Only for use in service.

**ME-163B**

Bedienungsvorschrift-Fl

(August 1944)

Issued September 1944

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# I. Brief description of the ME-163B

## A. Use

The aircraft model Me 163 B is used as a daytime homeland defend aircraft and beside its tailless design it is characterised by its very high climb rate and the speed it can reach.

## B. Construction Form

Self-supporting, tailless, single seat mid-wing aircraft (amendment 1) with a solid rocket engine, detachable gear, a retractable landing skid and a tail wheel. Vertical stabilizer is assembled onto the rear fuselage; Ailerons also used as elevator. Wings equipped with solid slats, trim flaps and landing flaps. The whole construction made so that a conversion of the cockpit to a pressurized cabin after sealing and upgrading of the pressure-maintaining system is possible.

## C. Characteristics

### 1. Fuelsage

All-metal monocoque construction. Fuselage nose, front section, Rear section and tailpiece connected to each other by screws. Mid-upper shell of the front section detachable. Cockpit with cushion seat for usage of a parachute pack equipped with integrated oxygen supply. Full glass canopy . Bad weather window. Windows behind the seat. Protection against enemy fire by armored nose cover. Armored glass and armored plates around the cockpit and storage room.

### 2. Wing Assembly

Fabricated as a two-holm wooden construction. Each wing connected to fuselage at 3 points. Solid slats. On the rear edge of wings are ailerons and trim flaps; on the underside of the wings are landing flaps. Manual drive of the trim flaps via shafts, bevel gear and push rods, landing flaps driven via hydraulics.

### 3. Tail Unit

Vertical stabilizer is assembled onto the rear fuselage. Rudder is provided with a fireproof paint. Ailerons also used as elevator.

### 4. Control Unit

Hand control by flight stick, foot control by pedals. Transmission of steering forces by push rods. Trim flaps controlled by hand wheel; transmitted by torsional waves, bevel gear and spindle gear.

### 5. Gear

Jettisonable, hydraulically linked  gear. Takeoff possible using the takeoff-cart. Hydraulically retractable landing skid and tail wheel. Indicator device for raised and lowered status of the landing skid, aswell as attached or detached gear in the cockpit.

### 6. Engine

Installation of the HWK 109-509 engine in the rear fuselage. Engine functions as repulsion unit. Thrust is adjustable using the handle (throttle) left-hand inside the cockpit. Fuel tank inside the  storage room (behind the cockpit), inside the cockpit and inside the wings.

### 7. Pressure System

The device is driven by pneumatic-hydraulics. Power supply by pressure accumulators in the nose section.

Operated by the device are:

1. Latch-in and drop of the gear
2. Landing skid
3. Tail wheel

Operation of the landing flaps also by oil-pressure-system (hand pump) independently from the pneumatic-hydraulic device

### 8. Emergency Locator Transmitter

Power is generated by a 2000 watt at 24 volts wind propeller. Nickel collectors at 20 Ah. An automatic switch for segregation of the collector, the power generator and the starter engine from the onboard wiring system in the right-hand console each. An outboard port for a ground power supply while onboard wiring system detached (press disconnect button!).

Operated by electrics are:

1. Starter engine (button for starter engine on left-hand side of the cockpit)
2. Artificial horizon
3. Pilot tube
4. Radio equipment
5. Weapons
6. Indicator and warning devices

### 9. Radio Systems

Funkgerätesatz FuG 16 ZE (radio) with installation kit FuE 16 ZE without additional modulation device as well as the Funkgerätesatz FuG 25a with the installation kit FuE 25 a.

### 10. Weapons

A MK 108 or a MG 151,20 in the transition section of each wing.

## D. Dimensions, Weights and Loading Plan

|  |  |
| --- | --- |
| Wingspan | 9,30 m |
| Length | 5,92 m |
| Height (Including Antenna) | 2, 80 m |
| Wing Surface | 19,6 m |
| Wing Loading on takeoff | 210 kg/m |
| Wing loading on landing | 110 kg/m |

Spread of weight (look at the load planning)

## E. Utilization and stress groups

Utilization group H.

Stress group: Until g-flight = 2900 kg H 5; above that H 4.

Takeoff weight: 4100 kg, landing weight 2100 kg.

## F. Operation Data

### 1. Fuel

|  |  |  |
| --- | --- | --- |
| **Tank For** | **Installation Site** | **Content in liters** |
| T-Stoff | Container Room | 1040 |
| T-Stoff | Cockpit Left\* | 60 |
| T-Stoff | Cockpit Right\* | 60 |
| C-Stoff | Wing Left | 177 |
| C-Stoff | Wing Right | 177 |
| C-Stoff | Nose section left | 73 |
| C-Stoff | Nose section right | 73 |
|  | T-Stoff Supply | 1160 |
|  | C-Stoff supply | 500 |
|  | Total supply in liters | 1660 |
|  | Totall supply in kilograms | 2026 |

\* Protected Containers

### 2. Performance and consumption

Engine thrust is controllable via the handle (throttle) left-hand inside the cockpit. Control range from 200 to 1500 N thrust, corresponding to the display of the thrust indication device from 3 to 19 at (1 at = 98.0665 kPa) of combustor pressure at ground level

Consumption: Look at engine manual

### 3. Allowed maximum speed\*

In vertical flight

In vertical flight: Look at admission-paper

When trim flaps at an angle:

Maximum permissible thrust: 1500N

\* Look at admission

# II. Preparation for flight

## Responsible work by the aircraft mechanic

1. Preparation work on the engine according to the currently valid maintenance instructions.
2. Refueling as described here
3. Fill up oil pressure plant.
4. At first commissioning (for example after an overhaul) fill up oil pressure plant as described here:
   1. Switch position,

# III. Flight

## A. Preparation for flight

1. Put on parachute (inside seat cushion, equipped with oxygen mask), check seat configuration and strap yourself.
2. Turn on the whole wiring system and all automatic switches. Turn on gear indicator.
3. Set altimeter
4. When high air humidity and temperatures below 0°C turn on pilot tube (Indicator must respond).
5. Check  oxygen supply: Open valve with two complete rotations. Plug in breathing tube into mask and put it on. Press button on breathing mask. O2-guard must open lips.
6. Close canopy (pull handle and push canopy forward).

## B. Taxiing

### 1. Taxiing to runway

Taxi to takeoff position with attached gear part using a tractor unit and tow bar or carry it there on a transport vehicle.

### 2. Rolling on self-takeoff

Set trim flaps as described in the chart. (Hand wheel and indicator with trim chart left-hand inside the cockpit).

## C. Takeoff

### 1. Self takeoff

### 2. Takeoff with lift-off trolley

### D. Climb

a. Speed indicator for optimal climb around 700km/h IAS from ground level to service

ceiling

b. Best climb rate at around 100m/s at 10,000m

### E. Altitude Flight

XXXXXXXXXXXXXXXXXXXXXX

### F. Target Approach (Tactic)

Refer to the experience of a fighter wing

### G. Gliding

1. While gliding set trim to 0-position, for tighter turns additional trim can be set tail-

heavy.

2. Highest allowed glide speed until mach-warning shows up (around 850km/h IAS)

### H. Landing

1. Set trim flaps on tail-heavy

2. Extend the landing skid, turn off the switch on the left hand side of the cockpit. Note the

indication device (lamps must be turned on). After they have, set the hydraulic switch

back to the “Ruhe”-position (Standby)

3. (At speeds below 300 km/h (Speed indicator) lower your trim flaps to about -8° to -10°

(hand wheel) and indicator on left-hand side of the cockpit.

4. Extend landing flaps to the maximum down position.

5. Landing approach from 220 km/h to 200 km/h (Speed indicated). Aircraft will touch down at about 180 km/h to 190 km/h (Speed indicated).

6. After flawless touch down and coming to a stand-still set trim flaps to 0(Degrees) and raise landing flaps. Turn on wiring system.

### J. Emergency Situations

#### 1. Failed Takeoff

Turn off engine (thrust lever back into the 0 position).

#### 2. Bail out

a. Turn off the engine.

b. Dumb T-Stoff (Pull handle on the left side of the instrument panel for quick dump).

c. Pull up slightly (decrease of air speed).

d. If possible, turn off the wiring system (electricity power switch on instrument panel).

e. Release the seat-belt.

f. Pull emergency jettison handle for the canopy. If canopy doesn’t fly off completely do a

hard slipping manoeuvre.

g. If possible wait for the aircraft to slow down and then bail out.

#### 3. Emergency landing

a. Turn off the engine.

b. Dumb T-Stoff (Pull handle on the left side of the instrument panel for quick dump).

c. Turn off electricity power switch on the instrument panel.

d. If possible touch down on extended landing skid.

e. Extend landing flaps to the maximum down position.

# IV. Maintenance

# V. General Work

## A. Mounting of the aircraft onto the gear part

1. Put a stone block “Herkules II” with raising tip below the fuselage front section.

2. Raising tip has to snap into jack up socket on the nose cover.

3. Careful raise fuselage.

4. Someone has to support one wing tip.

5. Roll gear part below the aircraft.

6. Pay attention to a proper lock on the cones of the gear part traverse into the counter fittings on the skid.

## B. Towing

1. Attack the gear part as described under A

2. Before towing check if tires on the gear part are pressurized as demanded

3. Tow the aircraft using the tow bar and a tractor or another transport vehicle.

4. Don’t pull on the slats; don’t push on the trim flaps, ailerons and vertical stabilizer.

## C. Anchoring and covering

1. Anchor the aircraft in the direction of the wind (look at the anchoring instructions).

2. Retract trim flaps.

3. Set all control surfaces to zero position using the brake-stay. Brake-stays marked with

colored pennants.

# Annex 1