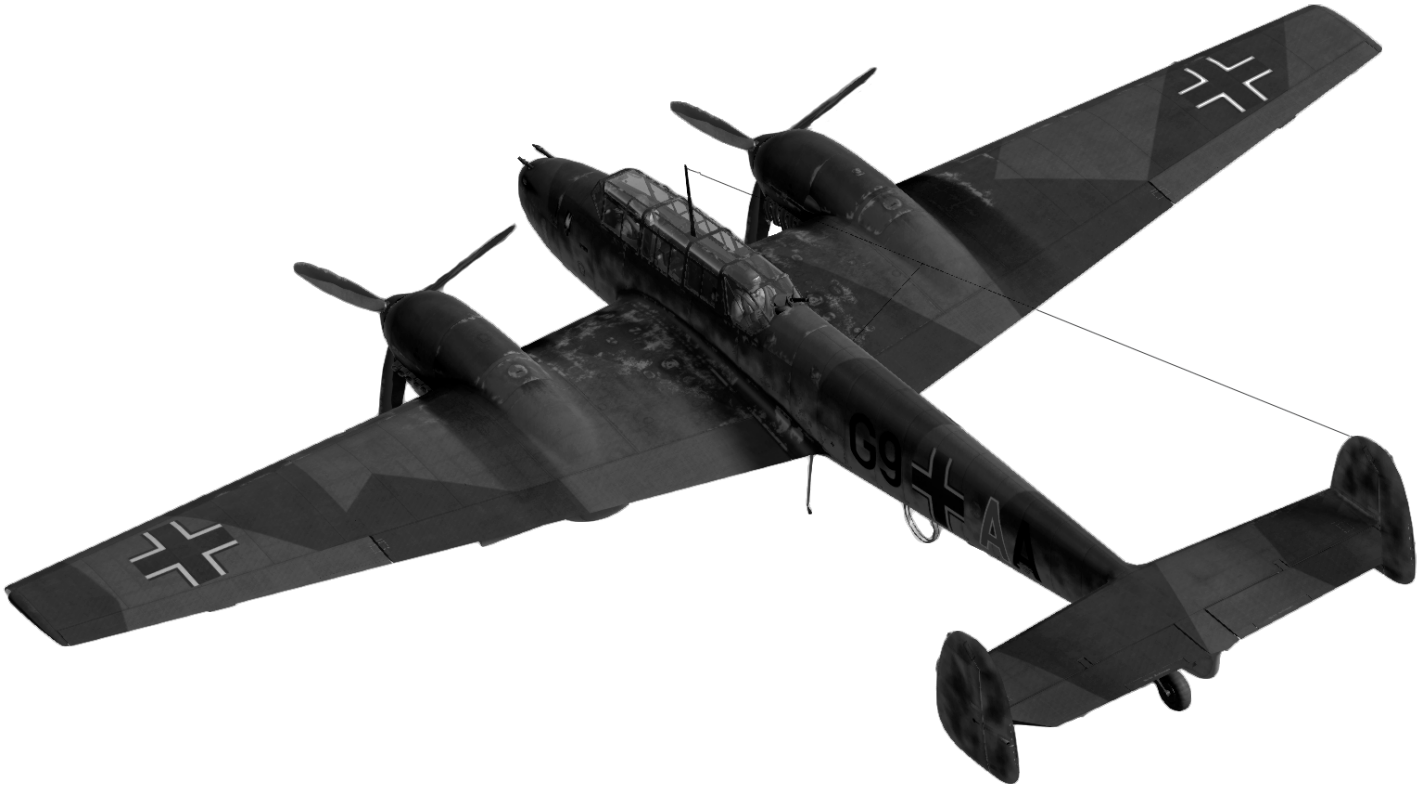
Engine management

Settings for:	**Radiators**	**ATA**	**RPM**
Cruise	Automatic	1.15	2300
Climb	Automatic	1.30	2500
Highest speed	Automatic	1.42	2700 (**1 min.**)
Never exceed 115 ^{0}C water temperature and 85 ^{0}C oil temperature			

Landing procedure

Fully open both oil and water radiators (c, k) (close air filter door on trop. version)
Lower flaps and two-stage landing gear on approach at approx. 250 km/h (c, k)
Touchdown speed approx. 175 km/h
Maintain slight back pressure on joystick to avoid nose over (p, k)
Use light rudder inputs to steer
Apply toe-brakes carefully until full stop (p, k)
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Messerschmitt Bf 110



General characteristics

- **Crew:** 2
- **Length:** 12.07 m (39 ft 7.25 in)
- **Wingspan:** 16.24 m (53 ft 3.75 in)
- **Height:** 4.12 m (13 ft 6.5 in)
- **Wing area:** 38.40 m^2 (413.33 sq ft)
- **Empty weight:** 5,308 kg (11,702 lb)
- **Armament:** (C-2/4/7 & /B) 4x MG 17 (7.92 mm), 2x MG FF (20 mm)
  (C-2/4/6/7 & /B) Defensive; 1x MG 15 (7.92 mm)
  (C-6) 4x MG 17 (7.92 mm) 1x MK – 101 (30 mm)
- **Bombs**: (4/B & C-7) 2x SD 250/500 or 2x SC 250/500

Starting, taxi, and take-off procedures

Apply chocks, Magnetos on m 1+2 (c, k)
Open both oil and water radiators 100% (c, k)
Engine 1 and 2 fuel cocks fully forward ('both') open (c, k)
Select engine 1 (k), and start engine 1 (k), repeat for engine 2
Select both engines (k) and throttle up – observe rpms to ensure both engines are in synch
Prop pitch is manual and has to be constantly adjusted to never exceed engine limits
Remove chocks (k) and release brakes
Slowly apply throttle and taxi using rudder and toe-brakes to control direction of travel (p)
Turn aircraft towards take off direction and use toe-brakes to stop aircraft (p)
Apply chocks (k)
Increase throttle to 100% using rudder to keep aircraft straight
Remove chocks (k)
Take off at approx. 150–180 km/h – do not let speed get to 200 km/h on the ground
Raise undercarriage immediately after take-off (c, k)
Once above 300 km/h carefully trim aircraft. Trim has to be constantly adjusted

Engine management

Settings for	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200
Climb	100% / 100%	1.23	2300
Highest speed	As required	1.30	2400 **(5 min.)**
Never exceed temperature of 100 °C for water and 105 °C for oil (Keep both below 95 °C recommended)			

Landing procedure

Fully open oil and water radiators (c, k)
Once airspeed is below 240 km/h lower two-stage flaps and two-stage undercarriage (c, k)
Slow down to approx. 200 km/h
Touch down at approx. 150–180 km/h, maintain back pressure on joystick to prevent nose over
Gently apply toe-brakes once below approx. 130 km/h
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks. Magnetos on M 1+2 (k)
Open both oil and water radiators 100% (c, k)
Engine 1 and 2 fuel cocks fully forward ('both') open (c, k)
Select engine 1 (k), and start engine 1 (k), repeat for engine 2
Select both engines (k) and throttle up - observe rpms to ensure both engines are in synch
Select manual prop pitch and reduce pitch by 30 mins to 11:25 position (c, k) then toggle auto prop pitch on (k)
Remove chocks (k) and release brakes
Slowly apply throttle and taxi using rudder and toe-brakes to control direction of travel (p)
Turn aircraft towards take off direction and use toe-brakes to stop aircraft (p)
Apply chocks (k)
Increase throttle to 100% using rudder to keep aircraft straight
Remove chocks (k)
Take off at approx. 150–180 km/h – do not let speed get to 200 km/h on the ground
Raise undercarriage immediately after take-off (c, k)
Once above 300 km/h carefully trim aircraft. Trim has to be constantly adjusted

Engine management

Settings for	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200 (auto pitch)
Climb	100% / 100%	1.23	2300 (auto pitch)
Highest speed	Adjust while watching temps	1.35 1.45	2400 (**5 min.**) 2500 (**1 min.**)
Never exceed temperature of 100 °C for water and 105 °C for oil (Keep both below 95 °C recommended)			

Landing procedure

Fully open oil and water radiators (c, k)
Once airspeed is below 240 km/h lower two-stage flaps and two-stage undercarriage (c, k)
Slow down to approx. 200 km/h
Touch down at approx. 150–180 km/h, maintain back pressure on joystick to prevent nose over
Gently apply toe-brakes once below approx. 130 km/h
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks. Magnetos on M 1+2 (k)
Open both oil and water radiators 100% (c, k)
Engine 1 and 2 fuel cocks fully forward ('both') open (c, k)
Select engine 1 (k), and start engine 1 (k), repeat for engine 2
Select both engines (k) and throttle up - observe rpms to ensure both engines are in synch
Select manual prop pitch and reduce pitch by 30 mins to 11:25 position (c, k) then toggle auto prop pitch on (k)
Remove chocks (k) and release brakes
Slowly apply throttle and taxi using rudder and toe-brakes to control direction of travel (p)
Turn aircraft towards take off direction and use toe-brakes to stop aircraft (p)
Apply chocks (k)
Increase throttle to 100% using rudder to keep aircraft straight
Remove chocks (k)
Take off at approx. 150–180 km/h – do not let speed get to 200 km/h on the ground
Raise undercarriage immediately after take-off (c, k)
Once above 300 km/h carefully trim aircraft. Trim has to be constantly adjusted

Engine management

Settings for	Radiators (water/oil)	ATA	RPM
Cruise	50% / 50%	1.15	2200 (auto pitch)
Climb	100% / 100%	1.25	2400 (auto pitch)
Highest speed	Adjust while watching temps	1.35	2600 **(5 min.)**
Never exceed temperature of 100 °C for water and 105 °C for oil (keep both below 95 °C recommended)			

Landing procedure

Fully open oil and water radiators (c, k)
Once airspeed is below 240 km/h lower two-stage flaps and two-stage undercarriage (c, k)
Slow down to approx. 200 km/h
Touch down at approx. 150–180 km/h, maintain back pressure on joystick to prevent nose over
Gently apply toe-brakes once below approx. 130 km/h
Apply chocks and turn off fuel cocks to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Bristol Beaufighter

General characteristics

- **Crew:** 2
- **Length:** 41 ft 4 in (12.60 m)
- **Wingspan:** 57 ft 10 in (17.63 m)
- **Height:** 15 ft 10 in (4.83 m)
- **Wing area:** 503 sq ft (46.7 m^2)
- **Empty weight:** 15,386 lb (6,979 kg)
- **Armament:** (1C/F/F Late) 4x Hispano Mk I (20 mm), 6x Browning .303 Mk II
- **Bombs**: (1C) 2x GP 250 lb Mk IV or 2x GP 500 lb Mk IV

Starting, taxi and take-off procedures

Apply chocks (k) turn on magnetos 1 and 2 for both engines
Turn the red and green rotary fuel cocks on the left side to 'Inner Tanks' (c, k)
Open radiators (c, k)
Turn on boost cut-out (c, k)
Set prop pitch to Fine (100%) (c, k)
Apply 10% throttle
Select engine 1 (k), start engine (k default key is 'i')
Select engine 2 (k), start engine (k default key is 'i')
Select both engines (k)
Wait approx. one minute, then push throttle fully forward
After some coughing the engines should catch and run smoothly
If an engine stops, reselect this engine, reduce throttle to 10% start again and wait a little longer before opening throttle fully again
Re-select both engines (k)
Remove chocks (k) release brakes (k)
Slowly increase throttle until aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tight turns apply brakes, then rudder and throttle (p, k)
On runway accelerate with full throttle to approx. 105 mph then pull stick smoothly for take-off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiators**	**Boost**	**RPM**
Cruise	55%	+1.0	2400
Climb	75%	+2.5	2400
Highest speed	As required	+4.0	2800 **(5 min.)**
Never exceed engine temperature of 260 °C, oil max. 90 °C Toggle charger at 6500 ft (climb) or 3500 ft (combat)			

Landing

Set prop pitch to 100% (c, k)
Lower landing gear at approx. 160 mph (c, k)
Lower flaps at approx. 140 mph (c, k)
Approach speed approx. 100 mph, touch-down at 95 mph
After touch-down maintain slight back pressure on joystick to avoid nose over
Steer carefully with rudder and brakes (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi and take-off procedures

Apply chocks (k) turn on magnetos 1 and 2 for both engines
Turn the red and green rotary fuel cocks on the left side to 'Inner Tanks' position (c, k)
Open radiators (c, k)
Turn on boost cut-out (c, k)
Set prop pitch to Fine (100%) (c, k)
Apply 10% throttle
Select engine 1 (k), start engine (k default key is 'i')
Select engine 2 (k), start engine (k default key is 'i')
Select both engines (k)
Wait approx. one minute, then push throttle fully forward
After some coughing the engines should catch and run smoothly
If an engine stops, reselect this engine, reduce throttle to 10% start again and wait a little longer before opening throttle fully again
Re-select both engines (k)
Remove chocks (k) release brakes (k)
Slowly increase throttle until aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tight turns apply brakes, then rudder and throttle (p, k)
On runway accelerate with full throttle to approx. 105 mph then pull stick smoothly for take-off
Raise undercarriage (c, k)

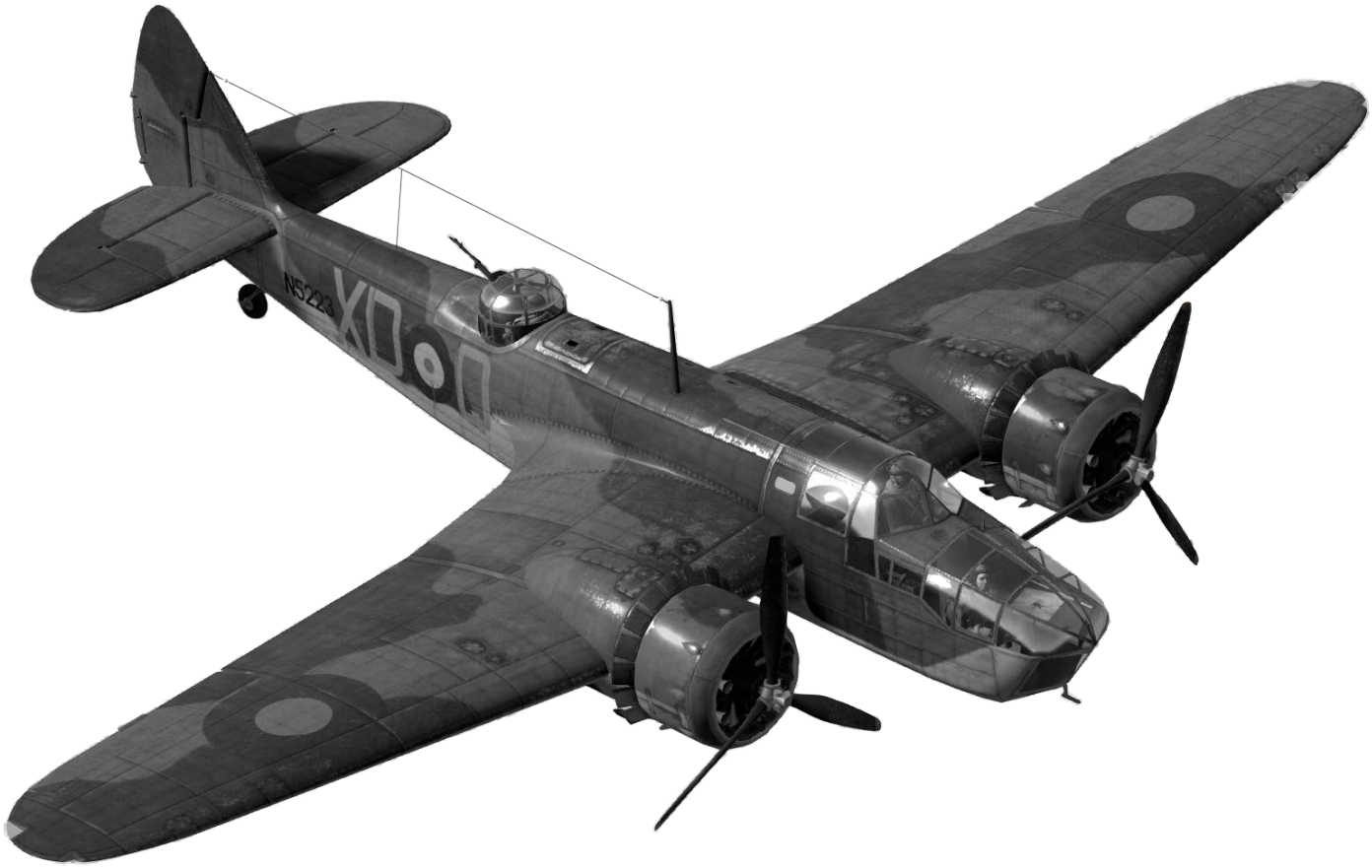
Engine management

Settings for:	**Radiators**	**Boost**	**RPM**
Cruise	55%	+2.5	2500
Climb	75%	+3.5	2500
Highest speed	As required	+6.75	2800 **(5 min.)**
Never exceed engine temperature of 280 °C, oil max. 90 °C Toggle charger at 5000 ft (climb) or 3500 ft (combat)			

Landing

Set prop pitch to 100% (c, k)
Lower landing gear at approx. 160 mph (c, k)
Lower flaps at approx. 140 mph (c, k)
Approach speed approx. 100 mph, touch-down at 95 mph
After touch-down maintain slight back pressure on joystick to avoid nose over
Steer carefully with rudder and brakes (c, k)

Bristol Blenheim



General characteristics

- **Crew:** 3
- **Length:** 42 ft 7 in (12.98 m)
- **Wingspan:** 56 ft 4 in (17.17 m)
- **Height:** 9 ft 10 in (3.00 m)
- **Wing area:** 469 sq ft (43.6 m^2)
- **Empty weight:** 9,790 lb (4,441 kg)
- **Armament:** (IV) 1x Browning .303 Mk II
  (NF & IVF) 5x Browning .303 Mk II
  (IV & IVF) Defensive; 1x Vickers .303
  (IV Late & IVF Late) Defensive; 2x Browning 303
- **Bombs**: (IV & Late) 2x GP 500 lb Mk IV or 4x GP 250 lb Mk IV or 12x GP 40 lb Mk III
- **Bombs** (rack): (All variants) 8x GP 40 lb Mk III

Starting, taxi, and take-off procedures

Apply chocks (k), turn Magnetos 1 and 2 for both engines on (c, k)
Turn the green and the red rotary fuel cocks on the right side of the cockpit to 'Inner Tanks' position (c, k)
Open radiators (c, k)
Turn on boost cut-out (k)
Select fine prop pitch 100% (c, k)
Apply 10% throttle
Select engine 1 (k) and start it (k, default key is 'i')
Select engine 2 (k) and start it (k, default key is 'i')
Select both engines (k)
Wait three minutes then push throttle forward to 100%
After some coughing, engines should catch and start to run smoothly
If an engine stops, select that engine, reduce boost to 10%, start it again and wait one minute longer before opening throttle to 100%.
Reselect both engines, then throttle back to 10%
Remove chocks (k)
Brakes off (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k, c)
On runway accelerate (full throttle) to approx. 100 mph then pull stick smoothly to take off
Raise undercarriage (c, k)
After take-off and reaching approx. 140 mph, reduce prop pitch to coarse (0%)

Engine management

Settings for:	Radiators (Cylinder Head Temp)	Boost	Prop Pitch	RPM
Cruise	50%	+3.5	Coarse	2400
Climb	50%	+5	Coarse	2100 - 2400
Highest speed	35%	+9 (*)	Coarse	2750 **(5 min.)**
Never exceed temperature of 235 °C for cylinder head temperature, 85 °C for oil				

(*) With 'Boost Cut-Out' enabled (k)

Landing procedure

Lower flaps on approach at approx. 140 mph (c, k)
Set prop pitch to fine (100%)
Press brakes once to ensure they are disengaged (k)
Lower landing gear at approx. 120 mph (c, k)
Touchdown speed approx. 90 mph
After touchdown, maintain back pressure on joystick until low speed, to avoid nosing over
Steer by applying rudder and brakes carefully apply brakes carefully (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Dewoitine D.520

General characteristics

- **Crew:** 1
- **Length:** 8.6 m (28 ft 3 in)
- **Wingspan:** 10.2 m (33 ft 6 in)
- **Height:** 2.57 m (8 ft 5 in)
- **Wing area:** 15.87 m2 (170.8 sq ft)
- **Empty weight:** 2,123 kg (4,680 lb)
- **Armament:** 4x MAC 1934 M39 (7.5 mm), 1x Hispano Mk I (20 mm)

Starting, taxi, and take-off procedures

Apply chocks (k)
Open fuel cocks 1 and 2' (c, k)
Open both radiators full (c, k)
Apply 10% throttle
Start engine (k, default key is 'i')
Run engine until oil temperature reaches 30°C and water temperature 40°C
Set prop pitch to 'Auto' for taxiing and take of (c, k)
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k), the aircraft turns very slowly
Make sure that cabin is closed prior to take-off
On runway accelerate lifting the tail as soon as possible. At approx. 100 km/h, pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiator**	**ATA**	**RPM**
Cruise	60%	1.0	2200
Climb	As required	1.17	2400
Highest speed	As required	1.28	2520 **(3 min.)**
Never exceed 125 ^{0}C water temperature, 100 ^{0}C oil For combat maneuvers never load more than 62% fuel!			

Landing procedure

Open both radiators full (c, k)
Lower airspeed to below 220 km/h
Lower flaps and landing gear on approach at approx. 180 km/h (c, k)
Adjust speed and touch down at approx. 130 km/h
After touchdown, maintain back pressure on joystick until low speed to avoid nosing over
Apply brakes carefully (c, k)
Steer by applying rudder and brakes carefully (c, k)
Apply chocks and close fuel cock to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Gloster Gladiator

General characteristics

- **Crew:** 1
- **Length:** 27 ft 5 in (8.36 m)
- **Wingspan:** 32 ft 3 in (9.83 m)
- **Height:** 11 ft 9 in (3.58 m)
- **Wing area:** 323 sq ft (30.0 m^2)
- **Empty weight:** 3,626 lb (1,645 kg)
- **Armament:** 4x Browning .303 Mk II

Starting, taxi, and take-off procedures

Apply chocks (k)
Switch on both magnetos (c, k)
Switch on fuel cock to '1 Auxiliary (Gravity)' (c, k)
Set mixture to 100% (c, k)
Set air intake shutter (carburettor heat) to 'closed' (0%) (c, k)
Set oil radiator dial to 'cooler on' (c, k)
Apply 10% throttle
Start engine (k, default key is 'i')
Wait for engine temperature to reach 26–27°C then push throttle forward to 100%
After some coughing the engine should catch and start to run smoothly
Throttle back to idle
Set fuel cock to 'main' (c, k)
Set air intake shutter (1 carburettor heat) to 'open' (100%) (c, k)
Remove chocks (k), release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate to approx. 70–80 mph, then pull stick smoothly to take off
Maintain desired temperatures with oil radiator settings

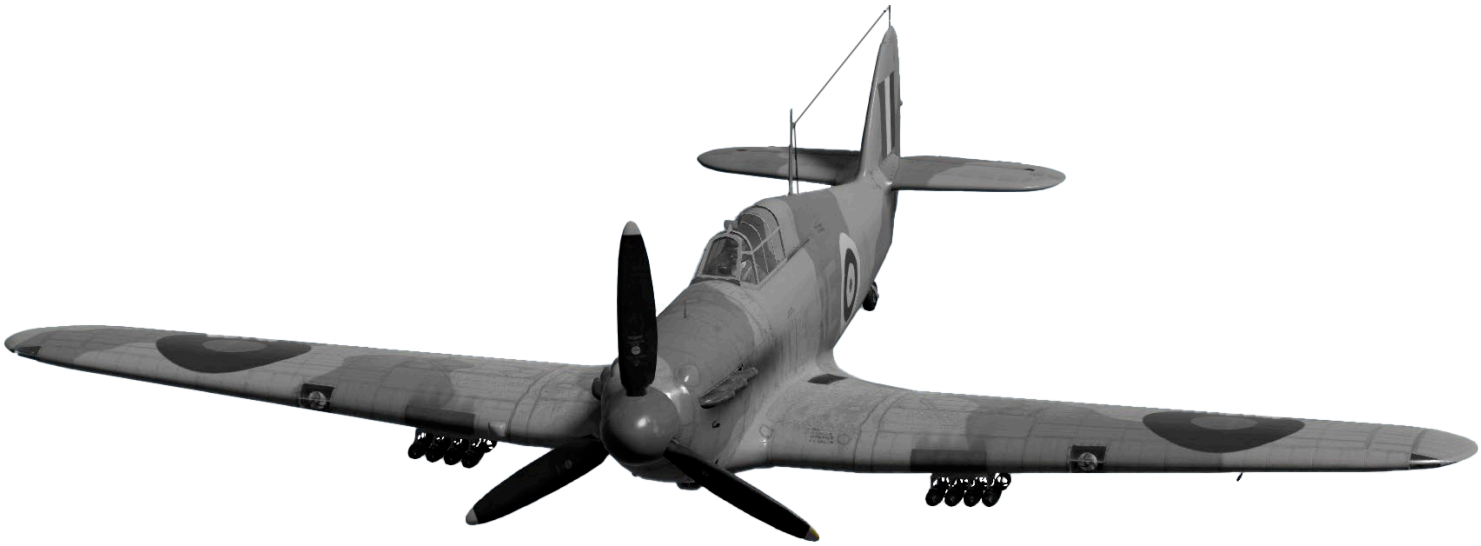
Engine management

Settings for:	Oil radiator	Speed	Boost	RPM
Cruise	Open	170 mph	+3	2200
Climb	Open	170 mph	+5	2400
Highest speed	As required	243 mph	+5.75	2750
Never exceed engine temperature of 240 °C and oil temperature of 85 °C				

Landing procedure

Set air intake shutter (carburettor heat) to 'Close' (100%) (c, k)
Switch on fuel cock to '1 Auxiliary (Gravity)' (c, k)
Lower flaps on approach at approx. 90 mph (c, k), maintain approx. 75 mph on approach
Touchdown speed approx. 65 mph
Steer by applying rudder and brakes carefully (c, k)
Apply chocks and close fuel cock to finish sortie (c, k)

Hawker Hurricane



General characteristics

- **Crew:** 1
- **Length:** 32 ft 3 in (9.83 m)
- **Wingspan:** 40 ft 0 in (12.19 m)
- **Height:** 13 ft 1.5 in (4.001 m)
- **Wing area:** 257.5 sq ft (23.92 m^2)
- **Empty weight:** 5,745 lb (2,606 kg)
- **Armament:** (Early variants & IIa) 8x Browning .303 Mk II
  (IIb) 12x Browning .303 Mk II
  (IIc) 4x Hispano Mk I (20 mm)
  (IId) 2x Vickers 40 mm Class S, 2x Browning .303 Mk II
- **Bombs**: (I-FB) 8x GP 40 lb Mk III
  (IIb, IIc) 2x GP 250 lb Mk IV

Starting, taxi, and take-off procedures

Apply chocks (k)
Switch on both magnetos (c, k)
Switch on fuel cock to 'Main On' (c, k)
Open radiator full (c, k)
Prop pitch fully forward ('Fine' 100%)
Apply 10% throttle
Start engine (k, default key is 'i')
When the engine is running open throttle to 20 %
Wait for engine oil temperature to reach 18°C
Remove chocks (k)
Release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate to approx. 100 mph, then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiators**	**Boost**	**Prop Pitch**
Cruise	50%	+4	Coarse
Climb	100%	+6	Coarse **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 110 ^{0}C water temperature, 90 ºC oil			

(*) with Boost Cut-Out enabled (c, k)

Landing procedure

Lower flaps (two stage) on approach at approx. 140 mph (c, k)
Lower landing gear (two stage) (c, k)
Increase Prop Pitch to 100%
Open radiator full to 100% (c, k)
Touchdown speed approx. 80 mph
After touchdown, keep slight back pressure on joystick until low speed to avoid nosing over
Steer by applying rudder and brakes carefully (c, k)
Apply chocks and close fuel cock to finish sortie (c, k)

Starting, taxi, and take-off procedures

Apply chocks (k)
Switch on both magnetos (c, k)
Switch on fuel cock to 'Main On' (c, k)
Open radiator full (c, k)
Prop pitch fully forward (100%)
Apply 10% throttle
Start engine (k, default key is 'i')
When the engine is running open throttle to 20 %
Wait for engine oil temperature to reach 18°C
Remove chocks (k)
Release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate to approx. 100mph, then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiators**	**Boost**	**RPM**
Cruise	50%	+4	2700
Climb	100%	+6	2700 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 110 ^{0}C water temperature, 90 ºC oil			

(*) with Boost Cut-Out enabled (c, k)

Landing procedure

Lower flaps (two stage) on approach at approx. 140 mph (c, k)
Lower landing gear (two stage) (c, k)
Increase Prop Pitch to 100%
Open radiator full to 100% (c, k)
Touchdown speed approx. 80 mph
After touchdown, keep slight back pressure on joystick until low speed to avoid nosing over
Steer by applying rudder and brakes carefully (c, k)
Apply chocks and close fuel cock to finish sortie (c, k)

Starting, taxi, and take-off procedures
Apply chocks (k), switch on magnetos (c, k)
Switch on fuel cock to 'Main On' (c, k)
Open radiator fully (c, k)
Prop pitch to fully fine (100%)
Apply 10% throttle
Start engine (k, default key is 'i')
When the engine is running open throttle to 20%
Wait for engine oil temperature to reach 18°C
Remove chocks (k)
Release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate to approx. 100 mph, then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiator**	**Boost**	**RPM**
Cruise	50%	+6	2700
Climb	100%	+9	2850 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 135 °C water temperature, 105 °C oil Toggle charger at 13000 ft (climb) or 11000 ft (combat)			

(*) with Boost Cut-Out enabled (c, k)

Landing procedure
Lower flaps (two stage) on approach at approx.140 mph (c, k)
Lower landing gear (two stage) (c, k)
Increase Prop Pitch to fully fine 100%
Open radiator fully (c, k)
Touchdown speed approx. 80 mph
After touchdown, keep slight back pressure on joystick until low speed to avoid nosing over
Steer by applying rudder and brakes carefully (c, k)
Apply chocks and close fuel cock to finish sortie (c, k)

Lendlease Kittyhawk

General characteristics

- **Crew:** 1
- **Length:** 31 ft 8.5 in (9.665 m)
- **Wingspan:** 37 ft 3.5 in (11.367 m)
- **Height:** 10 ft 8 in (3.25 m)
- **Wing area:** 236 sq ft (21.9 m^2)
- **Empty weight:** 5,922 lb (2,686 kg)
- **Armament:** 6x .50 cal Browning M2AN

Starting, taxi, and take-off procedures

Apply chocks (k), open canopy
Set constant speed toggle (prop pitch mode - toggle) switch to 'Auto' (constant speed) (c, k)
Set propeller pitch lever (prop Pitch 1) fully forward (100%)
Set fuel selector switch (fuel cock 1) to 'Fuse' (centre) (c, k)
Set magnetos to 'Both' (M 1+2) (c, k)
Turn carburettor air to 'Cold' (fully pulled out) and radiator shutters to 'Shut' (0%) (c, k)
Set throttle to approx. 10% (c, k)
Set mixture control fully forward to 'Full rich' (100%) (c, k)
Start engine (default key is 'i') (k)
Warm up engine at approx. 1000 RPM until a minimum oil -temperature of 40°C and a minimum radiator-temperature of 80°C have been reached
Set radiator shutters to 'Open' (c, k)
Set flaps to about ¼ deployed (c, k)
Remove chocks (k) and slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes if required and at approx. 100 mph pull stick smoothly to take off
Raise undercarriage (c, k) and flaps (c, k) and set boost to 42 in and adjust propeller pitch lever to achieve 2800 RPM

Engine management

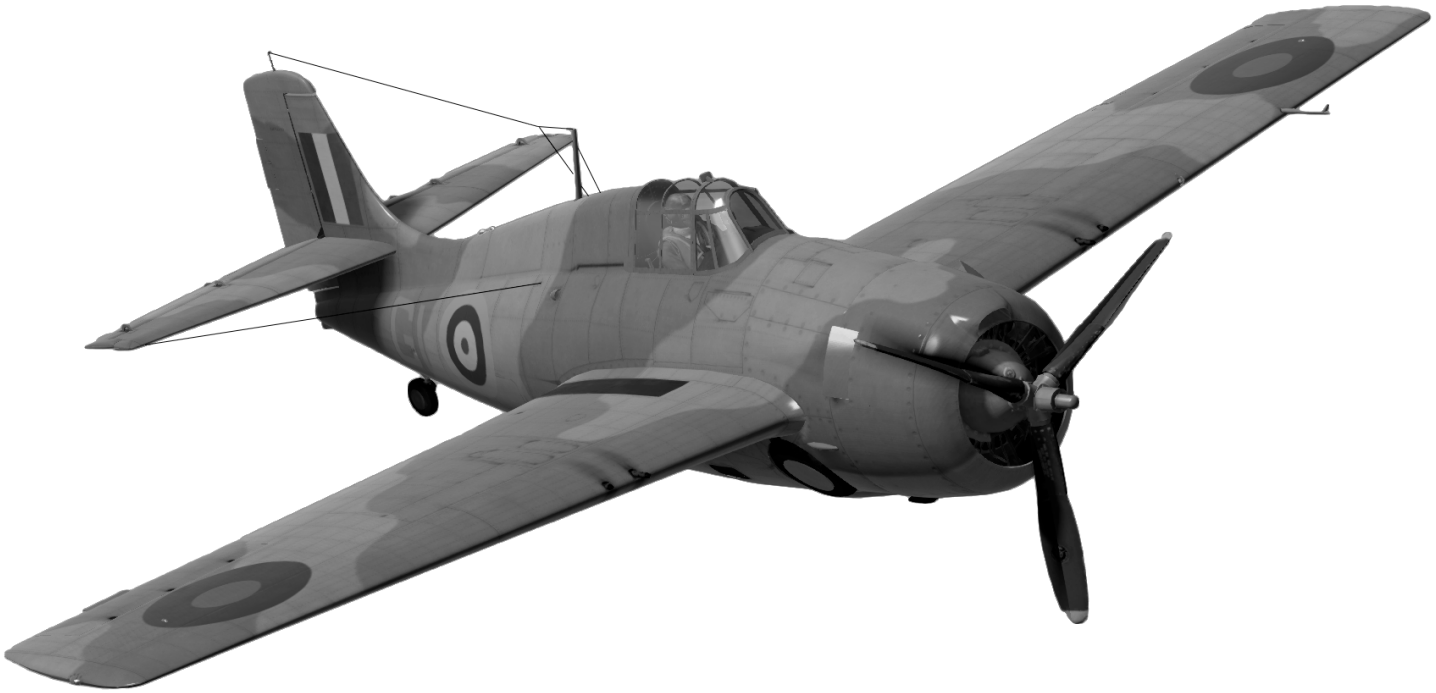
Settings for:	**Oil and coolant**	**Boost**	**RPM**
Cruise	75%	42 in	2600
Climb	100% at 150 mph	42 in	2800 **(30 min.)**
Highest level speed (5 min. limit, 470 mph in dive)	Adjust accordingly	56 in	3000 **(5 min.)**
Never exceed 125 °C coolant temperature, 95 °C oil			

Landing procedure

On approach lower flaps and undercarriage once speed is below 140 mph (c, k)
Ensure constant speed toggle switch is set to 'Auto' (c, k) and propeller pitch lever is fully forward (100%)
Open radiator shutters
Fly approach speed of around 100-110 mph aiming to be at approx. 100 mph crossing the threshold
Touchdown speed 90 mph
Apply brakes very carefully after touchdown and apply rudder as required to keep straight during landing roll

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Fleet Air Arm Martlet



General characteristics

- **Crew:** 1
- **Length:** 28 ft 9 in (8.76 m)
- **Wingspan:** 38 ft 0 in (11.58 m)
- **Height:** 11 ft 10 in (3.61 m)
- **Wing area:** 260 sq ft (24 m^2)
- **Empty weight:** 4,907 lb (2,226 kg)
- **Armament:** 4x .50 cal Browning M2AN

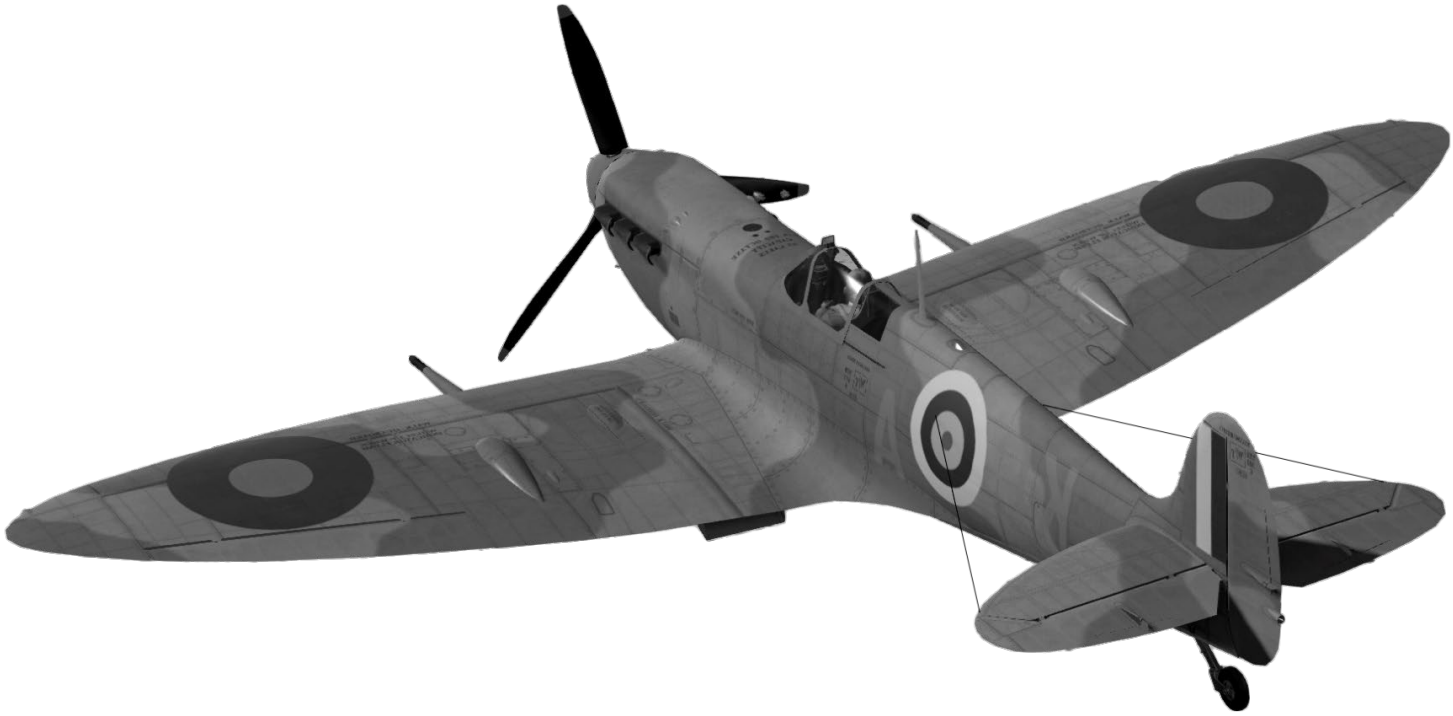
Starting, taxi, and take-off procedures
Apply chocks (k)
Rotate magneto switch to 'both' (c, k)
Switch on fuel cock to 'Main' (c, k)
Open cowling flaps (c, k)
Switch prop pitch to 'Manual', set to 100% (c, k)
Apply 20% throttle to reach approx. 1000 rpm
Start engine (k, default key is 'i')
Run engine at 1000 rpm until oil temperature reaches 40°C
Set prop pitch to 'Auto' (constant speed) for taxiing and take off (c, k)
Unlock tail wheel to taxi (c, k)
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes (p, k)
On runway accelerate to 85 kn (knots) then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Cowl Flaps**	**Boost**	**RPM**
Cruise	35%	32.5 in	2470
Climb	As required	41 in	2550 **(30 min.)**
Highest speed	As required	48 in	2700 **(5 min.)**
Never exceed cyl. head temperature of 260 °C & oil temperature of 100 °C Toggle charger at 7800 ft (climb) or 5200 ft (combat)			

Landing procedure
Lower flaps and landing gear on approach at approx. 120 kn (c, k)
Lock tail wheel (c, k)
Set prop pitch to 'Auto' (constant speed) (100%) (k)
Touchdown speed at approx. 85 kn
After touchdown, keep slight back pressure on joystick until low speed to avoid nosing over
Steer by applying rudder and brakes carefully (c, k)
Apply chocks and close fuel cock to finish sortie (c, k)

Supermarine Spitfire



General characteristics

- **Crew:** 1
- **Length:** 29 ft 11 in (9.12 m)
- **Wingspan:** 36 ft 10 in (11.23 m)
- **Height:** 11 ft 5 in (3.48 m)
- **Wing area:** 242.1 sq ft (22.49 m^2)
- **Empty weight:** 5,065 lb (2,297 kg)
- **Armament:** (Early variants, IIa & Va) 8x Browning .303 Mk II
  (IIb & Vb) 4x Browning .303 Mk II, 2x Hispano Mk I (20 mm)

Starting, taxi, and take-off procedures

Apply chocks (k)
Switch on magnetos (c, k)
Switch on fuel cock (c, k)
Open radiator full (c, k)
Prop pitch fully forward (fine 100%) (c, k)
Apply 10% throttle
Start engine (k default key is 'i')
When the engine is running open throttle to 20%
Wait until the engine oil temperature reaches 18°C
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tighter turns, apply brakes, use rudder, increase throttle (p, k)
On runway accelerate to approx. 100 mph then pull stick smoothly back to take off
Raise undercarriage (c, k)
Adjust pitch to keep rpms below 3000 (c, k)

Engine management

Settings for:	**Radiator**	**Boost**	**RPM**
Cruise	55%	+3	2600
Climb	100%	+6	2600 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 115 °C water temperature			

(*) with Boost Cut-Out enabled (k, c)

Landing procedure

Lower flaps on approach at approx. 140 mph (c, k)
Lower landing gear at approx. 140 mph (c, k)
Prop pitch fully forward (100%) (c, k)
Touch down speed approx. 80–85 mph
After touchdown maintain slight back pressure on joystick until low speed to avoid nosing over. Steer by applying rudder and brakes carefully (c, k)
Apply chocks and turn off fuel cock to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures

Apply chocks (k)
Switch on magnetos (c, k)
Switch on fuel cock (c, k)
Open radiator full (c, k)
Prop pitch fully forward (100%) (c, k)
Apply 10% throttle
Start engine (k default key is 'i')
When the engine is running open throttle to 20%
Wait until the engine oil temperature reaches 18°C
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tighter turns, apply brakes, use rudder, increase throttle (p, k)
On runway accelerate to approx. 100 mph then pull stick smoothly back to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiator**	**Boost**	**RPM**
Cruise	55%	+3	2700
Climb	100%	+6	2750 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 120 °C water temperature			

(*) with Boost Cut-Out enabled (k, c)

Landing procedure

Lower flaps on approach at approx. 140 mph (c, k)
Lower landing gear at approx. 140 mph (c, k)
Prop pitch fully forward (100%) (c, k)
Touch down speed approx. 80–85 mph
After touchdown maintain slight back pressure on joystick until low speed to avoid nosing over. Steer by applying rudder and brakes carefully (c, k)
Apply chocks and turn off fuel cock to finish sortie (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals

Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.

Starting, taxi, and take-off procedures
Apply chocks (k)
Switch on magnetos (c, k)
Switch on fuel cock (c, k)
Open radiator full (c, k)
Prop pitch fully forward (100%) (c, k)
Apply 10% throttle
Start engine (k default key is 'i')
When the engine is running open throttle to 20 %
Wait until the engine water temperature reaches 18°C
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tighter turns, apply brakes, use rudder, increase throttle (p, k)
On runway accelerate to approx. 100 mph then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiator**	**Boost**	**RPM**
Cruise	55%	+6	2700
Climb	100%	+9	2850 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 135 °C water temperature			

(*) with Boost Cut-Out enabled (k, c)

Landing procedure
Lower flaps on approach at approx. 140 mph (c, k)
Lower landing gear at approx. 160 mph (c, k)
Prop pitch fully forward (100%) (c, k)
Touch down speed approx. 80–85 mph
After touchdown apply brakes carefully (c, k)
Apply chocks and turn off fuel cock to finish sortie (c, k)

Starting, taxi, and take-off procedures
Apply chocks (k)
Switch on magnetos (c, k)
Switch on fuel cock (c, k)
Open radiator full (c, k)
Prop pitch fully forward (100%) (c, k)
Apply 10% throttle
Start engine (k default key is 'i')
When the engine is running open throttle to 20 %
Wait until the engine water temperature reaches 18°C
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tighter turns, apply brakes, use rudder, increase throttle (p, k)
On runway accelerate to approx. 100 mph then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiator**	**Boost**	**RPM**
Cruise	55%	+6	2760
Climb	100%	+9	2850 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 135 °C water temperature			

(*) with Boost Cut-Out enabled (k, c)

Landing procedure
Lower flaps on approach at approx. 140 mph (c, k)
Lower landing gear at approx. 160 mph (c, k)
Prop pitch fully forward (100%) (c, k)
Touch down speed approx. 80–85 mph
After touchdown apply brakes carefully (c, k)
Apply chocks and turn off fuel cock to finish sortie (c, k)

Starting, taxi, and take-off procedures
Apply chocks (k)
Switch on magnetos (c, k)
Switch on fuel cock (c, k)
Open radiator full (c, k)
Prop pitch fully forward (100%) (c, k)
Apply 10% throttle
Start engine (k default key is 'i')
When the engine is running open throttle to 20 %
Wait until the engine water temperature reaches 18°C
Remove chocks (k) and release brakes (k)
Slowly increase throttle until the aircraft starts to move
Steer by using rudder (p, k) and brakes (k)
For tighter turns, apply brakes, use rudder, increase throttle (p, k)
On runway accelerate to approx. 100 mph then pull stick smoothly to take off
Raise undercarriage (c, k)

Engine management

Settings for:	**Radiator**	**Boost**	**RPM**
Cruise	55%	+6	2760
Climb	100%	+9	2850 **(30 min.)**
Highest speed	50%	+12 (*)	3000 **(5 min.)**
Never exceed 135 °C water temperature			

(*) with Boost Cut-Out enabled (k, c)

Landing procedure
Lower flaps on approach at approx. 140 mph (c, k)
Lower landing gear at approx. 160 mph (c, k)
Prop pitch fully forward (100%) (c, k)
Touch down speed approx. 80–85 mph
After touchdown apply brakes carefully (c, k)
Apply chocks and turn off fuel cock to finish sortie (c, k)

Lendlease Tomahawk

General characteristics

- **Crew:** 1
- **Length:** 21.27 ft (6.48 m)
- **Wingspan:** 24.50 ft (7.47 m)
- **Height:** 10 ft 8 in (3.25 m)
- **Wing area:** 100.00 sq ft (9.290 m^2)
- **Empty weight:** 1,347 lb (611 kg)
- **Armament:** 4x Browning .303 Mk II; 2x .50 cal Browning M2AN

Starting, taxi, and take-off procedures

Apply chocks (k)
Set constant speed toggle (Propeller pitch mode - toggle) switch to 'Auto' (constant speed) (c, k)
Set propeller pitch lever (Propeller Pitch 1) fully forward (100%) (c, k)
Set fuel selector switch (fuel cock 1) to 'Fuse' (centre) (c, k)
Set magnetos to 'Both' (M1+2) (c, k)
Turn carburettor air to 'Cold' (fully pulled out) (c, k) and radiator shutters to 'Shut' (0%) (c, k)
Set throttle to approx. 10% (c, k)
Set mixture control fully forward to 'Full Rich' (100%) (c, k)
Start engine (k default key is 'i')
Warm up engine at approx. 1000 rpm until a minimum oil temperature of 40°C and a minimum radiator temperature of 80°C have been reached
Set radiator shutters to 'Open' (c, k)
Remove chocks (k) and release brakes (k), slowly increase throttle until the aircraft starts to move
Steer by using rudder and brakes if required (p, k)
Apply rudder as required to keep straight and at approx. 90 mph pull stick smoothly to take off
Raise undercarriage (c, k) and set boost to 42 in and adjust propeller pitch lever to achieve 2800 rpm

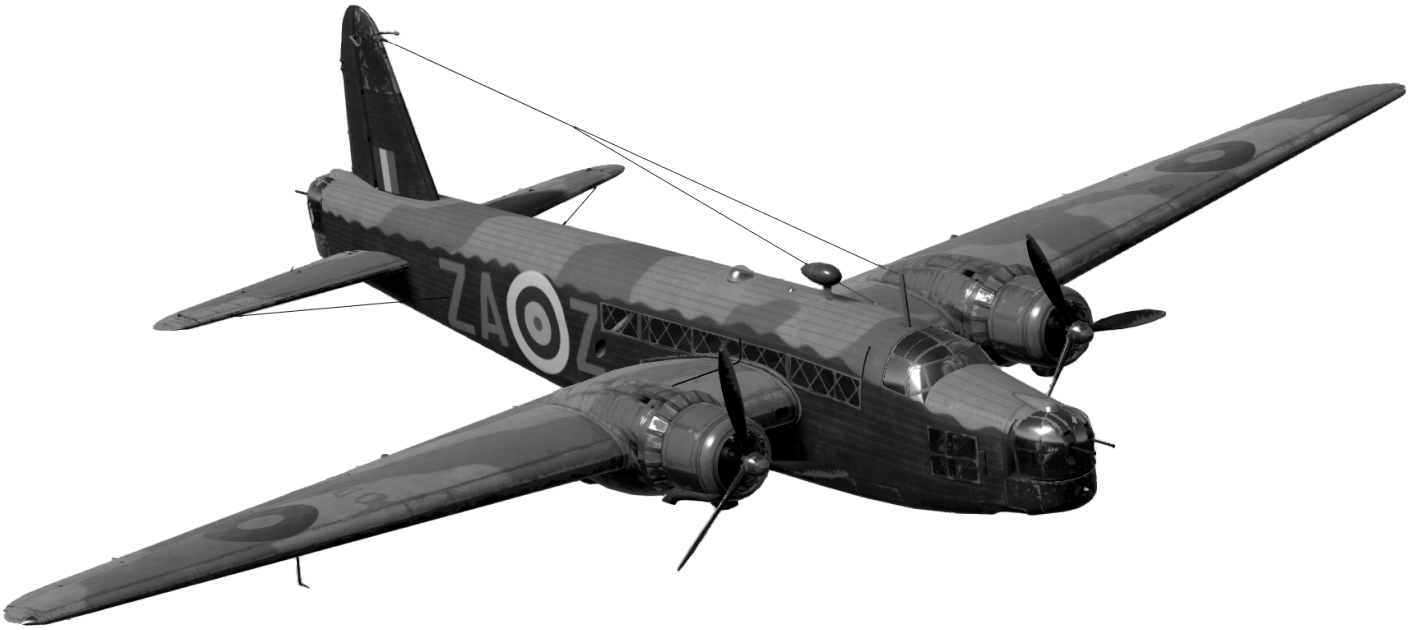
Engine management

Settings for:	**Oil and coolant**	**Boost**	**RPM**
Cruise	Adjust accordingly	37 in	2600
Climb	100% at 150 mph	42 in	2800
Highest level speed, do not exceed 470 mph in dive	Adjust accordingly	48 in 54 in (Late)	3000 **(5 min.)** 3120 in dive
Never exceed 125 °C coolant temperature, 90 °C oil			

Landing procedure

On approach lower flaps (optional) and two-stage undercarriage once speed is below 140 mph (c, k)
Ensure constant speed toggle switch is set to 'Auto' (c, k) and propeller pitch lever is fully forward (100%)
Fly approach speed of around 95–100 mph
Touchdown speed 85 mph
Apply brakes only very carefully after touchdown and use rudder as required to keep straight during landing roll

Vickers Wellington



General characteristics

- **Crew:** 6
- **Length:** 64 ft 7 in (19.69 m)
- **Wingspan:** 86 ft 2 in (26.26 m)
- **Height:** 17 ft 5 in (5.31 m)
- **Wing area:** 840 sq ft (78 m^2)
- **Empty weight:** 18,556 lb (8,417 kg)
- **Armament:** (Ia) Defensive; 4x Browning .303 Mk II
  (Ic) Defensive; 6x Browning .303 Mk II
- **Bombs**: (Ia) 18x GP 250 lb, 9x GP 500 lb, 2x GP 1000 lb or 2x AP 2000 lb
  (Ic) 18x GP 250 lb, 9x GP 500 lb, 2x GP 1000 lb or 2x AP 2000 lb
  (Ic Torpedo) 2x Torpedoes Mk XII/XV or 2x AP 2000 lb Mk IV

Starting, taxi, take-off, climb and cruise procedures

Apply chocks (k)
Set fuel tank selector 1 and 2 to 'Inner' and set fuel tank selector 3 to 'on' (c, k)
Select both engines (default) (k)
Set magnetos to 'On', mixture to 'Full' (100%) and prop pitch to 'Fine' (100%) (c, k)
Set superchargers to 'Medium' (0%) and open throttle to approx. 10% (c, k)
Select engine 1 (k) and start it (k, default key is 'i') repeat with engine 2
Select both engines when temperatures reach approx. 30°C (k)
Throttle up to check whether both engines run in synch, then throttle back to 0%
Select 15° of flap and open cowling flaps to approx. 1/3 open position (c, k)
Remove chocks, slowly apply throttle and steer with differential brakes and rudder (p, k)
Apply brakes **very** carefully, the Wellington is prone to nose over!
When ready for take-off increase throttle to 100%, use rudder to keep aircraft straight.
See table below for maximum take-off rpm and boost settings
At 80 mph ease back control column and raise undercarriage (c, k)
Don't exceed 120 mph with gear still down!
Open cowling flaps to 100%
Once 125 mph are reached adjust pitch and throttle to climb settings (see table below)
At 600 to 800ft fully raise flaps and adjust cowling flaps to maintain desired temperatures
Maintain 125 mph and climb to 12,000ft, setting superchargers to 'Full' at 8,000ft (c, k)
Once desired cruise altitude is reached set mixture to 0% and apply cruise settings

Engine management

Settings for:	Cowl flaps	Mixture	Boost	RPM
Take-off	Approx. 1/3 open	Rich	6 ¾	2600
Climb	100% at 125 mph	Rich	2 ½	2250 **(30 min.)**
Cruise	Closed at 130 mph	Lean	2 ½	2250
Highest Speed	As desired	Rich	6 ¾	2600 **(5 min.)**
Never exceed temperature of 240 °C for engine and 85 °C for oil Toggle charger at 8000 ft (climb) or 6000 ft (combat)				

Landing procedure

Ensure superchargers are set to 'Medium (c, k)
Fully close cowling flaps and set prop pitch to 'Fine' (c, k)
Fly a very flat approach and ensure speed is below 120 mph early in approach
Lower landing gear and flaps below 120 mph (c, k)
Touchdown at approx. 75–80 mph, use rudder to keep straight
Maintain back pressure on joystick until low speed, then **very** carefully apply brakes
In parking position apply chocks, engage slow running cut off switch to stop engines (c, k)

Abbreviations 'c' = cockpit selection, 'k' = keyboard, 'p' = rudder pedals
Note: The settings outlined in this procedure are conservative. Increased aircraft performance can be achieved with careful manipulation of RPMs, boost, pitch and radiator settings.