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FM 30-35

<p>WAR DEPARTMENT</p>
<p>BASIC FIELD MANUAL</p>
<p>MILITARY INTELLIGENCE</p>
<p>IDENTIFICATION OF GERMAN AIRCRAFT</p>

July 5, 1941

UNCLASSIFIED
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FM 30-35

BASIC FIELD MANUAL

MILITARY INTELLIGENCE

IDENTIFICATION OF
GERMAN AIRCRAFT

PREPARED UNDER DIRECTION OF THE
CHIEF OF STAFF



ENGINEER REPRODUCTION PLANT
THE ARMY WAR COLLEGE
WASHINGTON, D. C.

1941

WAR DEPARTMENT,
WASHINGTON, July 5, 1941

FM 30-35, Military Intelligence, Identification of German Aircraft, is published for the information and guidance of all concerned.

[A.G. 062.11 (4-11-41).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
CHIEF of STAFF.

OFFICIAL:

E. S. ADAMS,

Major General,

The Adjutant General.

DISTRIBUTION:

BASIC FIELD MANUAL
MILITARY INTELLIGENCE

IDENTIFICATION OF GERMAN AIRCRAFT

This manual supersedes FM 30-35, July 5, 1940.

The material contained in this manual has been secured from many sources. It is the best material available but may be incomplete and, in some respects, inaccurate.

This manual containing illustrations with explanatory data relative to German aircraft is published for limited distribution. It will be used for instruction of officers and men in appearance and general characteristics of German aircraft and will be safeguarded as prescribed in AR 380-5.

The German airplane markings are as shown below:

GERMANY



WING



TAIL

ILLUSTRATIONS

MILITARY AIRCRAFT

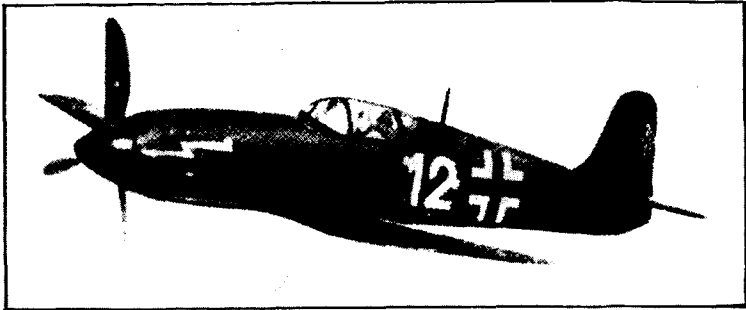
Pursuit Heinkel He - 113	6
Pursuit Messerschmitt Me - 109	8
Pursuit Messerschmitt Me - 110	10
Fighter Bomber Messerschmitt Jaguar	12
Pursuit Focke-Wulf Fw - 187	14
Pursuit Focke-Wulf Fw - 198	16
Dive Bomber Junkers Ju - 87	18
Dive Bomber Junkers Ju - 87K	20
Bomber Heinkel He - 111K Mk III	22
Bomber Heinkel He - 111K Mk V	24
Bomber Heinkel He - 111K Mk Va	26
Dive Bomber or Bomber Junkers Ju - 88	28
Bomber Junkers Ju - 88K	30
Dive Bomber or Bomber Junkers Ju - 88A-1	32
Bomber Dornier Do - 17	34
Bomber Dornier Do - 215	36
Heavy Bomber Junkers Ju - 89K	38
Heavy Bomber Heinkel He - 177	40
Heavy Bomber Focke-Wulf Kurier	42
Observation Henschel Hs - 126	44
Observation Fieseler Fi - 156	46
Troop Transport Junkers Ju - 52	48
Troop Transport Junkers Ju - 52/3m W	50
Troop Transport Junkers Ju - 86	52
Troop Transport Focke-Wulf Fw - 200	54
Troop Transport Junkers Ju - 89 and 90	56
Troop Transport Blohm & Voss BV - 142	58

NAVY AIRCRAFT

Torpedo-Bomber Fieseler Fi - 167	62
Patrol-Torpedo Arado Ar - 95	64
Patrol Arado Ar - 196	66
Torpedo-Bomber Blohm & Voss Ha - 140	68
Patrol-Torpedo Heinkel He - 59	70
Patrol-Torpedo Heinkel He - 114	72
Patrol-Torpedo Heinkel He - 115	74
Patrol Dornier Do - 18K	76
Patrol Dornier Do - 24	78
Patrol-Transport Dornier Do - 26	80
Patrol Blohm & Voss Ha - 138	82
Patrol-Transport Blohm & Voss Ha - 139	84
Multipurpose Arado Ar - 197	86

**MILITARY
AIRCRAFT**

GERMAN
ARMY

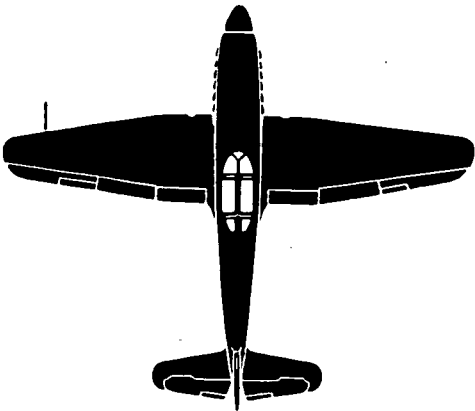
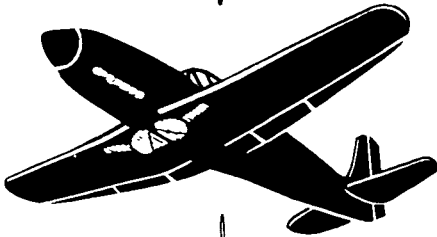
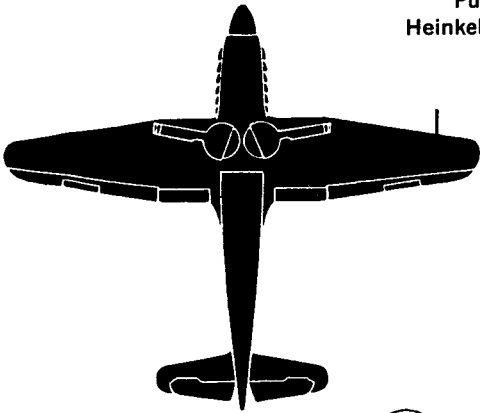


Pursuit Heinkel He - 113

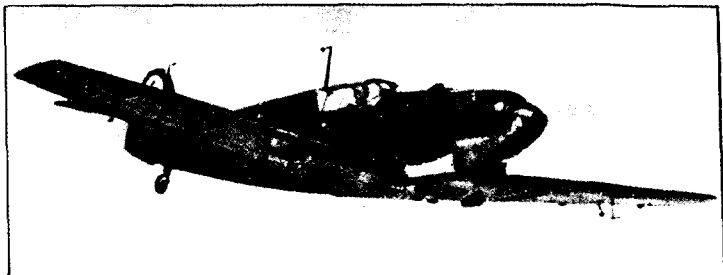
Long, tapered, trapezoidal, slightly dihedral low-wing, all metal monoplane, pointed nose, single motor, enclosed cockpit, inward retractable landing gear, and retractable tail wheel.

Crew:	One.
Armament:	Two large caliber machine guns situated in wings near fuselage and one cannon on nose of motor.
Ammunition:	
Bomb load:	
Radio:	Two-way.
Aarmor:	
Motors:	One 1,500-horsepower Daimler-Bentz, liquid cooled.
Maximum speed:	400 miles per hour at 19,000 feet (estimate).
Rate of climb:	
Service ceiling:	37,000 feet.
Maximum range:	
Wing span:	31 feet.

Pursuit
Heinkel He-113



GERMAN
ARMY

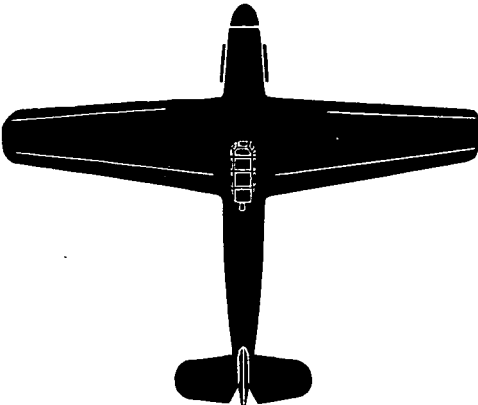
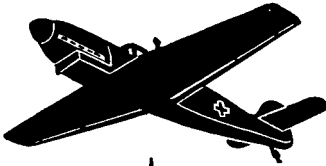
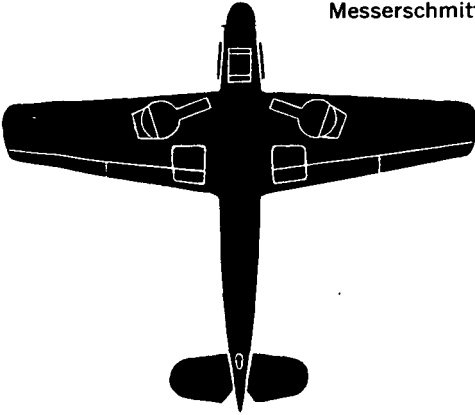


Pursuit Messerschmitt Me-109

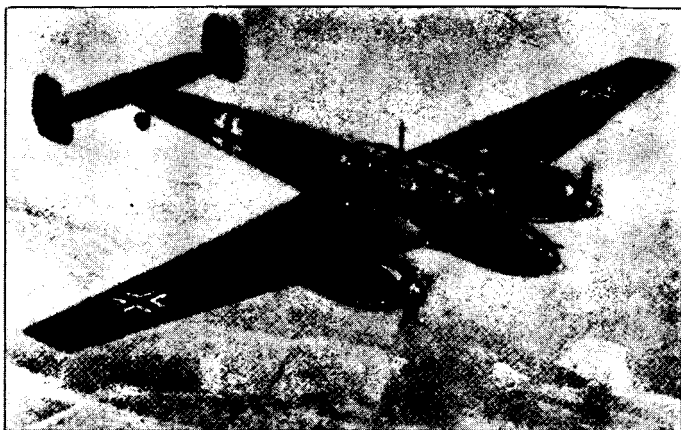
Tapered, square tip, low-wing monoplane. All metal, single motor, pointed nose, enclosed cockpit and retractable landing gear.

Crew:	One.
Armament:	Two machine guns, fixed-fuselage, and two 20-mm cannon, fixed-wing (or four machine guns). (Latest model cannon through propellor).
Ammunition:	500 rounds per machine gun; 60 rounds per 20-mm.
Bomb load:	Can carry one 500-pound bomb.
Radio:	Two-way
Armor:	8-mm armor protection for pilot from rear and above. Bullet-proof windshield. Fuel tanks partially protected but not self-sealing.
Motors:	One 1,175-horsepower, DB 601A, liquid cooled. (New models: 1,500 to 1,700 horsepower, DB 603.)
Maximum speed:	354 miles per hour.
Rate of climb:	To 13,120 feet in 3.8 minutes.
Service ceiling:	36,080 feet.
Maximum range:	620 miles at 298 miles per hour; 540 miles at 322 miles per hour.
Wing span:	33 feet.

Pursuit
Messerschmitt Me-109



**GERMAN
ARMY**

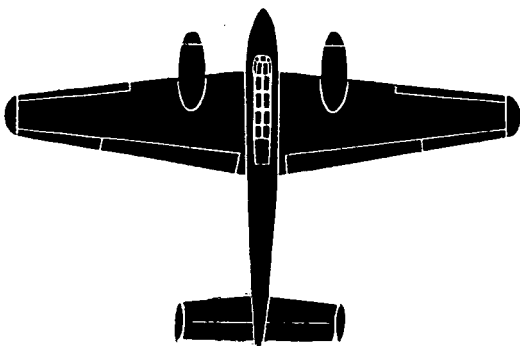
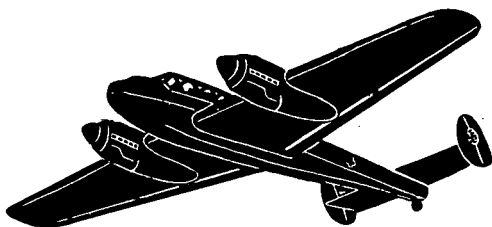
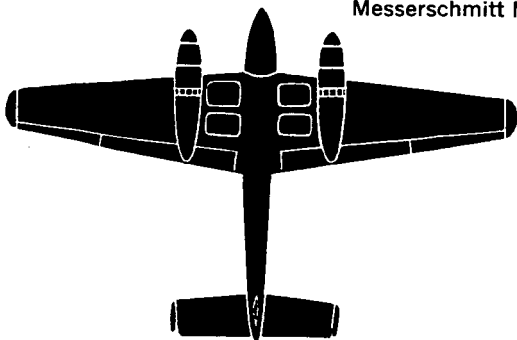


Pursuit Messerschmitt Me-110

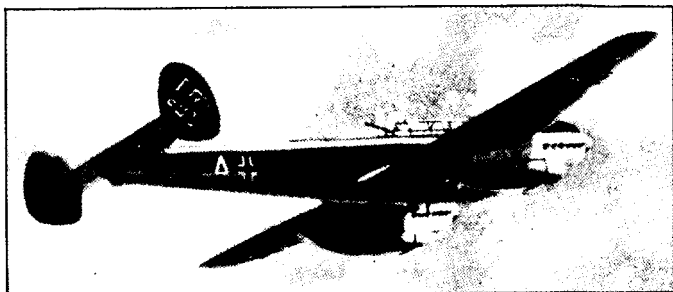
Long, narrow, slightly swept back and tapered, low-wing monoplane. Two mid-wing motors, pointed engine nacelles, enclosed cockpit, retractable landing gear, and twin rudder fins.

Crew:	Three.
Armament:	Four machine guns, fixed-fuselage; two machine guns, flexible-fuselage, rear; two 20-mm cannon, fixed-nose.
Ammunition:	5,000 rounds machine gun; 400 rounds 20-mm.
Bomb load:	Can carry one 1,100-pound bomb.
Radio:	Two-way and blind landing equipment.
Armor:	Substantial armor plate.
Motors:	Two 1,175-horsepower, DB 601A, liquid cooled.
Maximum speed:	370 miles per hour.
Rate of climb:	10,000 feet in 4.1 minute; 20,000 feet in 10.1 minutes.
Service ceiling:	
Maximum range:	3.5 hours at cruising speed or 1,300 miles at 315 miles per hour.
Wing span:	55 feet.

Pursuit
Messerschmitt Me-110



**GERMAN
ARMY**

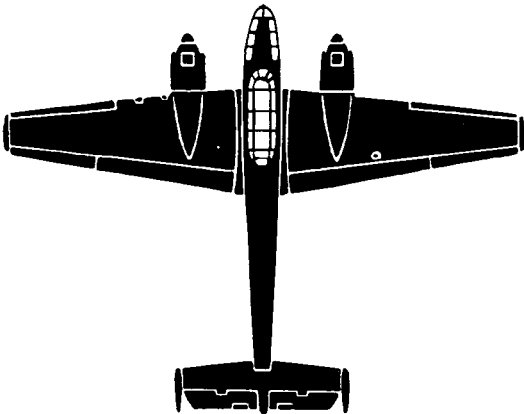
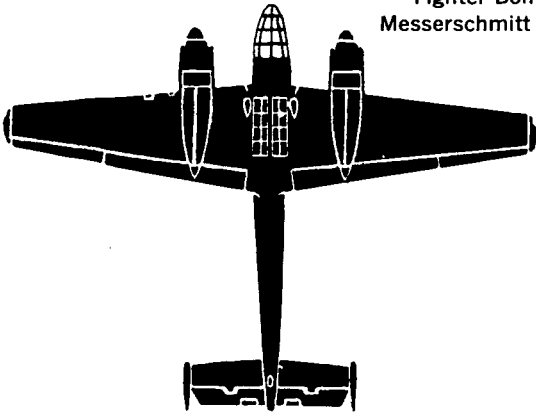


**Fighter Bomber Messerschmitt Jaguar
(similar to Me-110)**

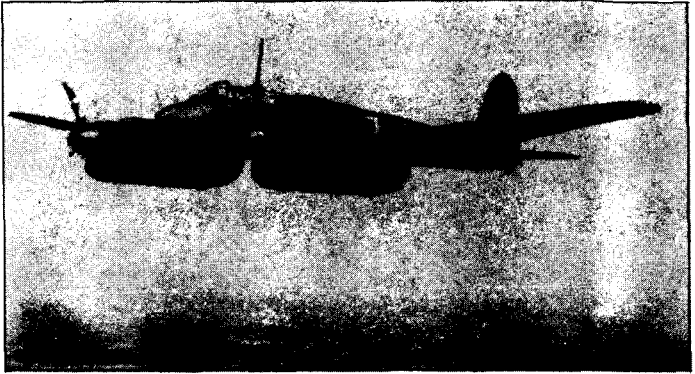
Long, narrow, slightly swept back and tapered, low-wing monoplane. Two mid-wing motors, pointed engine nacelles, enclosed cockpit, retractable landing gear, twin rudder fins and semi-retractable tail wheel.

Crew:	Two or three.
Armament:	Four machine guns, fixed-fuselage; two machine guns, flexible-fuselage, rear; two 20-mm cannon, fixed-nose.
Ammunition:	5,000 rounds per machine gun; 400 rounds per 20-mm.
Bomb load:	Has been known to carry two 1,100-pound bombs.
Radio:	Two-way and blind landing equipment.
Armor:	Substantial armor plate.
Motors:	Two 1,175-horsepower Daimler-Benz, DB 601 motors.
Maximum speed:	320 miles per hour, (estimate).
Rate of climb:	10,000 feet in 4.1 minutes; 20,000 feet in 10.1 minutes.
Service ceiling:	
Maximum range:	3.5 hours at cruising speed or 1,300 miles at 315 miles per hour.
Wing span:	55 feet.

Fighter Bomber
Messerschmitt Jaguar



**GERMAN
ARMY**

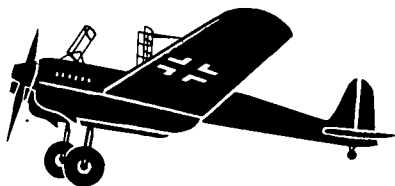


Pursuit Focke-Wulf Fw-187

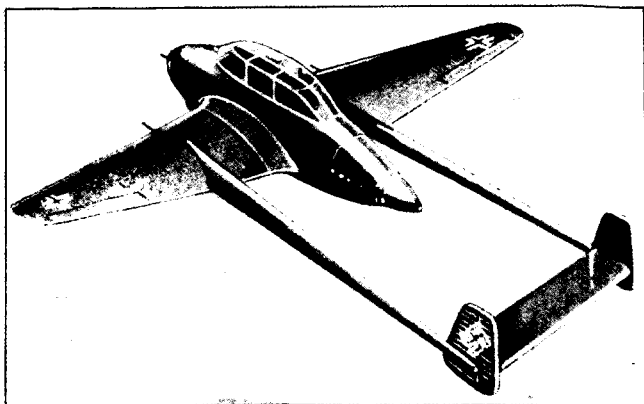
Low-wing cantilever monoplane, thin wing, twin motors projecting noticeably from wings, pointed nose, retractable landing gear.

Crew:	Two.
Armament:	Four machine guns; two 20-mm cannon.
Ammunition:	
Bomb load:	
Radio:	Two-way.
Armor:	
Motors:	Two 1,325 horsepower, DB 601E (also DB 603).
Maximum speed:	400 miles per hour.
Rate of climb:	To 6,560 feet in 1.9 minutes.
Service ceiling:	38,700 feet.
Maximum range:	
Wing span:	51 feet.

Pursuit
Focke-Wulf FW-187



**GERMAN
ARMY**

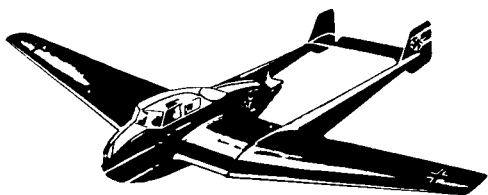


Pursuit Focke-Wulf Fw-198

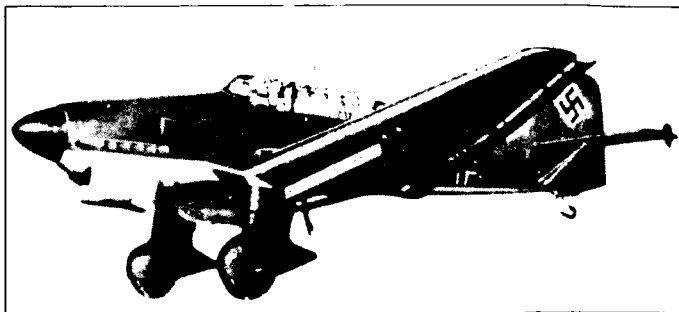
Tapered, mid-wing monoplane. All metal, single pusher type motor, short, blunt nose, enclosed cockpit, twin tail boom and rudder fins.

Crew:	One.
Armament:	Two cannon in boom extension forward; four machine guns in nose.
Ammunition:	
Bomb load:	
Radio:	Two-way.
Armor:	
Motors:	One 1,360-horsepower, DB 601E.
Maximum speed:	370 miles per hour at 19,000 feet.
Rate of climb:	2,750 feet per minute.
Service ceiling:	34,500.
Maximum range:	Two hours at 295 miles per hour.
Wing span:	

Pursuit
Focke-Wulf FW-198



**GERMAN
ARMY**

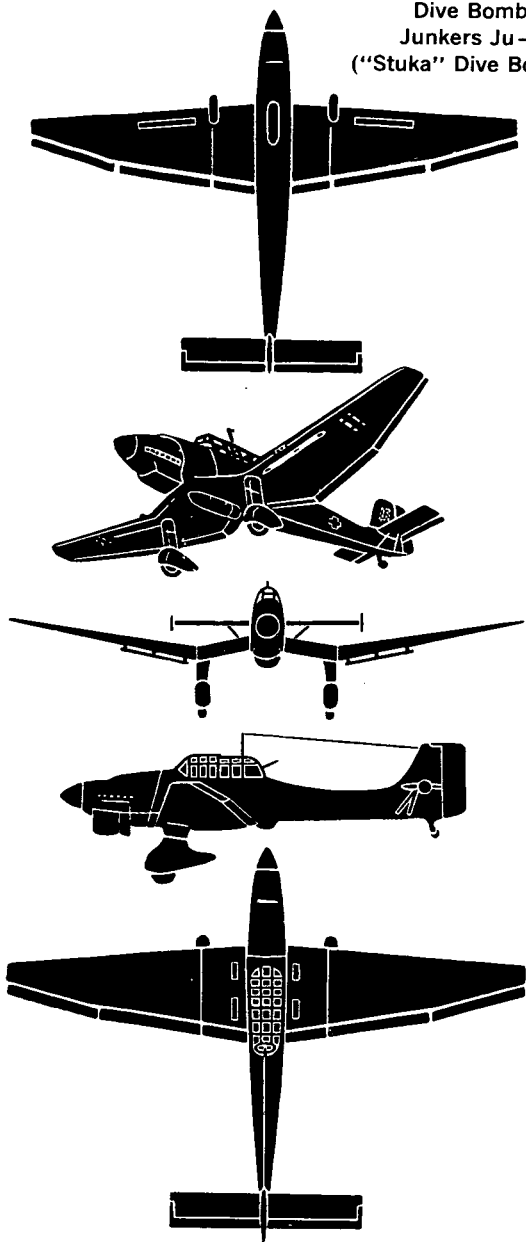


**Dive Bomber Junkers Ju-87
("Stuka" Dive Bombers)**

Slightly swept-back, tapered, negative dihedral, square tip, low-wing monoplane. All metal, single motor, enclosed cockpit, long pointed nose, square tip tail plane, and fixed landing gear.

Crew:	Two.
Armament:	Two machine guns, fixed-fuselage; one machine gun, flexible-fuselage, rear.
Ammunition:	
Bomb load:	One 1,100-pound and two 110-pound.
Radio:	Two-way.
Armor:	
Motors:	One 1,200-horsepower Junkers Jumo 211A, liquid cooled.
Maximum speed:	242 to 250 miles per hour. Diving speed, 430 miles per hour.
Rate of climb:	To 13,120 feet in 8.5 minutes.
Service ceiling:	27,890 feet.
Maximum range:	2.5 hours at cruising speed; 498 miles at 186 miles per hour.
Wing span:	45 feet.

Dive Bomber
Junkers Ju-87
("Stuka" Dive Bombers)



**GERMAN
ARMY**

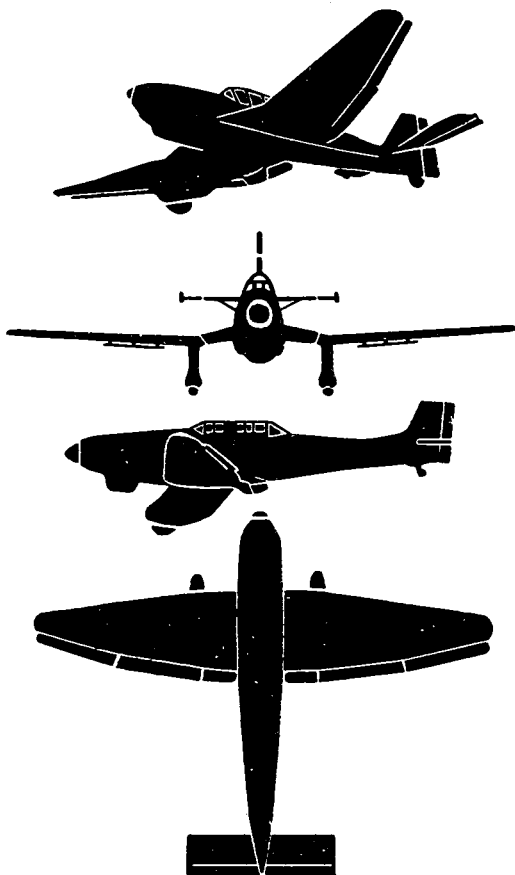


Dive Bomber Junkers Ju-87K

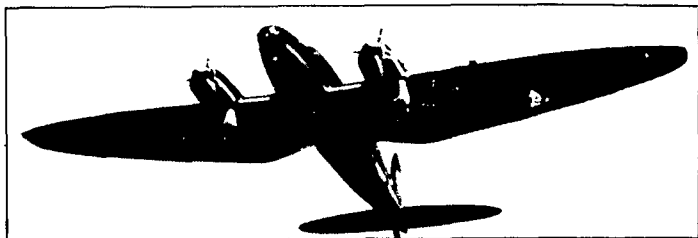
Swept-back, tapered, negative dihedral, round tip, low-wing monoplane. Single motor, pointed nose, enclosed cockpit, and fixed landing gear.

Crew:	Two.
Armament:	Two machine guns, fixed-fuselage; one machine gun, flexible-fuselage, rear.
Ammunition:	
Bomb load:	One 1,100-pound and two 110-pound.
Radio:	Two-way.
Armor:	
Motors:	One 1,200-horsepower Junkers Jumo 211A, liquid cooled.
Maximum speed:	242 to 250 miles per hour. Diving speed, 430 miles per hour.
Rate of climb:	To 13,120 feet in 8.5 minutes.
Service ceiling:	27,890 feet.
Maximum range:	2.5 hours at cruising speed; 498 miles at 186 miles per hour.
Wing span:	45 feet.

Dive Bomber
Junkers Ju-87K



**GERMAN
ARMY**

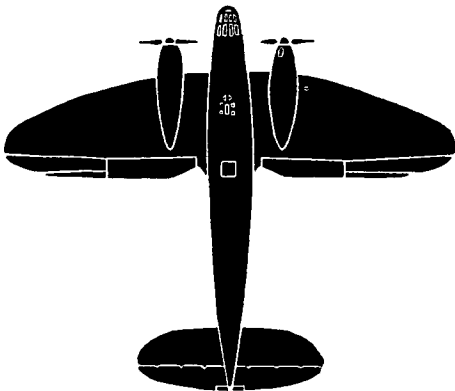
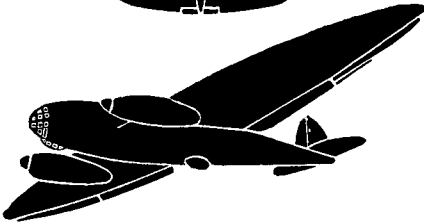
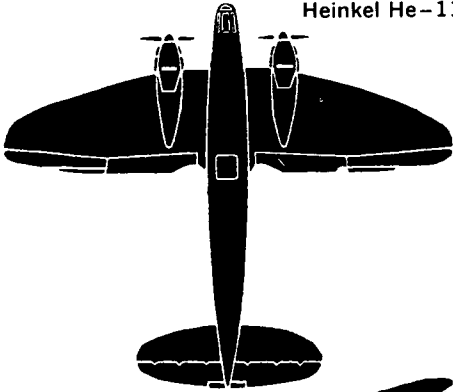


Bomber Heinkel He-111K Mk III

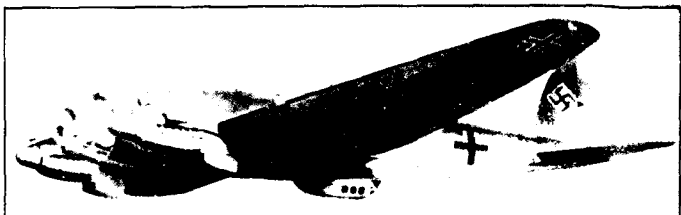
Elliptical, rounded, trailing edge, slight cut-out, slightly dihedral, low-wing monoplane. Twin mid-wing motors, pointed engine nacelles, long pointed nose, elliptical tail, and retractable landing gear.

Crew:	Four.
Armament:	Three machine guns—50-mm in nose, top of fuselage, and dust bin (or cannon).
Ammunition:	
Bomb load:	2,200 to 4,500 pounds.
Radio:	Two-way.
Armor:	
Motors:	Two 1,050-horsepower DB 600 (also Junkers Jumo 211, 1,200-horsepower in some models).
Maximum speed:	252 with DB motor; 272 with Jumo 211 model.
Rate of climb:	3,280 feet in 2.1 minutes.
Service ceiling:	24,100 feet.
Maximum range:	1,000 miles at 217 miles per hour.
Wing span:	76 feet.

Bomber
Heinkel He-111K Mk III



GERMAN
ARMY

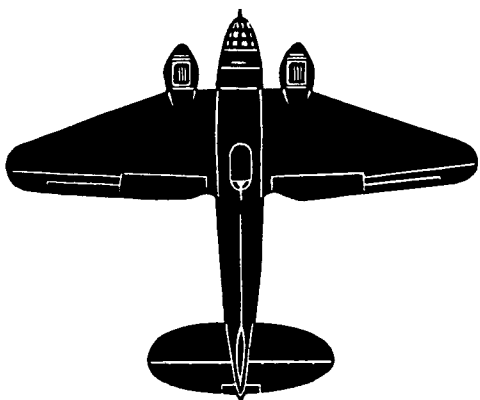
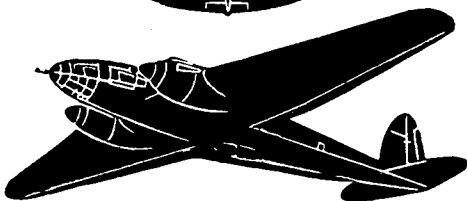
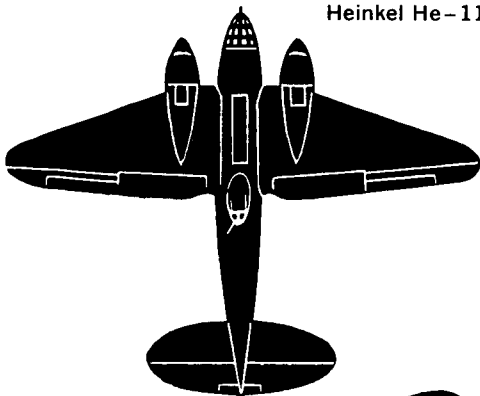


Bomber Heinkel He-111K Mk V

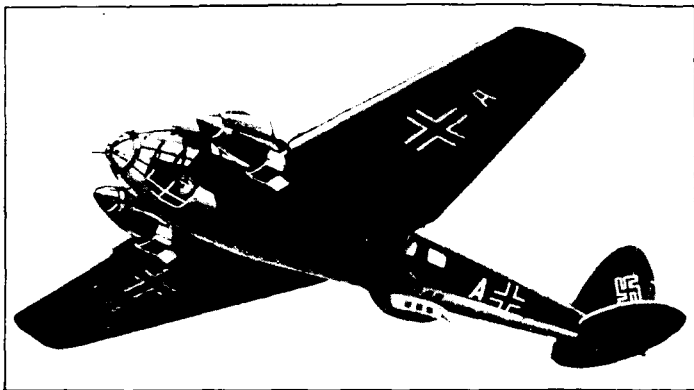
Swept-back, round tip, straight, trailing edge, low-wing monoplane. All metal, twin mid-wing motors, pointed engine nacelles, short nose, retractable landing gear and tail wheel, elliptical tail plane, and gun turrets showing above and below fuselage.

Crew:	Four.
Armament:	Three 50-mm machine guns or cannon in nose, top of fuselage, and dust bin.
Ammunition:	
Bomb load:	4,400 pounds.
Radio:	Two-way.
Armor:	
Motors:	Two 1,150-horsepower DB 601A.
Maximum speed:	274 miles per hour at 12,300 feet.
Rate of climb:	To 13,120 feet in 16.8 minutes.
Service ceiling:	24,100 feet.
Maximum range:	2,170 miles with 4,400 pounds.
Wing span:	76 feet.

Bomber
Heinkel He-111K Mk V



**GERMAN
ARMY**

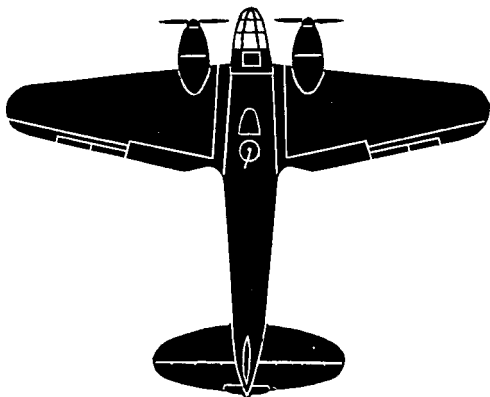
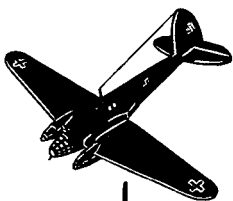
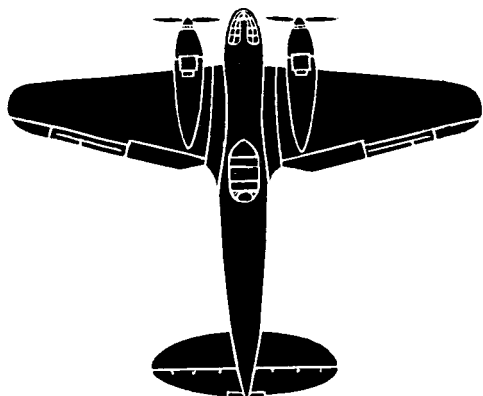


Bomber Heinkel He-111K Mk Va

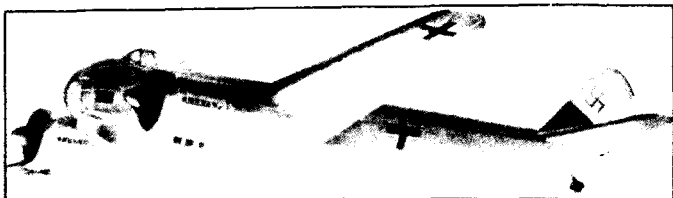
Slightly swept-back, tapered, round tip, slightly dihedral, low-wing monoplane. All metal, twin mid-wing motors, pointed engine nacelles, short nose, retractable landing gear and tail wheel, and elliptical tail plane.

Crew:	Four.
Armament:	Three flexible 50-mm machine guns or cannon in nose, top of fuselage, and dust bin.
Ammunition:	
Bomb load:	Four 1,100-pound.
Radio:	Two-way.
Armor:	
Motors:	Two 1,200-horsepower Jumo 211A.
Maximum speed:	280 miles per hour at 14,000 feet.
Rate of climb:	To 13,120 feet in 17 minutes.
Service ceiling:	26,200 feet.
Maximum range:	2,110 miles at cruising speed with 2,200-pound bomb load or 2,640 miles without load.
Wing span:	74 feet.

Bomber
Heinkel He-111K Mk Va



**GERMAN
ARMY**

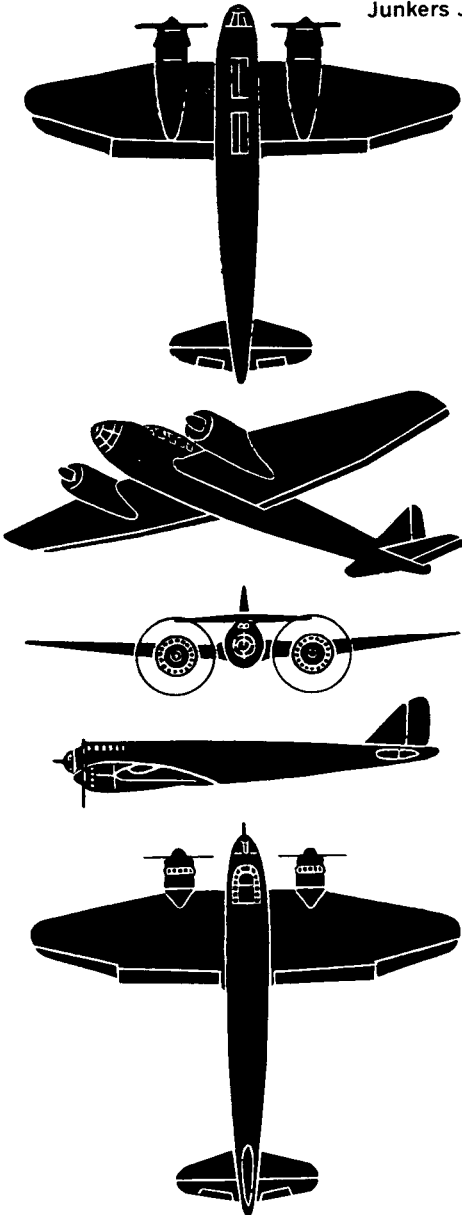


Dive Bomber or Bomber Junkers Ju-88

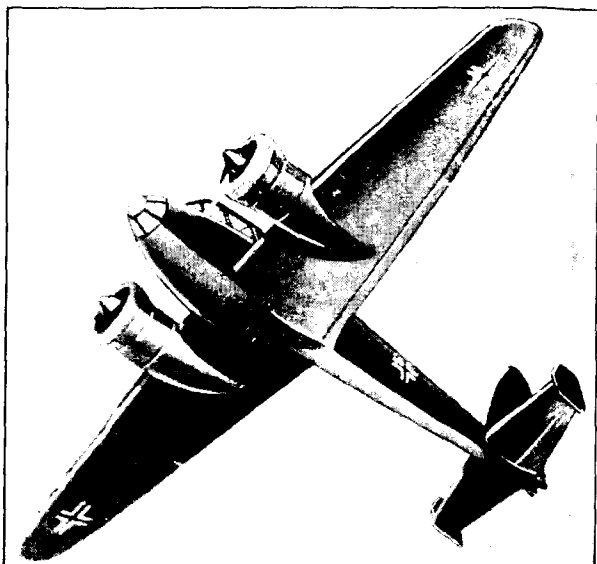
Swept-back, tapered, round tip, mid-wing monoplane. All metal, twin mid-wing motors, blunt engine nacelles, short, round nose, retractable landing gear, and elliptical tail plane.

Crew:	Four (three when used as dive bomber).
Armament:	Three flexible machine guns—one front, two rear.
Ammunition:	500 rounds per gun.
Bomb load:	Two 1,100-pound; maximum, three 1,100-pound or one 4,000-pound.
Radio:	Two-way.
Armor:	
Motors:	Two 1,200-horsepower Junkers Jumo 2 U. B., liquid cooled.
Maximum speed:	320 miles per hour at 15,580 feet.
Rate of climb:	15,000 feet in 7.1 minutes.
Service ceiling:	29,520 feet.
Maximum range:	1,560 miles at 185 miles per hour.
Wing span:	60 feet.

Dive Bomber or Bomber
Junkers Ju-88



**GERMAN
ARMY**

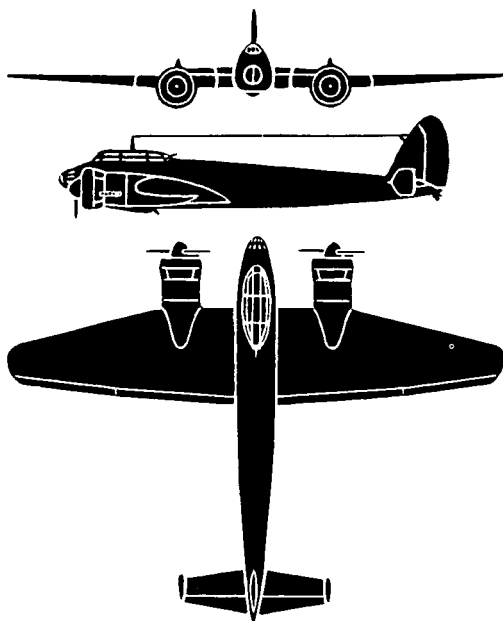


Bomber Junkers Ju-88K

Swept-back, tapered, low-wing monoplane. Twin mid-wing motors, blunt engine nacelles, retractable landing gear and tail wheel, enclosed cockpit, diamond-shaped tail plane, and twin rudder fins.

Crew:	Three to four.
Armament:	Three machine guns. Some models have 5 machine guns.
Ammunition:	
Bomb load:	2,200 pounds.
Radio:	Code two-way and VM.
Armor:	
Motors:	Two 1,200-horsepower Junkers Jumo 211a.
Maximum speed:	317 miles per hour at 15,600 feet.
Rate of climb:	
Service ceiling:	29,800 feet.
Maximum range:	2,520 miles.
Wing span:	56 feet.

Bomber
Junkers Ju-88K



**GERMAN
ARMY**

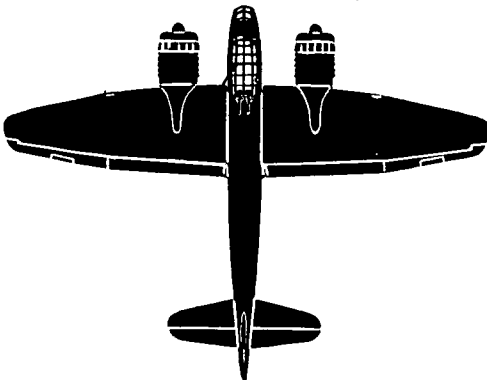
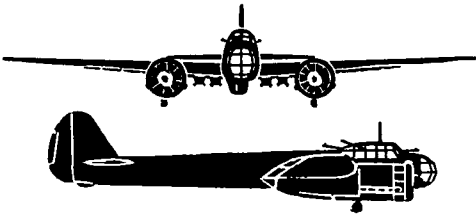
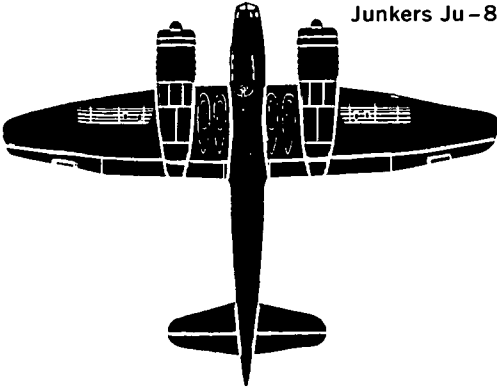


Dive Bomber or Bomber Junkers Ju-88 A-1

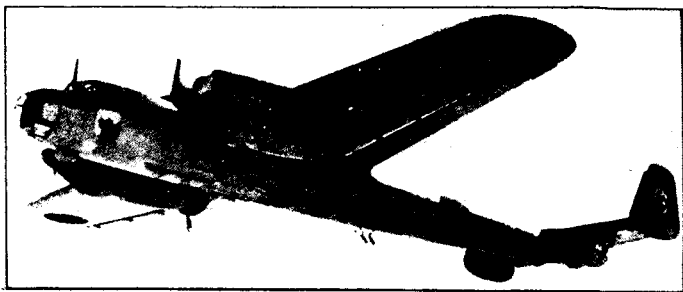
Swept-back, tapered, angular wings, round tip, low-wing cantilever, all metal monoplane. Twin mid-wing motors, long, blunt engine nacelles, long transparent nose, retractable landing gear, elliptical tail plane, in front of fin.

Crew:	Four.
Armament:	Six flexible machine guns firing front, side rear, above, and under fuselage.
Ammunition:	
Bomb load:	Four 550-pound bombs and also sixteen 110-pound bombs alternative with extra fuel tanks.
Radio:	Two-way.
Armor:	
Motors:	Two 1,200-horsepower Jumo 211 A or B.
Maximum speed:	317 miles per hour at 15,600 feet.
Rate of climb:	
Service ceiling:	29,800 feet.
Maximum range:	1,310 miles at 264 miles per hour or 5.5 hours.
Wing span:	59 feet.

Dive Bomber or Bomber
Junkers Ju-88 A-1



**GERMAN
ARMY**

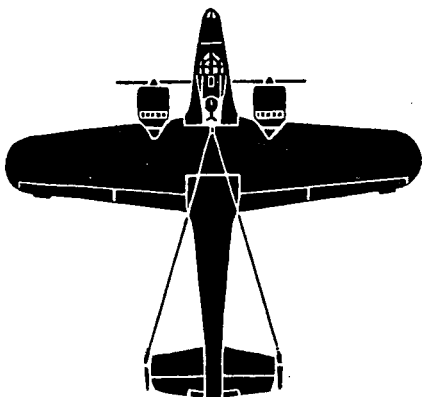
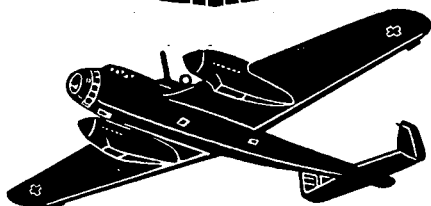
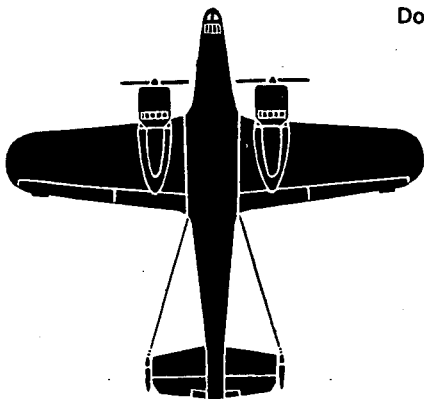


Bomber Dornier Do-17

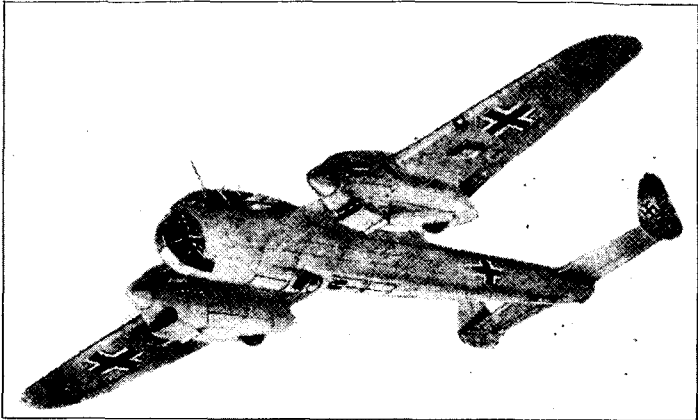
Slightly swept-back, tapered, round tip, high-wing monoplane. Twin motors, blunt engine nacelles protruding below the wings, long pointed nose, retractable landing gear and tail wheel, and twin rudder fins.

Crew:	Three, all in one compartment.
Armament:	Eight flexible machine guns— upper and lower forward, upper and lower rear, two on each side.
Ammunition:	
Bomb load:	Two 1,100-pound.
Radio:	Two-way.
Armor:	Armor protection for crew.
Motors:	Two 1,050-horsepower DB 600, liquid cooled.
Maximum speed:	288 miles per hour.
Rate of climb:	To 3,280 feet in 1.8 minutes; to 19,680 feet in 17 minutes.
Service ceiling:	29,283 feet.
Maximum range:	965 to 1,860 miles, depending upon gas and bomb load or 1,200 miles at 210 miles per hour.
Wing span:	59 feet.

Bomber
Dornier Do-17



**GERMAN
ARMY**

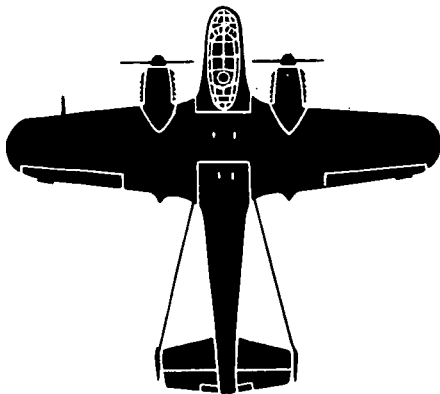
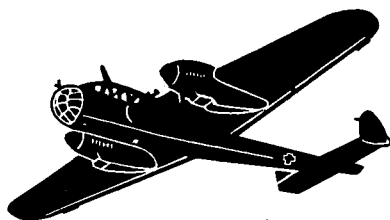
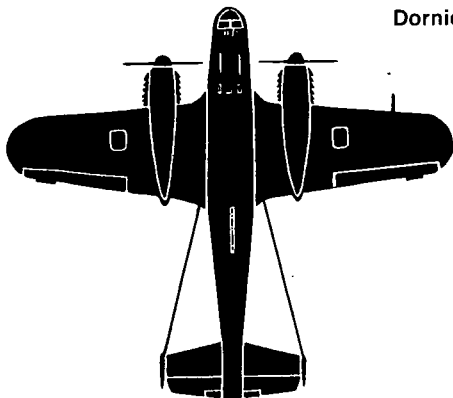


Bomber Dornier Do-215

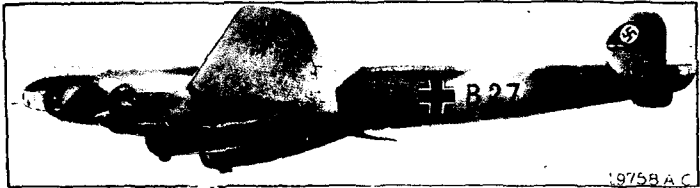
Slightly swept-back, tapered, round tip, high-wing monoplane. All metal, twin motors, pronounced engine nacelles extending below wings, retractable landing gear and tail wheel, and twin rudder fins.

Crew:	Four, all in one compartment.
Armament:	Five machine guns—one front, one each upper and lower rear, one each, beams.
Ammunition:	
Bomb load:	Two 1,100-pound.
Radio:	Two-way.
Armor:	
Motors:	Two 1,150-horsepower DB 601, liquid cooled.
Maximum speed:	312 miles per hour at 16,400 feet.
Rate of climb:	To 3,280 feet in 1.8 minutes; to 16,400 feet in 12.8 minutes.
Service ceiling:	27, 230 feet.
Maximum range:	965 to 1,860 miles, depending upon gas and bomb load; 1,044 at 264 miles per hour.
Wing span:	59 feet.

Bomber
Dornier Do-215



**GERMAN
ARMY**



Heavy Bomber Junkers Ju-89K

Extremely swept-back, square tip, low-wing monoplane. Four mid-wing motors, pointed engine nacelles, long pointed nose, retractable landing gear and tail wheel, and twin rudder fins.

Crew:	Six.
Armament:	
Ammunition:	
Bomb load:	
Radio:	
Aarmor:	
Motors:	Four.
Maximum speed:	255 miles per hour at 5,500 feet.
Rate of climb:	
Service ceiling:	23,600 feet.
Maximum range:	1,250 miles.
Wing span:	

Heavy Bomber
Junkers Ju-89K



**GERMAN
ARMY**

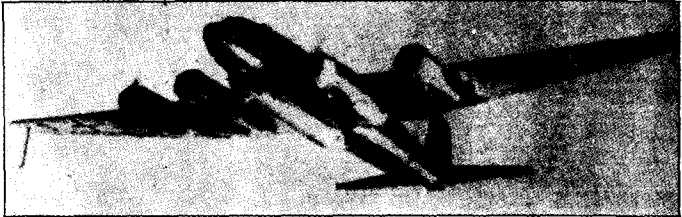
Heavy Bomber Heinkel He-177

Four engine, heavy bomber, monoplane. Fowler, medium-wing, all metal.

Crew:	Five.
Armament:	Five machine guns; cannon are contemplated.
Ammunition:	
Bomb load:	12,000 pounds, normal.
Radio:	Two-way.
Armor:	Armor protection for rear gunner.
Motors:	Four 1,325 horsepower DB 606.
Maximum speed:	340 miles per hour.
Rate of climb:	20,000 feet in 30 minutes.
Service ceiling:	36,000 feet.
Maximum range:	1,863 miles normal; 4,000 miles maximum.
Wing span:	103 feet.

**Heavy Bomber
Heinkel He-177**

**GERMAN
ARMY**

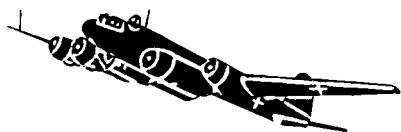


Heavy Bomber Focke-Wulf Kurier

Slightly swept-back, tapered, round tip, slightly dihedral, 4-motor monoplane, blunt engine nacelles, long pointed nose, elliptical tail plane, and retractable landing gear and tail wheel. (Similar to Focke-Wulf Fw-200 Condor).

Crew:	Six.
Armament:	Cannon and machine guns.
Ammunition:	
Bomb load:	
Radio:	Code two-way and VH.
Armor:	
Motors:	Four 1000-horsepower BMW Bram Fafnir 323M.
Maximum speed:	265 miles per hour at 9,500 feet.
Rate of climb:	To 3,280 feet in 2.5 minutes; to 13,120 feet in 14.3 minutes.
Service ceiling:	28,000 feet.
Maximum range:	775 to 1,180 miles, depending on gas and bomb load.
Wing span:	

Heavy Bomber
Focke-Wulf Kurier



**GERMAN
ARMY**

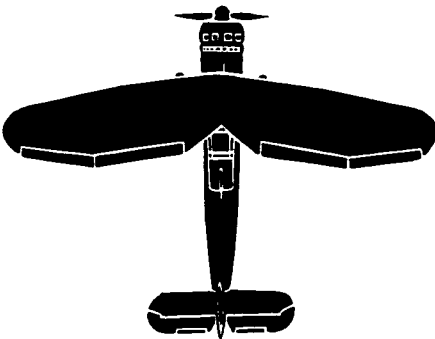
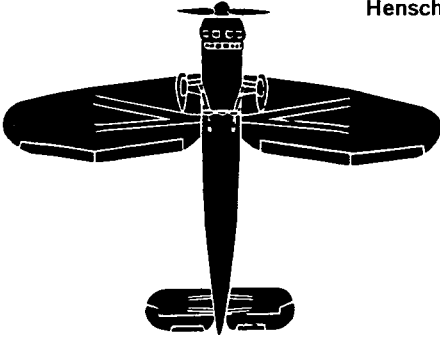


Observation Henschel Hs-126

Swept-back, round tip, rounded trailing edge with cut-out, parasol monoplane. Single motor, blunt nose and fixed landing gear.

Crew:	Two.
Armament:	Two machine guns.
Ammunition:	500 rounds for front gun; 975 rounds for rear gun.
Bomb load:	Ten 22-pound.
Radio:	Code two-way-M.
Armor:	
Motors:	One 870-horsepower BMW 132 Dc, air cooled.
Maximum speed:	230 miles per hour at 16,400 feet.
Rate of climb:	To 6,560 feet in 3.5 minutes; to 19,700 feet in 11.7 minutes.
Service ceiling:	26,400 feet.
Maximum range:	3.4 hours at cruising speed or 620 miles.
Wing span:	48 feet.

Observation
Henschel Hs-126



**GERMAN
ARMY**

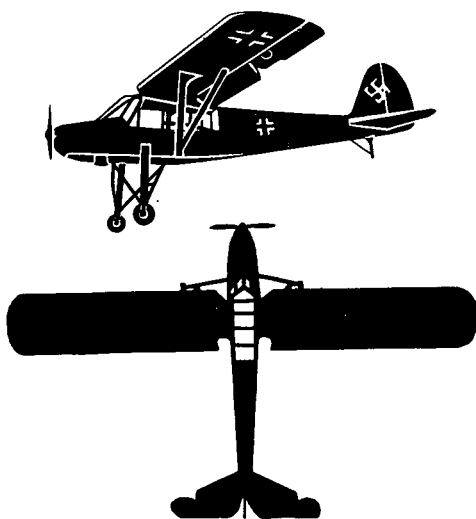


Observation Fieseler Fi-156 (probably)

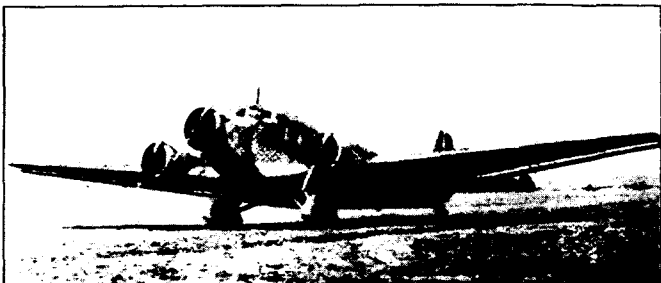
High wing, braced-wing, monoplane, fuselage steel tubing and fabric, wings wood and fabric, fixed landing gear.

Crew:	Three.
Armament:	
Ammunition:	
Bomb load:	
Radio:	Two-way code, low power.
Armor:	
Motors:	One 240-horsepower Argus As 10c 3, air cooled.
Maximum speed:	108 miles per hour; landing speed 25 miles per hour.
Rate of climb:	6,560 feet in 8.8 minutes.
Service ceiling:	17,000 feet.
Maximum range:	247 miles.
Wing span:	47 feet.

Observation
Fieseler Fi-156



**GERMAN
ARMY**

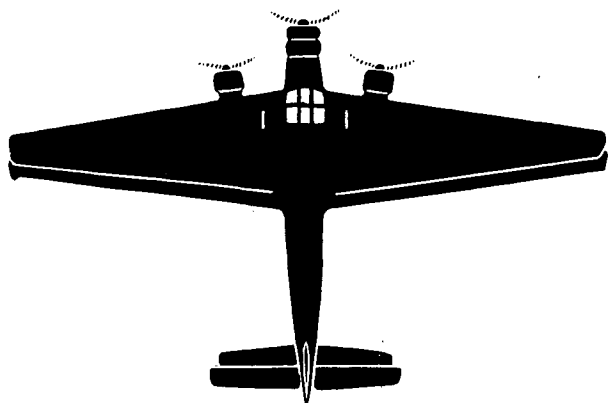
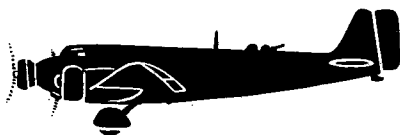
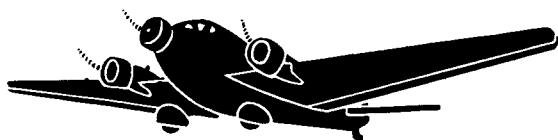
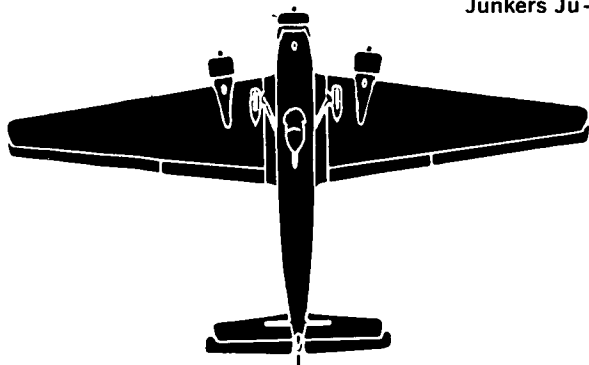


Troop Transport Junkers Ju-52

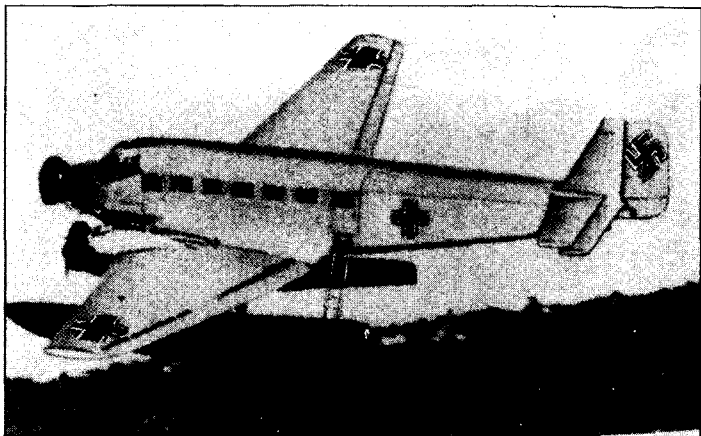
Swept-back, tapered, square tip, slightly dihedral, low-wing monoplane. Three motors, blunt engine nacelles, and fixed landing gear.

Crew:	Three.
Armament:	One machine gun.
Ammunition:	
Bomb load:	Fifteen men with full equipment.
Radio:	Yes.
Armor:	
Motors:	Three 870-horsepower BMW 132 Dc, air cooled.
Maximum speed:	120 miles per hour at cruising speed.
Rate of climb:	
Service ceiling:	
Maximum range:	
Wing span:	

Troop Transport
Junkers Ju-52



**GERMAN
ARMY**



Troop Transport Junkers Ju-52/3m W

Crew:

Armament:

Ammunition:

Bomb load:

Radio:

Armor:

Motors: Three 750-horsepower BMW 132a.

Maximum speed: 168 miles per hour.

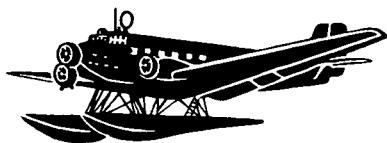
Rate of climb:

Service ceiling:

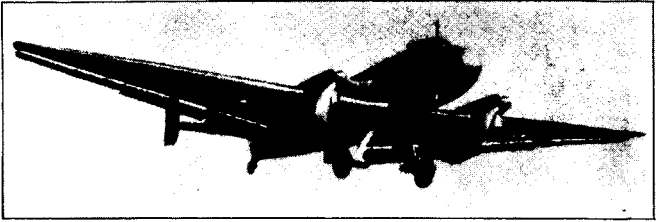
Maximum range:

Wing span:

Troop Transport
Junkers Ju-52/3m W



**GERMAN
ARMY**



Troop Transport Junkers Ju-86

Crew:

Armament:

Ammunition:

Bomb load:

Radio:

Armor:

Motors: 760-horsepower BMW 132.

Maximum speed: 248 miles per hour at 9,800 feet.

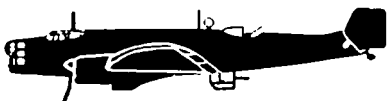
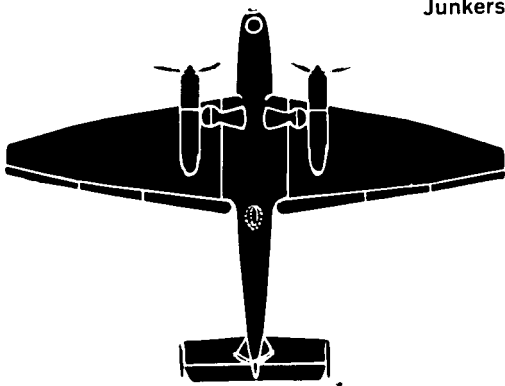
Rate of climb:

Service ceiling: 25,580 feet.

Maximum range: 930 miles.

Wing span: 73 feet 10 inches.

Troop Transport
Junkers Ju-86



**GERMAN
ARMY**

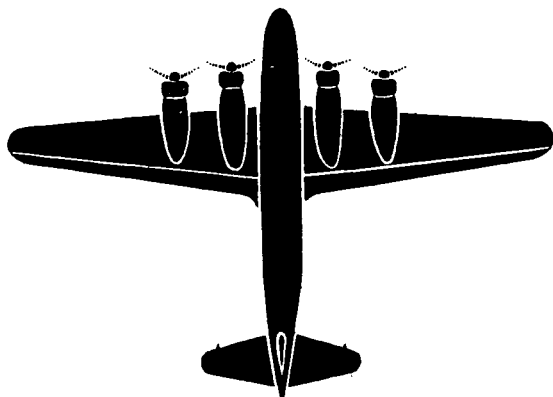
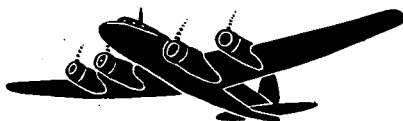


Troop Transport Focke-Wulf Fw-200

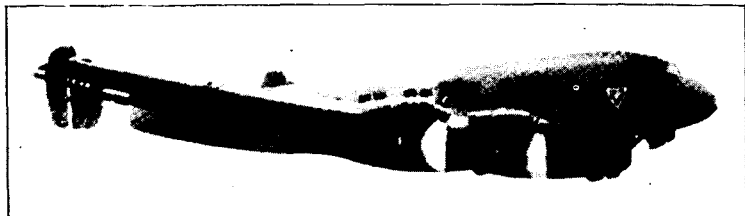
Slightly swept-back, tapered, round tip, slightly dihedral, four-motor monoplane, blunt engine nacelles, long pointed nose, elliptical tail plane, and retractable landing gear and tail wheel.

Crew:	Six.
Armament:	
Ammunition:	
Bomb load:	
Radio:	Code two-way and VH.
Armor:	
Motors:	Four.
Maximum speed:	265 miles per hour at 9,500 feet.
Rate of climb:	To 3,280 feet in 2.5 minutes; to 13,120 feet in 14.3 minutes.
Service ceiling:	28,000 feet.
Maximum range:	775 to 1,180 miles, depending on gas and bomb load.
Wing span:	108 feet.

Troop Transport
Focke-Wulf Fw-200



**GERMAN
ARMY**

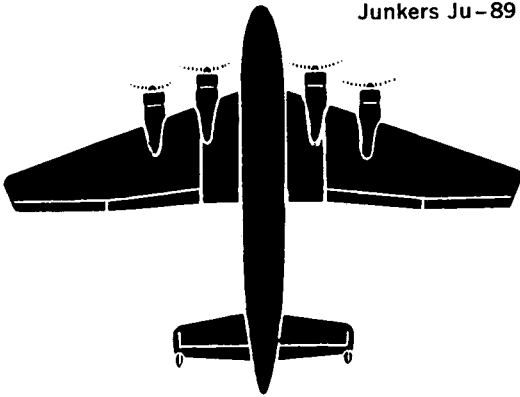


Troop Transport Junkers Ju-89 and 90

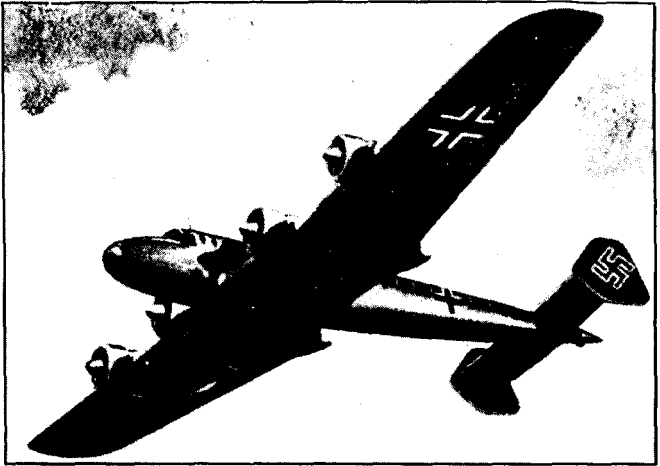
Extremely swept-back, square tip, slightly dihedral, low-wing cabin monoplane. Four mid-wing motors, blunt engine nacelles, long pointed nose, retractable landing gear, and twin rudder fins.

Crew:	Three.
Armament:	
Ammunition:	
Troop capacity:	Forty.
Bomb load:	
Radio:	
Armor:	
Motors:	Four 880-horsepower BMW 132 Dc motors.
Maximum speed:	217 miles per hour.
Rate of climb:	
Service ceiling:	
Maximum range:	
Wing span:	115 feet.

Troop Transport
Junkers Ju-89 and 90



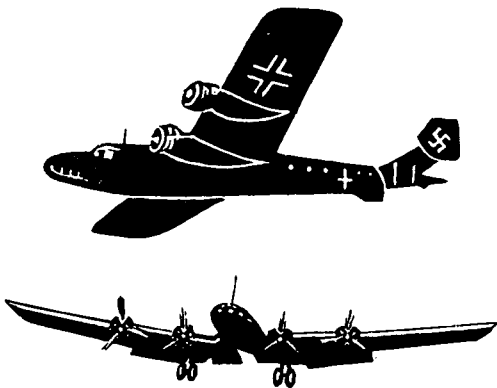
GERMAN
ARMY



Troop Transport Blohm and Voss BV-142

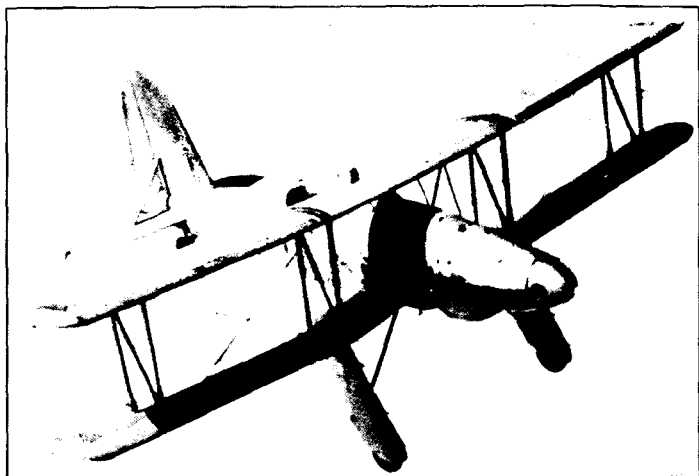
Crew:
Armament:
Ammunition:
Bomb load:
Radio:
Armor:
Motors: Four 880-horsepower BHW.
Maximum speed: 248 miles per hour.
Rate of climb: 3,280 feet in 2.5 minutes.
Service ceiling: 22,305 feet.
Maximum range:
Wing span: 97 feet.

Troop Transport
Blohm & Voss BV-142



NAVY
AIRCRAFT

**GERMAN
NAVY**

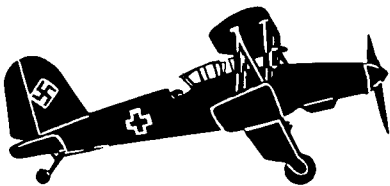


Torpedo-Bomber Fieseler Fi-167

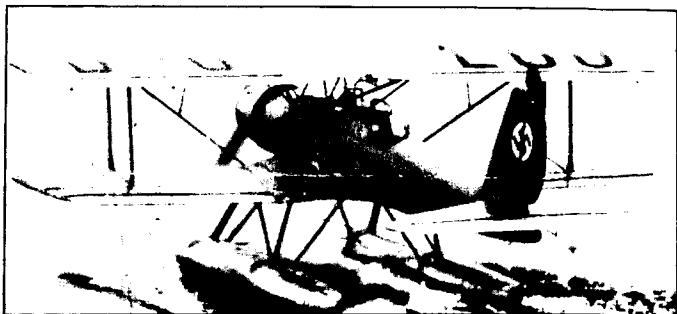
All metal biplane, single liquid-cooled motor, pointed nose, and fixed landing gear. For operation from carrier.

Crew:	Two.
Armament:	Two guns. One torpedo.
Ammunition:	
Bomb load:	One torpedo or two 1,102.3-pound bombs.
Radio:	
Armor:	
Motors:	1,150-horsepower DB 601 B.
Maximum speed:	202 miles per hour at 12,100 feet.
Rate of climb:	
Service ceiling:	26,900 feet.
Maximum range:	930 miles; when fully loaded, 404 miles.
Wing span:	44 feet.

Torpedo-Bomber
Fieseler Fi-167



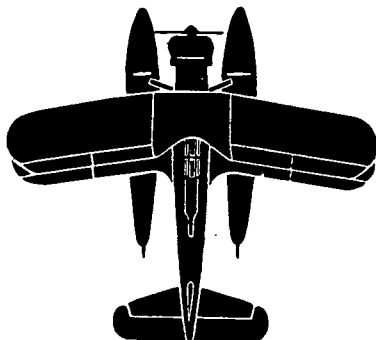
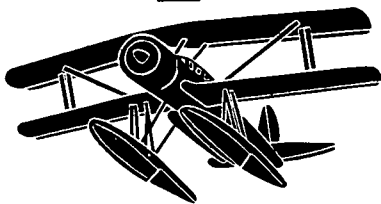
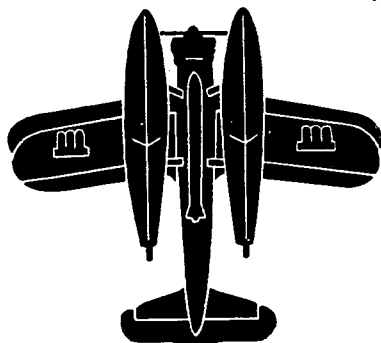
**GERMAN
NAVY**



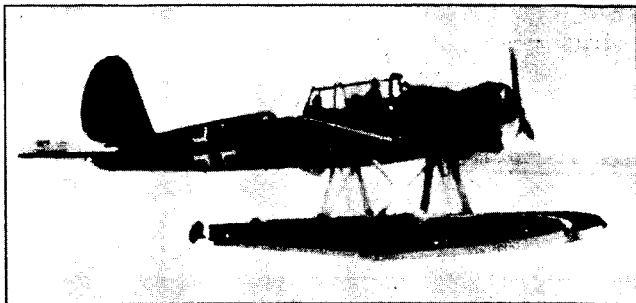
Patrol-Torpedo Arado Ar-95

Swept-back, round tip, biplane; twin float seaplane, single motor, and blunt nose.

Crew:	Two or three.
Armament:	Two machine guns.
Ammunition:	
Bomb load:	Six 110-pound, one 1,760-pound torpedo, or 825-pound smoke tank.
Radio:	
Armor:	
Motors:	One BMW 192, air cooled.
Maximum speed:	193 miles per hour at 9,840 feet.
Rate of climb:	To 3,280 feet in 2.3 minutes; to 13,120 feet in 9 minutes.
Service ceiling:	25,580 feet.
Maximum range:	Six hours at cruising speed.
Wing span:	41 feet.



**GERMAN
NAVY**



Patrol Arado Ar - 196

Crew:

Armament:

Ammunition:

Bomb load:

Radio:

Armor:

Motors: One 240-horsepower Argus As,
10c.

Maximum speed: 186 miles per hour.

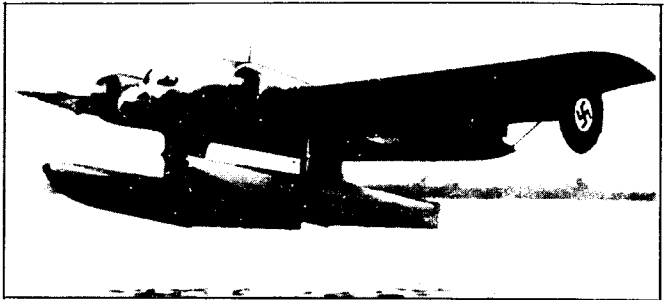
Rate of climb: 3,280 feet in 4.6 minutes.

Service ceiling: 17,056 feet.

Maximum range: 502 miles.

Wing span: 36 feet.

**GERMAN
NAVY**

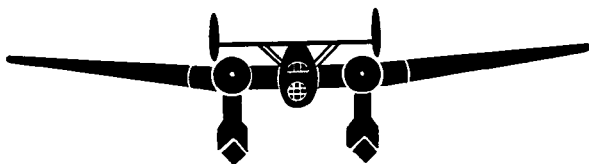


Torpedo-Bomber Blohm & Voss Ha-140

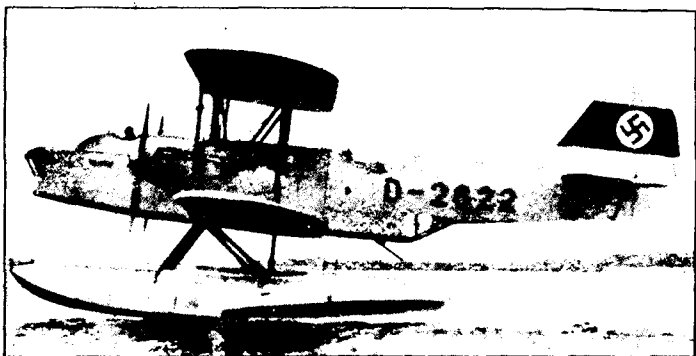
Round tip, slightly dihedral, mid-wing monoplane, twin float, seaplane, twin mid-wing motors, blunt engine nacelles, and twin rudder fins.

Crew:	Four.
Armament:	Two machine guns. Torpedo or bombs.
Ammunition:	
Bomb load:	
Radio:	
Armor:	
Motors:	Two 1,150-horsepower Jumo 211.
Maximum speed:	201 miles per hour.
Rate of climb:	9,840 feet in 11.5 minutes.
Service ceiling:	
Maximum range:	1,240 miles with torpedo; 1,550 miles on patrol.
Wing span:	69 feet.

**Torpedo-Bomber
Blohm & Voss Ha-140**



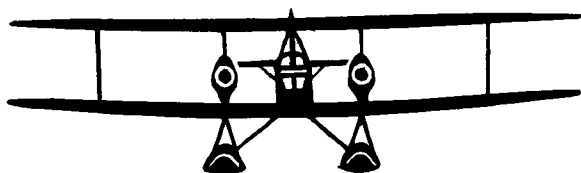
**GERMAN
NAVY**



Patrol-Torpedo Heinkel He-59

Straight, round tip, biplane, twin float seaplane, twin motors, and pointed engine nacelles.

Crew:	Four.
Armament:	Three machine guns.
Ammunition:	
Bomb load:	1,760 pounds.
Radio:	Two-way code.
Armor:	
Motors:	Two BMW VI.
Maximum speed:	140 miles per hour.
Rate of climb:	To 3,280 feet in 4.8 minutes.
Service ceiling:	
Maximum range:	1,088 miles.
Wing span:	78 feet.



**GERMAN
NAVY**

Patrol-Torpedo Heinkel He-114

Biplane seaplane, fuselage all metal, wings fabric, floats.

Crew:	Two.
Armament:	One fixed 7.9-mm machine gun fuselage in front and one flexible machine gun in fuselage, rear.
Ammunition:	500 rounds per machine gun.
Bomb load:	Light bomb can be accommodated.
Radio:	Two-way code.
Armor:	
Motors:	One 880-horsepower BMW 132 Dc.
Maximum speed:	205 miles per hour.
Rate of climb:	3,280 feet in 3 minutes.
Service ceiling:	23,000 feet.
Maximum range:	696 miles.
Wing span:	45 feet.

**GERMAN
NAVY**

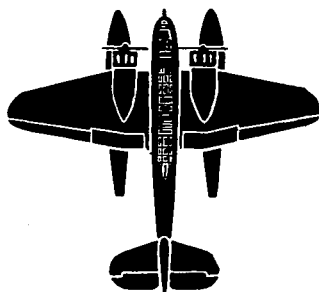
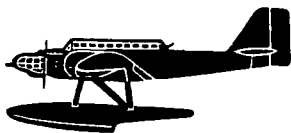
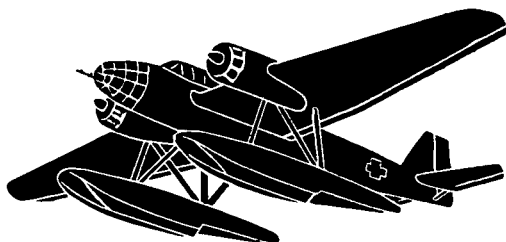
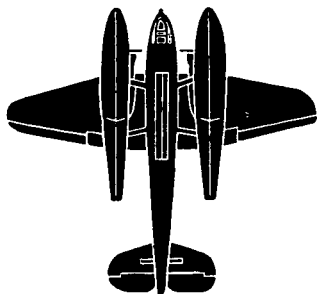


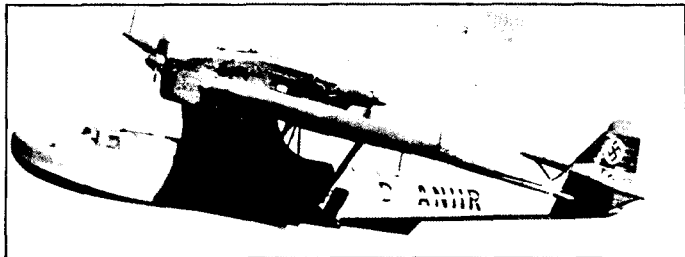
Patrol-Torpedo Heinkel He-115

Swept-back, tapered, round tip, mid-wing monoplane, twin float seaplane, twin mid-wing motors, and blunt engine nacelles.

Crew:	Two.
Armament:	Five machine guns and bombs or torpedo.
Ammunition:	Boxes and their housings would accommodate ammunition up to 174 millimeters long.
Bomb load:	250 kilo, or 500 kilo bombs or aerial mines. (1,760 pounds largest).
Radio:	Two-way.
Armor:	14-mm panel fitted behind pilot's head and shoulders.
Motors:	Two 880-horsepower BMW 132.
Maximum speed:	204 miles per hour.
Rate of climb:	6,600 feet 8.5 minutes.
Service ceiling:	21,300 feet.
Maximum range:	1,300 miles.
Wing span:	73 feet.

Patrol-Torpedo
Heinkel He-115



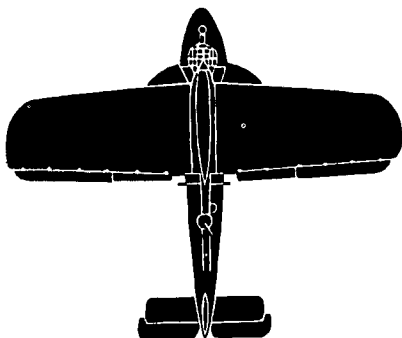
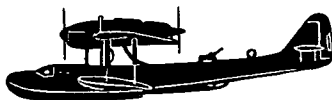
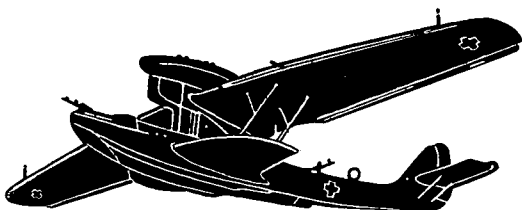
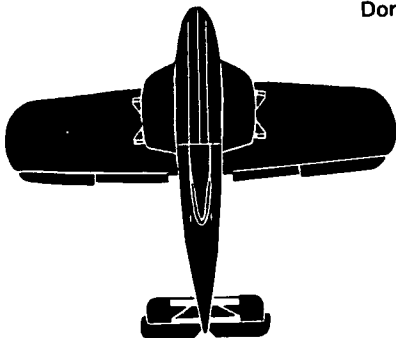


Patrol Dornier Do-18K

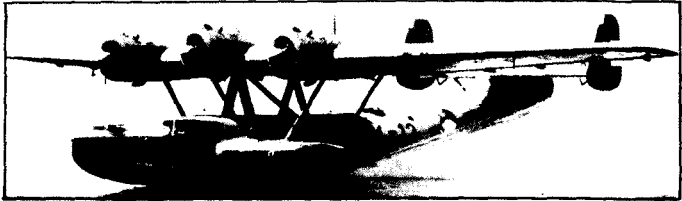
Slightly swept-back, slightly tapered, round tip, monoplane. flying boat, twin motors in tandem, sponsons or sea wings protruding from the hull of the float and braced to the wing.

Crew:	Four.
Armament:	Two machine guns.
Ammunition:	
Bomb load:	2,200 pounds.
Radio:	Yes.
Armor:	
Motors:	Two 600-horsepower Jumo 205.
Maximum speed:	155 miles per hour.
Rate of climb:	
Service ceiling:	14,000 feet.
Maximum range:	3,200 miles.
Wing span:	86 feet.

Patrol
Dornier Do-18K



GERMAN
NAVY

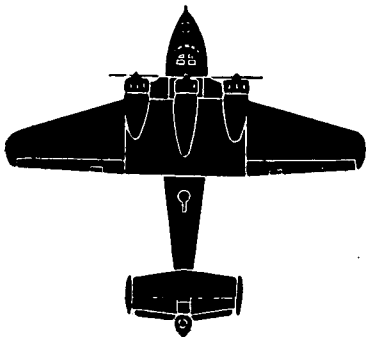
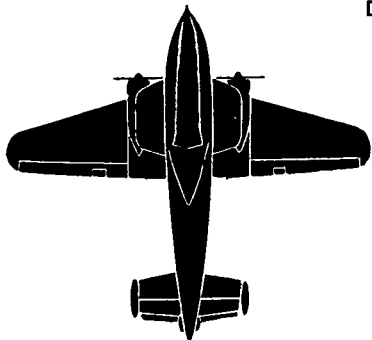


Patrol Dornier Do-24

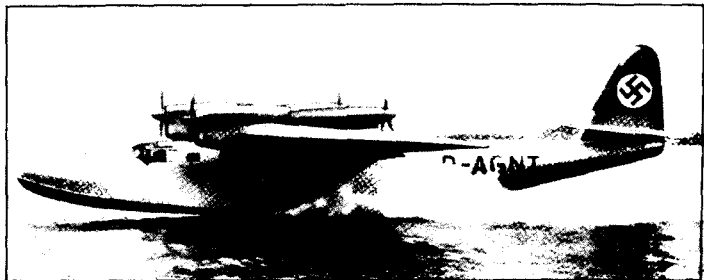
Swept-back, round tip monoplane, flying boat, blunt engine nacelles, sponsons or sea wings of hull braced to wings, three mid-wing motors, and twin rudder fins.

Crew:	Five.
Armament:	Three flexible machine guns.
Ammunition:	
Bomb load:	3,300 pounds.
Radio:	Two-way Code and Voice.
Armor:	
Motors:	Three (BMW 132c or Wright Cyclone).
Maximum speed:	195 miles per hour.
Rate of climb:	To 3,250 feet 3.5 minutes.
Service ceiling:	18,700 feet.
Maximum range:	2,175 miles.
Wing span:	89 feet.

Patrol
Dornier Do-24



**GERMAN
NAVY**



Patrol-Transport Dornier Do-26

High-wing monoplane, flying boat, four motors with engine nacelles protruding above the wings, two each in tandem.

Crew:

Armament: Gun turret in nose and one behind wing.

Ammunition:

Bomb load:

Radio:

Armor:

Motors: Four 600 horsepower Jumo, 205c Diesel motors.

Maximum speed: 208 miles per hour.

Rate of climb:

Service ceiling:

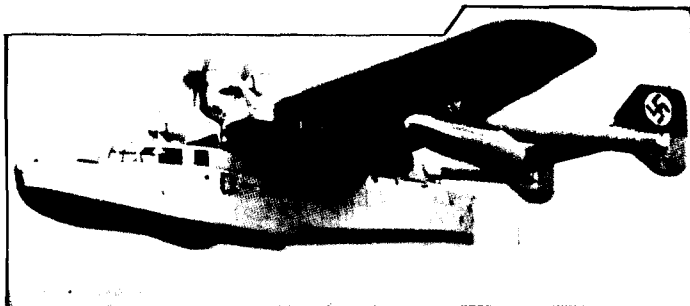
Maximum range: 5,600 miles at 130 miles per hour.

Wing span: 99 feet.

Patrol-Transport
Dornier Do-26



**GERMAN
NAVY**



Patrol Blohm & Voss Ha-138

Tapered, round tip, monoplane, flying boat, three motors, floats attached to under-surface of wings, and twin boom tail.

Crew:

Armament: Retractable gun turret in nose and gun positions behind middle motor and in stern of short hull.

Ammunition:

Bomb load:

Radio:

Aarmor:

Motors: Three 600-horsepower Junkers Jumo 205c Diesel motors.

Maximum speed: 171 miles per hour.

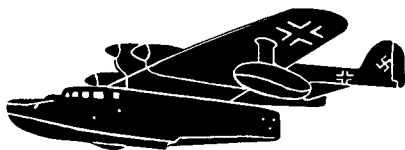
Rate of climb: 13,128 feet in 48 minutes.

Service ceiling:

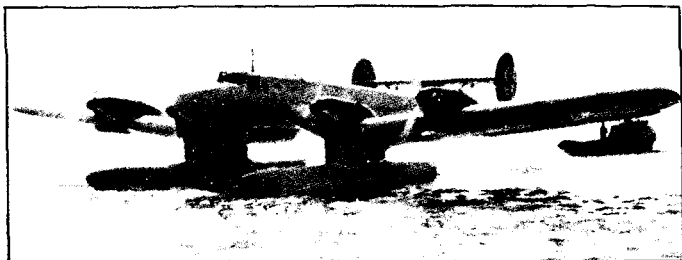
Maximum range: 1,500 miles at 146 miles per hour.

Wing span: 89 feet.

Patrol
Blohm & Voss Ha-138



**GERMAN
NAVY**



Patrol-Transport Blohm & Voss Ha-139

Negative dihedral, round tip, monoplane, seaplane with twin floats, four mid-wing motors, pointed engine nacelles, and twin rudder fins.

Crew:	Four.
Armament:	
Ammunition:	
Bomb load:	
Radio:	Yes.
Armor:	
Motors:	Four 510 Jumo 205.
Maximum speed:	200 miles per hour.
Rate of climb:	3,280 feet in 6 minutes.
Service ceiling:	14,100 feet.
Maximum range:	3,230 miles.
Wing span:	81 feet.

**Patrol-Transport
Blohm & Voss Ha-139**



**GERMAN
NAVY**



Multipurpose Arado Ar-197

Crew:	One.
Armament:	Machine guns and bomb.
Ammunition:	
Bomb load:	
Radio:	
Armor:	
Motors:	One B. M. P. radial motor.
Maximum speed:	
Rate of climb:	
Service ceiling:	
Maximum range:	
Wing span:	

Multipurpose
Arado Ar-197

