Operator's Handbook

# SUNKERSJU87 SUNKERSJU87 SUNKERSKU WRDS MKE HASKEW

After years of secretive development, the Junkers Ju 87 Stuka dive bomber emerged as a feared weapon of the Luftwaffe

# JUNKERS JU 87 Stuka dive bomber

ORIGIN: JUNKERS ENGINEER, HERMANN POHLMANN LENGTH: 11 METRES Range: 600 Kilometres Engine: Water Cooled, Inverted V-12 Junkers Jumo 211 PRIMARY WEAPON: 1,100-POUND

**BOMB PAYLOAD** 

SECONDARY WEAPON: TWO WING-MOUNTED 7.92MM MG 17 MACHINE GUNS; SINGLE REAR-FACING MG 17 IN COCKPIT CREW: 2

The Junkers Ju 87 Stuka is one of the most recognizable and vilified aircraft of the war. It spread terror and destruction along with spearheading the aerial phase of the blitzkrieg

The distinctive inverted gull wings and

fixed landing gear with spats make this

Ju 87 easily identifiable.

he Junkers Ju 87 Stuka dive bomber – its nickname a shortened version of the German word for dive bomber, 'Sturzkampfflugzeug' – remains one of the most legendary aircraft of World War II. Its champion was Luftwaffe General Ernst Udet, who was second only to Manfred von Richthofen as the highest scoring German fighter ace of World War I, claiming 62 aerial victories.

While participating in a stunt-flying exhibition in the US in 1931, Udet witnessed a demonstration of the Curtiss Hawk II, a superb American combination fighter and dive bomber. Captivated by the plane's precision bombing

**Below:** A squadron of Stuka dive bombers hold a tight formation in preparation to wing over into their characteristically steep dives



and performance, he procured two Hawks for assessment in Germany.

At the same time, German aircraft manufacturers were working to circumvent the restrictions on offensive aircraft imposed under the Treaty of Versailles. The Junkers Flugzeugwerke AG had purchased a manufacturing facility in Sweden and developed the K 47 there, while the Henschel firm's Hs 123 also showed promise as a dive bomber.

Both firms exerted influence on the progress of the Ju 87 under Junkers engineer Hermann Pohlmann, who had been working on dive bomber prototypes since the late 1920s. The all-metal Ju 87 developed into an excellent dive-bombing platform, its fixed landing gear adding to the plane's sturdy construction and assisting the dive brakes. Although several engines were utilised, the inverted V-12 water-cooled Junkers Jumo 211 powered the first production models of the most common Ju 87B series.

The first Ju 87 prototype flew on 17 September 1935 and the pre-production Ju 87A began rolling off assembly lines the following year. During WWII, the Stuka became a feared aerial weapon, forever identified with the Nazi Blitzkrieg, or Lightning War. By the end of the war, more than 6,000 Stukas had been manufactured, with over a dozen variants in seven major series.

### "THE ALL-METAL JU 87 DEVELOPED INTO AN EXCELLENT DIVE-BOMBING PLATFORM, ITS FIXED LANDING GEAR ADDING TO THE PLANE'S STURDY CONSTRUCTION AND ASSISTING THE DIVE BRAKES"

Right: A dashing, young Ernst Udet, shown here during World War I, became a champion of the Stuka dive bomber and the aircraft type in general, as the Luftwaffe developed into a formidable offensive weapon in the 1930s

## ENGINE

The Junkers Jumo 211 inverted V-12 water-cooled engine was produced in greater numbers than any other German aircraft powerplant during World War II. In response to a 1934 appeal from the Luftwaffe Air Ministry, Junkers engineer Doctor Franz Josef Neugebauer led the team that completed the prototype Jumo 211 the following year. The Jumo 211 series was the primary powerplant of Luftwaffe multi-engine bombers throughout the war, powering the Junkers Ju 87, Ju 88 and Heinkel He 111 models. Nearly 70,000 were manufactured by 1945. The 14 variants in the Jumo 211 series generated up to 1,500 horsepower.

**Right:** Widely distributed to manufacturing facilities of Luftwaffe aircraft, the Junkers Jumo 211 inverted V-12 engine powered numerous types during World War II

"THE JUMO 211 SERIES WAS THE PRIMARY POWERPLANT OF LUFTWAFFE MULTI-ENGINE BOMBERS THROUGHOUT THE WAR, POWERING THE JUNKERS JU 87, JU 88 AND HEINKEL HE 111 MODELS"



The exhaust pipes of the Junkers Jumo 211 engine jut out from the cowling. The engine proved durable and performed under the harshest climate conditions, particularly on the Eastern Front and in North Africa

**Left:** A stuka Ju-87 being overhauled. The plane featured numerous innovative components that were unique at the time of its introduction into combat

### JUNKERS JU 87 STUKA

A large bomb sits fixed to the underside of a Stuka by its external cradle apparatus. The plane carried multiple sizes of ordnance along with machine guns that were used to ward off enemy fighter planes and to strafe ground targets



### ARMAMENT

A principal weapon of the Blitzkrieg, the Junkers Ju 87 Stuka devastated enemy troop concentrations, communication centres and fortified positions. Its primary weapon was its bomb load, including ordnance such as 2,200-pound anti-armour bombs; 1,100-pound high-explosive bombs, which were effective against fortifications; 500-pound general-purpose bombs; and 110-pound fragmentation bombs, which were deadly against exposed infantry. Early variants carried two 7.92mm MG 15 or MG 17 machine guns, one firing forwards and one to the rear, for air defence and strafing. Others mounted an additional forward-firing machine gun. The Ju 87G, a tank-buster with two wing-mounted Rheinmetall 37mm BK cannon, appeared on the Eastern Front in 1943.

Left: In this chilling frame, a Stuka dive bomber unleashes its deadly cargo against enemy positions. It appears that the plane has delivered a large anti-amour or high explosive bomb along with a pair of smaller fragmentation bombs

## "EARLY VARIANTS CARRIED TWO 7.92MM MG 15 OR MG 17 MACHINE GUNS, ONE FIRING FORWARDS AND ONE TO THE REAR, FOR AIR DEFENCE AND STRAFING"

On a misty morning a Luftwaffe sentry guards an airfield where Junkers Ju 87 dive bombers are being fitted with ordnance for the day's combat mission. Bombs lie awaiting attachment to the dive bombers that sit on the grass airfield "EASILY DISTINGUISHED WITH ITS INVERTED GULL WINGS AND FIXED LANDING GEAR SPORTING LARGE SPATS, THE JUNKERS JU 87 STUKA DIVE BOMBER CONJURED UP IMAGES OF A SINISTER BIRD OF PREY"

# OROYAL **MUSEUM**

The Ju 87 pictured is exhibited in the RAF Museum, London. For more, visit www.rafmuseum.org.uk

The Junkers Ju 87's cockpit featured a standard instrument cluster located in the centre of the forward panel



# COCKPIT

The two-man Junkers Ju 87 dive bomber featured a cockpit with standard instrumentation, including the centre cluster of gauges used for 'instrument flying', such as the altimeter, compass, horizon indicator and a variometer to denote the rate of climb or descent. A ventilation nozzle for the flight deck was centred at the top of the panel while the Revi C/12D gunsight was offset to the right. The tachometer, boost meter and primer pump could be found below. The clock, radiator valve actuation buttons and power control switch were to the left with auxiliary consoles on each side. The bomb release trigger was housed on the control stick.



#### JUNKERS JU 87 STUKA

Below: The inverted gull wings and fixed landing gear with covering spats are readily visible in these artist's renderings of the Junkers Ju 87 Stuka

### DESIGN

Easily distinguished with its inverted gull wings and fixed landing gear sporting large spats, the Junkers Ju 87 Stuka dive bomber conjured up images of a sinister bird of prey. The plane included numerous state-of-the-art features, such automatic engine and propeller controls, along with an automatic pull-up dive brake system that activated with the release of the bomb payload, assisting in pulling out of a dive when the pilot was susceptible to blackout due to high G-forces. Pilots appreciated the Stuka's sturdy airframe, which incorporated aluminium sheeting, alloys called Pantal and Elektron, which contained titanium and magnesium, and steel.

#### SERVICE HISTORY AN ICON OF THE NAZI BLITZKRIEG, THE JU 87 OPERATED IN EVERY LUFTWAFFE THEATRE OF WORLD WAR II

At 4.36am on 1 September 1939, three German Junkers Ju 87 Stuka dive bombers screamed down on bridges across the Vistula River in Poland, executing the first air raid of World War II. The Ju 87 became an early scourge east and west as the Blitzkrieg ravaged Europe. Employed as flying artillery, Stukas inflicted heavy casualties and many pilots had already honed their skills with the Condor Legion during the Spanish Civil War.

Nine Ju 87 bomb groups were deployed to Poland, flying over 6,000 missions. One pilot remembered, "We came across throngs of Polish troops, against which our 100-pound fragmentation bombs were deadly. After that, we almost went down on the deck firing our machine guns. The confusion was indescribable."

The Stuka was also a weapon of terror. Some were equipped with sirens, nicknamed Jericho Trumpets, which wailed as the planes plummeted, devastating civilian targets such as the cities of Warsaw and Rotterdam. Despite its sterling dive bomber, ground attack and anti-shipping performance, the Stuka's Achilles' heel was exposed during the Battle of Britain in 1941. The slow-flying aircraft confronted sustained, co-ordinated defences in the fighters and pilots of the RAF. In six weeks, 92 Stukas were damaged or destroyed. In 10 days, more than 20 per cent of those engaged were lost and Luftwaffe chief, Hermann Göring withdrew them from the campaign.

Nevertheless, Ju 87s remained viable throughout the European Theatre; numerous variants with powerplant and design modifications were introduced. Colonel Hans-Ulrich Rudel, the most successful Stuka pilot, flew several types, including the tank-killer Ju 87G equipped with 37mm cannons. Rudel, the sole recipient of the Knights Cross with Gold Oak Leaves, Swords, and Diamonds, destroyed more than 500 Soviet tanks, at least 300 other vehicles, sank a cruiser and damaged a battleship. The legend of the Stuka spawned the legend of Rudel.

### "WE CAME ACROSS THRONGS OF POLISH TROOPS, AGAINST WHICH OUR 100-POUND FRAGMENTATION BOMBS WERE DEADLY. AFTER THAT, WE ALMOST WENT DOWN ON THE DECK FIRING OUR <u>MACHINE GUNS.</u> THE CONFUSION WAS INDESCRIBABLE"





### A WORLD OF MILITARY INFORMATION













f

www.haynes.com