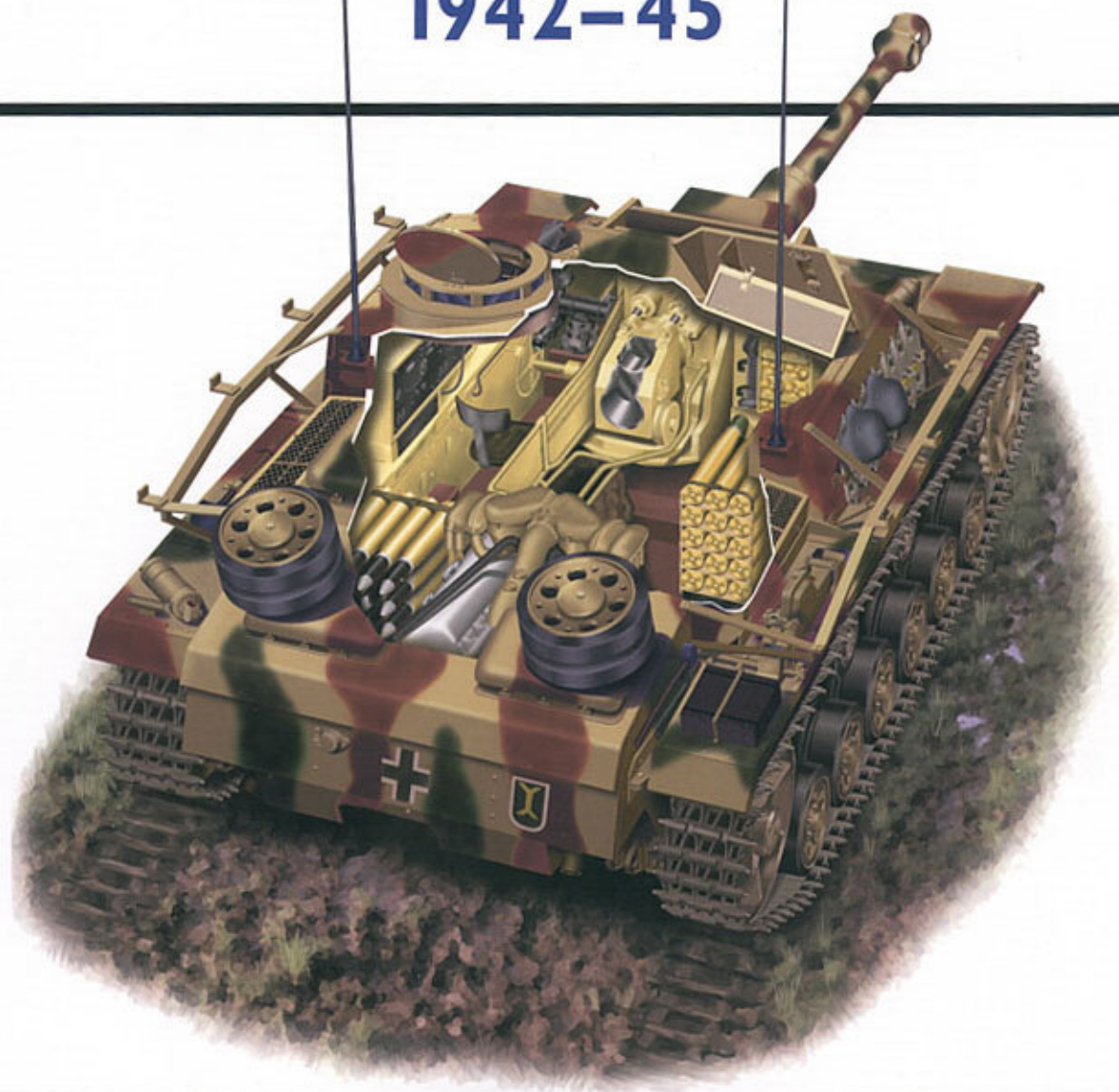


# STURMGESCHÜTZ III & IV 1942-45



HILARY DOYLE & TOM JENTZ MIKE FULLER PETER SARSON

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# STURMGESCHÜTZ III & IV 1942-45



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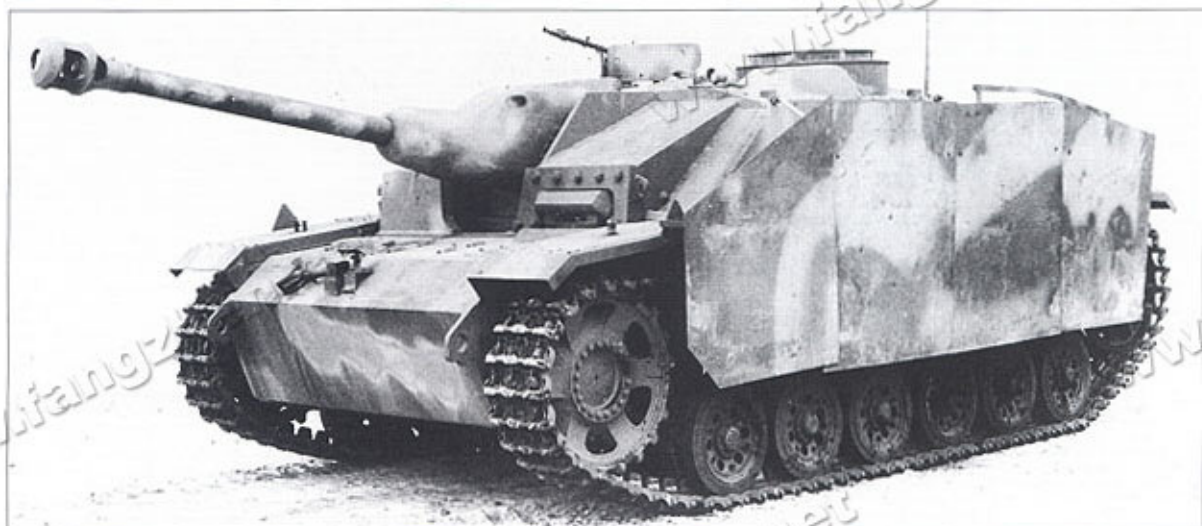
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# STURMGESCHÜTZ III AND IV 1942-45

## STURMGESCHÜTZ III WITH THE LONG BARRELLED 7.5 CM STU.K.40

The Sturmgeschütz with the short barrelled 7.5 cm Kanone L/24<sup>1</sup> was very successful in its intended combat role of supporting infantry by providing effective high explosive fire. It was even very successful in an anti-tank role, managing to knock out many more Russian T-34/76 tanks than it took as losses. However, the troops wanted a gun capable of knocking out the Russian T-34/76 and heavy KV-I tanks at long range. Therefore, the Sturmgeschütz Ausf.F was created by simply replacing the shorter barrelled gun with a long barrelled 7.5 cm Stu.K.40 L/43.

This is a factual documentary of the Sturmgeschütz created by the authors, who spent over 30 years digging through the original records



**Sturmgeschütz Ausf.G., Fgst. Nr. 107546, completed by Alkett in November/December 1944 had many features of the late production of Sturmgeschütz Ausf.G including Rundumsfeuer (remote controlled) machine gun, co-axial machine gun and external travel lock for the gun. (WJS)**

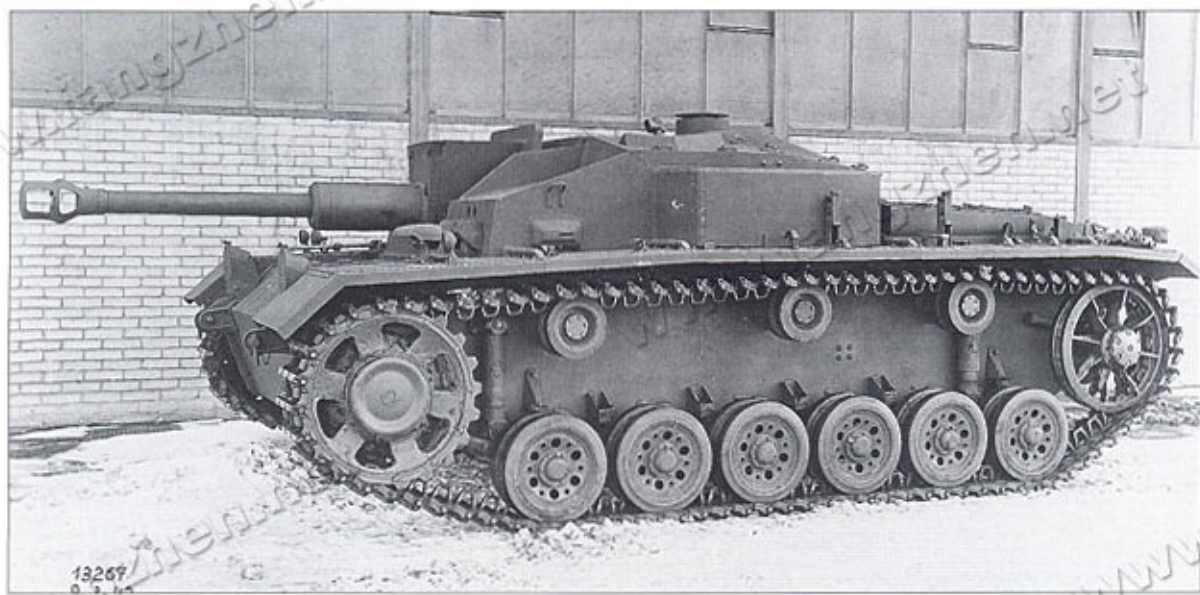
from design and production firms, the Heeres Waffenamt (army ordnance department), the office of the Generalinspekteur der Panzertruppen (General Guderian) and operational reports from units. This book is based solely on the contents of these original documents. The research is backed by observations made by the authors climbing over, under, around and through most of the Sturmgeschütz that still

(1) Kanone = gun and L/24, L/43 or L/48 = the barrel length divided by calibre, i.e. 3,233 mm divided by 75 mm = L/43.

exist in the West. Due to the many misinterpretations in published material and inaccuracies in reports prepared by Allied intelligence units during the war and the immediate post-war period, these unreliable sources have not been used in assembling this history.

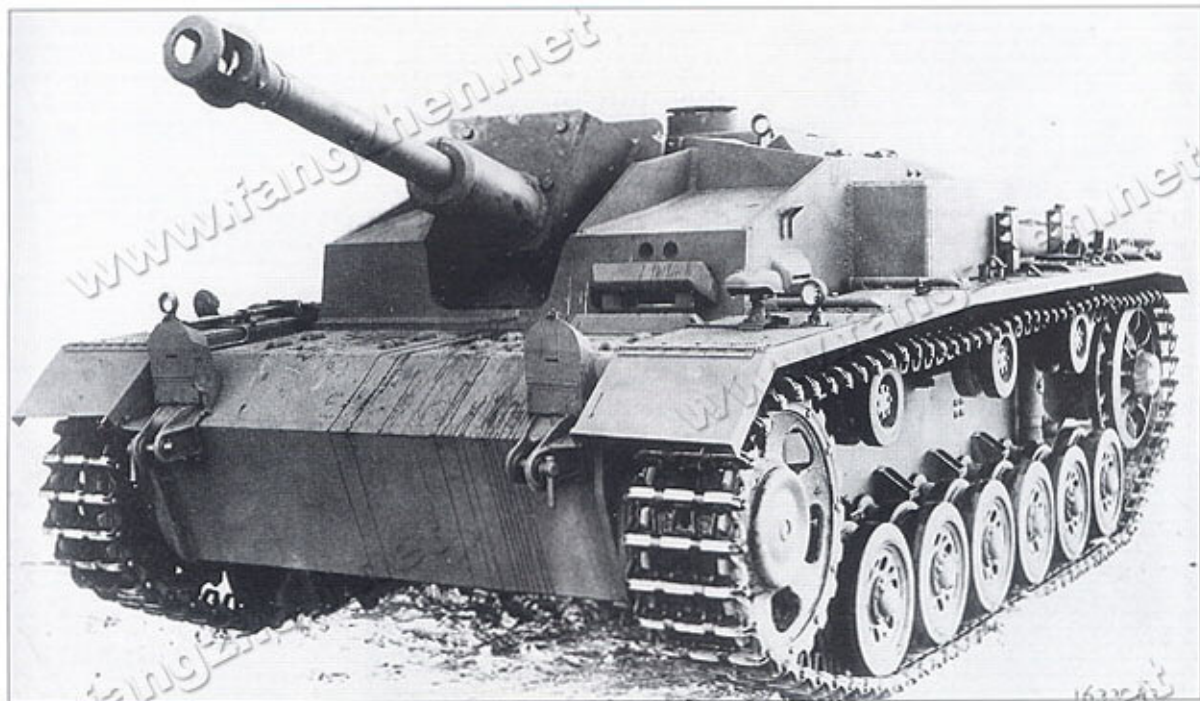
## DEVELOPMENT HISTORY

In the same year that the first trial series of short barrelled L/24 Sturmgeschütz were produced, in August 1938 Krupp started work on the conceptual design for a 7.5 cm Sfl. L/40 (75 mm self-propelled gun) for Wa Prüf 4 (the artillery design office for the ordnance department). The names for this higher performance assault gun evolved from s.Pak (verstärkt) L/42 in January 1939 to lang s.Pak in November 1939, lg. 7.5 cm Kan (Pz.Sfl.) in May 1940, Sturmgeschütz (verstärkt) in August 1940, Pz.Sfl.IIIb in October 1940, and Sturmgeschütz lang mit 7.5 cm Kanone in March 1941.



A wooden model was completed in November 1939 and sent to Daimler-Benz in December to determine what changes were needed to fit it into the chassis and superstructure. The first experimental gun 'RV1' was completed in April 1940 and sent to Meppen for test firing. One hundred and thirty-three rounds were fired with only one failure to eject. The same K.Gr.rot.Pz (armour piercing shell with high explosive filler, penetrator cap and ballistic cap) fired from the L/24 was also fired from this longer gun. With a larger cartridge case and more propellant, the 6.8 kilogram shell came out of the muzzle at an initial velocity of 670 metres per second. Barrel length from the end of the muzzle (without muzzle brake) to the back of the breech was 3,023 mm, equal to L/40 in calibre length. The gun could be traversed through an arc 12 degrees to the right and left of centre (a total of 24 degrees) and elevated from -10 to +20 degrees.

The first Sturmgeschütz Ausf.F was created by mounting the 7.5 cm Stu.K.40 L/43 in a modified superstructure on the chassis of a Sturmgeschütz Ausf.E in March 1942. (APG)



**Sturmgeschütz Ausf.F with 7.5 cm Stu.K.40 L/43. The 7.5 cm Stu.K.40 L/43 was only mounted in the first 120 Ausf.Fs. (WJS)**

Sent to Daimler-Benz in late July 1940, it was mounted in a modified Sturmgeschütz. After being shown to Hitler in March 1941, Krupp optimistically projected that, given favourable troop trials, production of the Sturmgeschütz lang mit 7.5 cm Kanone L/40 could begin in late spring 1942. In November 1941, Wa Prüf 4 ordered Krupp to cease working on the design of this weapon because it was superseded by a newer gun.

After having encountered the Russian T-34 and heavy KV-I tanks on the Eastern Front, on 28 September 1941 the OKH (army high command) was informed by the OKW (Wehrmacht high command) that:

After thorough evaluation of the value of our 'Sturmwagen', Hitler has created the following demands:

1) Armour protection on the new production Sturmwagen is to be increased without concern for the disadvantage that the weight increase will decrease its speed.

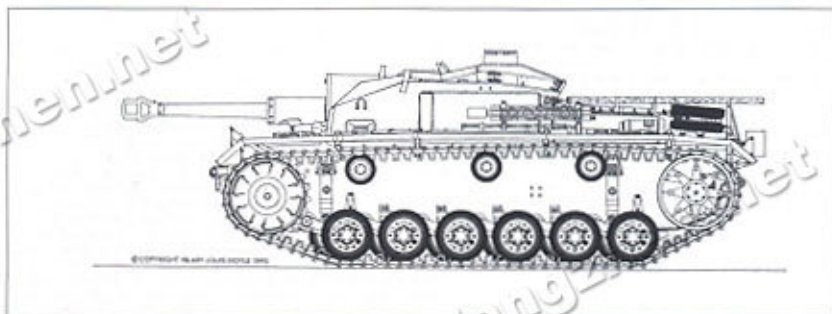
2) The Sturmwagen must have a 7.5 cm Kanone with a long barrel and higher muzzle velocity, because only this will restore the superiority over the new types of enemy tanks.

Wa Prüf 4 used this letter as authorisation to award contracts to Rheinmetall to develop a gun with a muzzle velocity of 770 metres per second when firing a 6.8 kg APCBC/HE shell, capable of penetrating 80 mm of armour plate at 30 degrees at a range of 1,000 metres. Rheinmetall had been designing a 7.5 cm Pak L/46 (towed anti-tank gun) capable of meeting this same performance specification. However, the 7.5 cm Pak L/46 was not ideally suited for firing in a limited space because of its long recoil (900 mm), also the long rounds (969 mm) couldn't be easily loaded. Therefore a new gun was designed with

shorter recoil and shorter rounds. The unaltered rifled gun tube (2,470.5 mm long) was kept from the 7.5 cm Pak L/46 but a shorter, larger diameter loading chamber was added resulting in the 7.5 cm Kan.44 L/43. Shorter but thicker shell casings made it easier to load the gun in the restricted confines of the fighting compartment and also allowed more rounds to be stowed in bins inside the Sturmgeschütz.

To increase penetration, the high explosive filler cavity was reduced in size making it less likely that the shell would break up during penetration. This new shell, named Pzgr.39, still had an armour piercing cap to prevent the shell from shattering on impact at high velocities and to defeat face-hardened plate. It also had a ballistic cap to reduce air friction, which meant a higher velocity at longer ranges and therefore increased armour penetration ability at longer ranges.

In December 1941, plans had been made to complete the first ten 7.5 cm Kan.44 in April, followed by 15 in May 1942. In actual fact, the first three trial guns were completed in February and the Stu.K.40 L/43 production series began with two completed in March, 51 in April, and 66 in May 1942. Initially, a double-chamber, cylindrical-shaped muzzle brake with four side ports was fitted which provided about 58 per cent of the braking ability of the recoil system.



1:76 scale side-view drawing of the Sturmgeschütz Ausf.F with the 7.5 cm Stu.K.40 L/43. (Hilary Louis Doyle)

## OFFICIAL DESIGNATIONS

The full name for this unique assault gun was 'gepanzerte Selbstfahrlafette für Sturmgeschütz (7.5 cm Sturmkanone 40 L/43) (Sd.Kfz.142)' (armoured self-propelled chassis for assault gun) (75 mm assault gun model 40-43 calibres long) (special vehicle number 142). It was not until after the 15 cm Sturmhaubitze 43 was mounted on PzKpfw IV chassis to create the 'Sturmpanzer' - officially known as the Sturmgeschütz IV für 15 cm Stu.Haub.43 (Sd.Kfz.166) - that the designation was changed to Sturmgeschütz III für 7.5 cm Stu.K.40 L/48 (Sd.Kfz.142/1).

## GENERAL DESCRIPTION

Armour protection consisted of the 50-mm-thick driver's front plate at an angle from the vertical of 9 degrees, 50 mm hull front at 20 degrees and 50 degrees, 30 mm superstructure and hull sides at 0 degrees, 30 mm tail plates at 10 degrees and 30 degrees, 10 mm fighting compartment roof at 77-90 degrees, 16 mm rear deck at 80-87 degrees, and 15 mm belly plate at 90 degrees. The large gun mantlet and the armour cover plate for the gun's recoil and recuperator cylinders were both 50 mm thick. Armour specifications for the 50 mm frontal armour

Sturmgeschütz Ausf.F, Fgst.  
Nr. 91148, with 7.5 cm Stu.K.40  
L/43 was completed in May  
1942 and issued to the  
Sturmgeschütz-Abteilung  
'LSSAH'. (KHM)



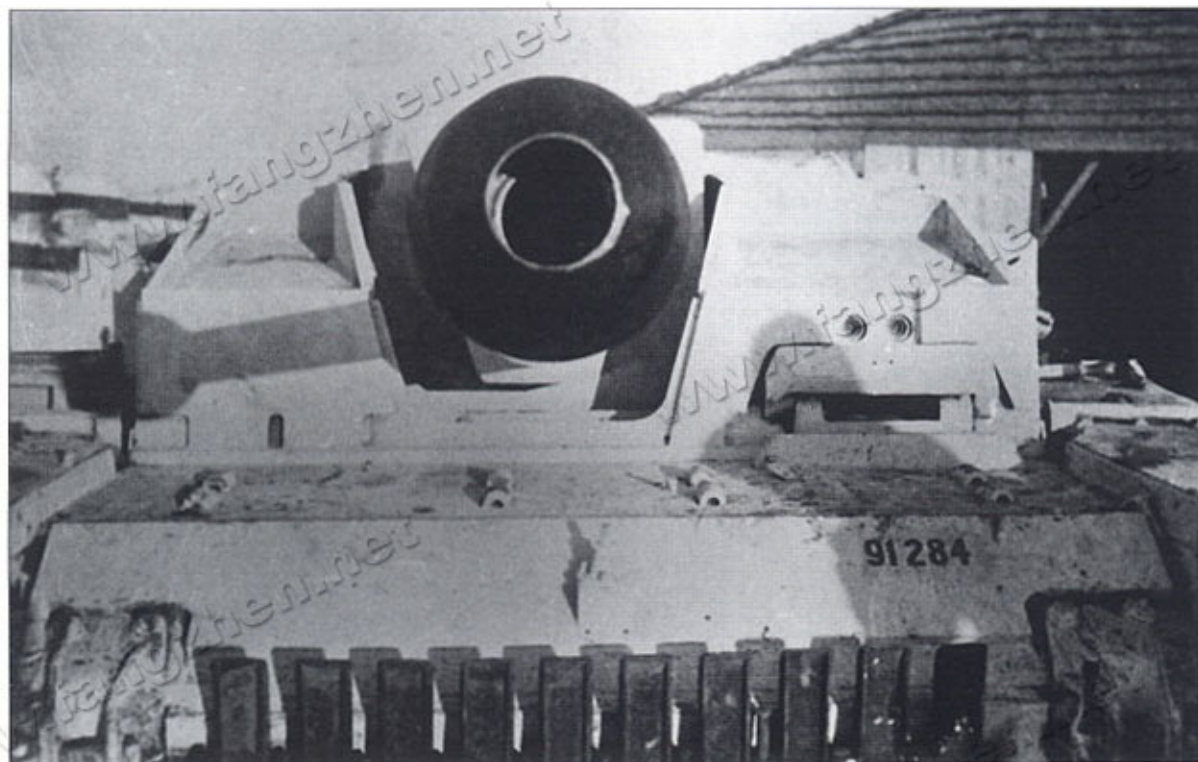
called for rolled armour face-hardened to greater than  $200 \text{ kg/mm}^2$  (equal to 588 Brinell Hardness). The rest of the armour body was welded together using homogeneous rolled-armour plates.

Hatches were provided in the superstructure roof directly above the gunner's, loader's and commander's positions. The driver was expected to escape through the steering brake inspection hatch in the glacis plate. The twin hatch covers were of equal size, hinged to the sides (instead of the front and rear as on the PzKpfw III).

The driver had a visor mounted in the front plate. When closed for added protection, he could use the KFF.2 twin periscopes. A fixed vision slit was mounted to the driver's left in the superstructure wall but he had no view at all to the right side. The gunner's only view was provided by the Sfl.ZF.1a periscopic gunsight with its head protruding through an opening in the gunner's hatch lid. The commander was provided with an SF.14Z scissors periscope that projected through the opened hatch when in use. When not in use, the SF.14Z mount was folded down and the binoculars strapped to the left wall. No vision devices were provided for the loader. Therefore, when buttoned up, the crew's vision was very restricted.

The commander had a spring-loaded rising seat, which was locked in position by a foot pedal. This enabled him to look out over the roof or to observe under cover with the scissors periscope. The loader's seat was hinged on the right wall so that it could fold up out of the way. The gunner's seat was attached to the gun mount.

The main armament consisted of the 7.5 cm Stu.K.40 L/43 with a semi-automatic vertical sliding breech and electric primer firing. The mounting consisted of a sturdy frame carrying the gun trunnions, the



gun mantlet, and the cradle. The gun could be elevated by hand through an arc from -6 degrees to +20 degrees and traversed by hand 10 degrees to the right and left of centre. 44 rounds of 7.5 cm ammunition were stowed in racks.

In addition to the main armament, the crew was provided with a loose 7.92 mm MG.34 with 600 rounds of ammunition and two machine pistols each with 192 rounds of ammunition. Twelve stick hand grenades were also carried. A smoke candle rack, protected by an armour guard, was mounted on the upper tail plate. The five smoke candles could be remotely released one at a time from inside the fighting compartment.

For communication, Sturmgeschütz issued to platoon leaders and battery commanders were outfitted with one Fu 16 transmitting and receiving radio set and one Fu 15 receiving radio set. The other two or three Sturmgeschütz in each platoon were only outfitted with one Fu 15 receiving radio set. The Fu 16, operating in the ultra-short-range frequency band of 13 to 24.95 MHz with 10 watts of power, had a transmitting range of 2 to 3 kilometres by voice when the Sturmgeschütz was moving.

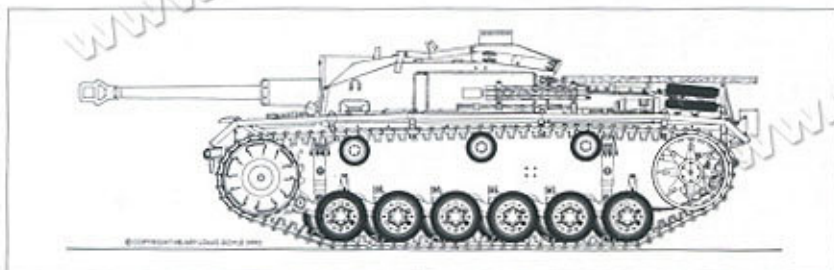
Power was delivered to the tracks by a drive train consisting of a high-performance Maybach HL 120 TRM 12 cylinder petrol engine delivering 265 metric hp at 2,600 rpm, through a six speed ZF SSG 77 transmission, on to the planetary gear steering and final drives to the drive sprockets. The combat weight of 21.6 metric tons was distributed over six sets of 520 mm diameter rubber-tyred twin roadwheels per side sprung by single transverse torsion bars. The unlubricated Kgs 61/400/120 track (380-mm-wide track with 400-mm-long track pins) provided a relatively high ground pressure of 0.9 kg/cm<sup>2</sup>.

**Sturmgeschütz Ausf.F, Fgst. Nr. 91248, completed in August 1942 has the 7.5 cm Stu.K.40 L/48 and additional 30 mm armour welded to the front surfaces. It was fitted with wider 'Winterketten' tracks and whitewashed for winter action with Sturmgeschütz-Abteilung 197. (KHM)**

## MODIFICATIONS DURING PRODUCTION RUN

As was the practise with every German armoured vehicle produced for a long period, major modifications were introduced within the production

run of each model without changing the Ausführung designation. Therefore, it shouldn't be expected that all Sturmgeschütz of the same Ausführung looked exactly alike. However, each Ausführung did have distinctive identifying characteristics.



1:76 scale side-view drawing of the Sturmgeschütz Ausf.F with the Stu.K.40 L/48 and additional 30 mm armour plates welded to the front. (Hilary Louis Doyle)

### geg.Sfl.f.Sturmgeschütz Ausf.F, Fgst.Nr.Serie 91034-91400

The external appearance of the first Sturmgeschütz Ausf.F was changed from its predecessor the Ausf.E by the longer 7.5 cm Stu.K.40 L/43 gun with muzzle brake and larger gun mantle. The front of the superstructure was further cut away to allow sufficient space to traverse the box-shaped armour housing for the larger recoil and recuperator cylinders. The superstructure roof remained the same as on the Ausf.E with the exception that the centre rear roof plate was replaced by a protruding armour housing for the roof-mounted exhaust fan. Internal changes included ammunition racks for 44 longer rounds for the 7.5 cm Stu.K.40 and a strengthened internal travel lock. At some point in the production run of the Ausf.F, ammunition stowage was increased from 44 to 54 rounds for the main gun.

The following list of modifications includes all significant changes to the external appearance of the Sturmgeschütz Ausf.F as well as those introduced to improve automotive performance.

The Sturmgeschütz Ausf.F/8 was created by mounting the superstructure of the Ausf.E on the 8/ZW chassis that had been developed for the PzKpfw III Ausf.J. The roof of the driver's compartment and that of the off side ammunition storage area were raised to further protect the main front armour plate of the fighting compartment. To increase the armour protection to the specified 80 mm, additional 30 mm plates were welded on frontal surfaces. Access hatches on the glacis plate had been designed for the PzKpfw III, as was the positioning of the shot deflector in front of the driver's visor. This vehicle is on display at the Brussels Tank Museum. The gun barrel is not the original. (HLD)



**April 1942** The Nebelkerzenabwurfvorrichtung (smoke candle rack) and armour guard were dropped from the upper right hull rear.

**June 1942** Starting with the 121st Ausf.F in early July 1942, the longer 7.5 cm Stu.K.40 L/48 was installed instead of the L/43. Frontal armour protection was increased by welding 30 mm face-hardened Zusatzpanzer (additional armour) plates on to the hull and superstructure front starting with the last 11 completed in June 1942 and all new Sturmgeschütz starting in July. The two headlights on the upper hull front were dropped along with their armour covers and the 'Notek' blackout light was relocated from the left track guard to the centre of the upper hull.

**August 1942** The back end of the sloping roof plate above the driver (and the similar plate on the right side) was raised to near the top of the superstructure to avoid penetration of the 50 mm plate at the front of the fighting compartment.

### **geg.Sfl.f.Sturmgeschütz Ausf.F/8, Fgst.Nr.Serie 91401-91650**

The main characteristic that differentiates an Ausf.F/8 from its predecessors is the hull design adopted from the 8.Serie/ZW (also known as the PzKpff III Ausf.J). The new hull had extended hull sides that were drilled for towing brackets, two different-size brake access hatches on the glacis with single piece covers, a new rear deck with larger louvres for engine cooling, 50-mm-thick armour on the hull rear, and the front fenders were shortened and no longer hinged. The superstructure was slightly modified by closing down the size of the opening in the roof hatch for the periscopic gun sight. The rest of the

The layout of the armour protecting the engine cooling air outlet at the rear of the Sturmgeschütz Ausf.F/8 is quite different to earlier Ausf. The radio antenna mounts were fixed in position, unlike those on the Ausf.F which still could be folded down. Some Sturmgeschütz Ausf.F/8 had a single-baffle rounded muzzle brake fitted to their Stu.K.40 L/48 due to shortages. (BA)



armour, automotive and weapons systems features remained the same as the Ausf.F.

The following list of modifications includes all significant changes to the external appearance of the Sturmgeschütz Ausf.F/8 as well as those introduced to improve automotive performance.

**October 1942** The brake access hatch design had reverted to the traditional design for the Sturmgeschütz with two hatches of the same size with split covers, hinged at the sides. The 30-mm-thick Zusatzpanzer (additional armour) face-hardened plates on the front of the hull and superstructure were drilled and bolted on to increase the rate of production.

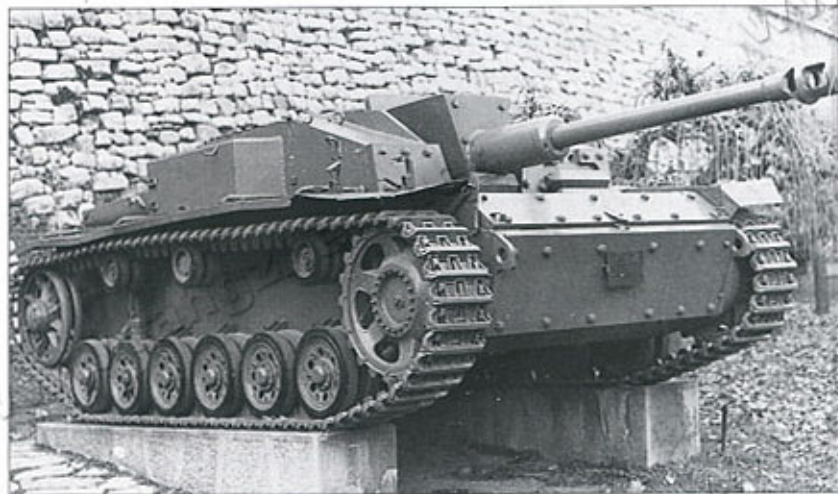
**December 1942** An experimental machine gun shield was installed on the roof in front of the loader's hatch. This provided frontal protection from small arms fire when the loader was manning the machine gun.

### **Sturmgeschütz III Ausf.G, Fgst.Nr.Serie 76101-76400, 91651-110000**

The key feature identifying an Ausf.G from its predecessor, the Ausf.F/8, is the redesigned superstructure. A cupola with seven periscopes was added for the commander. When buttoned up, the commander could still observe by extending the SF.14Z scissors periscope through a hinged port cut out of the forward edge of the hatch lid. Originally, this hatch lid was on a ball-bearing race, which allowed it to be pivoted through 360 degrees. The 30-mm-thick slanted superstructure sides were extended outward and protected at the front on both sides by a 50-mm-thick slanted plate. The shape of the roof was completely altered as there was no longer a hatch for the gunner – the head of the Sfl.ZF.1a periscopic sight protruded through a slit in the roof plate. The roof plates were slanted upward from the front and sides to create a central raised section for mounting the fume extractor fan in the roof over the breech of the gun. The rest of the armour, automotive, and weapons systems features remained the same as the Ausf.F/8.

Numerous improvements were introduced during the long two-and-a-half-year production run of the Ausf.G. These are listed in the

Starting in October 1942 the additional 30 mm plates were bolted in place to speed production. The hatches in the glacis plate reverted to the side opening design of Sturmgeschütz up to and including Ausf.F. The shot deflector was again positioned in front of the driver's visor. This Sturmgeschütz Ausf.F/8 is on display in Belgrade, Serbia. (TLJ)



chronological order in which they were introduced in newly assembled Sturmgeschütz. In some cases, several months elapsed between the time that a modification first appeared and when it was present on all Sturmgeschütz. This is due to several factors including multiple component suppliers, three assembly firms, and older components being inaccessible when newer components were stored on or in front of them. The following list of modifications includes all significant changes to the external appearance of the Sturmgeschütz Ausf.G as well as some introduced to improve automotive performance.

**December 1942** In place of a side vision slit, a pistol port was drilled through the left superstructure wall next to the driver. For additional protection, the 50 mm side plates protecting the superstructure side panniers were sloped at a steeper angle. An armour shield for the machine gun was mounted on the roof in front of the loader's hatch. It was hinged at the bottom to lie flat when not in use.

**January 1943** A sliding armour guard was added to close down the size of the hole in the roof through which the head of the periscopic gunsight protruded. The armour slide moved as the main gun was traversed to the left or right. The fume extractor fan was relocated from the roof to the rear wall of the superstructure.

**February 1943** Sets of three smoke candle dischargers were mounted on the left and right turret side from February through May 1943. They were dropped after it was discovered that the smoke candles were set off when hit by small arms fire, which blinded and incapacitated the crew. The KFE.2 driver's twin periscopes were dropped and the holes in the driver's front plate plugged until plates without these holes were available.

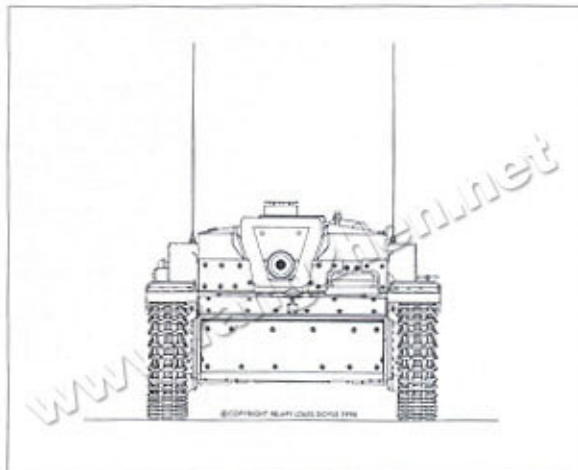
**April 1943** As a defence against Russian anti-tank rifles, Schürzen (side skirts) were mounted on both sides of the hull.

**May 1943** Because they were easier to manufacture as a single piece, the hull front plates were made from 80-mm-thick plates instead of 50 mm base plates with 30 mm Zusatzpanzer bolted on. This change was not completely implemented until about November 1943. The efficiency of the muzzle brake was increased by introducing a model that had side deflector flanges.

**September 1943** To prevent magnetic grenades from sticking to the armour, starting from late September 1943 Zimmerit anti-magnetic coating was applied to the vertical armour surfaces.

**October 1943** The side walls of the 'barrel' of the cupola were only 30 mm thick. Protection for the commander was increased by positioning an armour deflector on the superstructure roof in front of the cupola.

**November 1943** A cast gun mantle, known as a Topfblende (pot mantle) was introduced but not fitted in all cases. Gun mantles constructed from armour plates were still being installed at the assembly plants to the end of the war. Cast steel return rollers replaced rubber-tyred return rollers.



1:76 scale front-view drawing of a Sturmgeschütz Ausf.F/8 completed in October 1942. (Hilary Louis Doyle)



**A Sturmgeschütz Ausf. F/8 completed in November 1942 but backfitted with Schürzen (side skirts) and a machine gun shield in front of the loader's hatch. (BA)**

**March 1944** A Rundumsfeuer (remote controlled) machine gun mount was installed in the superstructure roof, replacing the armour shield in front of the loader's hatch. At the same time, the loader's hatch cover was redesigned to open in two halves, hinged at the sides. The MG.34 in the Rundumsfeuer mount could be aimed and fired by the loader from inside using a sighting periscope (3x magnification with 8 degree field of view) and a trigger on the right handlebar. However, the machine gun was not belt fed and the loader had to open his hatch in order to replace the magazines. There was a gun shield fitted to the Rundumsfeuer mount to protect the loader but there was a gap at its base. Due to a shortage of mounts, for several months many of the Sturmgeschütz were completed with an armour disc bolted over the hole in the superstructure roof.

**May 1944** A Nahverteidigungswaffe (close defence weapon) was to have been mounted in the superstructure roof on the right side. At first, due to a shortage of weapons, the hole in the superstructure roof was covered by an armour disc secured by bolts.

**July 1944** Pilze (sockets) were welded to the superstructure roof for mounting a 2-ton jib boom to be used for lifting out component parts, such as its own engine, or from an adjacent Sturmgeschütz. An external travel lock was positioned on the upper hull front directly under the gun tube. A spring and chain were fastened to the side of the external travel lock so that it pivoted out of the way when the gun was elevated out of the travel lock rest.

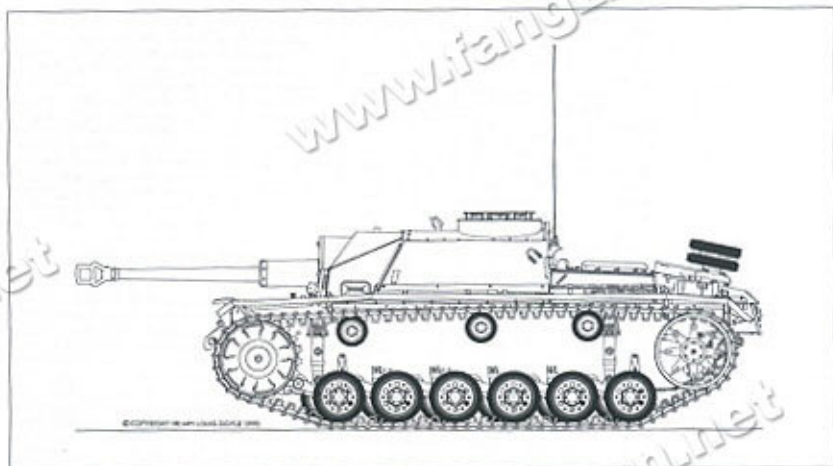
**September 1944** The assembly firms were ordered to stop applying the Zimmerit anti-magnetic coating.

**December 1944** A large vertical coupling for attaching rigid towing bars was welded on to the centre of the lower hull rear. Rigid towing bars

allowed better control of a Sturmgeschütz under tow than when steel cables were used.

### Backfitted modifications

The troops were officially authorised by announcements in the HTVBI (army technical bulletin) to perform the following modifications to their Sturmgeschütz: change to Winterketten with ice cleats starting in November 1942, mount Schürzen skirts on the hull and superstructure sides in May 1943, apply Zimmerit anti-magnetic coating in January 1944, change to Ostketten (wider tracks for better floatation in the mud) only on the Eastern Front in May 1944, weld Pilze sockets to the roof for 2-ton jib boom in July 1944, and weld a centred coupling for rigid tow bars on to the hull rear in December 1944.



### Sturmgeschütz III als Befehlswagen

Sturmgeschütz III issued to the Abteilung/Brigade headquarters and to the Batterie commanders were outfitted with additional radio sets for long-range communications. Sturmgeschütz III which were outfitted with a longer-range Fu 8 radio sets with 30-watt transmitters had Sternantenna (star aerials), mounted on white porcelain insulators protected by metal guards, located on the right superstructure rear. The Fu 8 operated in the medium-wave-length frequency band 0.83 to 3 MHz and had a range of 50 kilometres by voice transmission and 120 kilometres by telegraph key when the vehicle was stationary. When the vehicle was moving the range decreased to 15 kilometres by voice and 50 kilometres by telegraph key. The additional radio sets and transformer for the Fu 8 were mounted along the top of the right side pannier and the GG400 electric generator set mounted on the floor.

1:76 scale side-view drawing of a Sturmgeschütz Ausf. G completed in December 1942. (Hilary Louis Doyle)

## PRODUCTION

Mass production of the Sturmgeschütz with the 7.5 cm Stu.K.40 began with three in March 1942. Initially, only Alkett in Berlin-Borsigwalde was contracted to assemble fully operational Sturmgeschütz by being fed the component parts from other suppliers. Alkett was joined by Miag in Braunschweig where the first ten Sturmgeschütz were assembled in February 1943. M.A.N. in Nuernberg also contributed by completing their last 142 PzKpfw III chassis for Sturmgeschütz from February to October 1943.

Originally, only Brandenburger Eisenwerke produced the plates, made the castings, and welded together the armour bodies for the



Completed in December 1942 Sturmgeschütz Ausf.G, Fgst. Nr. 91675 was the twenty-fifth Ausf.G. It was issued to Sturmgeschütz-Abteilung 'Grossdeutschland'. The vehicle tactical number, '101', is stencilled on the right-hand side track guard, the tactical symbol on the left of the upper nose armour. The steel helmet emblem of 'Grossdeutschland' is painted on the sides of the superstructure. (BA)

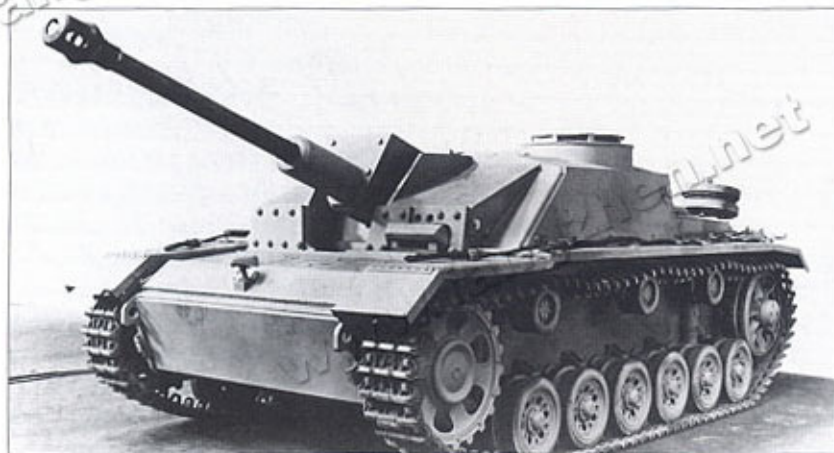
Sturmgeschütz. As the demand for production rapidly increased, three additional armour firms were contracted to produce the armour hulls and superstructure armour bodies: Deutsche Edelstahlwerke in January 1943, Harkort-Eicken Stahlwerke in 1943, and Bismarkhütte in 1944. Maybach in Friedrichshafen, Nordbau in Berlin, M.A.N. in Nuernberg, and MBA in Nordhausen assembled and tested the HL 120 TRM engines. Zahnradfabrik Friedrichshafen had three facilities to assemble the SSG 76 transmissions. Over 10 firms were involved in the production of 7.5 cm Stu.K.40 guns from extruding the barrels, machining the lands and grooves for the rifling, casting the breech, machining the breech and breech blocks, manufacturing the recoil cylinders and recuperators, to assembling and testing the entire gun. Altogether over 100 firms were involved in producing the parts and components needed to complete a single Sturmgeschütz.

The efforts of all of these firms had to be carefully co-ordinated in order to meet the demands of rapid increases in the production schedules. After completing the Sturmgeschütz at the very low rates of 15 per month in 1940, 45 in 1941, and 66 in 1942, Sturmgeschütz production was rapidly accelerated in 1943 from 130 in January to 395 in October. Then Alkett was heavily damaged in a bombing raid in November 1943, which temporarily slowed down production. Miag was hit five times by bombing raids in 1944 and Alkett twice more, but this only hampered production, which reached a peak of 492 Sturmgeschütz and Sturmhaubitze in December 1944. It was not until the entire infrastructure started collapsing in early 1945 that Sturmgeschütz production was severely hampered in February and March. The last Sturmgeschütz were reported to have been completed by Alkett in Berlin on 22 April 1945, directly before Russian troops captured the capital city.

**TABLE 1: PRODUCTION STATISTICS\***

	Stu.G	Stu.H	Stu.G IV
Mar 42	3		
Apr 42	36		
May 42	79		
Jun 42	70		
Jul 42	60		
Aug 42	80		
Sep 42	70		
Oct 42	84		
Nov 43	100		
Dec 43	120		
Jan 43	130		
Feb 43	140		
Mar 43	197	10	
Apr 43	228	34	
May 43	260	45	
Jun 43	275	30	
Jul 43	281	25	
Aug 43	291	5	
Sep 43	345	10	
Oct 43	395	11	
Nov 43	295	4	
Dec 43	174	30	30
Jan 44	227	26	78
Feb 44	196	54	136
Mar 44	264	56	87
Apr 44	294	58	91
May 44	335	46	95
Jun 44	341	100	90
Jul 44	377	92	90
Aug 44	312	110	70
Sep 44	356	119	56
Oct 44	325	100	84
Nov 44	361	102	80
Dec 44	452	40	49
Jan 45	391	71	46
Feb 45	189	24	18
Mar 45	235	49	38
Apr 45	-48	-48	3

\* Number accepted each month by the Waffenamt inspector



This Sturmgeschütz Ausf.G was completed before March 1943. To increase production of the Sturmgeschütz, a number of PzKpfw III chassis were used. Welded 30 mm plates increased the nose armour to 80 mm. (WJS)

## OPERATIONAL CHARACTERISTICS

Operational characteristics demonstrate the effectiveness of an armoured fighting vehicle by relating its capabilities to deliver firepower effectively, manoeuvre, and survive on the battlefield.

### Firepower

The effectiveness of firepower that can be delivered by the main gun is dependent upon the penetration ability of the armour piercing rounds, inherent accuracy of the gun, characteristics of the gunsights, and ability to get quickly and accurately on target.

Penetration statistics for armour plate were expressed in terms of the thickness in millimetres that could be penetrated when the plate was laid back at an angle of 30 degrees from the vertical. The penetrating ability of armour-piercing rounds fired from the 7.5 cm Stu.K.40 L/48 was determined by tests conducted at firing ranges, which proved that the results shown in Table 2 could be achieved.

Captured in Italy this Sturmgeschütz Ausf.G, Fgst. Nr. 95219, was completed by Miag in Braunschweig in May 1943. It has the smoke grenade launchers that were fitted on Sturmgeschütz Ausf.G from February to May of 1943. The Schürzen side apron steel plates were introduced in April 1943 to protect the side armour against Russian anti-tank rifle fire. During 1941 and 1942 Alkett, Berlin, had been the sole supplier of Sturmgeschütz. (TM)

**TABLE 2: ARMOUR PENETRATION**

	Pzgr.39	Pzgr.40	Gr.38 HL/C
Shell Weight:	6.8 kg	4.1 kg	5.0 kg
Initial Velocity:	750 m/s	930 m/s	450 m/s
Range			
100 m	106 mm	143 mm	100 mm
500 m	96 mm	120 mm	100 mm
1000 m	85 mm	97 mm	100 mm
1500 m	74 mm	77 mm	100 mm
2000 m	64 mm		100 mm





The Sturmgeschütz-Abteilung of SS 'Das Reich' being moved by train. The Sturmgeschütz nearest the cameraman has the solid 80 mm hull armour that was introduced in May 1943 but still has the smoke grenade launchers that were eliminated in the same month. (BA)

Of the total ammunition load of 44 to 54 rounds, it was recommended that the Sturmgeschütz carry about 50 per cent Pzgr.39 (armour piercing, capped, ballistic capped with explosive filler and tracer) to fight tanks and the rest as Sprgr. (high explosive shells). When available, a few rounds of Pzgr.40 (high velocity, sub-calibre, tungsten core) were carried for use against the heaviest armoured Russian tanks and tank destroyers. The Pzgr.40, without an explosive filler charge, was not as lethal after penetration as the Pzgr.39. A fourth type of round was the Gr.38 HL (HEAT) based on the hollow charge principle. With far less penetrating ability, the Gr.38 HL was also less accurate and much less destructive than the Pzgr.39. However, the Gr.38 HL could be carried in place of Sprgr., and used either to combat armour or as an effective high explosive round against soft targets.

The 7.5 cm Stu.K.40 was a fairly accurate gun capable of first-round hits at ranges up to 1,000 metres. The estimated accuracy shown in Table 3 is given as the probability (in percentage) of hitting a target 2 metres high and 2.5 metres wide, representing the target presented by the front



A Sturmgeschütz Ausf.G completed in mid-1943 is seen crossing an anti-tank ditch in support. The nose armour is increased by 30 mm plates bolted to the base 50 mm. (BA)

of an opposing tank. This table is based on the assumption that the actual range to the target has been determined and that the distribution of hits is centred on the target. The first number shows the accuracy in percentage that was obtained during controlled test firing of the gun to determine the pattern of dispersion. The second number in parentheses was calculated by doubling the dispersion obtained from controlled test firing. The Germans considered that 'doubled dispersion' was a close approximation of the accuracy obtained by the troops in practice and, if they remained calm, in combat.

The accuracy table does not reflect the actual probability of hitting a target under combat conditions. Due to errors in estimating the range and many other factors, the probability of a first-round hit was much lower than shown in these tables. However, the average gunner could achieve the accuracy shown by the number in parentheses after adjusting his fire on to the centre of the target – if he remained calm.

**TABLE 3: ACCURACY OF THE 7.5 CM STU.K.40**

Ammunition:	Pzgr.39	Pzgr.40	Gr.38 HL
Range	Percent	Percent	Percent
100 m	100 (100)	100 (100)	100 (100)
500 m	100 (99)	100 (98)	100 (100)
1000 m	99 (71)	95 (58)	82 (45)
1500 m	77 (33)	66 (24)	42 (15)
2000 m	48 (15)	21 (6)	20 (6)
2500 m	30 (8)		
3000 m	17 (4)		

The main gunsight in the Sturmgeschütz III was the Stf.ZF.Ia periscope mounted to the left of the gun. The pattern in the reticule

consisted of 7 triangles, separated by 4 mils. Placing the target on the point of a triangle allowed the gunner to aim without obstructing his view of the target. The distances between triangles were used to lead moving targets. The triangle height and separation distances in mils were also used as an aid in estimating the range to a target. The gunner set the range to the target by adjusting the range drum for the selected ammunition. Range scales were marked on the range drum for each type of ammunition. The range drums were graduated at 100-metre intervals out to a range of 2,300 metres for the Pzgr.39, 1,400 metres for the Pzgr.40, and 3,300 metres for the Sprgr.34.

### Mobility

The capability of the Sturmgeschütz to negotiate obstacles and cross terrain was equivalent or better than most Allied tanks as shown by the performance characteristics listed in Table 4.



A Sturmgeschütz Ausf.G, with a Luftwaffe unit in Italy, being repaired. (BA)

**TABLE 4: PERFORMANCE CHARACTERISTICS**

Maximum speed	40 km/hr
Maximum sustained road speed	20 km/hr
Average cross-country speed	12-15 km/hr
Radius of action, road	155 km
Radius of action, cross-country	95 km
Trench crossing	2.3 m
Fording	0.8 m
Step climbing	0.6 m
Gradient climbing	30 degrees
Ground clearance	0.39 m
Ground pressure	1.04 kg/cm <sup>2</sup>
Power to weight ratio	11.1 metric HP/ton
Steering ratio	1.14

### Survivability on the Battlefield

The 80-mm-thick frontal armour of the Sturmgeschütz was capable of withstanding attack from AP shells fired by the Russian T-34/76 and American 75 mm M3 gun. However, it was quite vulnerable at normal combat ranges when engaged by the American 76 mm M1A1 and the Russian 85 mm and 122 mm guns. The side and rear armour protection was only adequate to keep out 2 cm armour-piercing shells or hits from larger calibre shells at steep angles. Without a turret the Sturmgeschütz had an extremely low profile, making it a very difficult target to hit. The tables extracted from a Wa Prüf I report dated 5 October 1944 relate the relative ability of the major opponents to penetrate the Sturmgeschütz III and vice versa as shown in the Penetration Range Tables 1, 2 and 3. The penetration ranges were based on the assumption that the tanks stood at a side angle of 30 degrees to the incoming round.

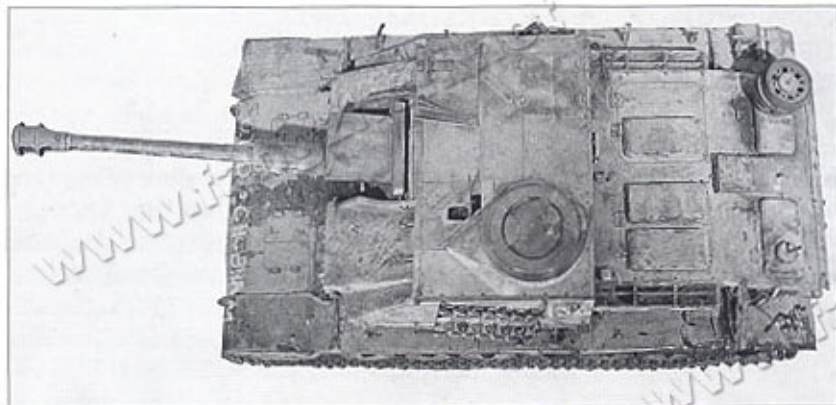
**PENETRATION RANGE TABLE 1:  
STU.G.III VS. CROMWELL AND CHURCHILL**

	Stu.G.III 7.5 cm Kw.K. penetrates Cromwell up to	Cromwell 75 mm M3 penetrates Stu.G.III up to	Stu.G.III 7.5 cm Kw.K penetrates Churchill up to	Churchill 75mmM3 penetrates Stu.G.III up to
Front: Turret	1000 m	—	700 m	—
Mantle	1600 m	100 m	500 m	100 m
D.F.P.*	1800 m	100 m	300 m	100 m
Nose	1400 m	100 m	300 m	100 m
Side: Turret	1800 m	—	700 m	—
Super	3000 m	3000 m	1500 m	3000 m
Hull	1800 m	3000 m	1500 m	3000 m
Rear: Turret	2100 m	—	1300 m	—
Hull	3500 m +	3500 m +	2800 m	3500 m +

\*D.F.P. = Driver's Front Plate

**PENETRATION RANGE TABLE 2:  
STU.G.III VS. M4A2 AND M4A4**

	Stu.G.III 7.5 cm Kw.K. penetrates M4A2 up to	M4A2 75 mm M3 penetrates Stu.G.III up to	Stu.G.III 7.5 cm Kw.K. penetrates M4A4 up to	M4A4 76 mm M1A1 penetrates Stu.G.III up to
Front: Turret	1000 m	—	1000 m	—
Mantle	100 m	100 m	100 m	1500 m
D.F.P.	100 m	100 m	0 m	1700 m
Nose	1300 m	100 m	1300 m	1600 m
Side: Turret	3000 m	—	3000 m	—
Super	3500 m +	3000 m	3500 m +	3500 m +
Hull	3500 m +	3000 m	3500 m +	3500 m +
Rear: Turret	3000 m	—	3000 m	—
Hull	3500 m +	3500 m +	3500 m +	3500 m +



Overhead view of Sturmgeschütz Ausf.G, Fgst.Nr. 96158, that was completed by Miag in December 1943. It has the steel return rollers introduced in that month and a shot deflector in front of the commander's cupola introduced in October 1943. The Zimmerit anti-magnetic coating was applied to Sturmgeschütz starting in September 1943. (TM)

**PENETRATION RANGE TABLE 3:  
STU.G.III VS. T 34/85 AND JS 122**

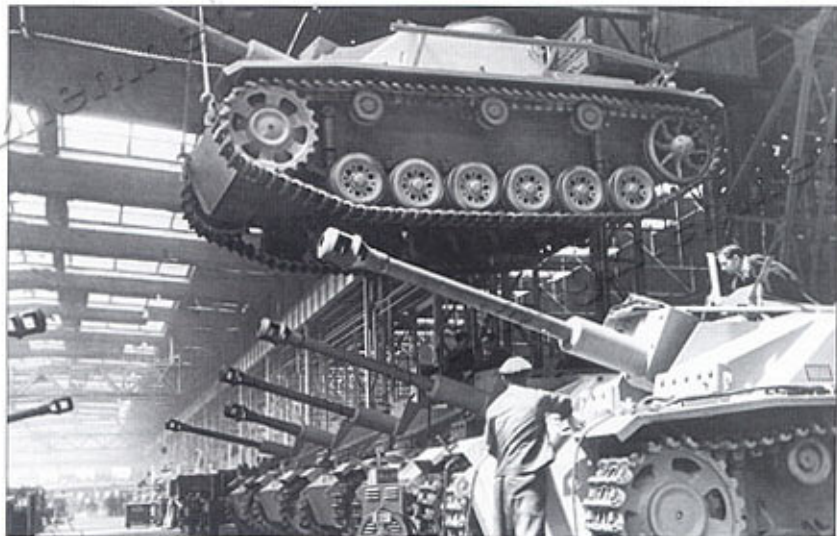
	Stu.G.III 7.5 cm Kw.K. penetrates T 34/85 up to	T 34/85 85 mm S53 penetrates Stu.G.III up to	Stu.G.III 7.5 cm Kw.K. penetrates JS 122 up to	JS 122 122 mm A19 penetrates Stu.G.III up to
Front: Turret	700 m	—	100 m	—
Mantle	100 m	1100 m	0 m	2100 m
D.F.P.	0 m	1500 m	0 m	2700 m
Nose	0 m	1400 m	100 m	2700 m
Side: Turret	1300 m	—	300 m	—
Super	1400 m	3500 m +	200 m	3500 m +
Hull	3200 m	3500 m +	500 m	3500 m +
Rear: Turret	1800 m	—	0 m	—
Hull	1000 m	3500 m +	100 m	3500 m +

## OPERATIONAL HISTORY

In presenting an overview of how this armoured fighting vehicle fared in combat, only original experience reports were used to relate the thoughts of the troops that fought in the Sturmgeschütz. This establishes a foundation for the reader to evaluate its performance free from the influence of assumptions, generalities, opinions, and other banalities expressed by armchair armour experts. The reader should be aware that these original experience reports are biased and do not describe the 'routine'. Most of the German reports were written with the motive of initiating improvements or changing tactics.

Sturmgeschütz-Abteilung Grossdeutschland and LSSAH were the first two units outfitted with 22 Sturmgeschütz with 7.5 cm Stu.K.40 L/43 in early 1942. At this time, Sturmgeschütz units were organised in accordance with K.St.N.446 dated 1 November 1941 with seven Sturmgeschütz per battery – one for the battery commander and two in each platoon. The number of Sturmgeschütz on the Eastern Front at the start of the summer offensives was only about 210 in 18 Sturmgeschütz-Abteilungen on 18 June. This had increased to 448 in

Sturmgeschütz being assembled at the Alkett Borsigwalde Werk 1 in Berlin during mid 1943. The fourth vehicle is a Sturmhaubitze, which were produced alongside the Sturmgeschütz Ausf.G. (WJS)



20 Sturmgeschütz-Abteilungen by 26 November 1942 at the time that the Russians were surrounding Stalingrad.

Following the loss of the 6.Armee at Stalingrad, the Russian offensives were finally halted by a counteroffensive to retake Charkov in March 1943. Taking part in this winter battle around Charkov, Infanterie-Division 'Grossdeutschland' reported that they had knocked out 230 T-34, 16 T-60 or T-70 and three KW-I during the period from 7 to 20 March 1943; of which 41 were claimed by their 35 Sturmgeschütz with Stu.K.40, 188 by their 71 PzKpff IV with Kw.K.40, and 30 by their nine PzKpff VI (Tiger).

During the same period up north near Leningrad in battles by the Ladoga Sea, the Sturmgeschütz were still proving to be very effective in combating Russian tanks. With their 41 Sturmgeschütz (including replacements), Sturmgeschütz-Abteilung 226 reported knocking out 210 Russian tanks (mostly T-34 and KV-I) for a loss of 13 Sturmgeschütz.

Increased production rates allowed the number of Sturmgeschütz authorised in each battery to be increased to ten in accordance with K.St.N.446a dated 1 November 1942. Units were not authorised to reorganise or get more equipment when a new K.St.N. was issued. Reorganisation was authorised by specific orders from the OKH Organisations-Abteilung and Sturmgeschütz were released from the ordnance depots only on orders issued from Inspektorat 4 or 6. A general order was issued by the Organisations-Abteilung in early March 1943 authorising all Sturmgeschütz-Abteilungen to be reorganised with ten Sturmgeschütz per battery.

Those units already at the front were issued replacements and new units were filled to 31 Sturmgeschütz before they were sent to the front for the summer offensive in 1943. There were 26 Sturmgeschütz-Abteilungen with a total of 727 Sturmgeschütz with 7.5 cm Stu.K.40 directly before the start of Operation 'Zitadelle' on 30 June 1943.

This offensive failed to penetrate in depth the Russian defence surrounding Kursk and German forces were forced to withdraw in the face of massive Russian counteroffensives. The commander of the Sturmgeschütz-Ersatz und Ausbildungs-Abteilung visited many of



A Sturmgeschütz Ausf.G completed in the autumn of 1943 has the cast gun mantle and an armour deflector in front of the commander's cupola. Concrete has been added on the sloped plate over the driver's position in an attempt to improve protection. (BA)

the Sturmgeschütz units on the Eastern Front from 30 August to 22 September 1943 to determine how they were faring during the forced withdrawals and reported:

"The Russian tanks have become poorer. The crews are well chosen and cared for, but poorly trained. When faced with anti-tank weapons, they very often panic. According to captured orders, the tank crews have been forbidden to combat German Sturmgeschütz.

"The Russian anti-tank gun has been improved with larger calibre guns, that are skilfully used. They are feared by the Sturmgeschütz crews. Aside from these, mines and anti-tank rifles are the most unpleasant means of defence used against the Sturmgeschütz. The anti-tank rifles can even penetrate the commander's cupola.

"In the current combat situation, German tanks are worthless in comparison to the Sturmgeschütz. The following facts support this: 1. The tank operates in large areas, its strengths are mobility, evasion and flanking actions. It does not seek to engage Russian tanks. It doesn't suit it to fight in co-operation with the German infantry. 2. Its armour and optics are inferior to that of the Sturmgeschütz. 3. The tank is substantially higher than the Sturmgeschütz, therefore easier to knock out.

A high-placed commander was heard to say: "I would rather have one Sturmgeschütz-Abteilung than an entire Panzer Division." A Regimental commander stated: "I prefer two Sturmgeschütz to ten Panzerkampfwagen."

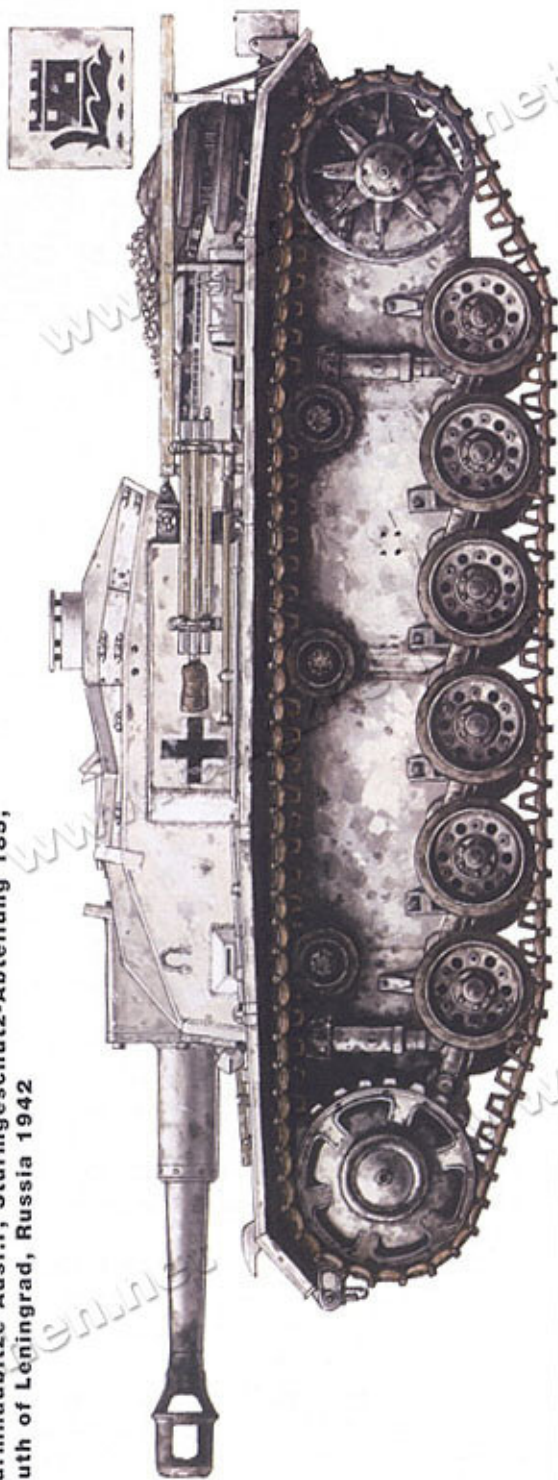
"The Sturmgeschütz has very likely become the most valued weapon this summer. Every infantry commander speaks with enthusiasm about and recognises the capabilities of the Sturmartillerie. Aside from defending against enemy infantry assaults, the Sturmartillerie can claim a large portion of the high number of enemy tanks destroyed. The number of enemy tanks claimed in August 1943 by 11 Sturmgeschütz-Abteilungen was 423, opposed to their own losses of only 18 Sturmgeschütz that were beyond repair.

"The calibre of 75 mm is sufficient for all armour encountered up to this point. If a Russian tank appears which is the equal to the German Tiger tank, a calibre of 88mm is recommended.

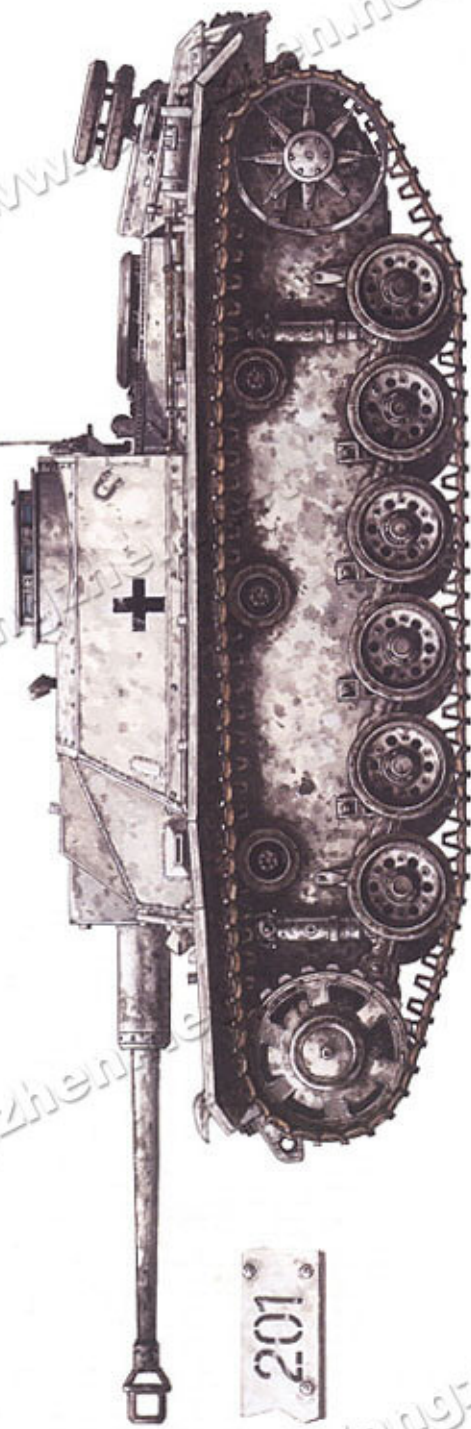
A1: Ausf.F, Sturmgeschütz-Abteilung 201, Russia 1942



A2: Sturmhaubitze Ausf.F, Sturmgeschütz-Abteilung 185,  
south of Leningrad, Russia 1942



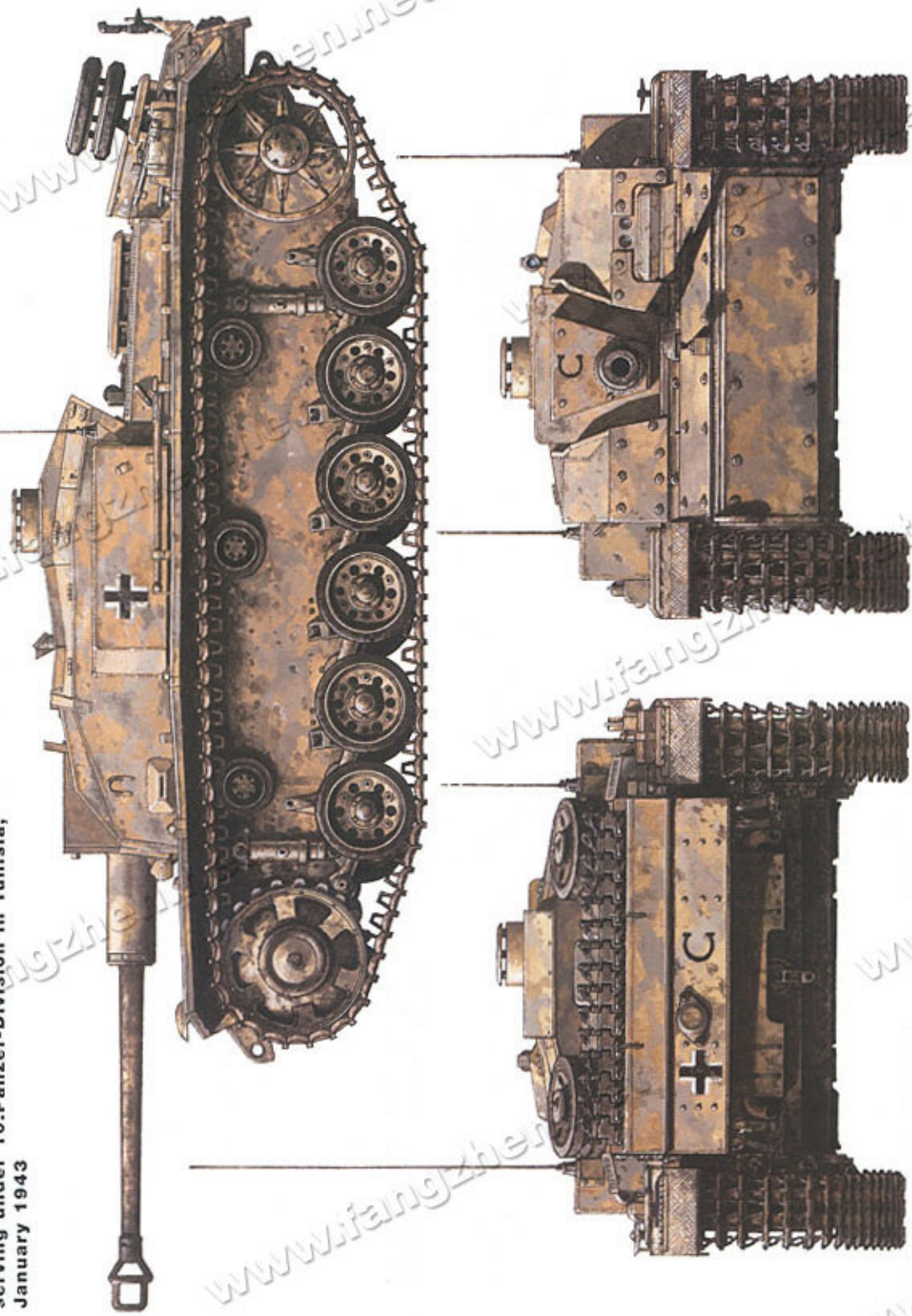
**B1:** Sturmgeschütz Ausf.G, December 1942



**B2:** Sturmgeschütz Ausf.G, Fgst.Nr.107546,  
late November/early December 1944



C: Sturmgeschütz Ausf.F/8, Sturmgeschütz-Batterie 90  
serving under 10.Panzer-Division in Tunisia,  
January 1943



# STURMGESCHÜTZ AUSF.G, STURMGESCHÜTZ- ABTEILUNG 303, NORTHERN RUSSIA 1943

## KEY

1. Maybach HL 120 TRM V 12 cylinder
2. Rear convoy light
3. Fire extinguisher
4. Spade
5. 16 rounds ammunition in stowage rack beside engine
6. Cooling air intake
7. Armour guard over air-intake hatch
8. Air cleaner
9. Recoil guard for 7.5 cm Stu.K.40 L/48
10. Rails for hanging 6mm Schützen plates to protect 30 mm side armour from anti-tank rifle fire
11. Fu 16 radio set with transformer underneath
12. Gunner's seat
13. Hatch for Commander's cupola
14. 2 metre rod antenna for Fu 16 radio system
15. Flap for SF14Z scissors periscope when mounted
16. Commander's cupola
17. Periscopes in cupola
18. Head of Sll.Z.F.1a periscopic gun sight
19. Sliding armoured cover for sight aperture
20. Gun sight mount
21. Gun elevation hand wheel
22. Vertical sliding breech block of 7.5 cm Stu.K.40
23. Sloped upper front armour of fighting compartment
24. Recoil and recuperator cylinders
25. Gun mantlet 50 mm front armour
26. Manual breech opening lever
27. 2 m rod antenna for Fu 16 radio system
28. Laffette (carriage for 7.5 cm Stu.K.40)
29. 7.5 cm Stu.K.40 L/48
30. Muzzlebrake

## SPECIFICATION

31. Mount for 7.92 mm MG 34 for anti-aircraft defence
  32. Mount for 7.92 mm MG 34 for ground engagement
  33. Machine gun shield
  34. Smoke candle dischargers
  35. Front section of loader's hatch folds forward to lock machine gun shield in upright position
  36. Machine pistol rack
  37. Ammunition rack on right of gun in forward pannier - 8 rounds, 15 rounds underneath.
  38. Roof armour
  39. S-hook for use with tow cables
  40. 30 mm side armour
  41. 15 rounds armour piercing ammunition Pzgr. 39/40 in foldaway floor rack
  42. Jack
  43. Wooden block for use with jack
  44. Rubber-tyred rigid wheels, size 520/95
  45. Hammer
  46. Track links 400 mm wide (including track pin), type Kgs 61/400/120
  47. Idler wheel
  48. Adjuster for idler wheel
  49. Tow cable bracket
  50. Collapsible bag for spent cartridge cases
  51. Spare wheel
  52. Left-hand fan access hatches with supplementary air outlet
  53. Main cooling air outlet
  54. Sloped upper rear armour
  55. Inertia starter armoured cover
  56. Exhaust pipe
  57. Engine air intake
- Maximum speed** 40 km/hr  
**Maximum sustained road speed** 20 km/hr  
**Average cross-country speed** 12-15 km/hr  
**Radius of action, road** 155 km  
**Radius of action, cross country** 95 km  
**Trench crossing** 2.3 m  
**Fording** 0.8 m  
**Step climbing** 0.60 m  
**Gradient climbing** 30 degrees  
**Ground clearance** 0.39 m  
**Ground pressure** 1.04 kg/cm<sup>2</sup>  
**Steering ratio** 1.14  
**Combat weight** 23,900 Kg
- Motor**  
 11.9 l V12 cylinder Maybach HL 120 TRM  
 265 metric-horse power at 2,600 rpm  
**Fuel** 310 l  
**Power to weight ratio** 11.1 metric HP/tonne  
**Overall length** 6.77 m  
**Width** 2.95 m  
**Height** 2.16 m  
**Firing Height** 1.57 m  
**Transmission** S.S.G.77 6 forward, 1 reverse  
**Armament** 7.5cm Stu.K.40 L/48  
**Main gun ammunition**  
 7.5cm Pzgr. 39 (Armour piercing)  
 7.5cm Pzgr. 40 (Armour piercing - tungsten core)  
 7.5cm Sprgr. (high explosive)  
**Sight** Sll.Z.F.1a  
**Stowed main gun rounds** 54 (73)  
**Stowed main MG rounds** 600 (2,650)

# STURMGESCHÜTZ AUSF.G, STURMGESCHÜTZ-ABTEILUNG 303, NORTHERN RUSSIA 1943

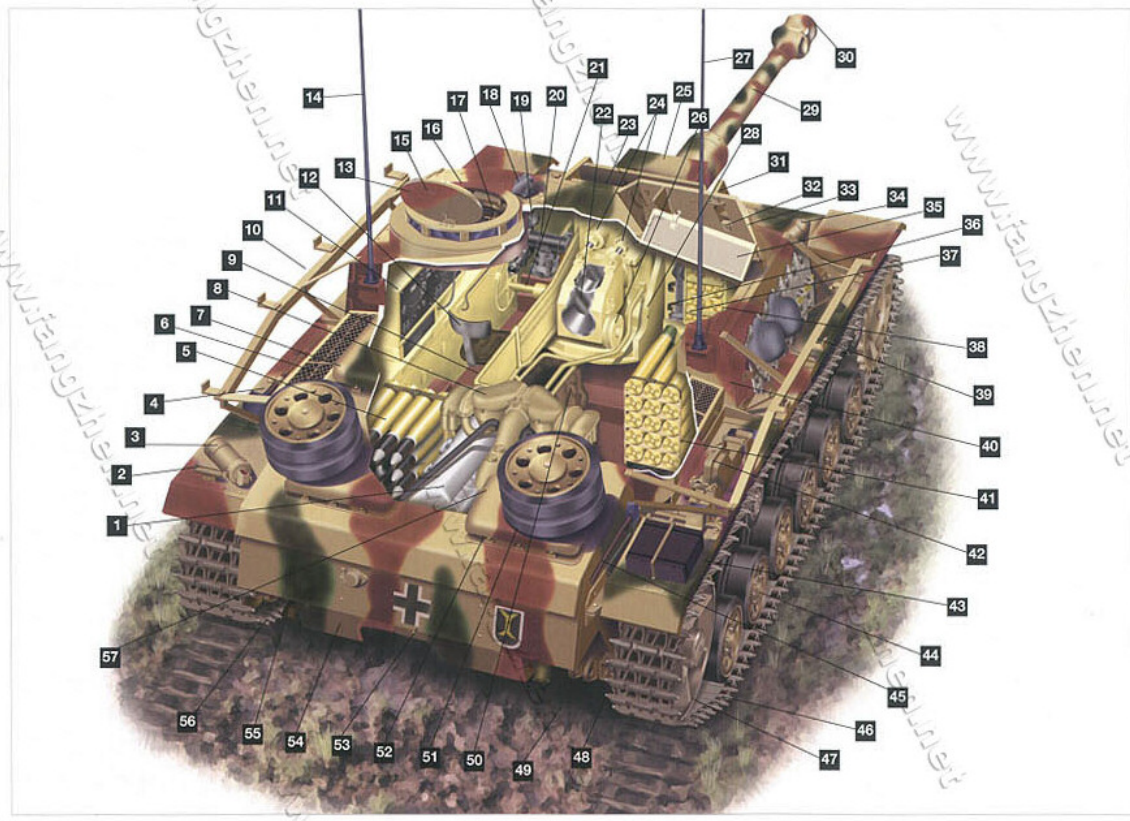
## KEY

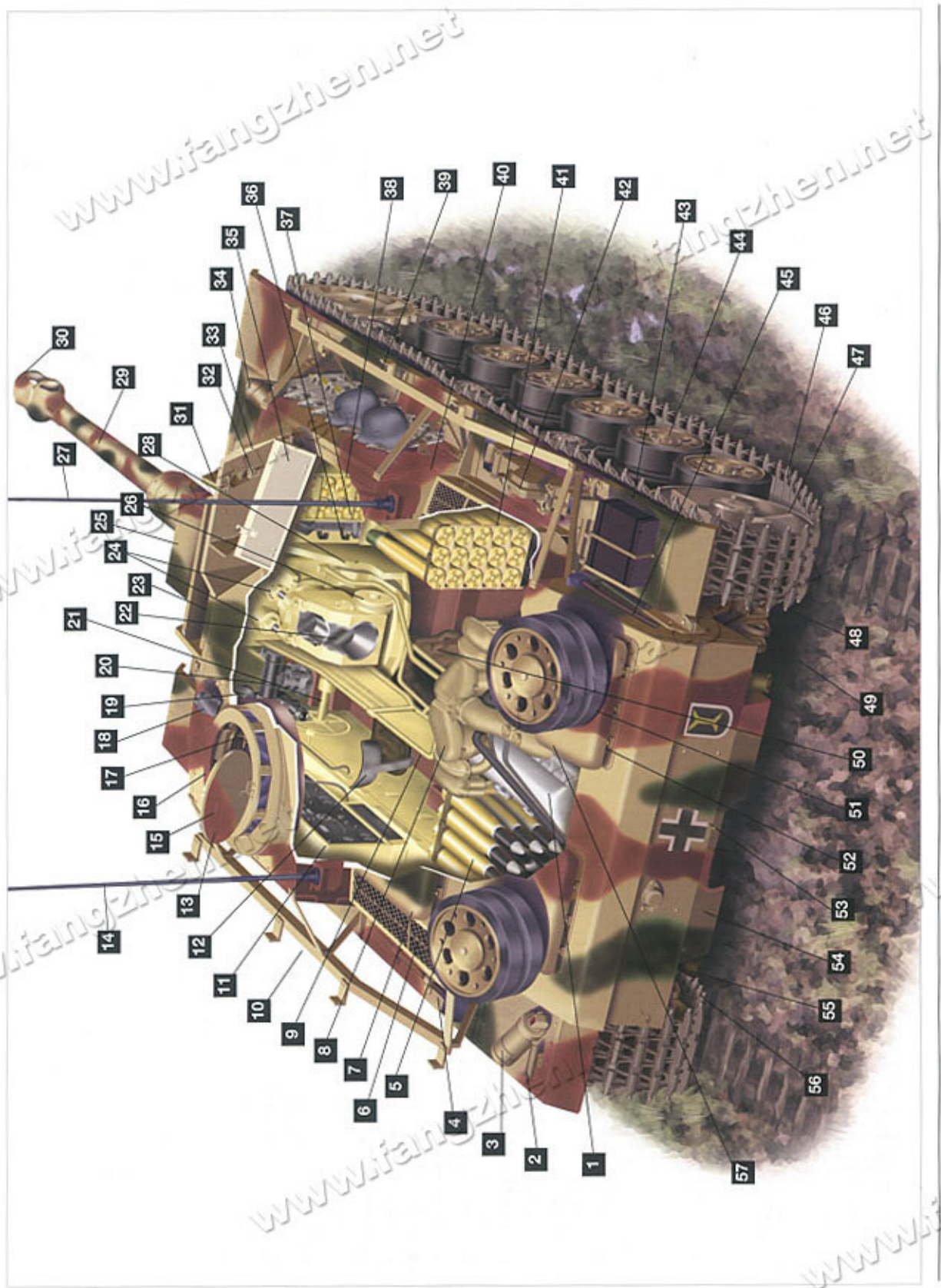
1. Maybach HL 120 TRM V 12 cylinder
2. Rear convoy light
3. Fire extinguisher
4. Spade
5. 16 rounds ammunition in stowage rack beside engine
6. Cooling air intake
7. Armour guard over air-intake hatch
8. Air cleaner
9. Recoil guard for 7.5 cm Stu.K.40 L/48
10. Rails for hanging 5mm Schürzen plates to protect 30 mm side armour from anti-tank rifle fire
11. Fu 16 radio set with transformer underneath
12. Gunner's seat
13. Hatch for Commander's cupola
14. 2 metre rod antenna for Fu 16 radio system
15. Flap for SF14Z scissors periscope when mounted
16. Commander's cupola
17. Periscopes in cupola
18. Head of Sfl.Z.F.1a periscopic gun sight
19. Sliding armoured cover for sight aperture
20. Gun sight mount
21. Gun elevation hand wheel
22. Vertical sliding breech block of 7.5 cm Stu.K.40
23. Sloped upper front armour of fighting compartment
24. Recoil and recuperator cylinders
25. Gun mantlet 50 mm front armour
26. Manual breech opening lever
27. 2 m rod antenna for Fu 16 radio system
28. Laffette (carriage for 7.5 cm Stu.K.40)
29. 7.5 cm Stu.K.40 L/48
30. Muzzlebrake

31. Mount for 7.92 mm MG 34 for anti-aircraft defence
32. Mount for 7.92 mm MG 34 for ground engagement
33. Machine gun shield
34. Smoke candle dischargers
35. Front section of loader's hatch folds forward to lock machine gun shield in upright position
36. Machine pistol rack
37. Ammunition rack on right of gun in forward pannier - 8 rounds, 15 rounds underneath.
38. Roof armour
39. S-hook for use with tow cables
40. 30 mm side armour
41. 15 rounds armour piercing ammunition Pzgr. 39/40 in foldaway floor rack
42. Jack
43. Wooden block for use with jack
44. Rubber-tired road wheels, size 520/95
45. Hammer
46. Track links 400 mm wide (including track pin), type Kgs 61/400/120
47. Idler wheel
48. Adjuster for idler wheel
49. Tow cable bracket
50. Collapsible bag for spent cartridge cases
51. Spare wheel
52. Left-hand fan access hatches with supplementary air outlet
53. Main cooling air outlet
54. Sloped upper rear armour
55. Inertia starter armoured cover
56. Exhaust pipe
57. Engine air intake

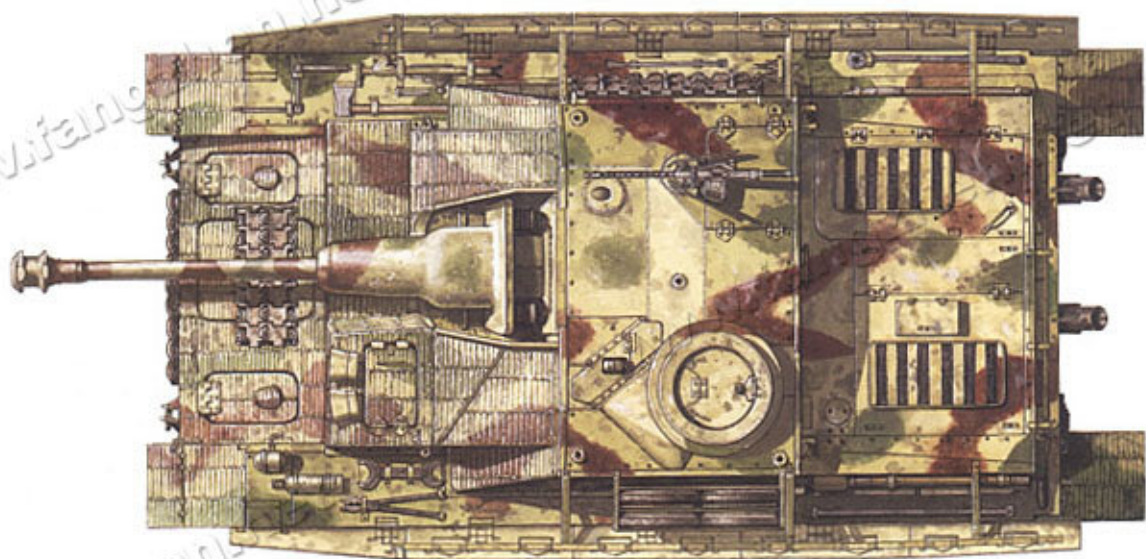
## SPECIFICATION

**Maximum speed** 40 km/hr  
**Maximum sustained road speed** 20 km/hr  
**Average cross-country speed** 12-15 km/hr  
**Radius of action, road** 155 km  
**Radius of action, cross country** 95 km  
**Trench crossing** 2.3 m  
**Fording** 0.8 m  
**Step climbing** 0.60 m  
**Gradient climbing** 30 degrees  
**Ground clearance** 0.39 m  
**Ground pressure** 1.04 kg/cm<sup>2</sup>  
**Steering ratio** 1.14  
**Combat weight** 23,900 Kg  
**Motor**  
 11.9 I V-12 cylinder Maybach HL 120 TRM  
 265 metric horse power at 2,600 rpm  
**Fuel** 310 l  
**Power to weight ratio** 11.1 metric HP/tonne  
**Overall length** 6.77 m  
**Width** 2.95 m  
**Height** 2.16 m  
**Firing Height** 1.57 m  
**Transmission** S.S.G.77 6 forward, 1 reverse  
**Armament** 7.5cm Stu.K.40 L/48  
**Main gun ammunition**  
 7.5cm Pzgr. 39 (Armour piercing)  
 7.5cm Pzgr. 40 (Armour piercing - tungsten core)  
 7.5cm Sprgr. (high explosive)  
**Sight** Sfl.Z.F.1a  
**Stowed main gun rounds** 54 (73)  
**Stowed main MG rounds** 600 (2,650)

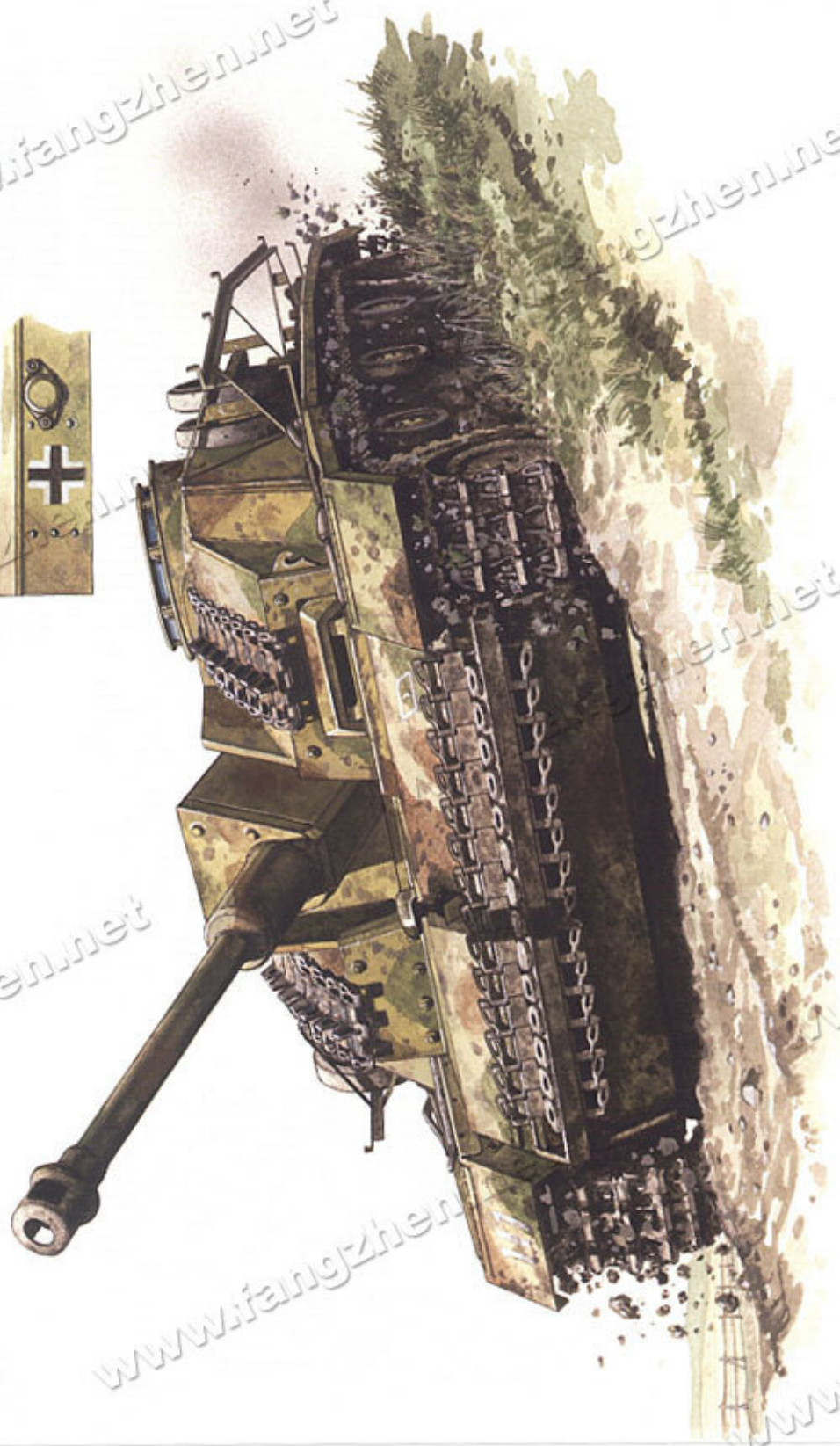




E: Sturmgeschütz IV, late August/early September 1944



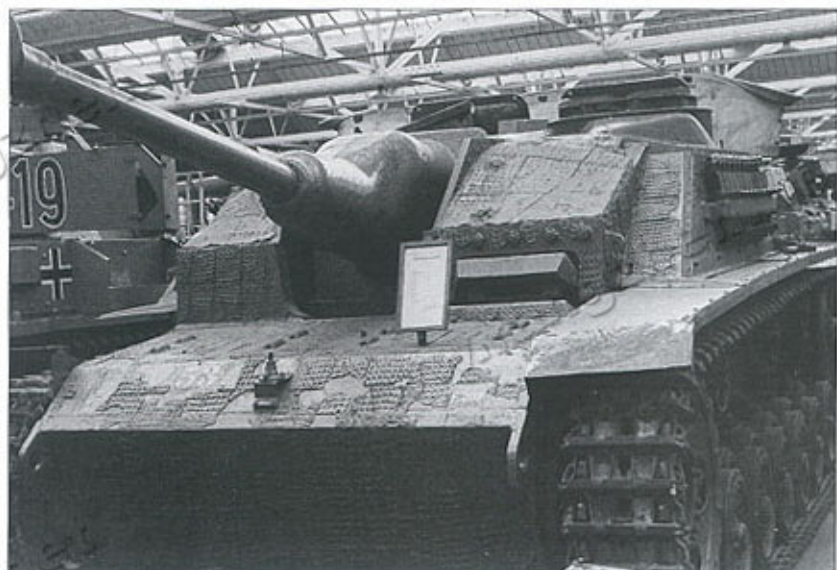
F: Sturmgeschütz Ausf.G, Fgst.Nr.76171, August 1943



G: Sturmhaubitze Ausf.G, Fgst.Nr.107578,  
late November/early December 1944



Sturmgeschütz Ausf.G,  
Fgst.Nr.94248, with the cast gun  
mantle was completed at Alkett  
in April 1944. It was examined  
by the School of Tank  
Technology and now is at the  
Tank Museum, Bovington.  
Zimmerit was applied in a 'waffle  
iron' pattern at Alkett. (HLD)



'Schürzen [side skirts] have proven valuable, are effective against anti-tank rifles and light anti-tank guns, but their mountings are poor. The commander's cupola is too lightly armoured. The loader's machine gun has not proven effective. It is suggested that it be internally mounted for the driver or the gunner. The 30-watt radio is good. Ranges of up to 200 kilometres have been achieved. Shaped charge ammunition has also proven to be effective. However, Panzergranaten (capped, armour piercing, with explosive filler, shells) are preferred. The high explosive shell is indispensable against infantry. The on-board intercom has proven worthwhile. The engine and chassis are weak. Automotive and cross-country capability are still inferior to the T-34.'

In February 1944, while maintaining the same organisation and unit designation, Sturmartillerie units were renamed from Abteilung to Brigade. This was done so that Sturmartillerie units could be easily recognised and not confused with newly formed Sturmgeschütz-Abteilungen (which were only companies of Sturmgeschütz assigned to the Panzer-Jäger-Abteilung within Infanterie-, Grenadier-, Gebirgs-, and Jäger-Divisionen). The authorised strength for most of these Sturmgeschütz-Brigaden remained at 31 Sturmgeschütz. There were only four units – Sturmgeschütz-Brigade 259, 278, 303 and 341 – which were authorised to have 45 Sturmgeschütz, organised in accordance with K.St.N.446b dated 1 February 1944 with 14 Sturmgeschütz per battery.

In spite of improvements in Allied tank armour and armament, the Sturmartillerie were still very successful in destroying many more enemy tanks than they took as losses. From January to August 1944, the Sturmartillerie-Brigaden claimed to have destroyed a total of 4,667 Russian tanks while losing 713 Sturmgeschütz as total write-offs. Even accounting for double claims, the Sturmartillerie were still destroying three Russian tanks for each Sturmgeschütz that was lost.

A total of about 12 independent Sturmgeschütz-Batterien and 57 Sturmgeschütz-Abteilungen/Brigaden had been created from 1940 to 1945 as the Sturmartillerie in the German army. These units were very



A Sturmgeschütz Ausf.G in Arnhem. This Sturmgeschütz Ausf.G. was completed in August 1944. The Rundumsfeuer machine gun is missing due to shortages while the coaxial machine gun fitted in the welded gun mantle from June 1944 did not appear in the cast mantle until October 1944. The Zimmerit coating was discontinued during September 1944. From August 1944 the camouflage was painted at the factory and at this period was intended to simulate light passing through foliage. (BA)

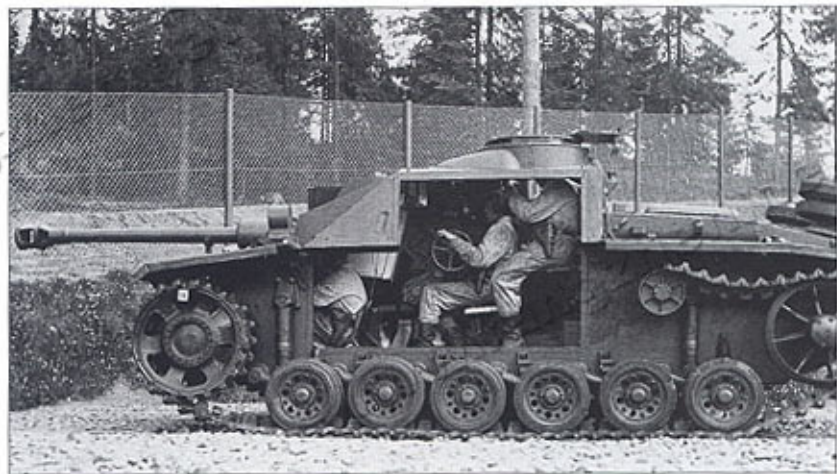
successful in both their intended role of supporting infantry attacks and their assumed role of knocking out enemy tanks. But Sturmgeschütz were not limited to employment with the Sturmartillerie. Starting in 1943, after General Guderian was appointed as Generalinspekteur der Panzertruppen, Sturmgeschütz were issued to Panzer units. This took on two forms. Panzer-Abteilungen created for nine Panzer-Grenadier-Divisionen were organised in accordance with K.St.N.1159 with 14 Sturmgeschütz per company for a total of 42 in each Abteilung. Two Panzer-Abteilungen, III/Pz.Rgt.24 and III/Pz.Rgt.36, were organised with two companies each of 22 Sturmgeschütz and two companies each of 22 PzKpfw IV. How well this mixture of Panzers and Sturmgeschütz in the same unit worked out is recorded in the following reports.

The following extracts are from a report written on 4 November 1943 by Hauptmann Markowsky of the III/Panzer-Regiment 24 of the 24.Panzer-Division on the first days in action north of Kriwoi-Rog:

'My Abteilung consisted of two PzKpfw IV-Schwadronen and two Sturmgeschütz-Schwadronen, each with 22 armoured vehicles. The Stab has only two Panzerbefehlswagen (5 cm Kw.K. lang). Unfortunately a reconnaissance platoon was not available. I could have often used one. The mixture of Sturmgeschütz and PzKpfw IV has proven itself to be useful. The Sturmgeschütz are employed very much like Panzers often without any special protection against attack from close combat troops. This was okay because the local Russian infantry didn't attempt to attack in this way. Sometimes a Sturmgeschütz-Schwadron was detached for another assignment. The 24.Panzer-Division doesn't have a Panzer-Jäger-Abteilung, but the III.Abteilung was still often employed together, which was always best for us.

'The Abteilung now has nine days of heavy combat behind it. During this period it knocked out 184 enemy tanks, 87 anti-tank guns, and 26 artillery pieces with only four of our own lost as total write-offs. The enemy tanks were almost exclusively T-34 with a few heavy 15 cm assault guns. The superiority over the Russian tanks isn't due very much to the equipment as, primarily, to the training of the crews and the leadership

One of the Sturmgeschütz Ausf.G supplied to Finland in 1944. This vehicle is on display at Parola, Finland. With the side armour removed one gets a clear impression of the crew positions in a Sturmgeschütz. (WJS)



within the Schwadronen, and secondarily to the concentrated employment of the Abteilung. Support from the other weapons, such as artillery and aircraft, has not yet been smoothly worked out for several different reasons. We are especially lacking good radio communication. That will be corrected and work itself out. But this is necessary so that our attacks won't fail, as recently occurred twice when we encountered massive anti-tank and anti-aircraft gun fronts that we couldn't envelop because of the terrain and we were too weak.

'We now count on an average operational combat strength of ten to 15 Panzers per Schwadron. Most of the losses are caused by mechanical breakdowns. I consider it to be very good that the number of Panzers in each Schwadron was increased to 22. This saves lives and increases the combat power. One thing has become very clear to me: we can win the war here only with massed Panzers and with nothing else.'

On 7 December 1943, the Oberstleutnant commanding Panzer-Regiment 36 wrote the following experience report on the employment of Sturmgeschütz within a Panzer-Abteilung:

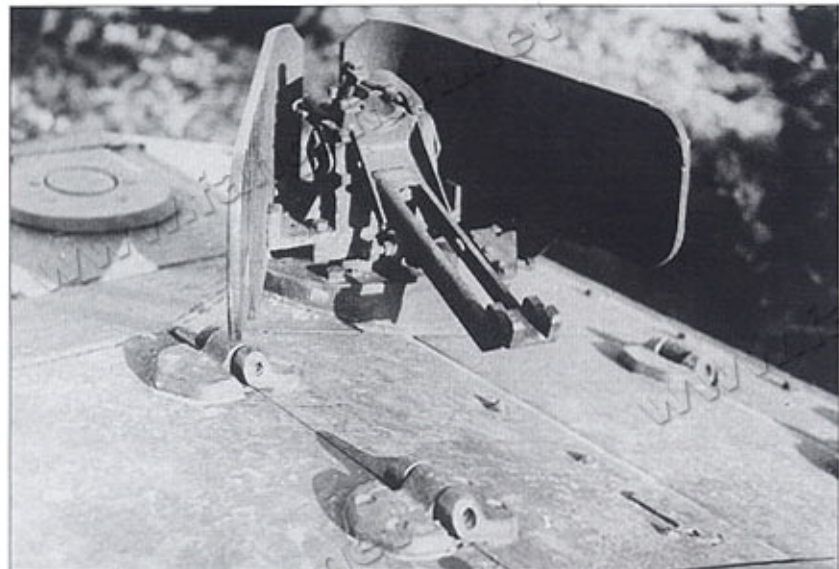
'The III/Panzer-Regiment 36 was outfitted as follows for employment on the Eastern Front: two Kompanien and an Aufklärungs-Zug with 49 PzKpfw IV lang and two Kompanien with 44 Sturmgeschütz. The Abteilung first went into battle on 28 October 1943 and had been in combat for 16 days by 1 December 1943.

'Employment of Sturmgeschütze within the Panzer-Abteilung and together with Panzer-Grenadiere has occurred in four different combat scenarios:

1. Sturmgeschütze attacking in the first wave.
2. Sturmgeschütze providing flank protection in the second wave.
3. Sturmgeschütze co-operating with the Panzer-Grenadiere.
4. Sturmgeschütze in defence.

'All four possibilities were tested in practice during the six weeks in action, resulting in the following experiences:

'1. The only advantage of using Sturmgeschütze to attack in the first wave is that they present a somewhat smaller target than the PzKpfw IV. The disadvantages are the following: A Panzer can maintain the direction of attack while utilising its traversable turret even when it must engage targets that appear to the left or right side. The Sturmgeschütz

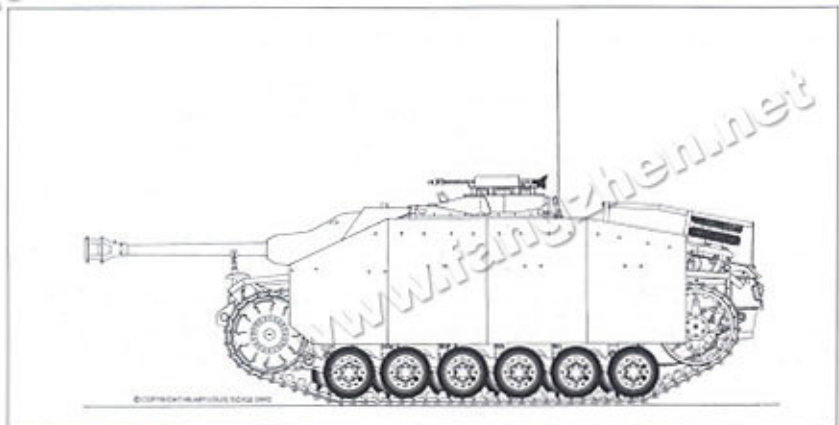


Close-up detail of the Rundumsfeuer (remote controlled) machine gun mount introduced in April 1944. Forward of this mount is the Nahverteidigungswaffe close-defence weapon that was fitted in some Sturmgeschütz from May 1944 and in all from October 1944. (HLD)

must always turn its front toward the enemy. For example, it must first turn half left in order to engage an enemy target located toward the left front. These turns delay the engagement of enemy targets and slow down the assault of the Panzergruppe. It is especially difficult and restrictive to engage enemy targets in heavy ground during the rainy season. The driver must often steer by repeatedly driving forward and backward in order to bring the gun into the necessary field of fire. The many steering manoeuvres overtax the transmission and especially the brakes. In a few cases things have gone so far that the tracks have been thrown in heavy ground.

During attacks through enemy infantry positions, which are usually very strongly occupied with anti-tank rifles, the lack of a machine gun protected by armour makes itself very negatively felt. The armour shield for the machine gun mounted on the roof of the Sturmgeschütz does not protect against anti-tank rifle fire from the front or against infantry weapons fired from the side.

2. It is somewhat better to employ the Sturmgeschütz in the second wave and to cover the flanks, because in covered positions it can let



1:76 scale side-view drawing of a Sturmgeschütz Ausf.G completed after October 1944. (Hilary Louis Doyle)

In early April 1945 this Sturmgeschütz Ausf.G was captured in a village near Paderborn. The revised Schürzen shape and method of mounting was to reduce the instance of the Schürzen being torn off by obstacles. This was a fairly widely adopted modification by the troops towards the end of the war. (National Archives)

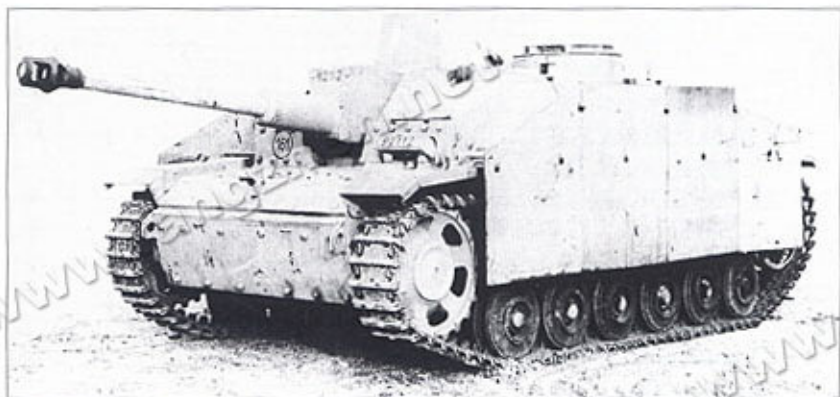


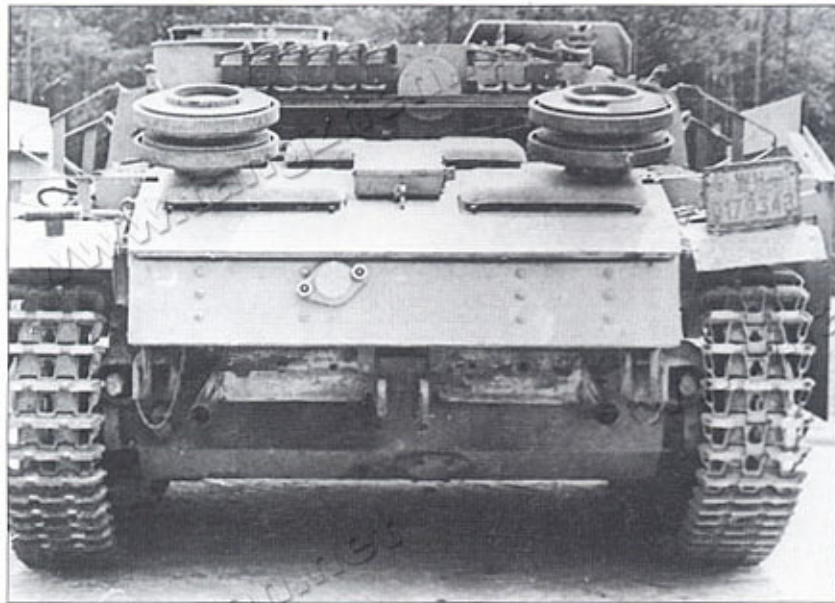
an approaching enemy tank attack and close the range. The same weaknesses described for their employment in the first wave are apparent when Sturmgeschütze are used in an attack to eliminate a threat to the flank. The Sturmgeschütz only needs to turn to the right or left, but then again it has more difficulty than a PzKpfw IV in engaging enemy tanks advancing from several directions.

'3. The employment of Sturmgeschütze together with Panzer-Grenadiere has worked out to be the best. The Sturmgeschütze provide the Panzer-Grenadiere with strong morale support, especially during an enemy tank attack. When attacking with Panzer-Grenadiere, the Sturmgeschütz can engage the enemy's heavy weapons such as the anti-tank guns, tanks, artillery pieces, and heavy machine guns while the enemy infantry and anti-tank rifles can be held off from the Sturmgeschütze by the Panzer-Grenadiere.

'4. Sturmgeschütze have proven themselves to be very good in defence. As a mobile anti-tank defence, Sturmgeschütze can effectively

Sturmgeschütz Ausf.G, Fgst. Nr. 92112, completed in March 1943 was sent to Kammersdorf where it was used as a test vehicle for various new modifications. The steel-tyred rubber-saving wheels were under trial and the vehicle has been used for testing the 'Pilze' sockets for the 2-ton crane. (WJS)





The rear of Sturmgeschütz Ausf.G, Fgst.Nr. 92112, which was used as a test vehicle for the steel-tired rubber-saving wheels. The new centre tow coupling for tow bars was introduced into production from December 1944. (TM)

engage the enemy from previously scouted positions behind our own main battle line. They were shown to be very useful for scouting the firing positions in advance on foot.

In closing, it can be said that in a mixed Panzer-Abteilung, the PzKpfw IV has been shown to be superior to the Sturmgeschütz, especially in offensive actions. This is proven by the following overview of the results and losses of the mixed Panzer-Abteilung for the period from 28 October to 1 December 1943. An average of 17 Panzers employed daily destroyed a total of 136 tanks, 117 anti-tank guns, and 20 artillery pieces. While at the same time an average of 13 Sturmgeschütz were operational daily and destroyed 75 tanks, 59 anti-tank guns, and 34 artillery pieces.

The ratio of kills by the Sturmgeschütz in comparison to the PzKpfw IV was about 70 per cent. The losses as total write-offs from 16 days in combat were 20 PzKpfw IV and 16 Sturmgeschütze. In 35 working days, 52 PzKpfw IV and 74 Sturmgeschütze were repaired by the maintenance platoon.

Starting in 1943, companies of 14 Sturmgeschütz were created as an organic part of the Panzer-Jäger-Abteilung for Infanterie-, Grenadier-, Gebirgs- and Jäger-Divisionen. In this way, divisions had their own effective unit with which they could counterattack enemy tank assaults. The effectiveness of Sturmgeschütz units within an infantry divisions are related in the following after-action report from Panzerjäger-Kompanie 1045, outfitted with Sturmgeschütz III, which was printed in December 1944:

The company was prepared as divisional reserves. After a half-hour artillery barrage, the enemy attacked one morning deployed on a wide front with about 30 new T-34 tanks and mechanised infantry with heavy air support. The enemy tried to force a breakthrough with elements from five or six divisions. The terrain was unusually favourable for the enemy. Above all, the forested areas provided him with suitable firing positions and assembly areas.

Alkett completed the Versuchs-Sturmhaubitze in March 1942 by mounting a weapon developed from the 10.5 cm le.FH.18 in the modified superstructure of a Sturmgeschütz Ausf.E. (WJS)



'The company went into action with nine Sturmgeschütz, and on the first day within three hours was able to knock out or destroy 16 T-34s (new), 1 KW-I, 17 machine guns, two mortars, two observation points with radios, one anti-tank gun and an infantry gun and immobilise two T-34s. And on the second day two T-34s, three anti-tank weapons, one self-propelled gun, two grenade launchers, 21 machine guns, and two anti-tank guns were knocked out or destroyed.

'The tanks were knocked out at ranges of 600 to 800 metres. In a period of 15 minutes, one Sturmgeschütz was able to shoot five tanks out of a column. The enemy tanks did not fire a single aimed round. The remaining T-34 tanks were individually hunted down. One T-34 was knocked out at a range of 1,000 metres with three rounds.

'Equipping the Sturmgeschütz with machine guns and sub-machine guns has proven to be very beneficial, because these weapons were able to keep the enemy tank-hunter teams as well as the infantry at bay. In summation, it should be said that after the enemy's high losses of tanks, they no longer utilised tanks during infantry attacks but instead dug them into defensive positions.'

In addition to their employment in the German army, the Sturmgeschütz III was sent to their allies in exchange for raw materials and to bolster their morale. With the very real threat of the Allies attempting a landing on the mainland after the loss of Tunisia, Germany sent three Sturmgeschütz Ausf.G to Italy in May 1943. Ten Sturmgeschütz Ausf.G were also sent to Spain in November 1943. When they were desperately needed by their own forces fighting in Russia, a total of 55 Sturmgeschütz were sent to Bulgaria from February to December 1943, 67 to Finland from June 1943 to July 1944, 120 to Rumania from November 1943 to August 1944, and 40 to Hungary in August and September 1944.

## VARIANTS

### **Sturmhaubitze**

Included in the Wa Prüf 6 list from mid-1941 of projects under development was a Sturmgeschütz leichte Feldhaubitze (105 mm light field howitzer). Its intended function was to provide escort artillery for the infantry and to be a Bunkerknacker (bunker buster). Daimler-Benz



The first nine of 12 Sturmhaubitze completed on rebuilt chassis were completed in October 1942 and issued to the Sturmgeschütz-Abteilung.185. (BA)

was responsible for detailed design of the chassis and Rheinmetall for detailed design of installation of the le.FH.18 in the superstructure.

By March 1942, Alkett had mounted a single experimental le.FH.18 into a converted Sturmgeschütz Ausf.E. Twelve le.FH.18a for mounting in Sturmgeschütz were scheduled to be completed in December 1941 through February 1942 of which five weapons were produced by May 1942. In a conference with Reichsminister Albert Speer at the Reichskanzlei on 2 October 1942, Hitler was shown a Sturmgeschütz with an le.FH. He was very satisfied with this model and especially with the extraordinarily low firing height of 1.55 metres. It was reported to Hitler that a single series of 12 were being produced of which six were already completed, three more were to be completed by 10 October and the last three in about four weeks. On 13 October, Hitler referred to the le.FH. mounted in a Sturmgeschütz as an ideal solution and wanted to know when 12 Sturmgeschütz out of the running production series could be completed with 10.5 cm le.FH.

The first nine Sturmhaubitze, completed in October 1942, were issued to the 3.Batterie/Sturmgeschütz-Abteilung 185 and were sent into action south of Leningrad in late November 1942. The other three out of the trial series were not reported to have been completed until January 1943. This trial series of 12 le.FH.18 were mounted in rebuilt Sturmgeschütz chassis from earlier Ausführung, not in newly produced chassis of the current Ausf.F/8.

Just like the 7.5 cm Kanone L/24 and 7.5 cm Stur.K.40 L/43 and L/48, the 10.5 cm Sturmhaubitze 42 L/28 was mounted in a carriage on a sturdy frame in the hull of the Sturmgeschütz chassis. The opening in the front of the superstructure was protected by a gun mantle on to which the armoured cover for the recoil and recuperator cylinders was welded. This hull mount only allowed the Sturmhaubitze to be traversed through an arc of 10 degrees to the right and 10 degrees to the left of centre. Elevation was restricted to an arc of -6 to +20 degrees - far below the optimum 45 degrees for a howitzer. A total of 36 rounds of

A Sturmhaubitze of  
Sturmgeschütz-Brigade 237  
provides transport for Hungarian  
Infantry. (MJ)



ammunition for the 10.5 cm Sturmhaubitze 42 were stowed in the hull. Two types of ammunition were carried: Sprenggranaten (high explosive shells) with separate casings so that the propellant charge could be varied, and Hohlladungsgranate (shaped charge armour piercing shells) complete with attached casing for rapid fire.

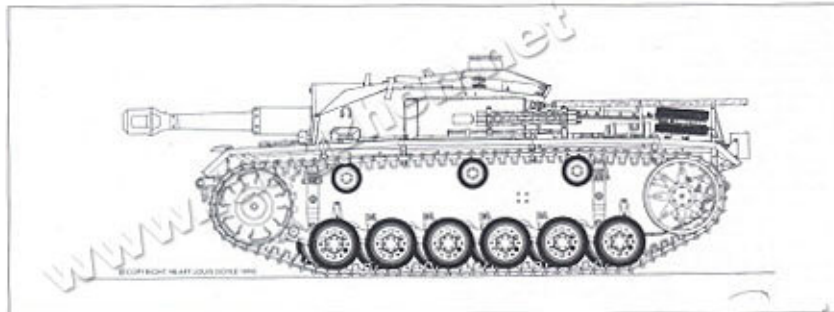
The Sturmhaubitze was not given its own Fgst.Nr. series. Produced alongside normal Sturmgeschütz at Alkett, the Sturmhaubitze chassis were included in the Fgst.Nr.Serie starting about 92001 through 94250 and continuing above 105001. The official name given to it by In 6 on 18 March 1944 was Sturmgeschütz III für 10.5 cm Stu.Haub.42 (Sd.Kfz.142/2). This was officially changed to Sturmhaubitze in August 1944 by the Generalinspekteur der Panzertruppen (General Guderian's office).

In early December 1942, Hitler ordered that the scheduled rate of production of Sturmhaubitze be increased to 24 per month. All of the production series Sturmhaubitze were assembled at Alkett in Berlin alongside the Sturmgeschütz Ausf.G. The first ten of the production series were completed in March 1943 with a total of 204 completed by the end of the year. Following reports of their successful employment on the Eastern Front, the rate of production was increased to over 50 in February 1944, and exceeded 100 per month from August through November 1944. A total of about 1,300 in the production series were completed by the end of the war.

Modifications to the superstructure and chassis of the Sturmhaubitze production series occurred at the same time as on the Sturmgeschütz Ausf.G. As announced in the army technical bulletin in September 1944, after it had been determined that it was not needed, the muzzle brake had been dropped from the 10.5 cm Sturmhaubitze 42. The muzzle brake from the 1c.FH.18 and 1c.FH.18/40 with side flanges could be fitted to the 10.5 cm Sturmhaubitze as a replacement. In addition, a cast Topfblende (pot mantle) had been introduced in mid-1944 but did not completely replace the welded plate version.

As reported by the commander of the Sturmgeschütz-Ersatz und Ausbildungs-Abteilung when he visited many of the Sturmgeschütz units

1:76 scale side-view drawing of a Sturmhaubitze Ausf.G completed after November 1943, when the cast gun mantle and steel return rollers were introduced. (Hilary Louis Doyle)



on the Eastern Front from 30 August to 22 September 1943 to determine how they were faring during the forced withdrawals: 'The Sturmhaubitze has completely proven itself and is indispensable against infantry targets. A ratio of 7 to 3 in each battery is viewed as being correct.'

### **Sturmgeschütz IV**

As proposed by Speer's Munitionsministerium, in February 1943 Krupp looked into mounting the Sturmgeschütz superstructure on a PzKpfw IV chassis, using their latest chassis design for a proposed Ausf.H with sloping armour and wider tracks. Krupp reported that it wasn't an acceptable solution because no weight would be saved by mounting the gun in the hull and dropping the turret.

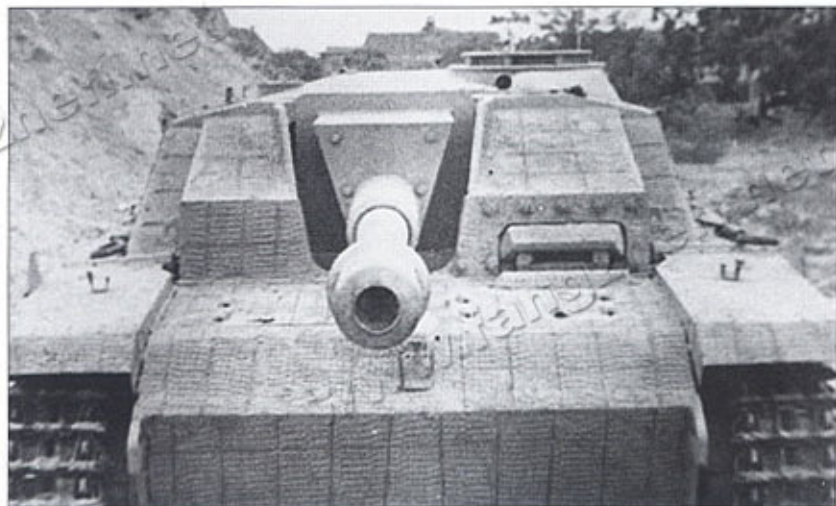
After the Alkett assembly plant was devastated by a bombing raid in November 1943, the decision was made on 6/7 December 1943 to replace quickly the lost Sturmgeschütz production capacity by mounting the current Sturmgeschütz superstructure on a PzKpfw IV chassis. With the original superstructure positioned back to the firewall, the driver's compartment needed to be extended forward and a plate added to fill the gap in the hull roof to the driver's right side. In addition, the gaps under the superstructure sides were covered with sheet metal.

Known originally as the Sturmgeschütz IV für 7.5 cm Stu.Kan.40 (L/48) it was produced by Krupp starting with Fgst.Nr.100001. Thirty Sturmgeschütz IV were also completed on chassis from Nibelungenwerk in Fgst.Nr.Serie 89324 to 89382. The special vehicle designator Sd.Kfz.167 for the Sturmgeschütz IV wasn't included in the K.St.N. (tables of organisation), and has only been found in a list dated 15 November 1944 detailing the weapons for each armoured vehicle.

The production capacity at Krupp Grusonwerk was quickly converted to Sturmgeschütz IV with the first 30 already completed in December 1943. Altogether 1,141 Sturmgeschütz IV were assembled from December 1943 through April 1945. Most of the Sturmgeschütz IV were issued as single companies of 14 (later ten) to Infanterie, Jäger, Gebirgs- and Volksgrenadier-Divisionen. There were a few exceptions, including Sturmgeschütz IV which were issued to the Panzer-Abteilung 190 in the 90.Panzer-Grenadier-Division in Italy, the Panzer-Abteilung 8 and Panzer-Abteilungen in the 4.SS-Division ('Polizei') and 5.SS-Panzer-Division ('Wiking') on the Eastern Front, and 17.SS-Panzer-Grenadier-Division ('Gotz v.Berlichingen') in the West.

The same modifications were made to the Sturmgeschütz IV chassis that were developed and introduced for the PzKpfw IV chassis. Among

This Sturmhaubitze, completed in May 1944, has solid 80 mm armour on the right of the fighting compartment. The remote controlled machine gun mounting has been plated over due to shortages of the weapon. (KHM)



these changes were reducing the number of return rollers to three per side, extending the hull sides for tow brackets, adding a bracket for using rigid towing bars which was centred on the hull rear, and switching to the Flammföter (flame extinguishing) engine exhaust mufflers.

Modifications introduced into the production run of the Sturmgeschütz III superstructure occurred in the Sturmgeschütz IV at the same time. In addition, a series of Sturmgeschütz IV had additional protection for the driver in the form of a 30-mm-thick rolled armour plate set at a steep angle in front of the driver's compartment. Also during the production run, the design of the driver's hatch was simplified and an external travel lock was introduced and then modified to support the gun at 12 degrees elevation.

The problems facing a company outfitted with Sturmgeschütz IV as an organic part of an Infanterie-, Jäger- or Grenadier-Division are related in the following after-action account from Panzer-Jäger-Kompanie 1253, printed in December 1944:

'Almost without exception, due to the situation, the company was deployed in platoon strength for the duration of the operation. This will be necessary from now on for Panzer-Jäger-Kompanien in Infanterie-Divisionen. Therefore, more than before the main emphasis must be placed on small combat team operations and platoon training.

'The company had no time to train together with the infantry due to its overly hasty deployment and transport to the front. Individual situations did not permit the commander to be briefed thoroughly or to establish necessary contact with the platoon leaders.

'From the start, our own attacks were greatly affected by the decreased combat effectiveness of the infantry and the lack of training in co-operation during combat. The enemy tanks and anti-tank guns evaded sweeping counterattacks and then only showed determined resistance when the infantry did not follow.

'The company was equipped with Sturmgeschütz that were missing the old machine gun shield and the new Rundumsfeuer mount had not been installed. Because in many cases the enemy can be suppressed by machine gun fire, when this weapon is lacking, frequently it is not replaceable by firing an increased number of high explosive shells.'



## THE PLATES

### A1: AUSF.F, STURMGESCHÜTZ-ABTEILUNG 201, RUSSIA 1942

Sturmgeschütz-Abteilung 201 was founded in March 1941 at Jüterbog and was initially equipped with Sturmgeschütz armed with the 7.5 cm Kanone L/24. In 1941 the unit was involved in the attack towards Moscow. In 1942 the unit received Sturmgeschütz Ausf.F with the 7.5 cm Stu.K.40 L/43 and took part in the summer offensive on the Eastern Front. With the exception of units sent to the 'Tropen' (hot climates), during this period all German army combat vehicles were to be painted in the single colour Dunkelgrau RAL 7021 (dark grey). Markings for the Sturmgeschütz-Abteilung 201 was the 'Ordenkreuz' emblem (a black cross on a white shield outlined in black) on the front upper nose armour plate and the rear armoured cover of the inertia starter port. The 'Balkankreuz' was painted in black with a white outline on either side of the superstructure and on the rear armour cover for the smoke candle rack. Each Sturmgeschütz carried a three-digit tactical number on each side of the superstructure.

### A2: STURMHAUBITZE AUSF.F, STURMGESCHÜTZ-ABTEILUNG 185, SOUTH OF LENINGRAD, RUSSIA 1942

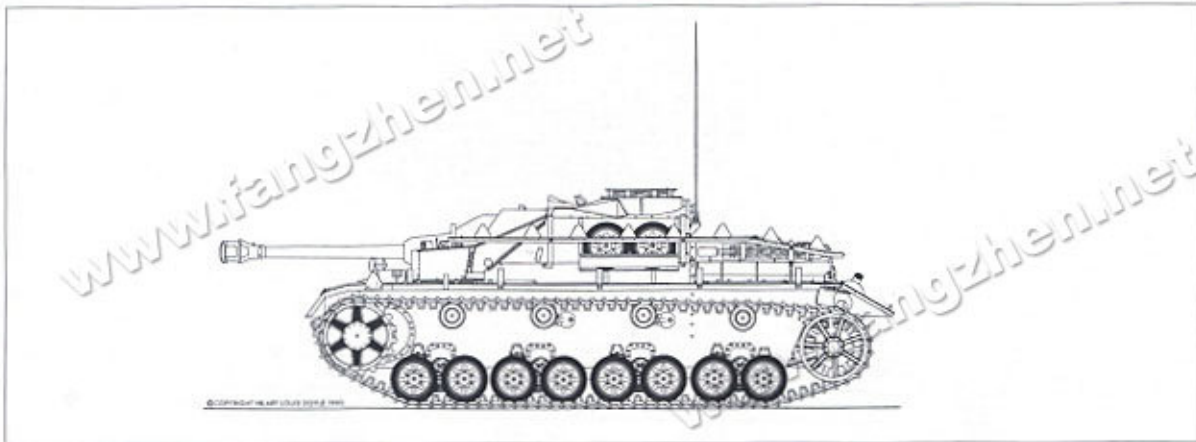
The 3.Batterie of Sturmgeschütz-Abteilung 185 was equipped with nine of the Sturmhaubitze-Versuchserie that were completed in October 1942 on rebuilt chassis. The 10.5 cm Sturmhaubitze L/28 was adapted from the le.FH.18 artillery piece. The chassis was a rebuilt Ausf.E or F with additional 30 mm armour plates welded to the front.

In December 1943 the first 30 Sturmgeschütz IV were completed by Krupp-Grusonwerk in Magdeburg by mounting a modified Sturmgeschütz Ausf.G superstructure onto a PzKpfw.IV chassis. (WJS)

Originally painted in Dunkelgrau RAL 7021 (dark grey) these Sturmhaubitze were coated with Weiss RAL 9002 (whitewash) to provide camouflage in the winter. Markings include the Sturmgeschütz-Abteilung 185 'Turm' emblem (a castle tower). The 'Balkankreuz' was painted in black with a white outline on either side of the superstructure and on the rear armour cover for the smoke candle rack.

Starting in late 1944 Sturmhaubitze no longer had a muzzle brake on the 10.5 cm Stu.H.42. A co-axial machine gun is mounted in the welded mantle. (WJS)





**1:76 scale side-view drawing of a Sturmgeschütz IV completed in the Spring of 1944 showing the layout of the vehicle without Schürzen plates mounted on their rails. (Hilary Louis Doyle)**

**B1: STURMGESCHÜTZ AUSF.G,  
DECEMBER 1942**

The Ausf.G replaced the Ausf.F/8 in December 1942. This Sturmgeschütz is one of the first Ausf.G produced and can be identified by the vision slit to the left side of the driver and a steeper angled armour plate protecting the front of the superstructure side sponson. The fan was mounted on the fighting compartment roof while the gunsight opening was not yet fitted with a sliding armour cover. Additional face-hardened 30 mm armour plates were bolted to the front of the superstructure and hull. The Sturmgeschütz-Abteilung 226 was created in April 1941. The unit received its Sturmgeschütz Ausf.G in time for the fighting south of Leningrad in January 1943. Originally painted in Dunkelgrau RAL 7021 (dark grey) these Sturmgeschütz were coated with Weiss RAL 9002 (whitewash) to provide camouflage in the winter. All that remained visible of their original markings was the 'Balkankreuz' that had been painted in black with a white outline on either side of the superstructure. Some vehicles also retained their three-digit tactical number on the front left of the upper nose plate.

**B2: STURMGESCHÜTZ AUSF.G,  
FGST.NR.107546, LATE NOVEMBER/EARLY  
DECEMBER 1944**

Built by Alkett in late November or early December 1944, this Sturmgeschütz Ausf.G has all of the modifications that were introduced toward the end of the production run. It has an external travel lock for the gun on the front upper nose plate and a coaxial machine gun in the 'Topfblende' cast gun mantle. On the fighting compartment roof is a Rundumsfeuer (remote controlled) machine gun, 'Pilze' sockets for a 2-ton jib crane, and a Nahverteidigungswaffe (a traversable close defence weapon).

In order to save paint, from September 1944, before leaving the assembly plant only about one-half of the original armour surface, coated with Rot RAL 8012 (red primer), was overpainted with well-thinned stripes and patches, with sharp outlines, of well-thinned Dunkelgelb RAL 7028 (tan),

Olivgrün RAL 6003 (dark olive green) and Rotbraun RAL 8017 (dark chocolate brown).

**C: STURMGESCHÜTZ AUSF.F/8,  
STURMGESCHÜTZ-BATTERIE 90 SERVING  
UNDER 10.PANZER-DIVISION IN TUNISIA,  
JANUARY 1943**

The Sturmgeschütz Ausf.F/8 was essentially the Sturmgeschütz Ausf.F superstructure mounted on an 8/ZW. chassis. The 8/ZW. chassis had been developed for the PzKpfw III Ausf.J. The 7.5 cm Sturmkanone 40 L/48 had already replaced the Sturmkanone 40 L/43 in the Sturmgeschütz Ausf.F. For use in tropical areas these Sturmgeschütz Ausf.F/8 were to be painted according to the 1942 specification with two-thirds of the surface coated with Braun RAL 8020 (brown) and one-third with Grau RAL 7027 (grey). Markings were the vehicle tactical letter on the front of the gun mantlet and on the rear armour of the motor compartment. The 'Balkankreuz' was painted in black with a white outline on either side of the superstructure and on the rear armour.

**D: STURMGESCHÜTZ AUSF.G,  
STURMGESCHÜTZ-ABTEILUNG 303,  
NORTHERN RUSSIA 1943**

This Sturmgeschütz Ausf.G was assembled between February and May 1943 and issued to the Sturmgeschütz-Abteilung 303. Sturmgeschütz Ausf.G of this period were delivered from the assembly plant with a base coat of Dunkelgelb RAL 7028 (tan) paint sprayed over the undercoat. The troops were authorised to apply camouflage patterns of stripes and patches of Olivgrün RAL 6003 (dark olive green) and Rotbraun RAL 8017 (dark chocolate brown) as local conditions required. For each Sturmgeschütz, the unit was authorised to obtain two kilogram tins of these colours in paste form that were to be thinned before application. Markings included the 'Balkankreuz' painted in black with a white outline on either side of the superstructure and on the left side of the upper tail plate. The Sturmgeschütz-Abteilung 303 unit emblem was painted on the right side of the upper nose plate and upper tail plate.

The interior of the fighting compartment was painted in Elfenbein RAL 1001 (ivory) while the floors were left in Rot RAL 8012 (red primer). Radio sets were Dunkelgrau RAL 7021 (dark grey). The motor compartment was also painted



A demonstration of the use of the 2-ton crane on Sturmgeschütz IV, Fgst.Nr. 100412, completed in late April or early May 1944. Other improvements include the remote controlled machine gun above the loader and the Nahverteidigungswaffe. (National Archives)

in Rot RAL 8012 (red primer). The 7.5 cm Panzergranate 39 (APCBC/HE shell) was identified by having the projectile painted Schwarz RAL 9005 (black) with a Weiss RAL 9002 (whitewash) cap. The 7.5 cm Sprenggranate (high explosive shell) was identified by having the projectile painted in Olivgrün RAL 6003 (dark olive green).

#### **E: STURMGESCHÜTZ IV, LATE AUGUST/EARLY SEPTEMBER 1944**

This Sturmgeschütz IV is ready for delivery at Krupp-Grusonwerk in Magdeburg. Most Sturmgeschütz IV were issued to single companies in Panzer-Jäger-Abteilung in the Volks-Grenadier-, Jäger-, Gebirgs- and Infanterie-Divisionen. The camouflage was applied at the assembly plant and consisted of a base coat of Dunkelgelb RAL 7028 (tan) on to which stripes and patches of Rotbraun RAL 8017 (dark chocolate brown) and Olivgrün RAL 6003 (dark olive green) with sharp outlines were sprayed to create the camouflage scheme. To simulate sunlight passing through foliage all dark areas were painted with spots of Dunkelgelb RAL 7028. Also,

spots of Olivgrün RAL 6003 and Rotbraun RAL 8017 were applied to the Dunkelgelb RAL 7028 areas; green nearest the green areas and brown near the brown areas. Zimmerit (anti-magnetic coating) was applied to the armour surfaces on the Sturmgeschütz IV until this practice was stopped in September 1944.

#### **F: STURMGESCHÜTZ AUSF.G, FGST.NR.76171, AUGUST 1943**

During 1943, a series of the Sturmgeschütz Ausf.G was built using the PzKpff III Ausf.M chassis available after the cancellation of the PzKpff III production run. This Sturmgeschütz Ausf.G was issued to Infanterie-Division 'Grossdeutschland'. Sturmgeschütz Ausf.G from this period were delivered from the assembly plant with a base coat of Dunkelgelb RAL 7028 (tan) paint. The troops were authorised to apply camouflage patterns of stripes and patches of Olivgrün RAL 6003 (dark olive green) and Rotbraun RAL 8017 (dark chocolate brown) as local conditions required. Sturmgeschütz belonging to 'Grossdeutschland' had the steel helmet unit emblem stencilled on the superstructure sides along with the 'Balkankreuz' painted in black with a white outline on either side of the superstructure and on the rear armour. The vehicle tactical number, '111', is stencilled on the right hand side trackguard, the tactical symbol on the left of the upper nose armour.

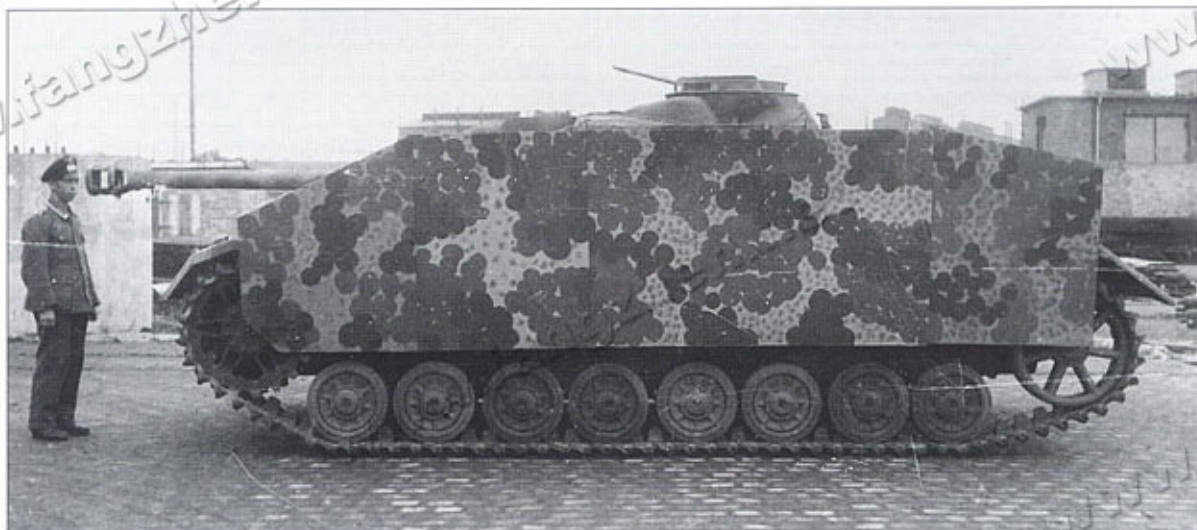


**ABOVE** Most Sturmgeschütz IV were issued to single companies in Panzer-Jäger-Abteilung in the Volks-Grenadier-, Jäger-, Gebirgs- and Infanterie-Divisionen. These Sturmgeschütz IV were manufactured in August 1944. They belong to the Panzer-Jäger-Abteilung of the 34. Infanterie-Division and are on the way to surrender to the US Army in Ivrea, northern Italy, on 5 May 1945. (US Official)

**BELOW** This Sturmgeschütz IV was completed in late August or early September 1944. It still has Zimmerit anti-magnetic paste applied. In September 1944 the assembly firms were ordered to discontinue applying Zimmerit. Sturmgeschütz IV incorporated all the changes introduced on the Sturmgeschütz Ausf.G superstructure and to the PzKpfw IV chassis. On this particular vehicle the Flammvernichter (flame suppresser exhaust covers) replaced the exhaust muffler. (National Archives)

**G: STURMHAUBITZE AUSF.G, FGST.NR.107578, LATE NOVEMBER/EARLY DECEMBER 1944**

This Sturmhaubitze represents those completed toward the end of the production run in late 1944. The muzzle brake has been eliminated and a coaxial machine gun is mounted in the welded mantlet. The revised layout of the Schürzen (steel plates) was a fairly widely adopted field modification at the end of the war, having been introduced to reduce the possibility of the Schürzen being torn off by obstacles. The camouflage pattern was applied at the assembly plant. To save paint about one-half of the armour surfaces were left coated only with Rot RAL 8012 (red primer). The other half was sprayed in a camouflage pattern of stripes and patches, of well-thinned Dunkelgelb RAL 7028 (tan), Olivgrün RAL 6003 (dark olive green) and Weiss RAL 9002 (whitewash). Wheels and other small components were painted in a single colour.



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