

Pzkpfw IV in action



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Pzkpfw IV

in action

by Bruce Culver

illustrated by Don Greer



squadron/signal publications

(Cover)

Two PzKpfw IV ausf H's, in late Autumn 1944, falling back through East Prussia. The first snow silhouettes the tanks, still wearing three color camouflage.

PANZER



ASSAULT BADGE

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A PzKpfw IV ausf F2 leads several late G's across a ford in a stream. The G's have the 80 mm front armor. This view shows the stowage of the ausf F2, the radio antenna trough above the shovel. As was common, extra equipment is carried.
(Bundesarchiv)



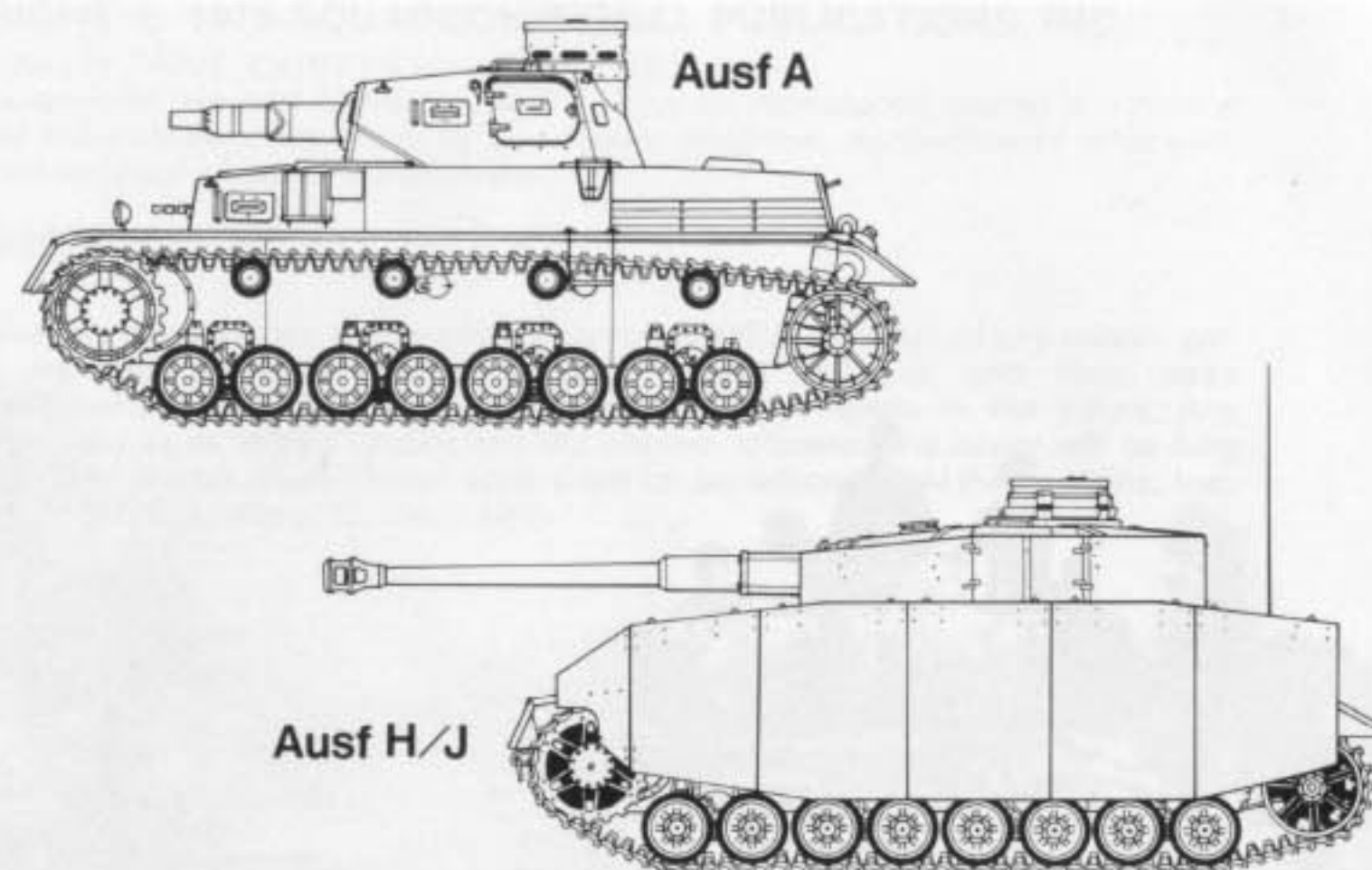
PzKpfw IV Development

In 1930, Colonel-General Heinz Guderian formulated a specification for a "medium tractor" (since Germany was not allowed to build tanks under the terms of the Treaty of Versailles). In 1934, with the rearmament program under Hitler, a similar specification was issued to Krupp and Rheinmetall - Borsig under the code designation **Bataillonsfuehrerwagen** (battalion commander's vehicle), usually shortened to "**BW**". Rheinmetall's prototype appeared in 1935, and used the suspension developed for the **Neubaufahrzeug** heavy tank. It was Krupp that received the production order; however, certain features of Rheinmetall's prototype were used in the Krupp vehicle.

Appearing in 1936, Krupp's first production vehicle was designated **Versuchskraftfahrzeug 622** by the Ordnance department (**Heereswaffenamt**), but Krupp called it **Panzerkampfwagen IV, ausf A**. Compared to later versions, the armor was thin, especially in the rear, and the protected vision devices were very crude. Only 35 PzKpfw. IV ausf A's were built and they served as production prototypes and development vehicles.

Since Krupp was engaged - among other things - in building railroad locomotives and rolling stock, the suspension used was very similar to that found on railroad cars - quarter elliptic leaf springs on each bogie truck. In all major respects regarding size, layout, crew arrangements, and even basic tool stowage, the PzKpfw IV ausf A was very similar to the later models. Since the PzKpfw IV was intended as a support tank, the armor in the rear was not as thick as the front, and this deficiency was never corrected.

As mentioned, the basic structure and design of the PzKpfw IV ausf A (Vers. Kfz 622) was virtually the same as that of the last PzKpfw IV J. The improvements made in the tank were almost entirely in the nature of increasing armor protection, mounting heavier weapons, improving vision devices and the like - upgrading the combat capabilities of the tank. Also evident was the increasing rationalization and standardization of many smaller fittings, so that later PzKpfw III's and IV's shared many details, including: hull mg mounting, turret vision flaps, turret doors, cupolas, MP ports, turret ventilator, and signal ports. In addition, a number of mechanical details were also common to both vehicles. This helped expand production, in spite of the fact that most German tank manufactures were heavy industrial manufacturers and not used to large scale mass production. Total German tank production was small compared to the United States and Soviet Union, but because of superior training and tactics early in the war, and expanded production later, the German panzer units were able to give a good account of themselves until early 1945, and even afterwards small units sometimes defeated larger allied forces, though most German tanks had to operate as small assault teams, the Panzer Divisions having been decimated by early of 1945..



The PzKpfw IV was designed before the PzKpfw III and therefore it must be considered as perhaps the first of the truly modern tanks of advanced combat capabilities. Virtually all of the features adopted for the PzKpfw IV have been used on most subsequent battle tanks. Among these were: lowered upper track run with overhanging sponsons; adequate interior space for a five-man crew and ammunition, allowing best tactical use of the vehicle; large turret ring, allowing later installation of larger weapons; suspension suitable for good road and cross country speeds; short pitch cast skeleton track. Compared with the **Grosstraktor** and **Neubaufahrzeug** designs, the PzKpfw IV was vastly superior in terms of speed, lower silhouette, maneuverability, and armament capability.

Interestingly enough, the Germans considered the PzKpfw III to be superior to the PzKpfw IV, but the smaller hull and turret ring of the III limited the carrying of heavier weapons, and by January 1943, the PzKpfw III was obsolete as a battle tank. The PzKpfw IV was able to carry the 7.5cm KwK 40, L/43 (later L/48) in its turret, and as a result development continued until 1944. The longer chassis also was more suitable for self-propelled gun carriages. Though considered obsolete with the introduction of the Panther, the PzKpfw IV remained in production well into 1945 and in fact provided the backbone of the German armored units until the end of the war. PzKpfw IV's served after the war in Spain, Turkey, and the Middle East; Syria used PzKpfw IV's during the 1967 war, most of these being employed as dug in pillboxes and antitank guns.

The basic models of the PzKpfw IV are described later, with drawings to show the pertinent detail features and differences. The ausf A, B, and C were basically development vehicles built in small numbers, in part because the PzKpfw IV was only to equip one company in each Panzer Battalion.

PzKpfw IV ausf A

The first production version - the ausf A (V.Kfz 622) was remarkably similar to the later models of the PzKpfw IV. Only two basic changes in shape were to be made later - the introduction of the straight front plate on the ausf B and C (later restored on F and later types) and the altered rear turret design, introduced with the ausf E. All other improvements were essentially details - thicker armor, longer, more powerful guns, wider tracks, better vision devices, new cupolas, etc. - but the shape, suspension and layout of internal and external stowage, access hatches, etc. were established with the first model.

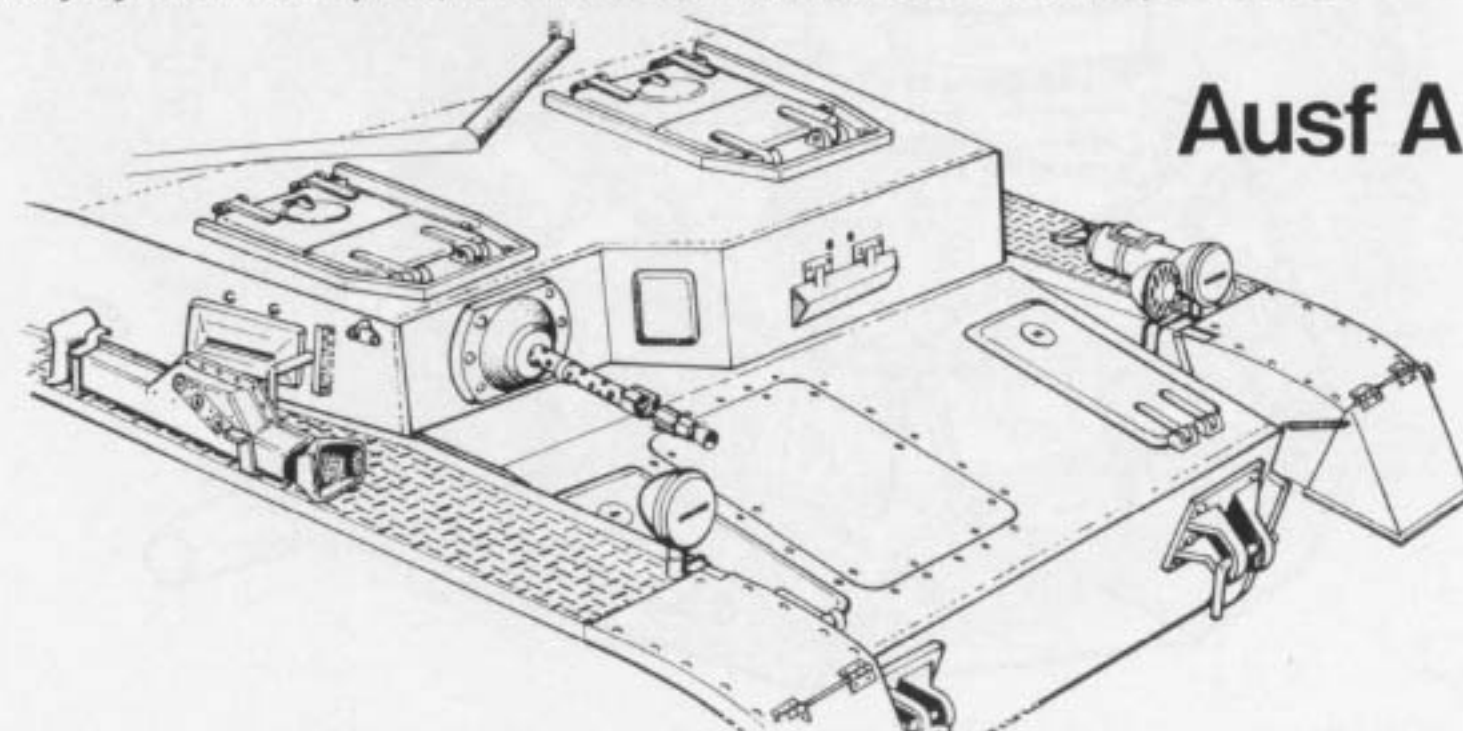
The suspension comprised front drive sprockets; eight pressed steel rubber tired roadwheels per side, mounted in four bogie trucks using quarter elliptic leaf springs; built-up rear idlers; four rubber tired return rollers; and 36cm wide single pin "skeleton" tracks, cast from manganese steel.

The hull - virtually identical to later versions - had the same angles and sizes of plates found in all models of the series. The nose and front superstructure plates were 30mm thick - all other plates were 20mm. The transmission access hatch in the glacis plate was flush, screwed in place; the brake access hatches to either side were raised slightly above the glacis plate. The front plate assembly featured an 8 1/4" setback of the radio operator's plate; this was done to include a machine pistol port for the driver in the angled plate that connected the driver's and R. O.'s front plates. The radio operator had a bow MG34 carried in a simple ball gimbal mount. The driver had a simple hinged armored flap to cover the armor glass vision block in his front plate. Two holes above this provided sight through a retractable binocular episcopes. Side vision ports at the front were provided for the driver and R.O., each port having internal armor glass and a shutter flap. The hull top hatches were in two sections, with signal ports in the rear segments. Stops kept the rear sections from fouling the turret - the front sections were laid against the bullet splash rails protecting the hatches. At the rear of the hull, engine access on the rear decking was through three hatches: a large left hand one, a narrow central hatch, and a right side hatch, hinged to the right. In addition, the upper rear hull plate could be unbolted for major maintenance work or engine changes. A large cylindrical muffler on the lower rear plate silenced the engine exhaust; a smaller cylindrical muffler serviced the two-stroke engine for the turret traverse.

In the center plate of the hull top was the turret ring. It was 66" in diameter and was offset 2 3/8" to the left of the centerline. The engine was offset 6" to the right, so that the turret electrical base junction could be placed clear of the main drive shaft. The turret itself was almost identical to later turrets except for plate thickness and details. The turret front plate was 30mm thick, the sides 20mm, and the rear plate was 10mm thick. Simple hinged vision port flaps were provided in the front plate for the loader and the gunner. Two vision ports were also provided in the forward turret sides; the left port (for the gunner) had no armor glass and no view slit. Entry was by large single doors on each side, hinged at the front; these could be held open by catches. Vision ports, protected by armor glass blocks, provided



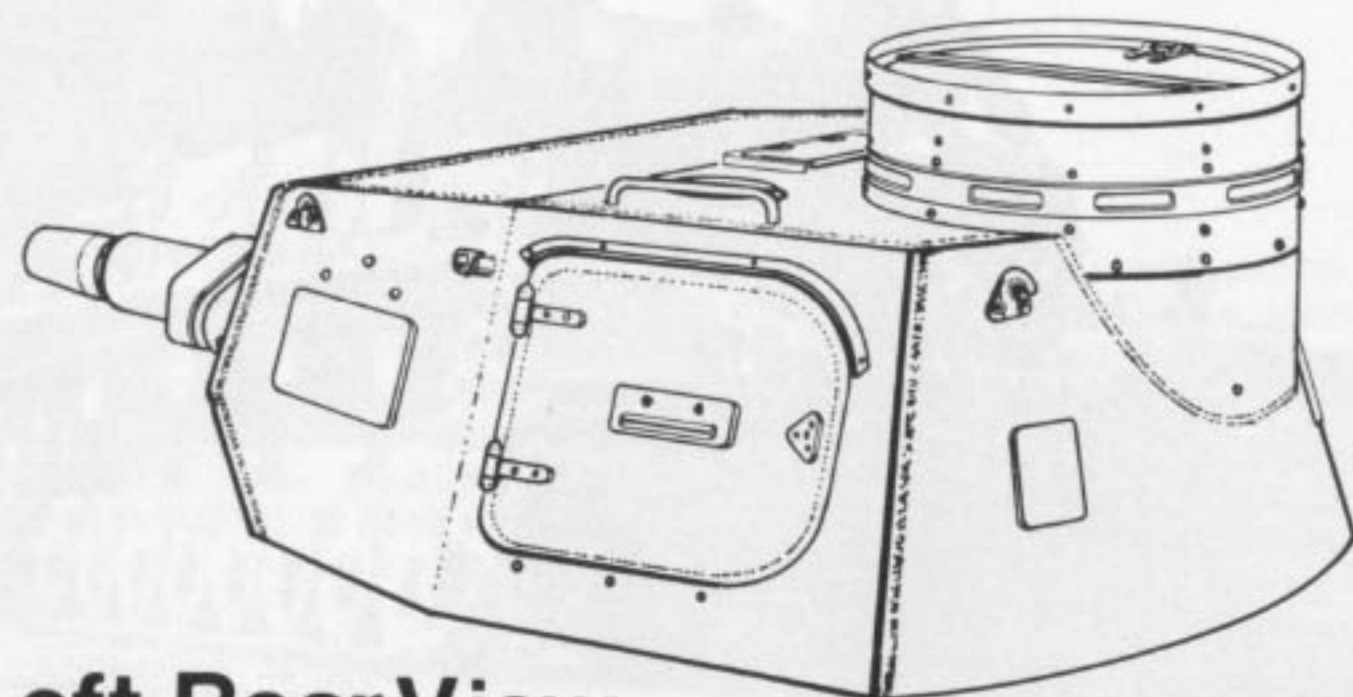
A rare view of the PzKpfw IV ausf A in action, this photograph shows a vehicle of the 1st Panzer Division in 1941, probably in France where several Panzer Divisions refitted after the campaign of 1940. The black panzer uniforms are worn with the early field cap rather than the beret. Note the early cylindrical cupola, and the added tracks used for extra protection.



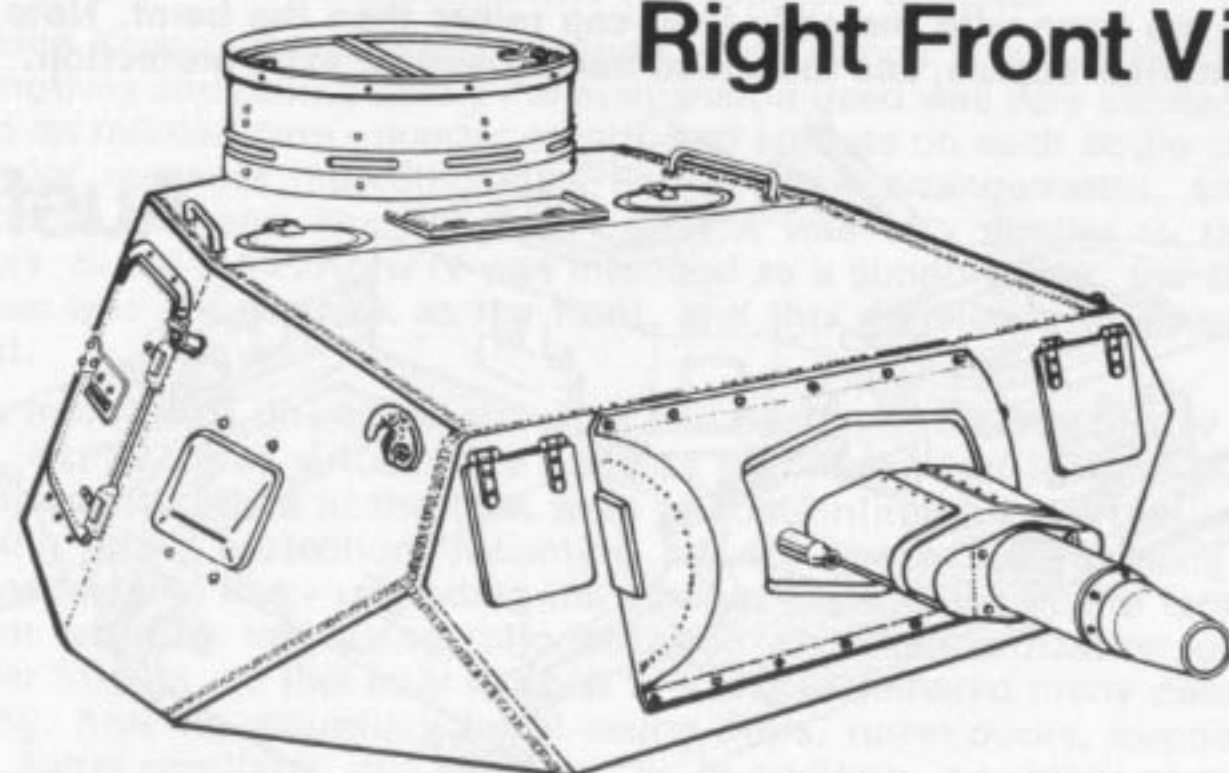
Ausf A

viewing for the vehicle commander. A rectangular ventilating flap in the roof in front of the cupola allowed for exchange of fresh air; and armored outlet cowl was on the forward left side of the hull. The 7.5cm KwK, L/24 support howitzer was carried in an internal roller type mantlet with an external fixed cover. The coaxial MG34 protruded through the mantlet and was unarmored. The engine was the gasoline-powered Maybach HL 108TR, rated at 300 hp. The transmission was a manually operated 5-speed SRG75. Steering was by clutch and brake.

early cupola with 2-segment vision and type. The light colored shells are yellow (AFG); the dark shells are black (APC).



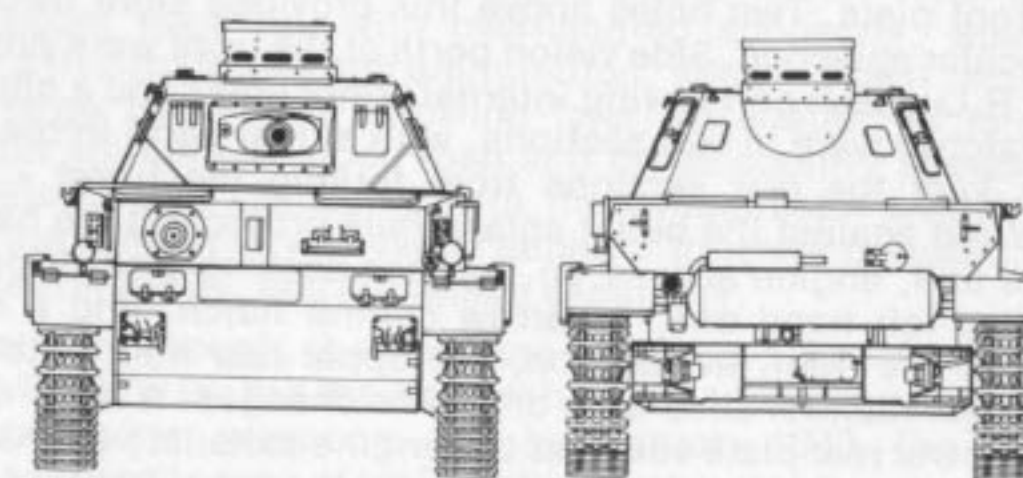
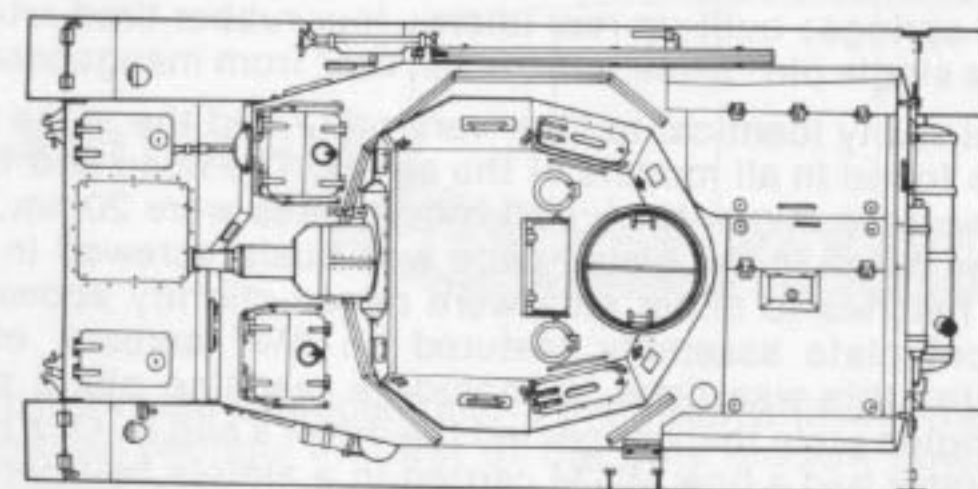
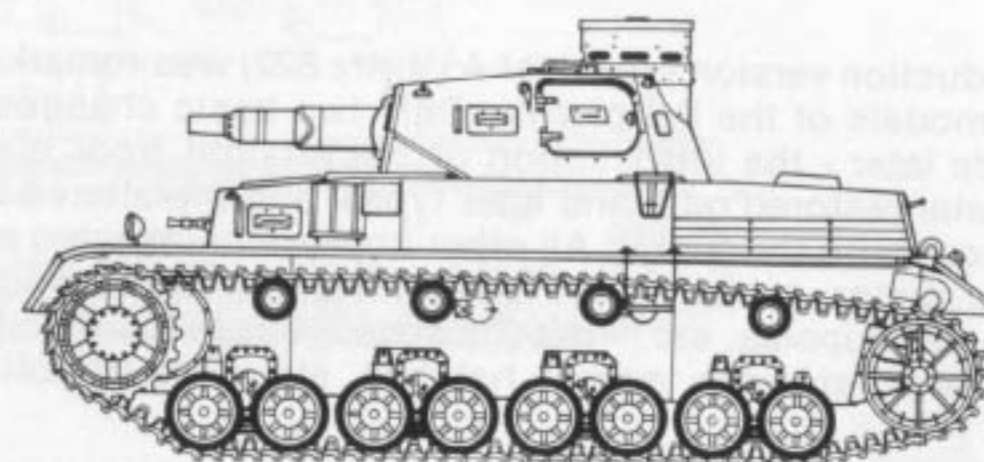
Left Rear View



Right Front View

Ausf A Turret

PzKpfw IV ausf A, 1935

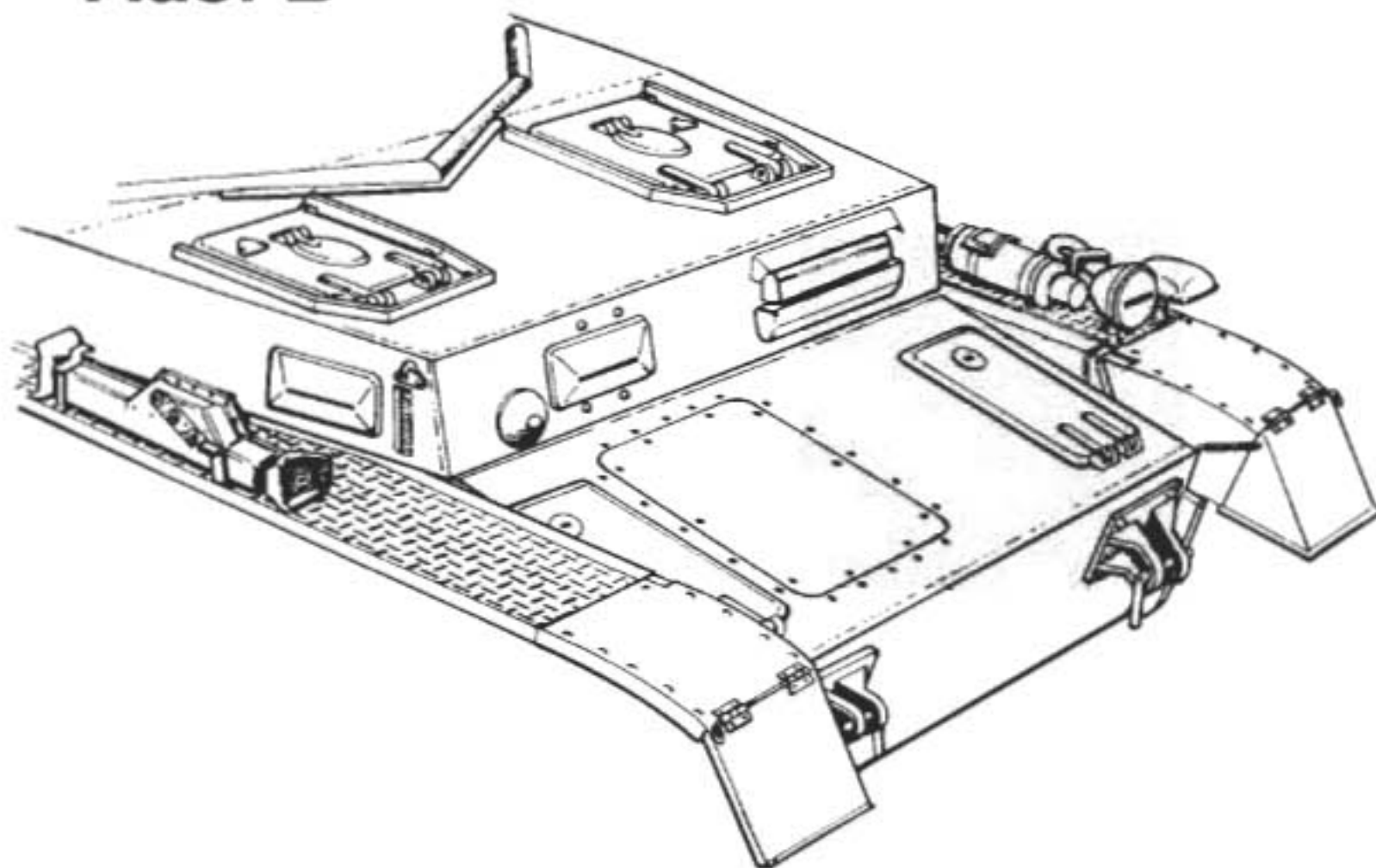


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PzKpfw IV ausf B

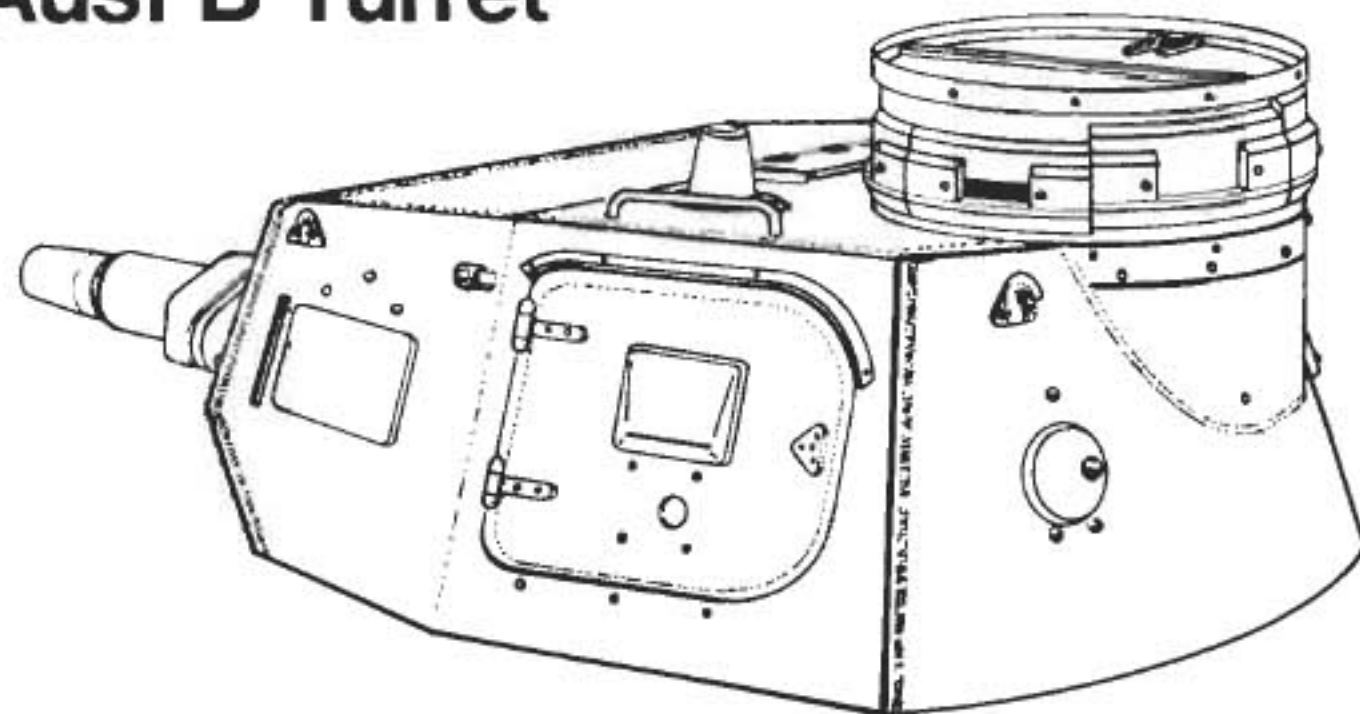
The Ausf B was similar to the ausf A, but featured detail improvements and an altered hull. The hull front plate was now a single 30mm plate and the radio operator's ball-mounted MG34 was eliminated and replaced by a vision port with a glass block. Next to this was a machine pistol port identical to that fitted to the ausf A's front plate. The driver's visor now used double flaps, both of which moved to close and protect the vision block. The hull top hatches were now single pieces hinged at the front. On the turret faceted cast visor flaps replaced the early simple flaps in the turret front plate and a new better cupola was fitted. The new cupola had more armor and was better protected, having 5 segments of upper and lower armor shutters to close and protect the view ports. The turret doors were modified by the addition of small pistol ports below the vision ports, protected by simple internal sliding armor shutters. The pistol ports in the rear turret plate were covered with round flaps from ausf B onward. The transmission was now a 6-speed SSG76.

Ausf B

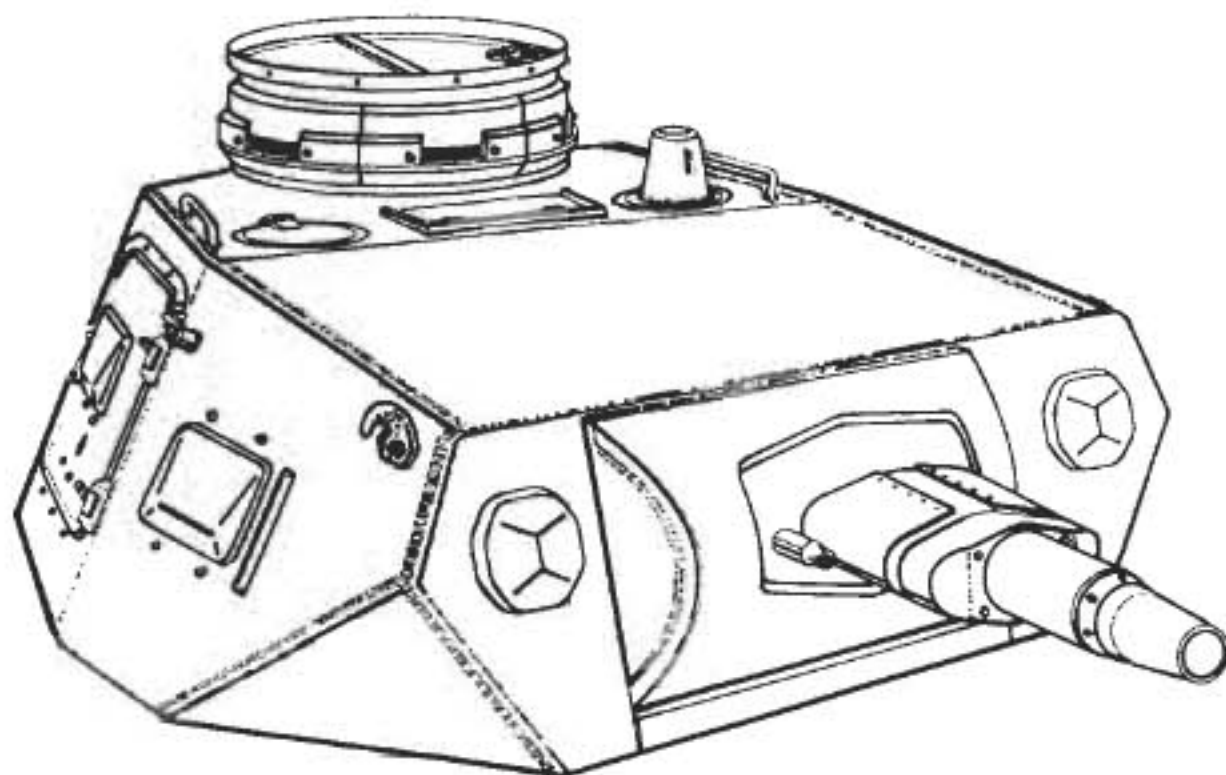


This wartime drawing shows several interesting features of the ausf B. The vehicle is shown with several rounds of tank ammunition and a few 50-rd. drums for the MG 34's. From the left, the details include: radio antenna in its trough; vehicle jack; axe, headlamp (with canvas cover); front flap of mudguard (flipped back); R.O.'s vision port (visor flap raised); gun mantlet; loader's view flap; new cupola with 5-segment vision slot flaps. The light colored shells are yellow (HE); the dark shells are black (APC).

Ausf B Turret



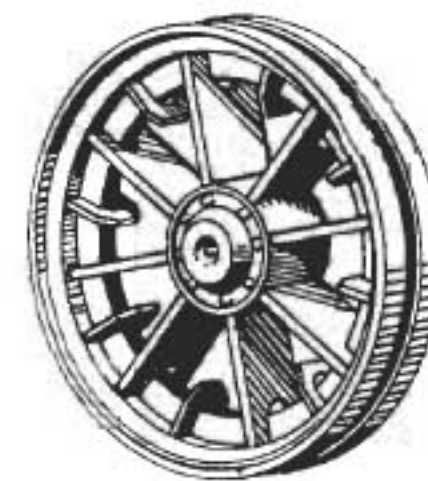
Left Rear View



Right Front View



A German and an Italian soldier leap off the ausf B shown here. The model can be determined by the unarmored coaxial mg in the internal mantlet and the second type of cupola (5 segment flaps). Note also the rear air intake vents on the rear hull side. The turret side flap raised up to provide a better view when this was safe. (Bundesarchiv)



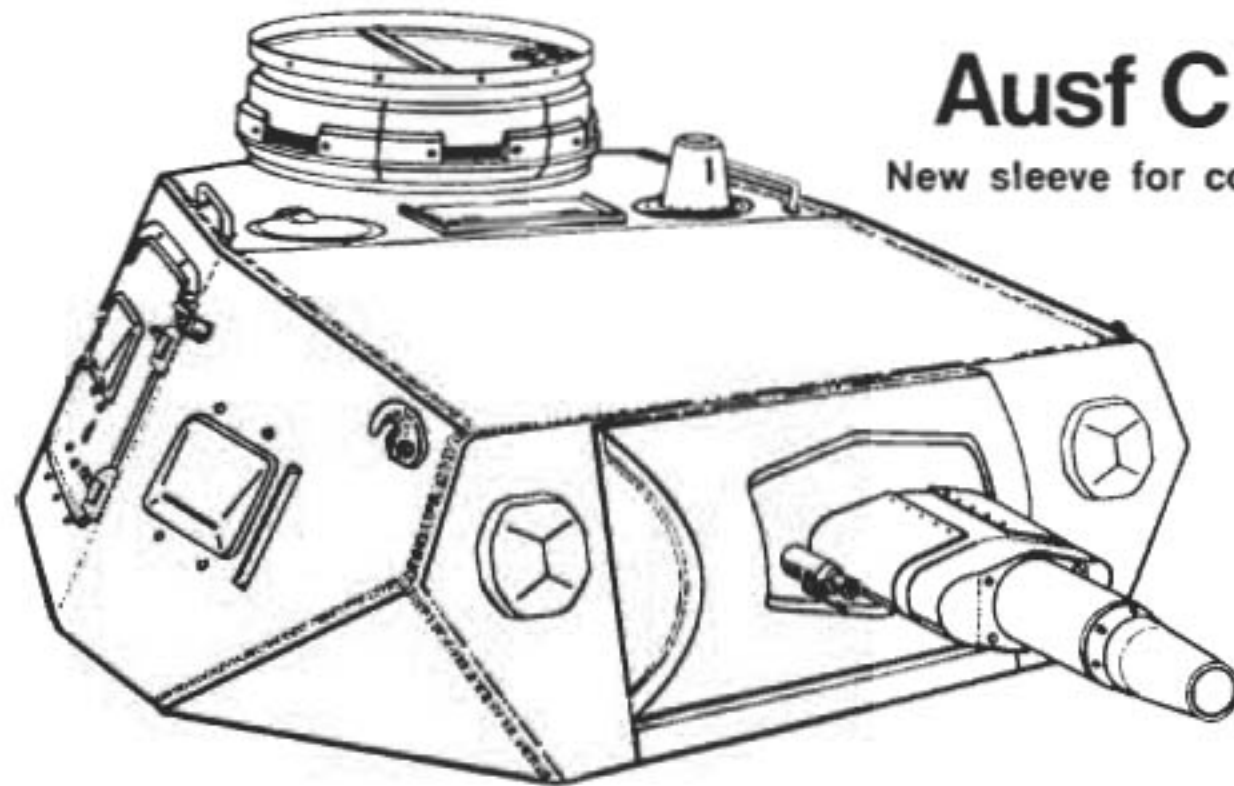
Drive sprocket and rear idler for ausf A, B and C.



Ausf B's during "Barbarossa", the invasion of Russia. The basic appearance of this early PzKpfw IV is very similar to all the subsequent versions. Though not too clear in this photo, the ausf B had a straight front plate. The conical structure to the right of the cupola is a covered signal port, used to shield signal lamps - a front slit allowed a narrow light beam forward. These vehicles have been retrofitted with turret stowage boxes. (Bundesarchiv)

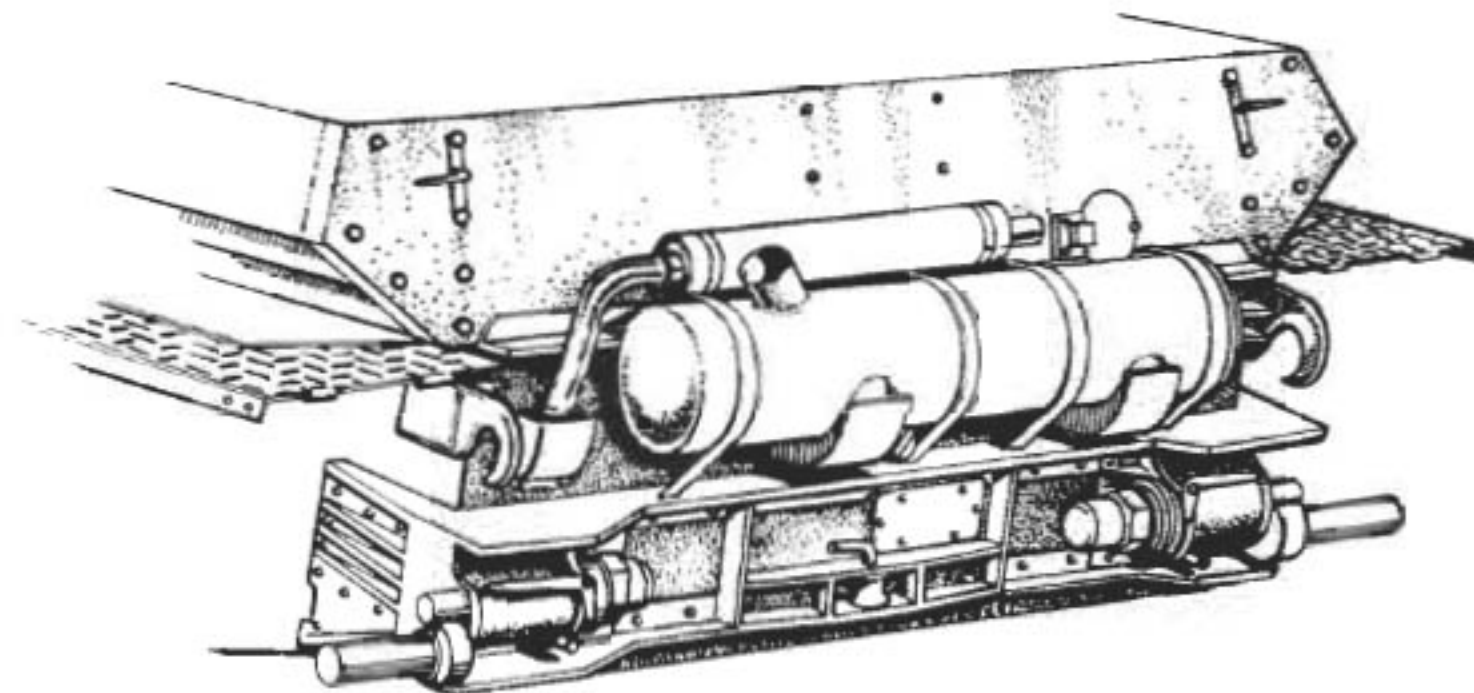
PzKpfw IV ausf C

The ausf C was almost identical to the ausf B. The only external difference between them was that the coaxial MG34 of the ausf C was fitted with an armored sleeve for improved protection. Usually, an "L" shaped rod extended from the armored sleeve - this served to push down the radio antenna on the right of the hull when the turret rotated to the right. The engine in the ausf C was the Maybach HL120TRM, which remained the standard engine for subsequent versions to the end of production in 1945.



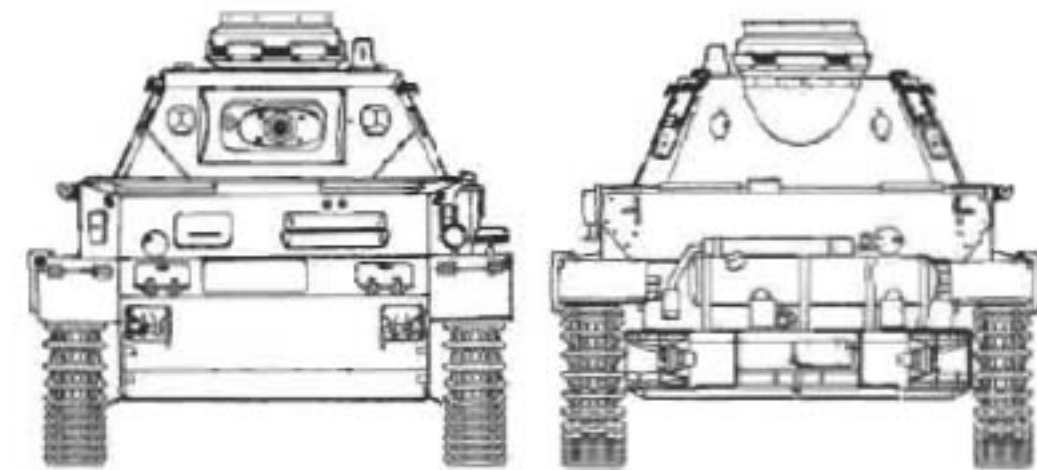
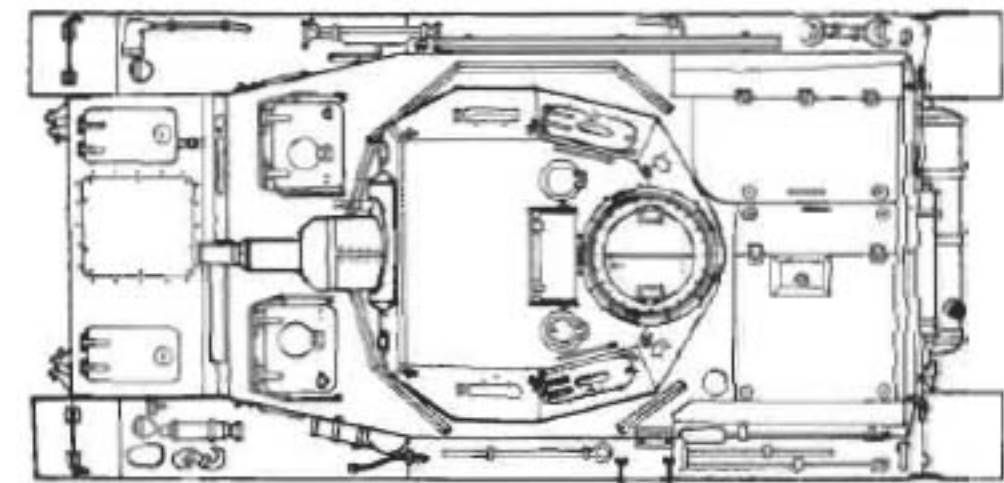
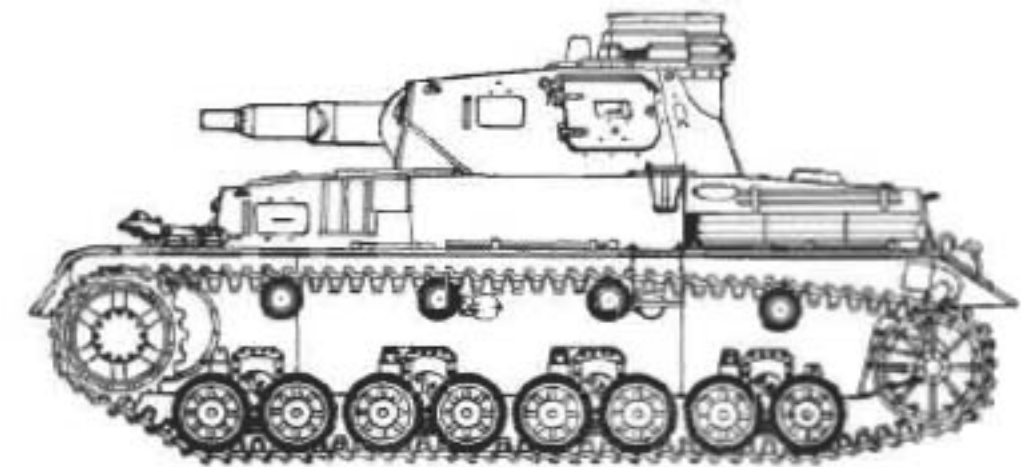
Ausf C Turret

New sleeve for co-axial MG 34.



Ausf A-E Exhaust

PzKpfw IV ausf C



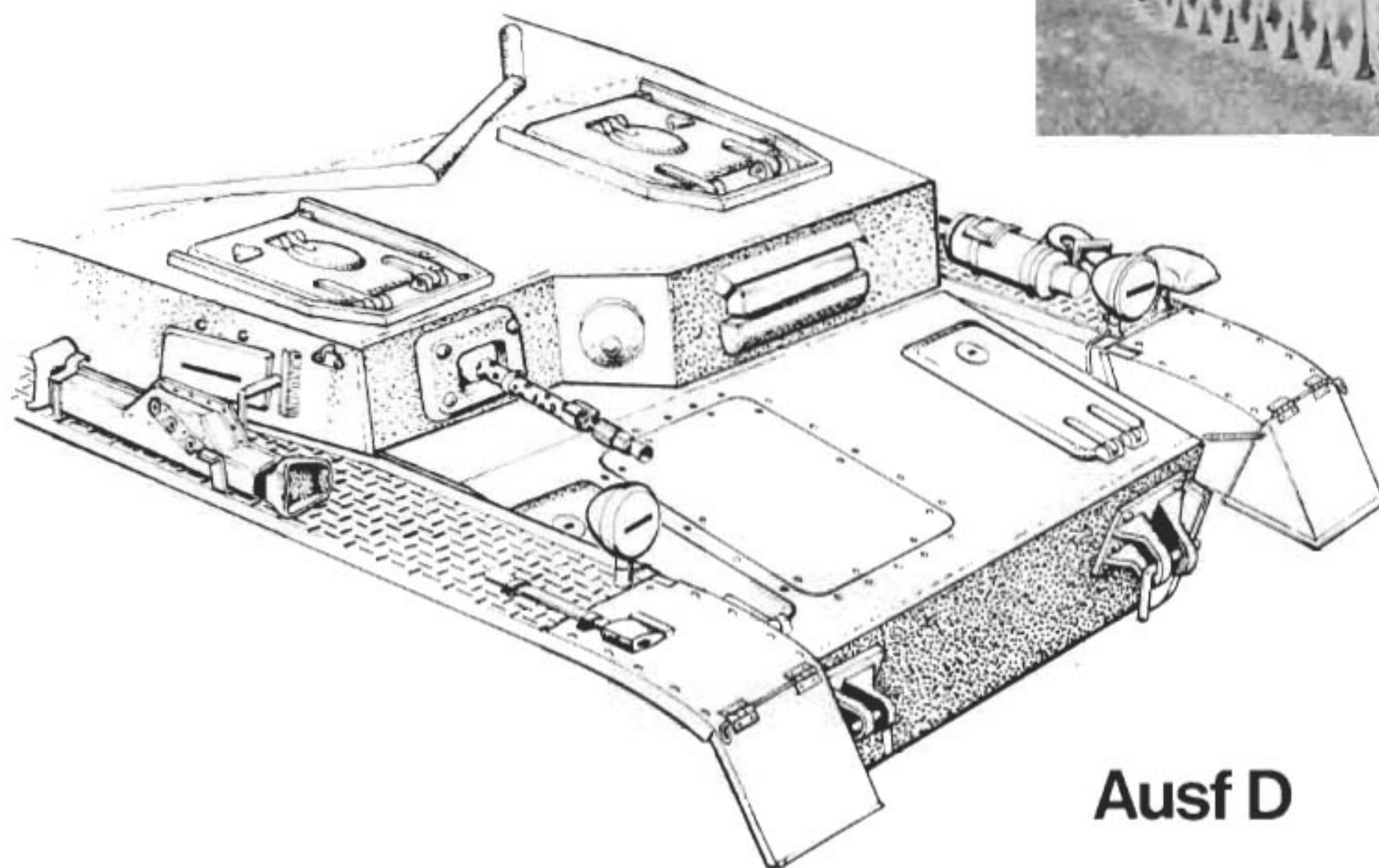
1:76 th scale (4 mm:1 foot)

PzKpfw IV ausf D

The ausf D was similar to the ausf C, but reverted to the ausf A front plate design, with the set-back radio operator's plate. A ball mount for a bow MG34 was reintroduced, now protected by a rectangular external frame. A Machine pistol port was provided in the central plate as in the ausf A. The 7.5cm KwK was fitted in a new external mantlet, which also carried the armored sleeve for the coaxial MG34. A wishbone-shaped frame was often fitted below the main gun to push down the radio antenna as the turret rotated. PzKpfw IV ausf D's were often refitted in 1940 and 1941, having additional 20mm armor bolted to the upper hull sides and the front plates for the driver and R.O. Because of the design of the driver's visor, the additional plates in front had to be spaced from the basic front plate. This spacing was also necessary for the R.O.'s extra plate, because of the mg mount. The track, though still 36cm wide, had higher guide teeth (3.14" vs. 2.36") and could not be used on ausf A-C PzKpfw IV's. Ausf D's being rebuilt were often fitted with later tracks, chassis components, etc. to bring them up to later standards.



PzKpfw IV ausf D during "Barbarossa", serving with 6th Panzer Division. Again note somewhat later fittings typical of 1941 - spare track in front, and the turret stowage box. Note the rain shield over the driver's visor. The set-back R.O.'s front plate and connecting plate are seen by the way they catch the light. (Bundesarchiv)

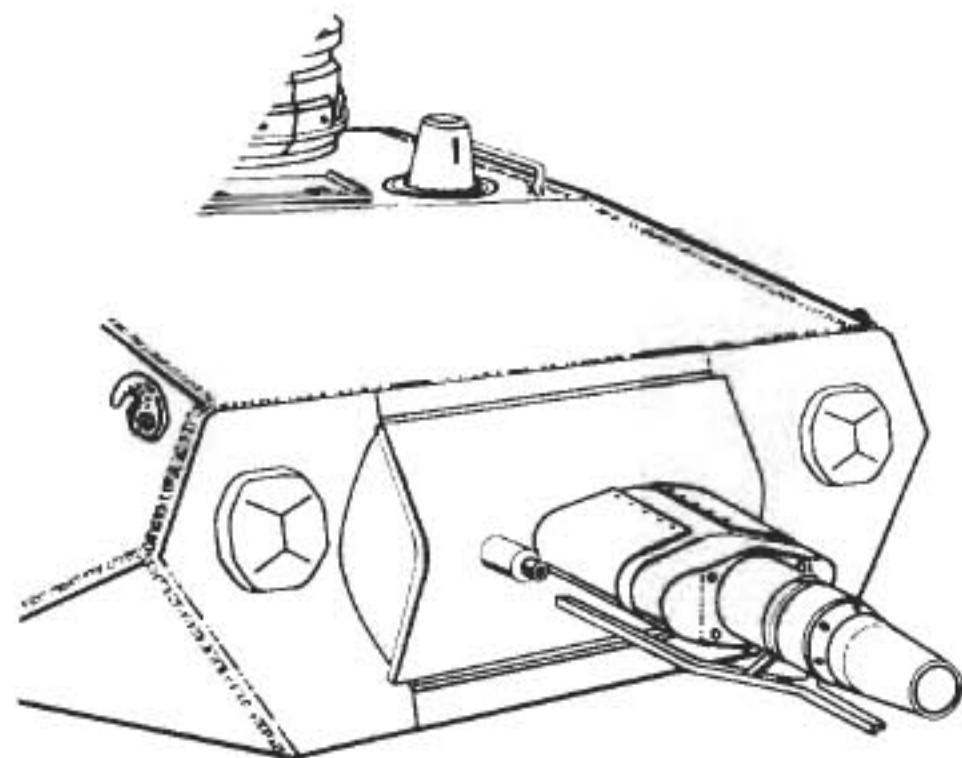


Ausf D

A German armor column during the invasion of France, 1940. The lead vehicle is a PzKpfw 35(t), from Czechoslovakia; behind it are: a PzKpfw IV ausf D; and ausf C; and another ausf D. Further behind are PzKpfw I's. (Bundesarchiv)

Ausf D Turret

New external gun mantlet and deflector.



This ausf D near Leningrad is a good example of an upgraded D. The turret stowage box has been added, and spare wheel racks are now on the side of the upper hull - earlier they were more commonly at the rear. Note the front turret lift hook, the solid vision flap, the door and its details, and at the lower right, the bore cleaning brush in its protective leather cover. Various items of crew stowage are hung from convenient parts of the turret, and a Kar 98k is up on the roof. The cone behind the rifle is for the left side roof signal port. (Bundesarchiv)





A somewhat earlier D, probably during training exercises. The contour of the cupola extension into the rear plate is typical of the A-D versions. Many of the tools and stowage fittings are not on this particular vehicle. The other tanks is a PzKpfw IIIE.



(Above Right) This PzKpfw IV in North Africa shows some rear details of the ausf D, similar to the earlier models. Note the long cylindrical engine muffler with the smaller muffler for the turret traverse auxiliary engine above it. The frame attached to the main muffler held 5 smoke candles which could be fired from inside the vehicle. The interior details on the turret door are shown clearly here. Note also that the doors over the side air intakes are closed, covering the grills. The ausf D had simplified intake grills, having only one longitudinal bar instead of 3 as on the ausf A - C vehicles.

Three ausf D's during the Russian winter of 1941/42, still in overall dark gray. Though not carrying a great deal of extra stowage, each vehicle has individual items that distinguish it from the other tanks. (Bundesarchiv)

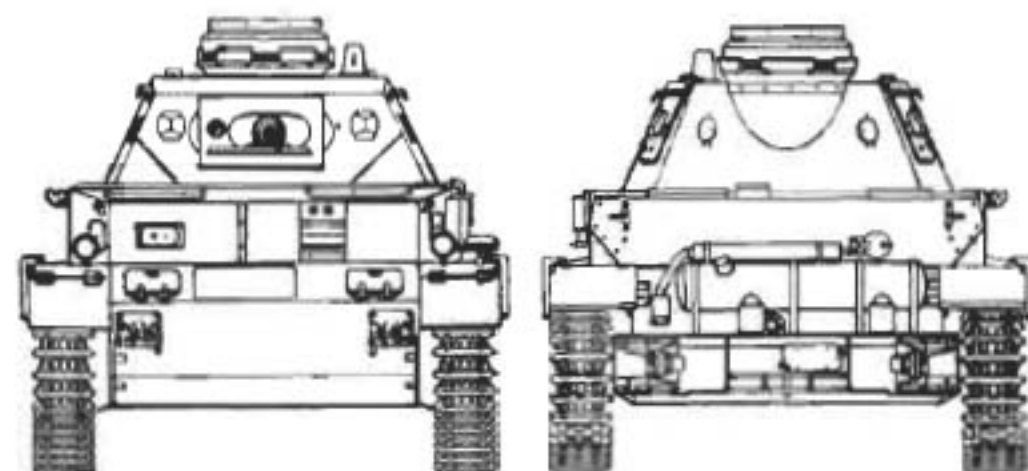
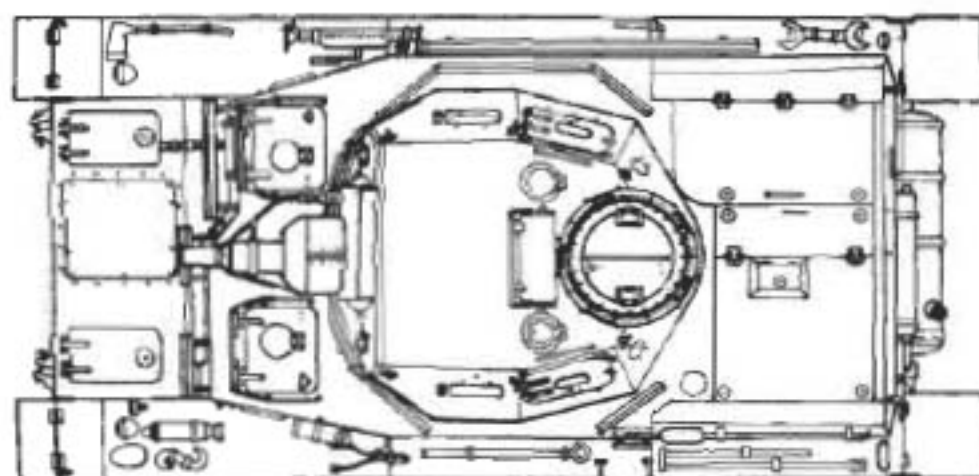
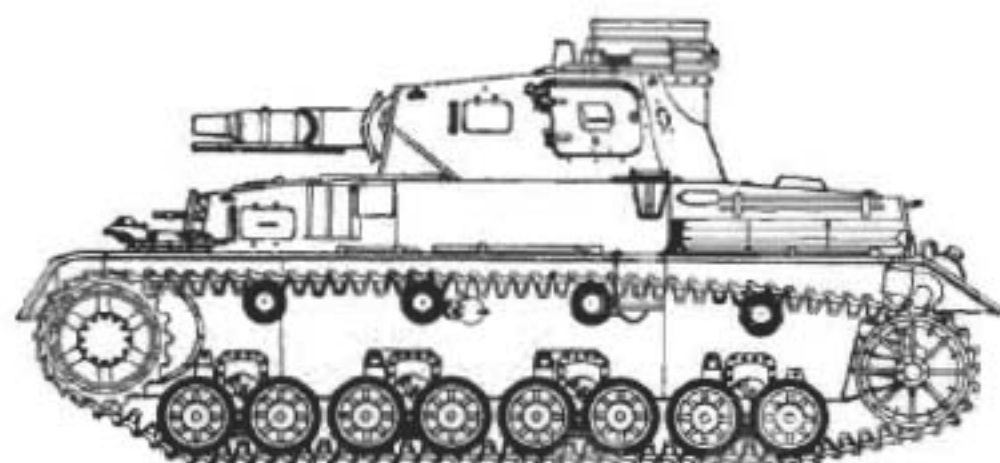




A group of ausf D and E vehicles in France after the campaign of 1940, showing the detail differences between the two models. The tanks on the far left and third from left are ausf D's; second from left, second from right, and near right are ausf E's. The vehicle second from the left is fairly unusual

- an early ausf E without the added frontal applique armor. The PzKpfw IV at the rear center is an ausf C, identified by the straight front plate, internal gun mantlet, and armored sleeve for the coaxial MG 34. (Bundesarchiv)

PzKpfw IV ausf D with appliqué armor

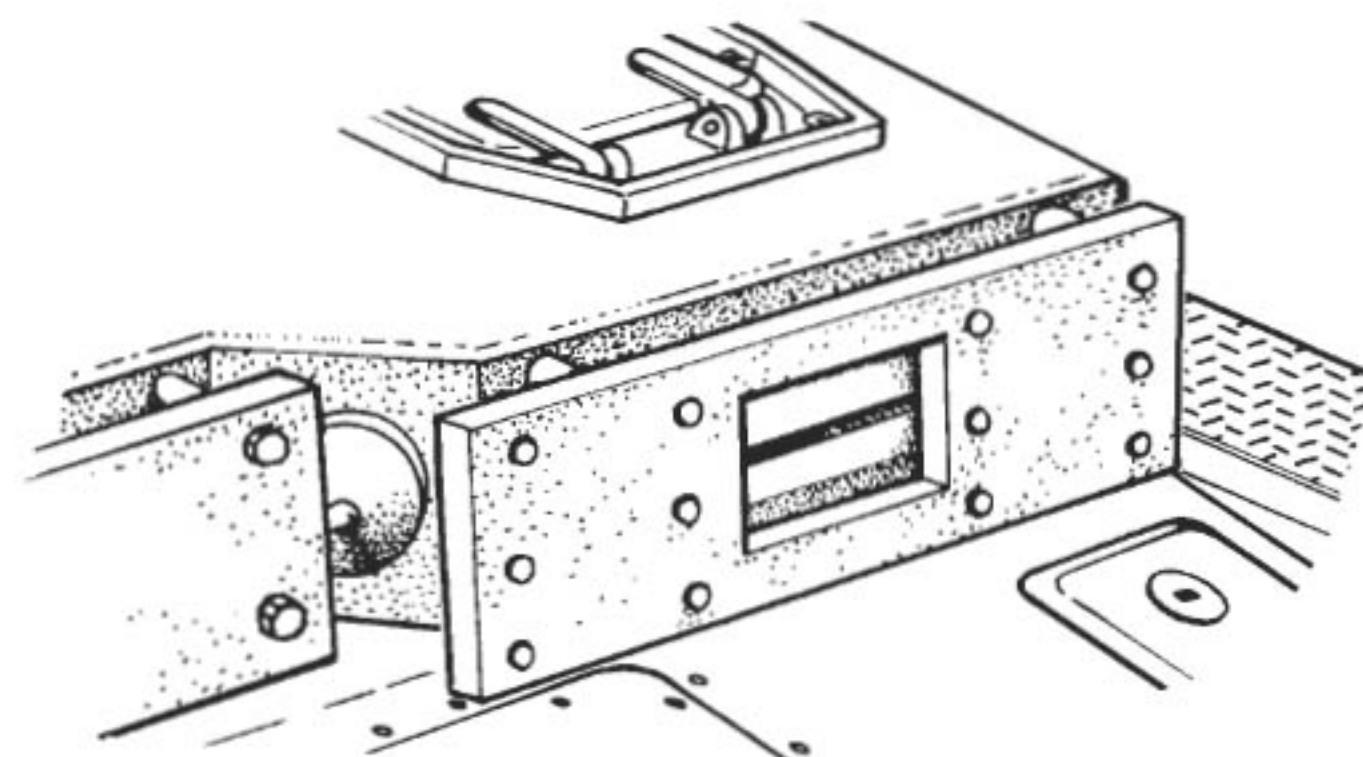


1:76 th scale (4 mm:1 foot)

Specifications for PzKpfw IV ausf D

Combat weight in tons	20.0
Maximum speed in kph	
by road	40
across country	20
Active range in km	
by road	200
across country	130
Fuel consumption in litres per	
100 km of road	235
Fuel supply in litres	470
Length overall in cm	591
Length without barrel in cm	591
Barrel overhand in cm	0
Width overall in cm	286
Turret ring in cm	165
Height in cm	268
Axis height of gun in cm	195
Engine No/cylinders/type	1/12/V/O
Type	Maybach HL 120 TRM
HP/HP: Kg	300/3.07
Cooling/cyl capacity (litres)	W/11.87
Rpm	3000
Type of transmission	Synchron
	ZF SSG 76
Gears	6 F 1 R
Type of steering	Clutch
Turning at the halt	No
Smallest radius (metres)	5.92
Drive from	Front
Length of track in contact	
with the ground in cm	352
Track width in cm	36
Wheel base in cm	239
Steering ratio l:s	1.47

Track type	Dry
Track spacing	101 Links
Type of suspension/springs	
per roller	Bogie/1/2
Weight/power ratio (ton/HP)	15.0
Ground pressure kg/sq cm	0.75
Ground clearance in cm	40
Gap crossing ability in cm	230
Vertical climb in cm	60
Gradients	30°
Wading depth in cm	100
Gun calibre in cm/type	7.5/KwK
Length in calibres	24
Muzzle velocity	
Armour-piercing shell m/sec	385
Muzzle velocity	
HE shell m/sec	420
Turret MGs number/calibre	
in mm	1/7.92
Bow MGs number/calibre	
in mm	1/7.92
Sighting equipment	TZF 5 b o.
	TZF 5 b/36
Number of rounds carried for	
main armament	80
MG ammunition	2700
Crew	5
Turret traverse	Hand-EI
Hull armour type	F
Bow armour in mm/°	30/78
Driver plate armour mm/°	30/80
Side armour bottom mm/°	20/90
Side armour top mm/°	20/90
Stern armour mm/°	20/78-90
Roof armour mm/°	11/0
Floor armour mm/°	10/0
Turret armour type	F + H
Front mm/°	30/79
Side mm/°	20/64
Stern mm/°	20/74
Roof mm/°	10/0-6

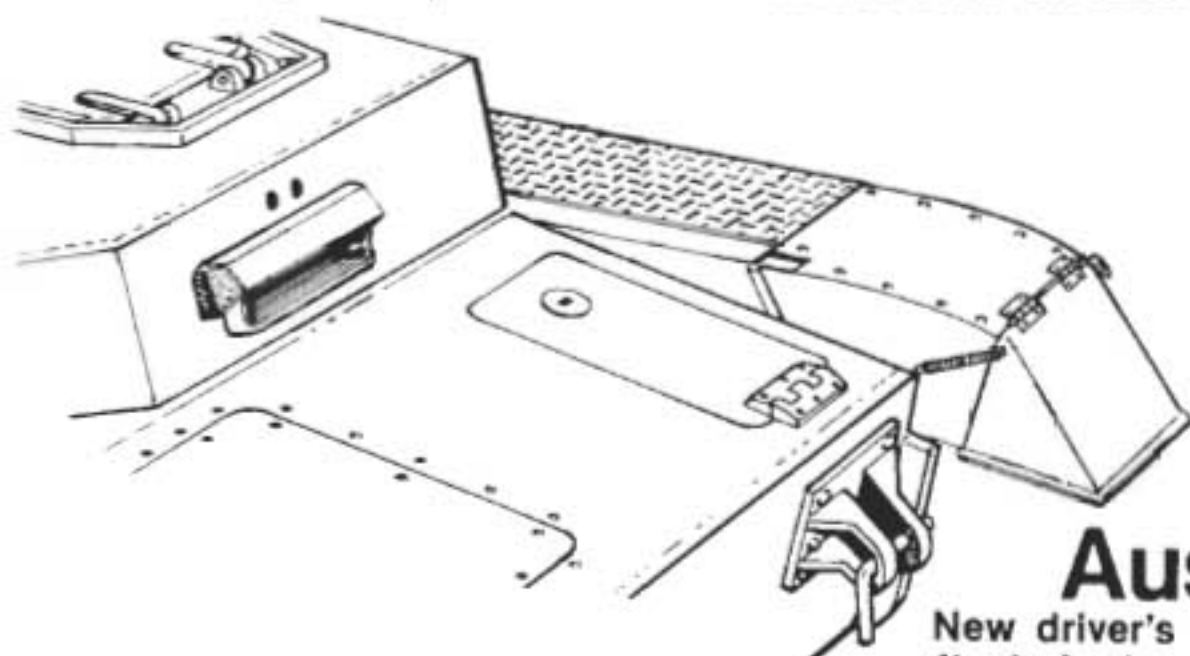


Alternate type of frontal appliqué armor for driver's visor.

PzKpfw IV ausf E

The PzKpfw IV ausf E, though very similar in appearance to the ausf D, carried a number of detail improvements that were to be found on all subsequent versions. Though the 3-piece front plate assembly with the set-back R.O.'s plate was still used, almost all the ausf E's built had the 20mm bolted-on side armor, plus 30mm plates fitted over the front plates. The driver's visor was a new design with a heavy single armored flap that hinged at the ends-swung up to allow the driver to look through the armor glass vision port. With the new visor, the driver's additional armor was fitted flush against the front plate. The bow MG mount was the **Kugelblende 30** (ball mount for 30mm armor thickness), and was modified to take the tank model MG34 with the armored barrel jacket. The R.O.'s additional 30mm armor was spaced from the hull as in the ausf D. The brake access hatches in the glacis plate were now flush mounted, with larger single hinges. The newer 36cm tracks used on the ausf D were used, but a new simplified drive sprocket was used.

The major changes in the ausf E were found in the turret. A new, much more heavily armored cupola was fitted. It featured 50mm - 95mm of armor, and in place of complete cupola segments which moved, the flaps covered only the 5 vision ports, most of the cupola armor being fixed. The cupola was used for all later production models. The cupola was still closed by two side hinged flaps. The shape of the turret was also altered when the rear plate was made more vertical to enclose the cupola completely, the roof plate being extended to the rear to meet it. The right side turret roof signal port was eliminated, and the rectangular ventilation flap in front of the cupola was replaced by a raised circular housing for an electrical ventilator fan. Finally, most of the vision ports and flaps were better armored than in previous models. Metal stowage bins were fitted to the turrets of later production vehicles. Late ausf E's were occasionally fitted with the ausf F 40cm tracks, drive sprockets and sometimes even rear idlers.



Ausf E

New driver's visor design and flush brake access hatch in glacis plate.



This ausf E is interesting in that no applique armor has been fitted to the front or sides of the superstructure. The ausf D behind it has a pennant on the radio antenna. The "G" on the front mudguards indicates that these vehicles - in Russia, fall 1941 - were part of the army commanded by Col. General Heinz Guderian. Without the applique armor, the details of the visor, mg ball mount, and machine pistol port can be seen. (Bundesarchiv)



New simplified drive sprocket introduced on ausf E.

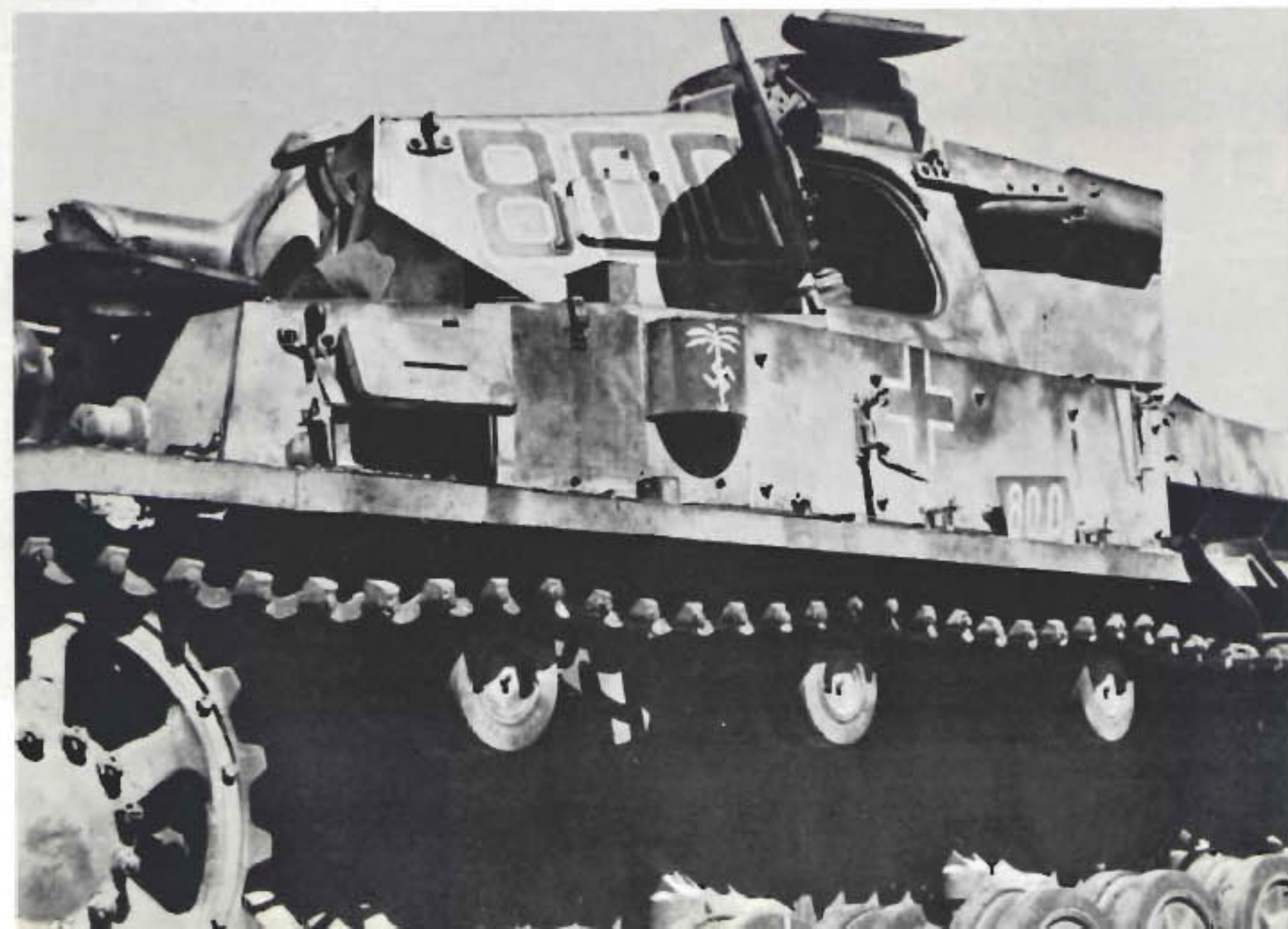


This ausf E carries an underlined turret number which does not conform to the usual German numbering practice. This may be a training exercise. (Bundesarchiv)



(Above Right) This PzKpfw IV ausf E in France demonstrates some of the detail changes from the ausf D. This vehicle has no applique armor, and the set-back front plate is identical to that of the ausf D. The differences show in the rear cupola, roof fan ventilator, flush hatches in the glacis plate, and the modified turret shape. The front and rear mudguard flaps are raised to allow mud and dirt to be thrown from the tracks easily, without doing any damage to these fragile parts. (Bundesarchiv)

This is one of the first PzKpfw IV's captured by the British in North Africa. The desert sand has been sprayed over the earlier dark gray, much of which is still visible. Note the use of the old rhomboid number plate along with the large red and white turret numbers. The damaged mounting step is dropped down.

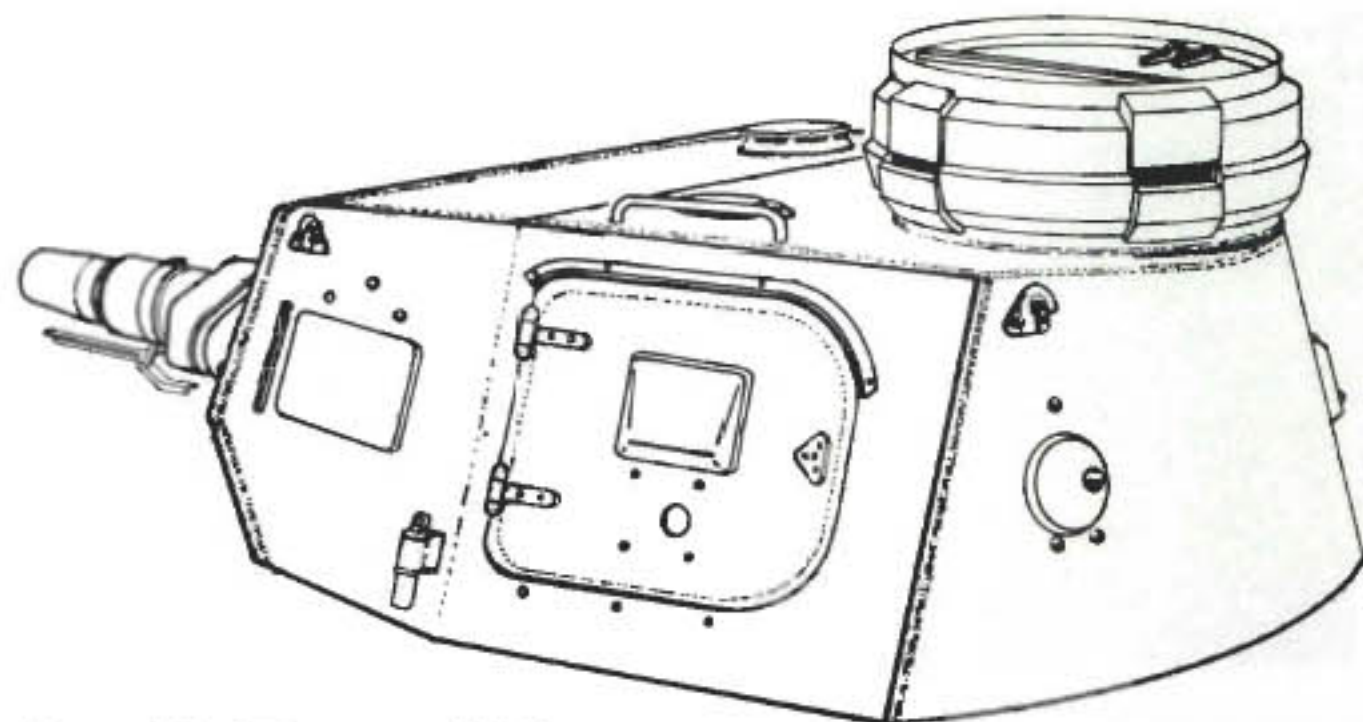




This excellent closeup shows many details of the standard ausf E, in this case a vehicle of the 11th Panzer Division in the Balkans. Well-shown features include: the aerial deflector on the gun, driver's visor, hull applique

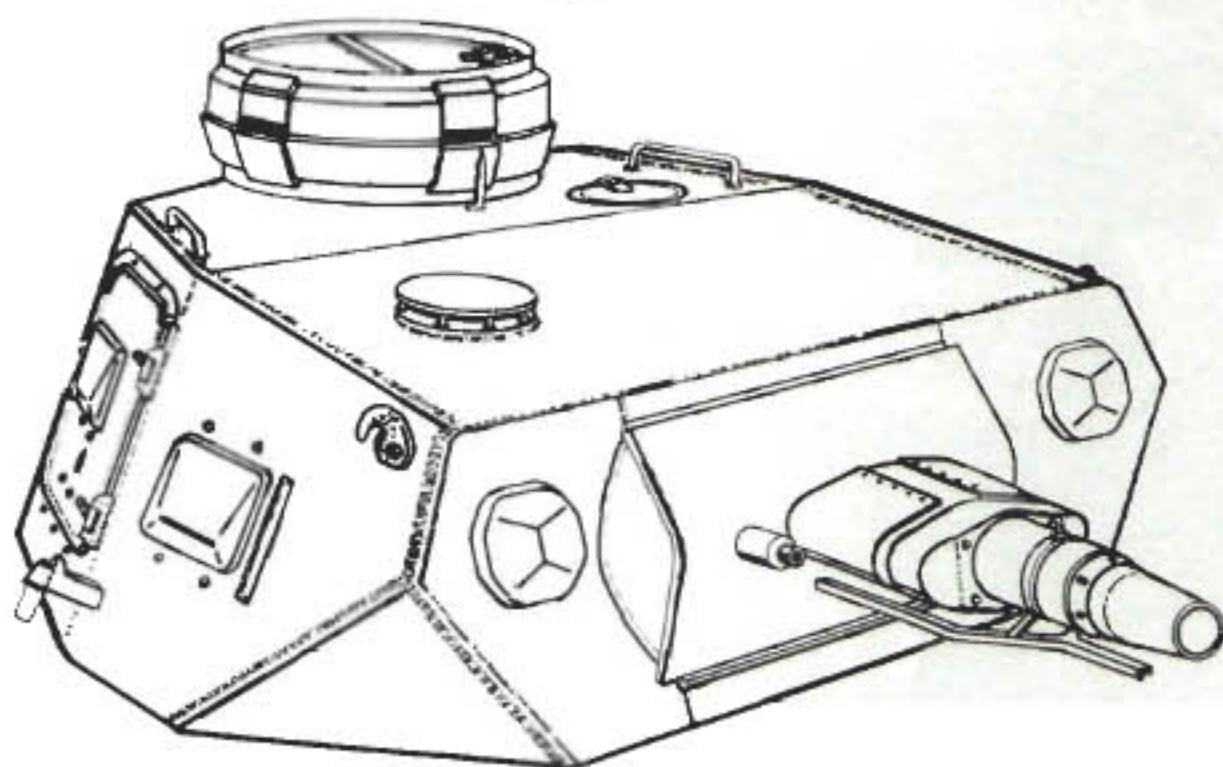
armor, cupola, and tool stowage. The mounting step - just below the gunner's hand - has been folded up; when the crew was climbing onto the tank, this was flipped down. (Bundesarchiv)

Ausf E Turret



Left Rear View

Right Front View



An ausf E in France and its "show-off" driver smash down two good-sized trees, demonstrating the vehicles power and durability. The front mudguard flaps are folded back to protect them from damage. (Bundesarchiv)

Another shot of "431", this time showing the entire crew sitting or standing in the hatches. The hatches in the PzKpfw IV were fairly generous in size, and entry and exit from the vehicle were unusually easy. (Bundesarchiv)





The ausf E in the foreground is noteworthy for the spare track stowage on the glacis plate and the jerricans on the engine deck. Behind the tank is a Kfz 4 le.E.Pkw. (light passenger car), followed by an artillery tractor. This picture is from the Leningrad campaign. (Bundesarchiv)



(Above Right) Two ausf E's in Russia, 1941. Both vehicles have spare jerrycans on the rear deck, and also both have an interesting 3-section set of round bins for stowing spare wheels. This design appears to have been an interim type, between the earlier open cradle carrier and the later open stowage box for spare wheels used on later vehicles. Color is overall dark gray, and the large turret numbers are red and white. On these vehicles, the jacks have been placed on the forward left mudguards instead of the more usual position on the center right mudguard. (Bundesarchiv)

Another shot of the same unit. Crew members wear a variety of uniforms: black panzer jackets, green fatigue uniforms, and combinations of the panzer and fatigue outfits. The tanks in the center are PzKpfw II's. (Bundesarchiv)

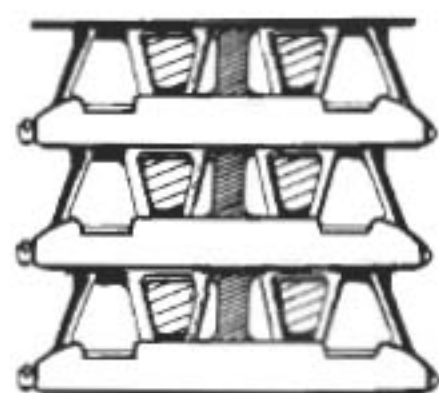


PzKpfw IV ausf F

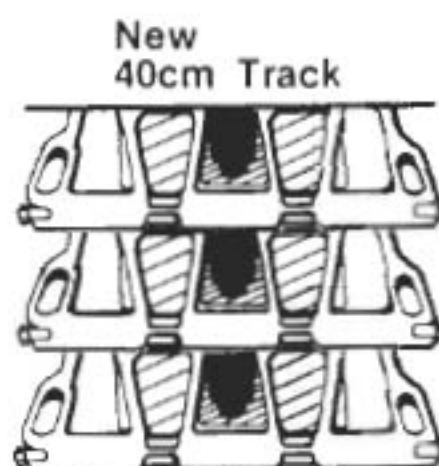
With the ausf F, the PzKpfw IV arrived at its final basic appearance, subsequent alterations only concerning additional armor, improved longer guns, and spaced armor skirts. The superstructure again featured the one-piece straight front plate for the driver and R.O., first used on the ausf B and C, but it was now 50mm thick. The hull sides were also altered, now being made from single 30mm thick plates. The nose plate was 50mm, the glacis plate was 30mm, and the rear hull plate remained only 20mm thick. The ball mount for the bow MG34 was the **Kugelblende 50**, designed to fit 50mm thick armor. The driver's visor was similar in operation and appearance to that of the ausf E, but was designed for 50mm armor, and differed slightly in shape and details. The glacis plate brake hatches now had vent cowls, sometimes screened at the rear.

The turret of the ausf F again presented many of the changes in the design. The mantlet, though similar in appearance to that of the ausf E, was now 50mm thick. The major change in the ausf F turret was the adoption of double turret doors identical to those used on the PzKpfw III ausf G - N. The front door of each pair hinged to the front, and was larger than the rear section. The front door contained a side vision port, protected by a flap and a glass block. The rear door contained a pistol port which was closed by a movable flap. The area of the door opening in the turret wall was not significantly altered by this modification.

Because of the great increase in weight of the F over that of the ausf E - the F hull was 48% heavier than the E hull - a new wider track was fitted. It was 40cm wide, and the extra width necessitated a new drive sprocket, similar to that of the ausf E, but with the outer face now dished in appearance, as the outer gear ring was 4cm further out than the hub. At the same time, a new rear idler was installed. This had 7 spokes from the hub to the rim and was welded from tubing and simple formed shapes. It represented a large saving in time and material compared to the earlier 8-spoke built-up design. Also, a shorter muffler was fitted, with a separate small muffler for the turret traverse powerplant.



Early
36cm Track



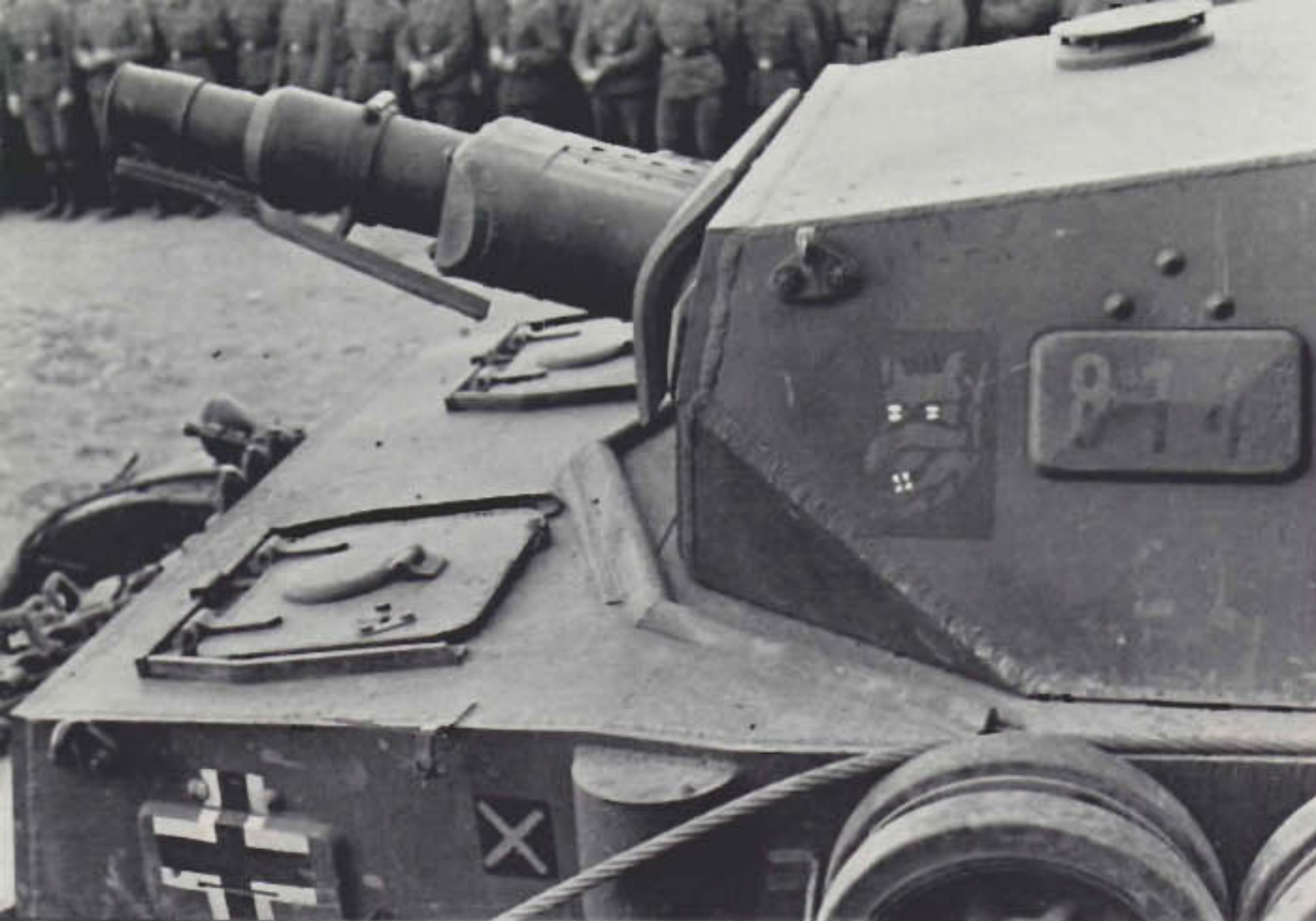
New
40cm Track



Later
40cm Track
with Ice Tread

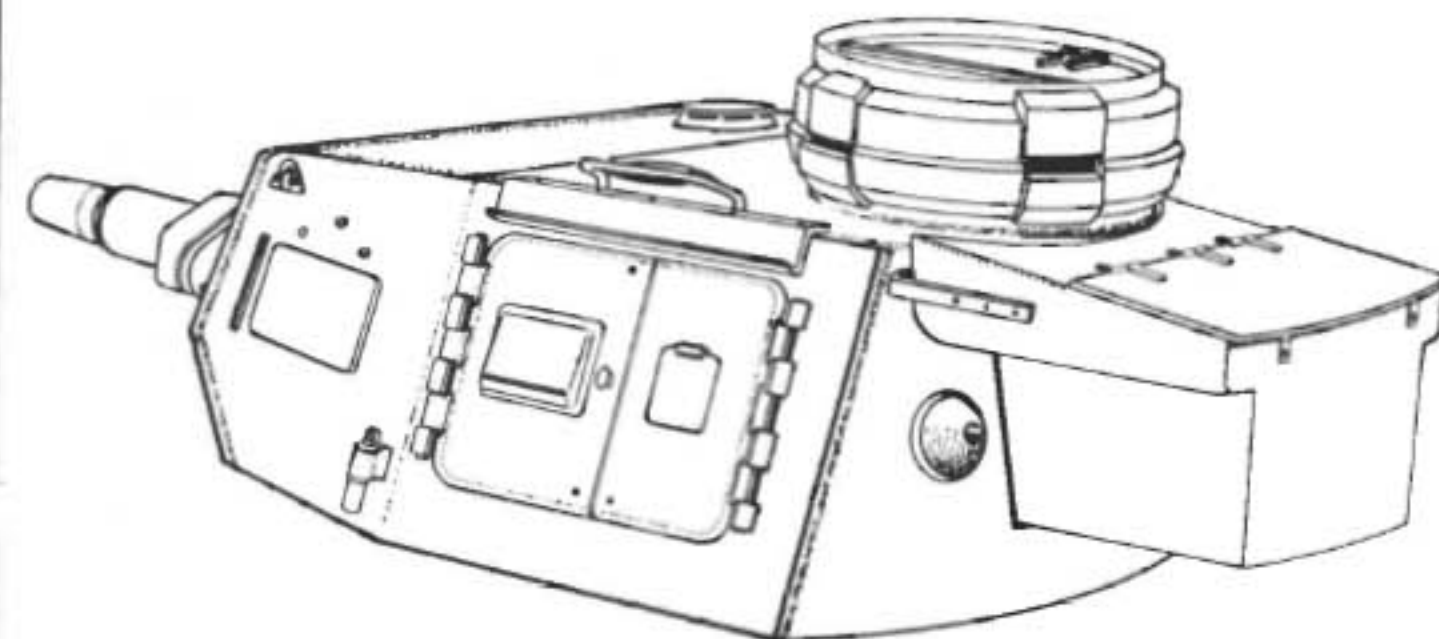


An ausf F from the 5th Panzer Division in Russia, 1941. The right side headlight is broken - this seems to have been common, and may have been caused by muzzle blast from the main armament. Even on this fairly new vehicle without apparent combat damage, the mudguards are already slightly damaged. Note the straight front plate, similar to that of the ausf B and C. (Bundesarchiv)



This all too unusual high view of "814" of the 5th Panzer Division shows several salient points of the ausf F, including the straight front plate, the hull top hatches with their signal port flaps and bullet splash rails, the turret with its splash rail-open on the left edge of the superstructure, and the lift hook and vision flap. The devil's head emblem is a very colorful marking, obviously done with a stencil. The turret number is in red, and is much smaller than was usual for this period (1941-42). (Bundesarchiv)

Ausf F Turret



This vehicle has a pattern of wavy stripes sprayed over the base color. The chassis number - 82273 - is painted in black - often this number was painted on the front plate. (Bundesarchiv)



This close-up of another vehicle from the same unit shows very clearly the structural welds in the turret and hull fittings. The mottling on this vehicle has been brushed on rather than sprayed. (Bundesarchiv)

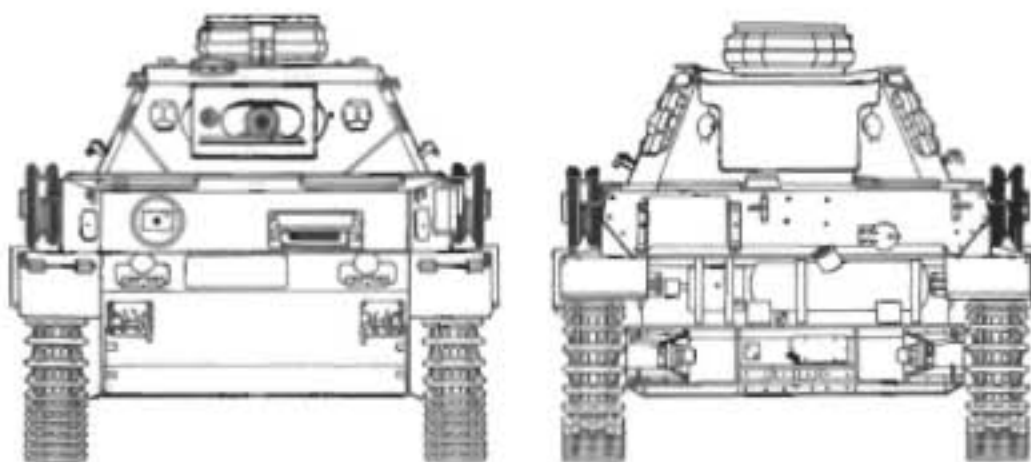
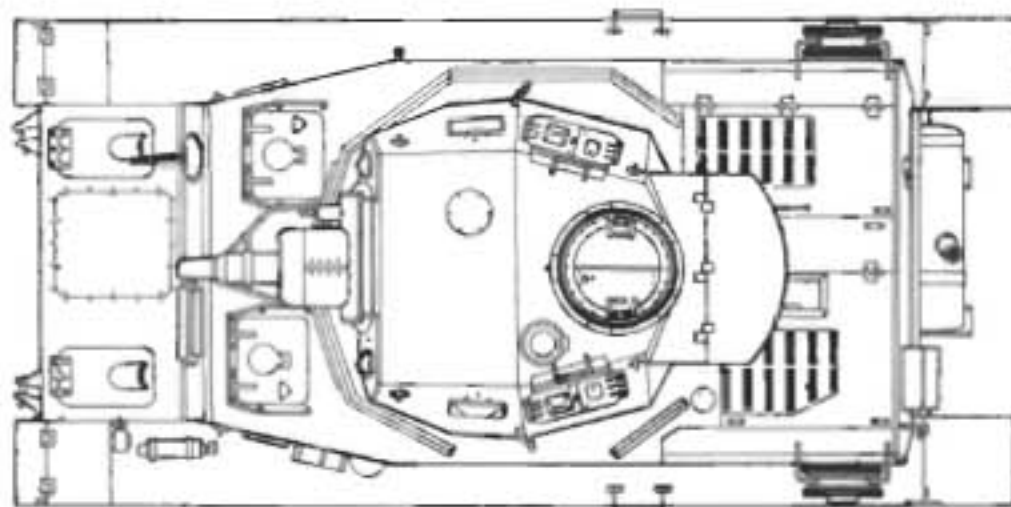
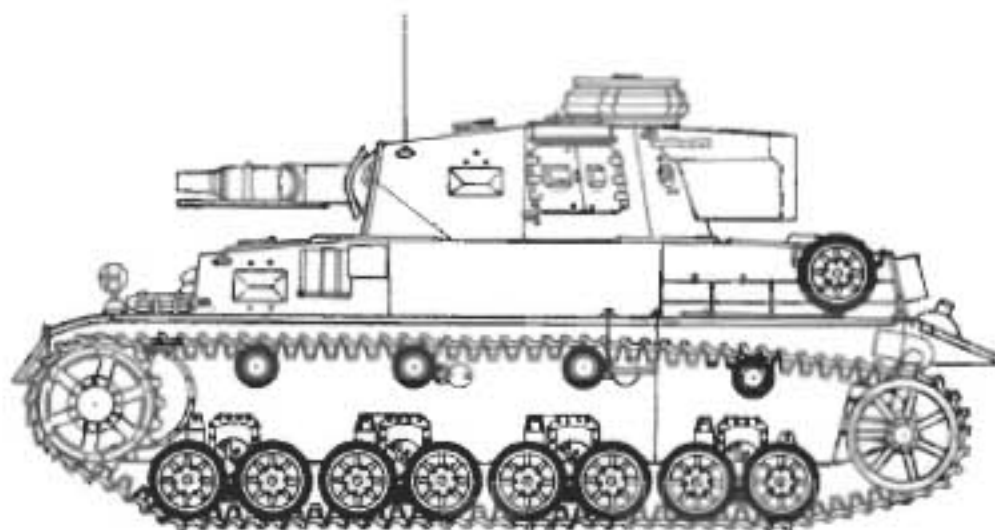


(Above Right) A lineup of ausf F's in Russia, 1941-42, showing vehicles in fairly new condition. The F had dished drive sprockets and wider tracks; these vehicles also carry a good deal of extra track up front, and twin automotive type headlamps. The radio aerials are folded back into the side troughs on the hull superstructures. (Bundesarchiv)

A rear view of an ausf F from the 5th Panzer Division shows the dished drive sprocket, radio aerial, simpler rear idler and new turret double doors. Note the rear mudguard flaps and retaining springs, and the oval Notek taillight. The tool on the upper rear hull side is the track tension adjusting tool. The entire main engine muffler is missing. (Bundesarchiv)



PzKpfw IV ausf F



1:76 th scale (4 mm:1 foot)

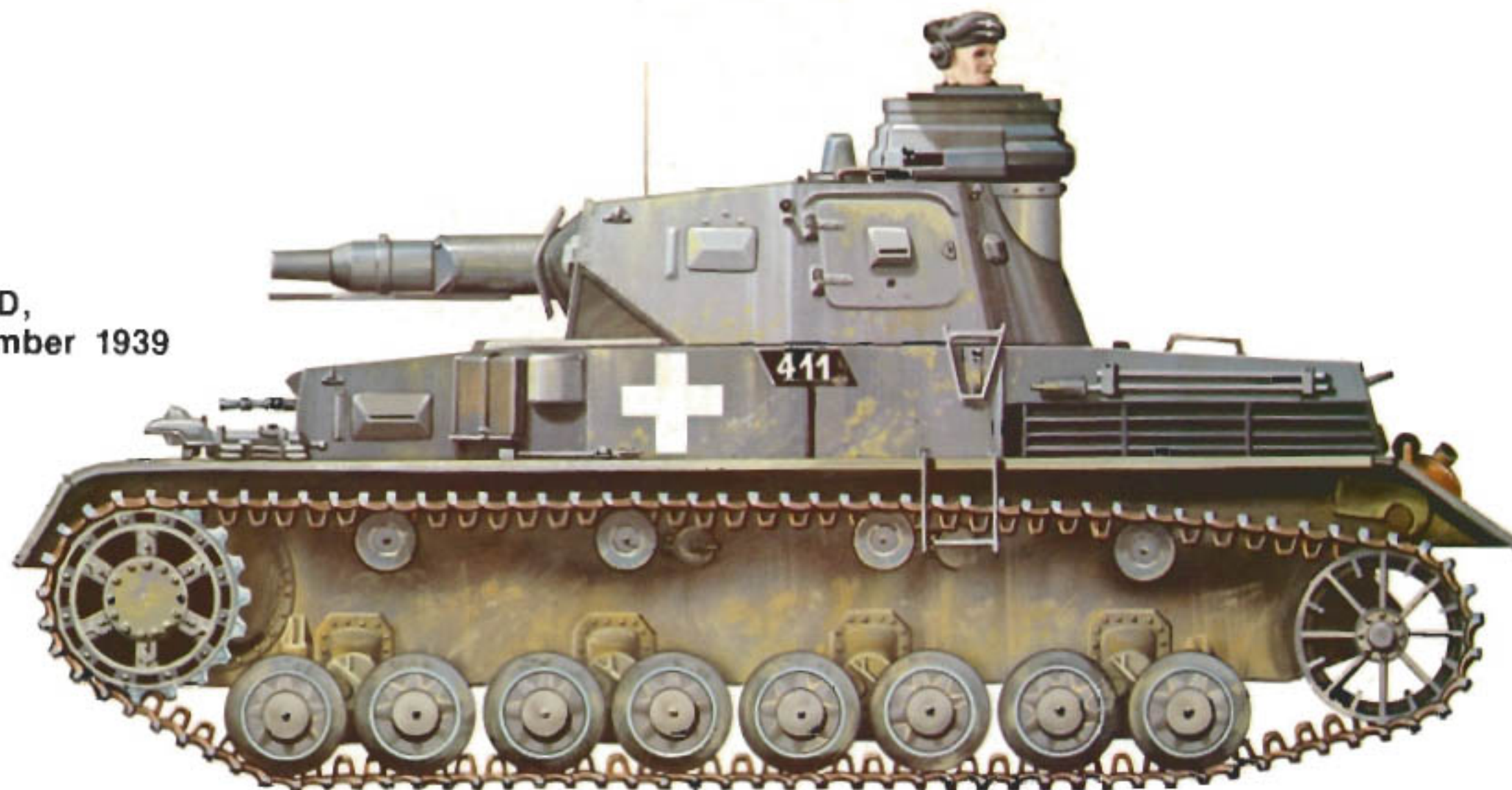


More vehicles from the 5th Panzer Division, a PzKpfw IV ausf F stuck in the snow, followed by a PzKpfw III. Both vehicles are in whitewash, but the PzKpfw III has some stripes of dark gray. Both vehicles are piled high with extra stowage; in this weather, tanks were better transport than trucks. Note the open driver's hatch - the interior side was painted in the external base color of the tank, in this case, dark gray. (Bundesarchiv)

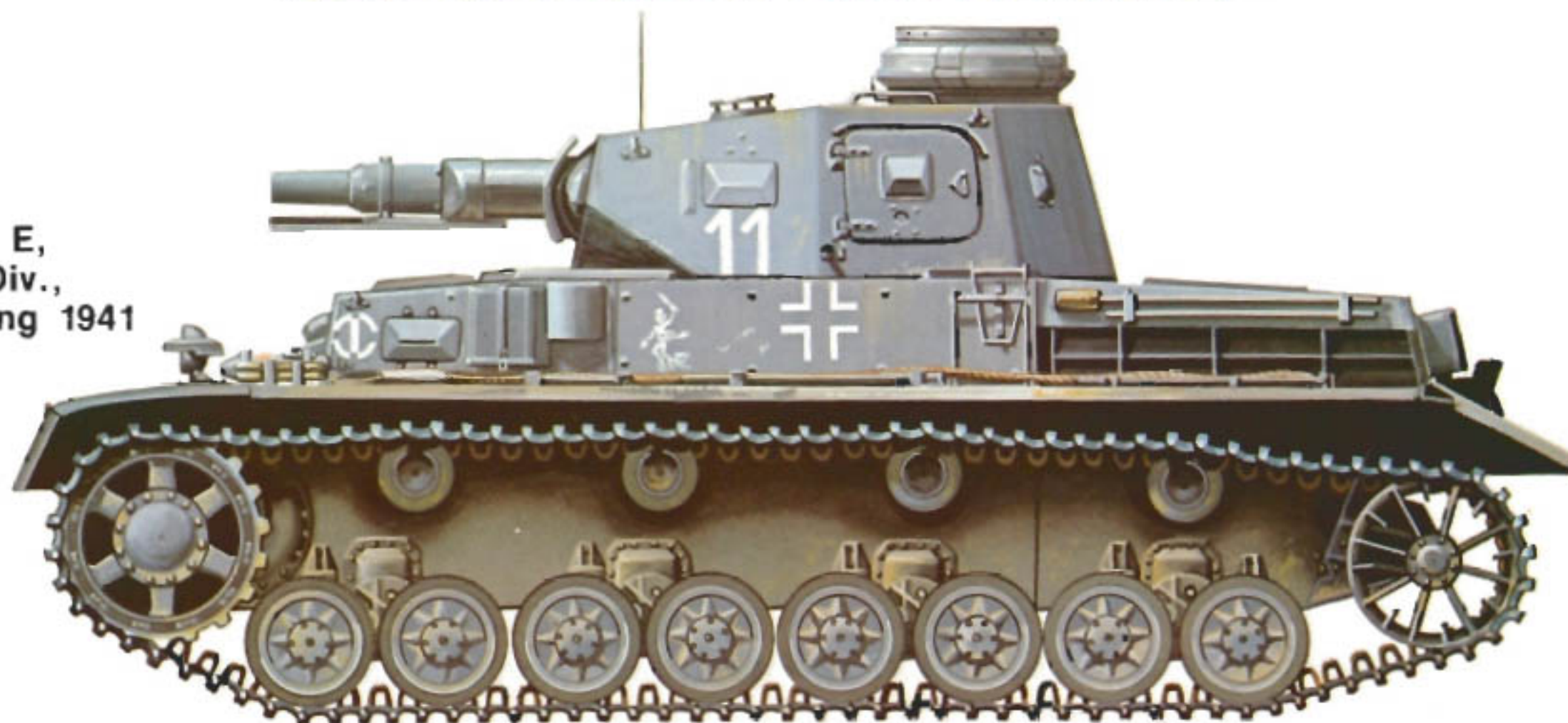
A detail view of damage caused by a mine. The roadwheels were pressed sheet steel with solid rubber tires, and antitank mines were capable of destroying the entire wheel assembly. Note the tubular style rear idler, used from ausf F onward.



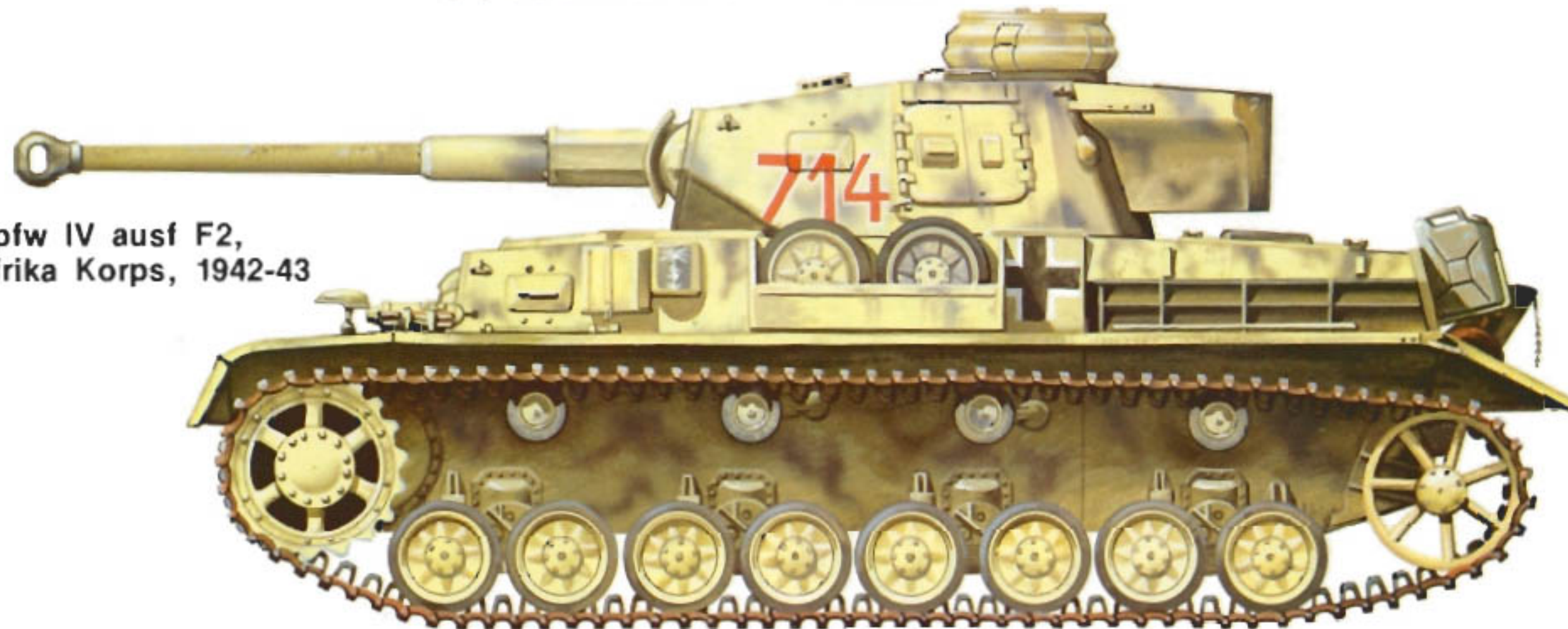
PzKpfw IV ausf D,
Poland, September 1939



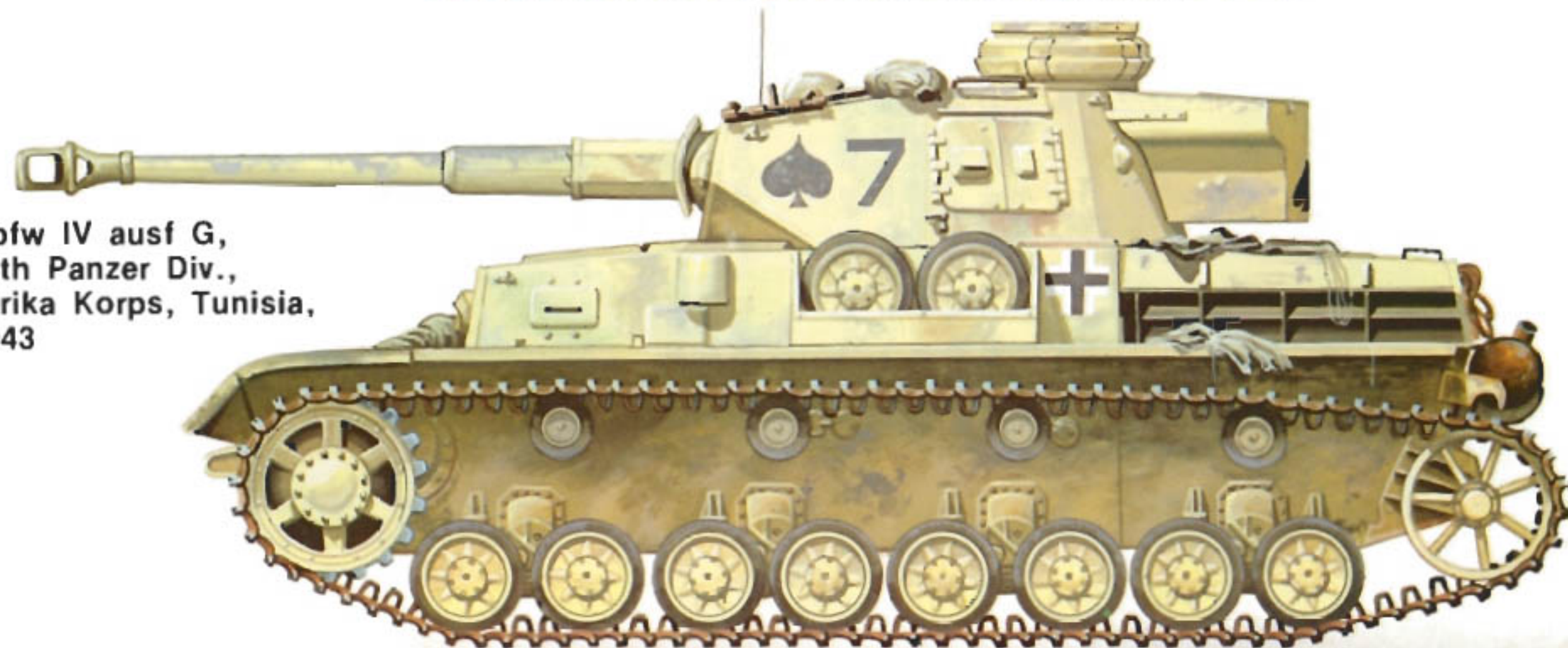
PzKpfw IV ausf E,
11th Panzer Div.,
Balkans, Spring 1941



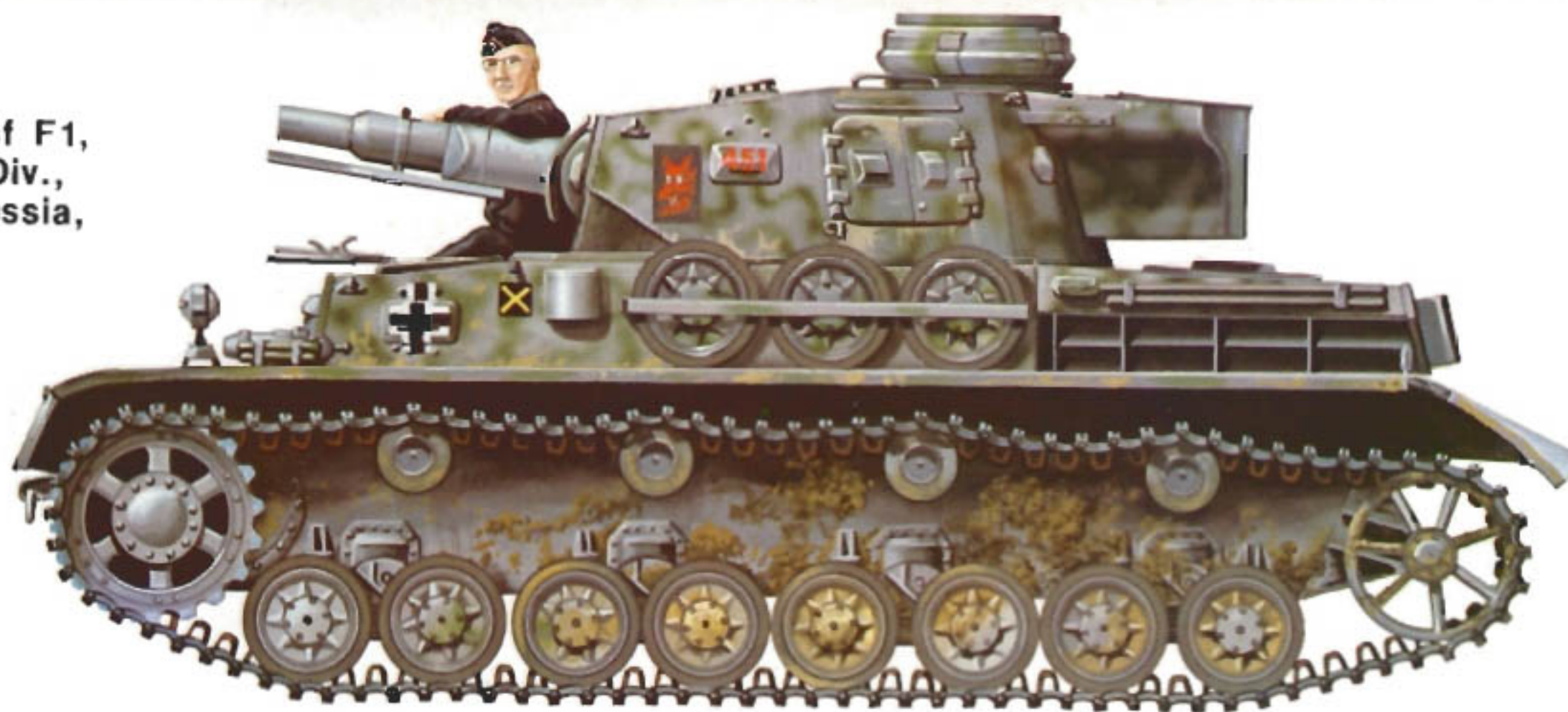
PzKpfw IV ausf F2,
Afrika Korps, 1942-43



PzKpfw IV ausf G,
15th Panzer Div.,
Afrika Korps, Tunisia,
1943

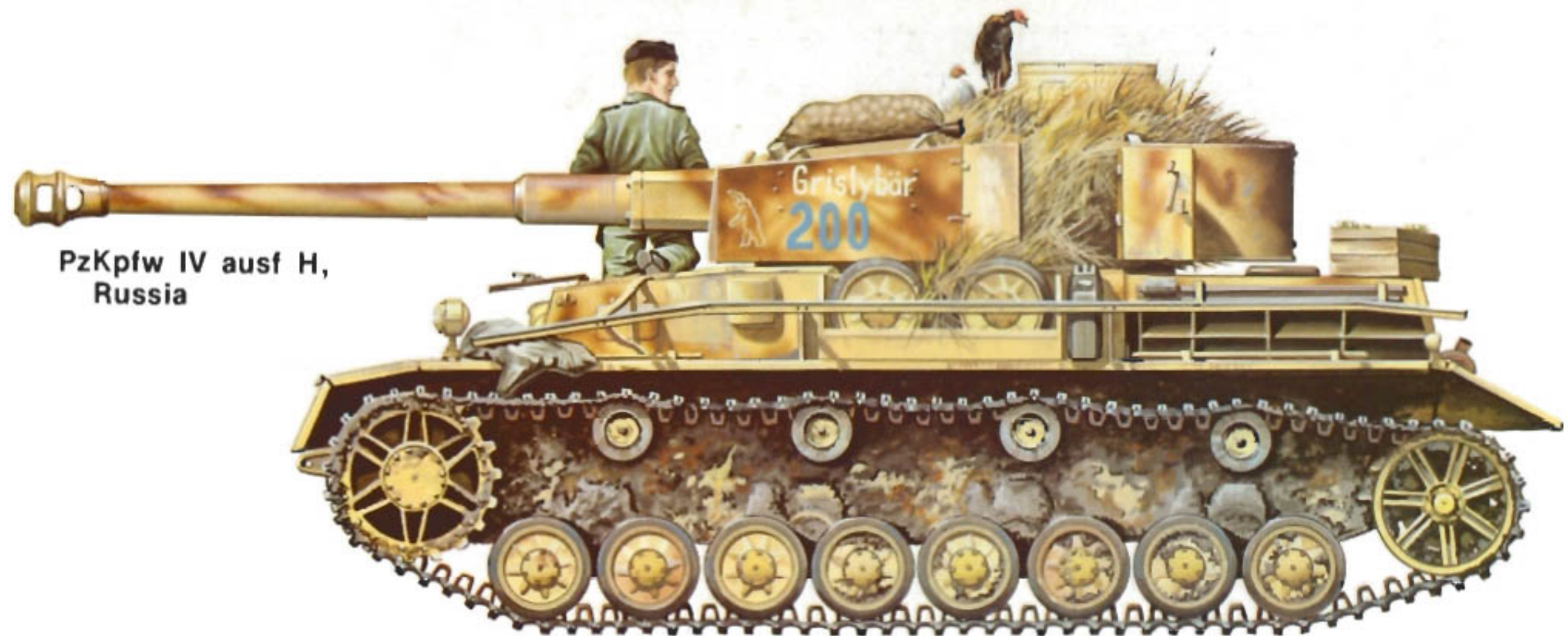


PzKpfw IV ausf F1,
5th Panzer Div.,
Southern Russia,
1941-42



PzKpfw IV ausf H,
Unknown SS unit





PzKpfw IV ausf H,
Russia



PzKpfw IV ausf H,
Eastern Front

PzKpfw IV ausf F2

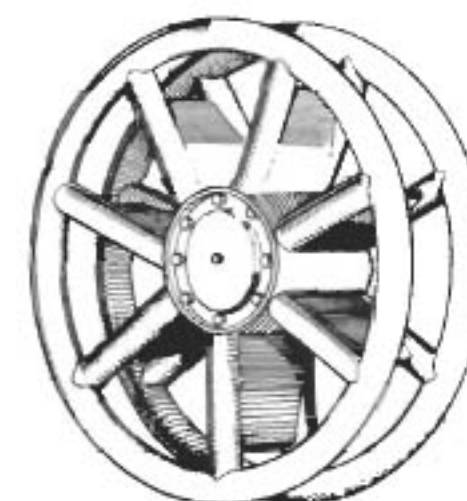
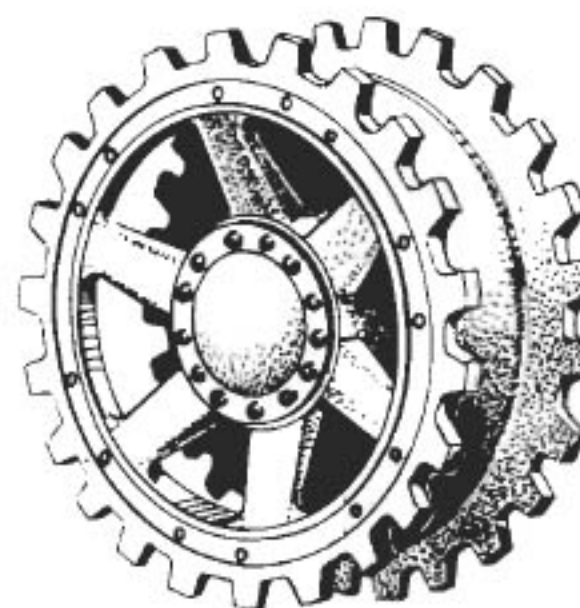
The invasion of Russia in June, 1941 revealed unequivocally the shortcomings of many German tanks, none of which could knock out the KV-1's and which had to get dangerously close to the T34's in order to put them out of action. Thus, in November of 1941, Hitler ordered the fitting of a longer high velocity antitank gun in the PzKpfw IV. The first examples were ready in March, 1942, and were in effect rearmed ausf F's, differing externally from the F only in the installation of the 7.5cm KwK40, L/43, and differing internally only in the different stowage arrangements for the rather long ammunition of the KwK40. The recuperator housing was more angular in section and had a flat front plate held by 4 conical bolts. Although the majority of ausf F2's resembled F's except for the longer gun and different recuperator housing, some late production vehicles appear to have been fitted with ausf G turrets which differed in detail from that of the F2. All ausf F2's were built with the single baffle globular muzzle brake, and to prevent confusion in referring to long and short gunned vehicles, all ausf F's retaining the short L/24 KwK were designated PzKpfw IV ausf F1.



This ausf F2 was photographed during training in France, 1942. Many Panzer Divisions were badly mauled in the Russian campaign and were sent back to France for rest and refitting. The large stowage box on the right mudguard was fitted to some F2's, and a similar box was used on some ausf G's, but they were not fitted to all these models. (Bundesarchiv)



In this view of F2's in Russia, all of the crewmen are wearing the field-gray uniforms with black Panzer caps. The coloring of the nearest F2 appears to be dark gray with sprayed patches of a sand color, perhaps the African shade sometimes used in the central and southern sectors of the Russian front. (Bundesarchiv)



Drive sprocket and rear idler used on ausf F, F2 and G, plus rebuilt D and E.



The Afrika Korps used a number of ausf F2's, though the short barreled earlier versions were much more numerous. The British often called the F2's "Mk IV Specials". The vehicle here is painted in overall "sand-brown", the second tropical sand color used by the DAK. Other than the crosses on the superstructure sides, there are no other markings on this vehicle. The globular single baffle muzzle brake used on the F2 shows well here. (Bundesarchiv)



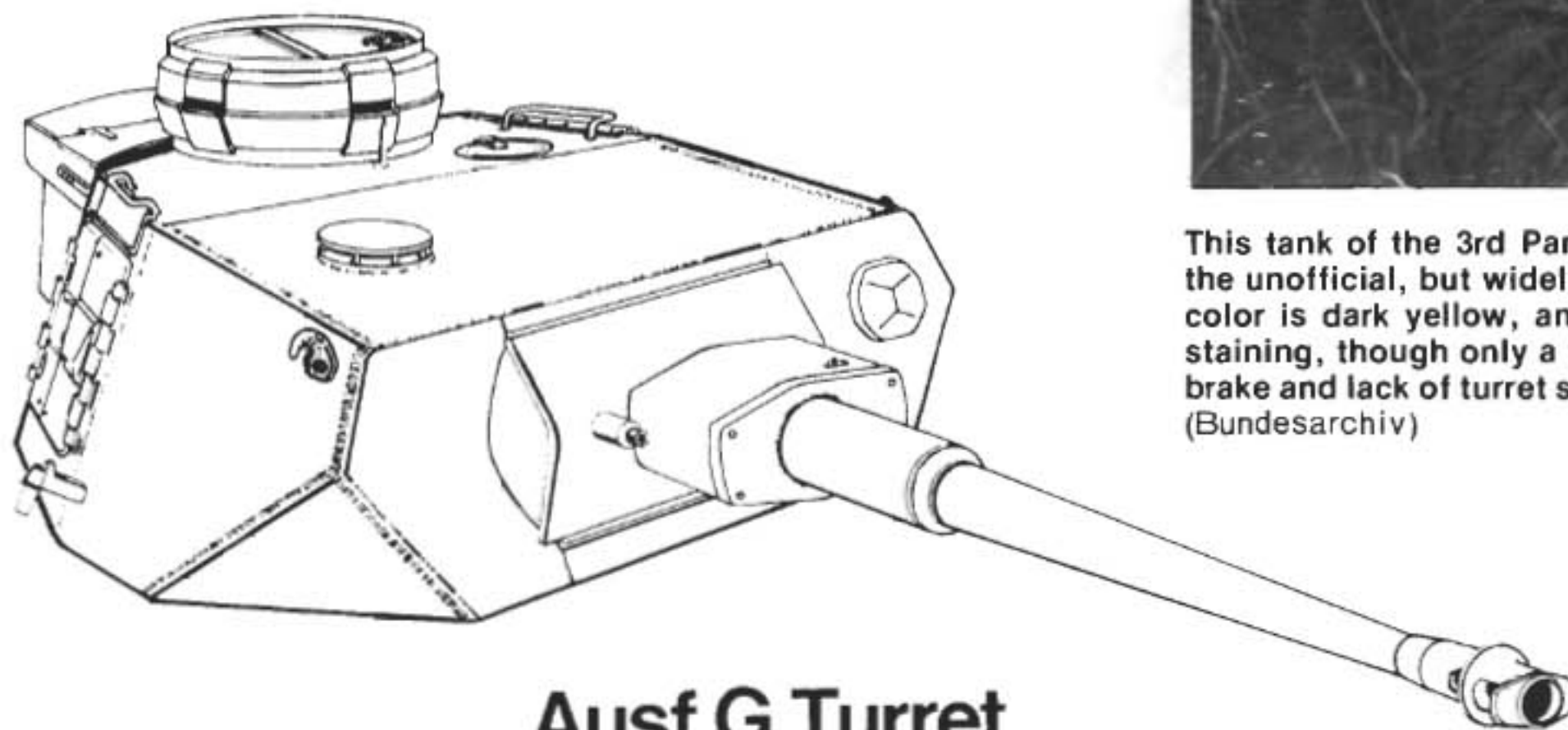
(Above Right) These F2's in Russia carry "garlands" of foliage and branches in an attempt to camouflage them better, especially in breaking up the shapes of the vehicles. The muzzle covers on the main guns indicate a convoy well behind the front lines. The crew of the first vehicle are wearing field-gray panzer uniforms similar to those issued to assault gun crews. (Bundesarchiv)



A PzKpfw IV ausf F2 advancing toward the Kursk front. This photo shows the similarities between the ausf F1 and F2. The only external difference between the two versions was the gun and recuperator assembly. This vehicle has an extra set of gun cleaning rods where the spare roadwheel stowage was usually placed, on the left side of the superstructure. (Bundesarchiv)

PzKpfw IV ausf G

The major changes in the ausf G were the introduction of the double baffle muzzle brake on the KwK40, and the elimination of the two turret forward side vision ports and the turret front port on the right side (for the loader). In addition, the signal ports were removed from the driver's and R.O.'s hull deck hatches. The ausf G formerly at Bovington, now in Germany, is non-standard in that while having a G hull and the later muzzle brake for the KwK 40, it has an F1/F2 turret and also has signal ports in the hull top hatches. This is most likely the result of parts shortages during manufacture or rebuilding or repair of the vehicle later. Late production ausf G's were fitted with one-piece cupola hatches, 8mm spaced turret "schurzen" (armor skirts) and even extra 30mm fitted plates added to the nose and hull front plate as for the ausf H. However, all G's originally carried the KwK 40, L/43. Some vehicles were no doubt rebuilt with hull skirting and L/48 guns, but these were not standard ausf G features. In other respects, the ausf G was similar to the ausf F series.



Ausf G Turret

New double-baffle muzzle brake and simplified turret.



This tank of the 3rd Panzer Division displays the standing bear, the unofficial, but widely used, symbol for the division. The base color is dark yellow, and already is showing signs of wear and staining, though only a few months old. The double-baffle muzzle brake and lack of turret side vision port identify it as an ausf G.

(Bundesarchiv)



An ausf G during the winter of 1942-43. This vehicle has been repainted in overall dark yellow base color - note that the inner surfaces of the side doors are in the earlier dark gray, the original base color. Note the details of the cleaning rods. (Bundesarchiv)



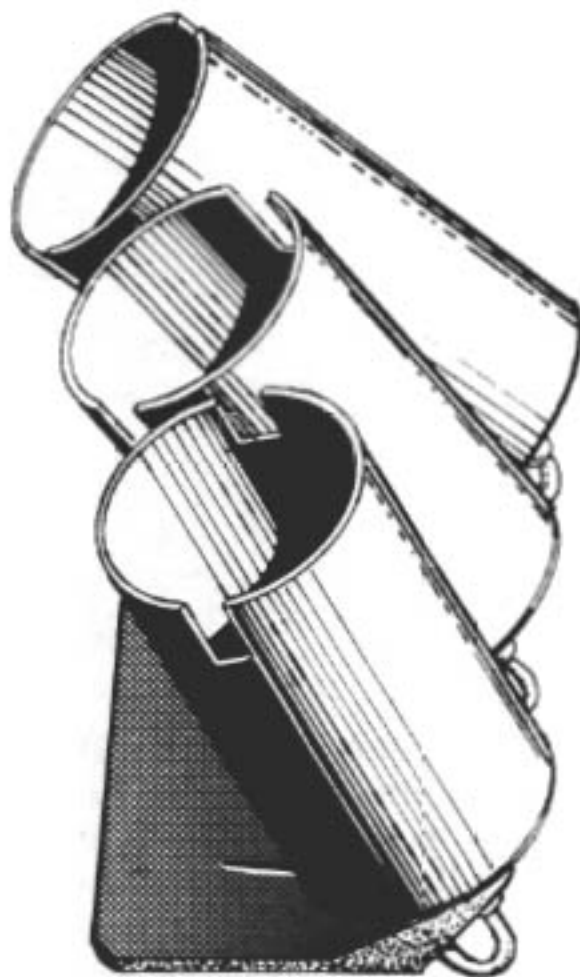
Interior Detail
of Later Turret
Doors



(Above Left) This G in Tunisia demonstrates the distinguishing features of this type: the double baffle muzzle brake and the simpler turret, with the side vision ports and right front vision port removed. Some late production F2's also had this later turret, but still retained the globular single baffle muzzle brake. Overall color is "sand-brown". (Bundesarchiv)

A "standard" ausf G, demonstrating the double baffle muzzle brake, smoke grenade launchers and turret without schurzen. This vehicle is seen in northern Russia, 1943. (Bundesarchiv)

Three G's advance during the Stalingrad battle. Possibly because of a new assignment in the company, the last tank carries only the company number. Again field-gray tunics are worn, sometimes with black Panzertruppe trousers, as shown. (Bundesarchiv)



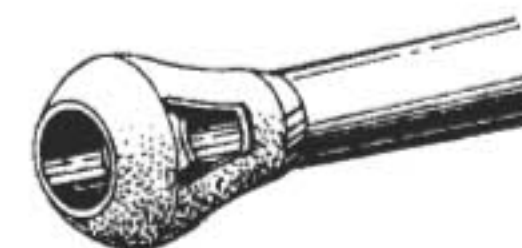
Smoke Grenade Launcher fitted to some later Ausf G's

During a halt, some needed repairs are pointed out - apparently a track pin has broken and must be replaced. Below the number 923 is a railroad shipping label, used to ease shipment on the proper type of cars, according to weight. The symbol on these vehicles is very similar to the special symbol used by 3rd SS Panzer Division (Totenkopf) during the Kursk Offensive. The details of the side doors and front door stop are very clear here. (Bundesarchiv)





(Above) Seen from the rear, the general similarities to the aust F1 and F2 may be seen. On the rear tank, just behind the Bosch headlight are two "S" towhooks and a cylindrical fire extinguisher. Most G's appear to have had the turret mounted grenade launchers, but some didn't. (Bundesarchiv)



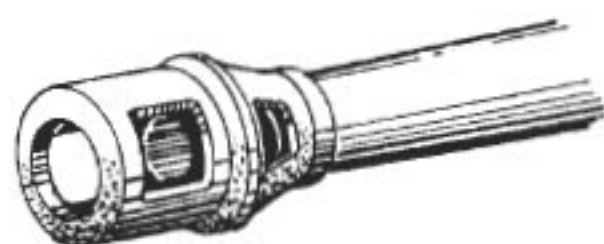
Single Baffle
Muzzle Brake
on aust F2

(Above Left) PzKpfw IV G's arriving on standard 4-wheeled 22' flatcars normally used for the PzKpfw IV. All of these vehicles have large logs in specially fitted brackets, apparently anticipating some of the difficulties encountered in moving through the Balkans. (Bundesarchiv)

The same vehicles shown from the other side. Again the color appears to be dark yellow overall. Most German vehicles were shipped from the factories in this color, and custom painted in the field by the using units. (Bundesarchiv)



This PzKpfw IV ausf G shows the added 30mm nose and front armor as well as smoke grenade tubes, headlamps, stowage, and the standard ausf F-G suspension. This vehicle again is overall dark yellow. (Bundesarchiv)



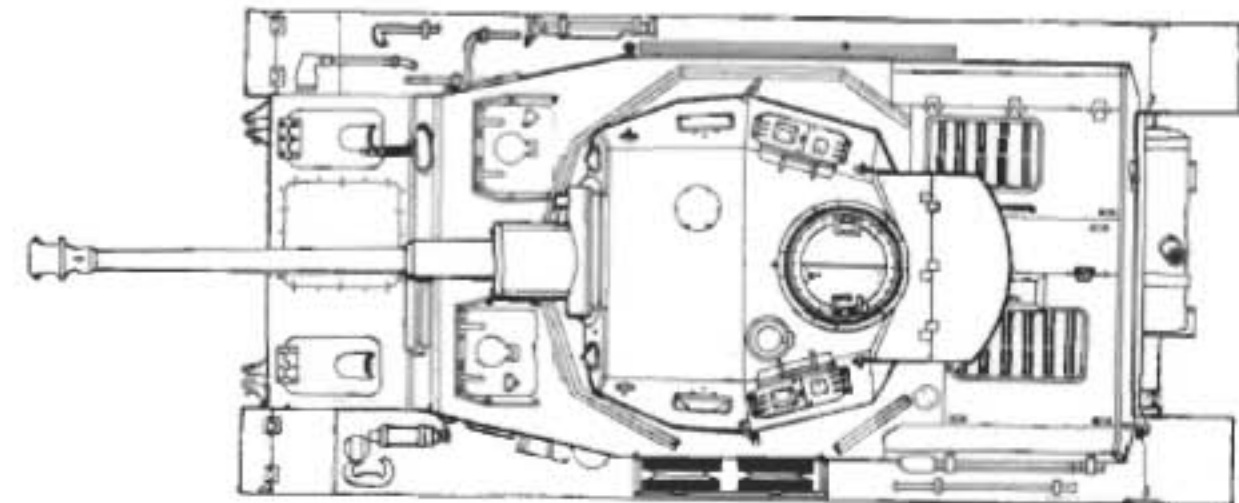
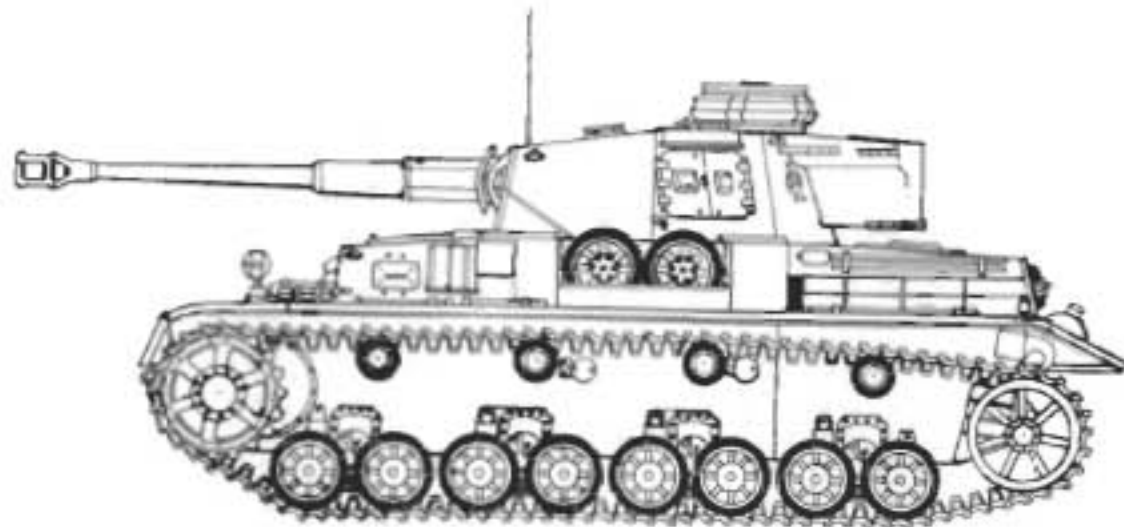
Double Baffle
Muzzle Brake
on ausf G

(Above Right) A recovery exercise, showing just how badly bogged down even a tank can get. The belly of "733" is almost touching the ground here. The bow MG34 has a cover over the entire Kugelblende mount. The cutout in the 30mm added front plate (just above the driver's visor) was for the holes for the binocular episcope device used in the IV. (Bundesarchiv)

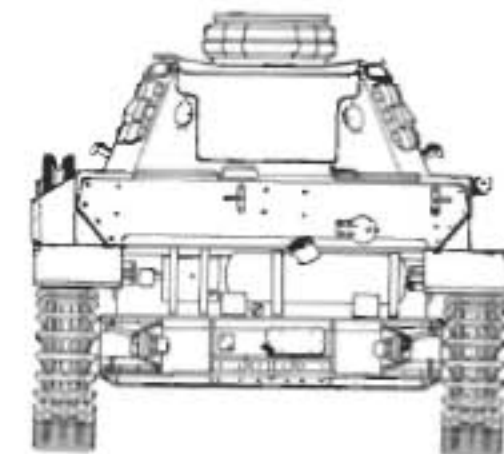
Several PzKpfw IV G's pass the Acropolis in Athens. On the closest vehicle, the chassis number is stencilled on the jack. Chassis numbers were used for recording all details of a vehicle's travels and repairs, and were often the only way to differentiate between similar vehicles (late F2 and G, for example). (Bundesarchiv)



PzKpfw IV ausf G



1:76 th scale (4 mm:1 foot)



This lineup of later ausf G's in the Balkans shows virtually new vehicles pictured during training or refitting. The railroad label on the nearest tank gives the SdKfz number, weight in metric tons and loading class ("S"). Note especially the wood rubbing strips at the upper sides and whole lower edge of the turret stowage box. (Bundesarchiv)



This vehicle, in the central sector of the Russian front, 1943, sports a scruffy white camouflage scheme. The driver's front plate has been uparmored, but the nose plate has not. Again spare track is used for yet more protection. In some ways, this practice was very useful, since "spaced" armor tends to cause AP shells to shatter on the main armor. (Bundesarchiv)



(Above Right) Three late production G's cross a log bridge in Russia. The second vehicle even has the brackets and rails for hull skirting. All these tanks feature 80mm frontal armor and are very similar to the ausf H, though retaining the L/43 KwK and folding antennas. (Bundesarchiv)

A 3-ton artillery tractor (SdKfz 11) passes a PzKpfw IV ausf G. Although this tank has extra 30mm armor on the driver's front plate, the crew has taken no chances covering the entire nose area with spare track, along with the front of the turret. Note the later Bosch AFV headlight also introduced with the ausf G. (Bundesarchiv)





This late production ausf G in Russia, 1943, is primarily dark yellow with a desultory overspray of white stripes and spots, and white stencilled turret numbers. Note the folding radio antenna and trough and the G pattern drive sprocket. (Bundesarchiv)



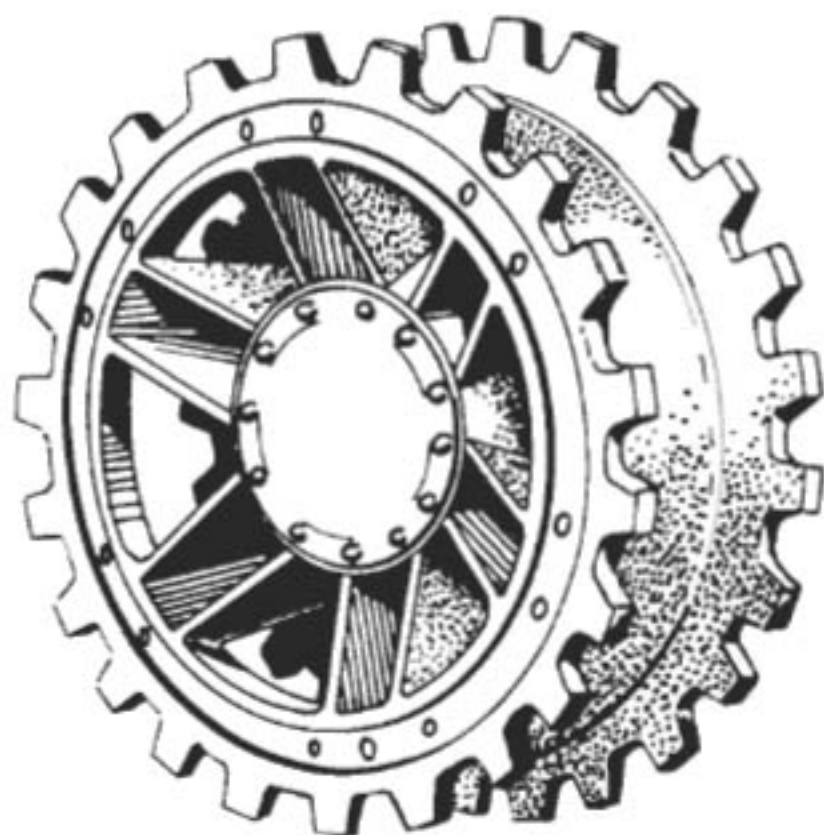
(Above Right) This late production PzKpfw IV ausf G in Russia resembles very closely the later ausf H. This vehicle still has the folding radio antenna and trough and the split cupola hatches, along with the L/43 KwK 40. However, it also has turret skirting and the added 30mm frontal and nose armor. This shot also shows very clearly the wide "Ostkettens" ("eastern tracks") used in Russia because of the poor weather and terrain. Note the bogey truck on the glacis and the gap left by its removal. (Bundesarchiv)



Another late ausf G, this time fitted with the one-piece cupola hatch later used on H's and J's. It should be noted that in many cases, production improvements were adopted before official model changes. Again "Ostkettens" are fitted - they often were shed during turns or maneuvers at high speed or on rough terrain, because all the extra width was added to the outer edges of the tracks. (Bundesarchiv)

PzKpfw IV ausf H

The ausf H was very similar to late production G's. The major detail alterations included the standardized fitting of the extra 30mm plates to the nose and driver's visor, so that existing fittings could be used. The KwK 40 was now lengthened about 15", resulting in a bore length of L/48. The radio antenna was removed from the right upper hull side and placed at the left rear corner of the engine deck; it no longer folded down, and the trough for the folded antenna was eliminated. Almost all ausf H's were fitted with additional 5mm spaced armor skirts (schurzen) to protect the hull sides from shaped charge grenades and bazooka rockets. These skirts were usually left off the vehicles for railway shipment, being installed by the using units after receiving the vehicles. The ausf H also saw the introduction of "zimmerit", a cement coating applied in textured coatings like stucco, designed to protect the vehicles from magnetic mines and "sticky bombs", explosive devices that would stick to relatively smooth metal surfaces. The roof signal port in the turret was eliminated on the ausf H, and a new lighter drive sprocket, with open web-type spokes, was also introduced. The ausf H appeared in the spring of 1943. Although the majority of ausf H's had the rubber-tired return rollers and welded tubular rear idlers, a few late production examples had the all steel rollers and the cast web-type rear idler adopted for most ausf J's. Thus, the only sure way to identify an H from a J is by noting the presence or absence of the small box-shaped muffler for the auxiliary engine.



New drive sprocket on ausf H and J.



This early ausf H, carrying the early type of side skirt mounting is also unusual in that the extra 30mm front armor has been bolted to the original 50mm plate, rather than welded, and the shape of the cutout for the driver's visor is different. This represents a factory variation during early production; some H's did have bolted armor, and from the older drive sprocket, it is possible that this vehicle, though having the ausf H antenna and L/48 KwK 40, may be a rebuilt ausf G. (Bundesarchiv)



These new ausf H's in Russia show an early skirt and bracket arrangement, almost identical to that used for the PzKpfw III. In this design the skirt sections were hung on hooks from the side rails, and had cutouts for these

hooks. Most of the crew of the nearest tank wear the rush-green fatigue uniform. (Bundesarchiv)



An ausf H, not fitted with hull skirting or brackets. The crew has sprayed white in a vertical wave pattern over the turret skirts. The chassis was not usually repainted. (Bundesarchiv)



(Above Right) This ausf H in Italy, 1944, has lost a track to a mine, and the crew works to get the track repaired. This tank is from the "Hermann Goering" Luftwaffe Panzer Division, which used a white star as a divisional tactical symbol; note also the rhomboid panzer symbol next to it. The number "2" indicates the 2nd company in the battalion, or the 2nd platoon in the company. This tank has the cupola mount for the AA MG 34. (Bundesarchiv)



This ausf H in Italy, 1944 is noteworthy for the heart sprayed on the side and the camouflage sprayed on the insides of the turret skirt doors. "715" is in black. This vehicle has the later steel return rollers, adopted to conserve rubber. (Bundesarchiv)

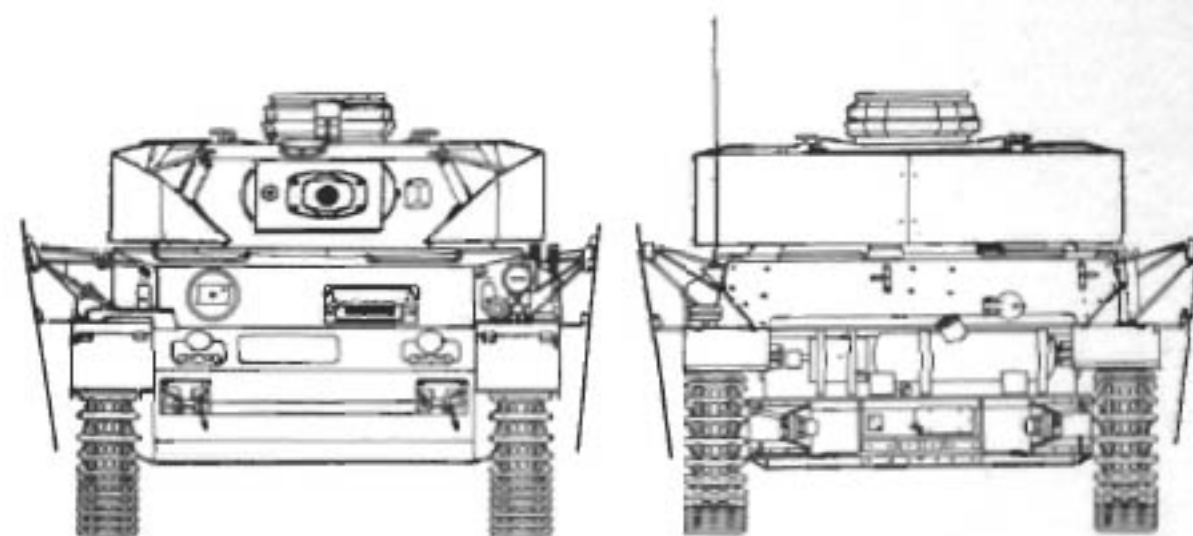
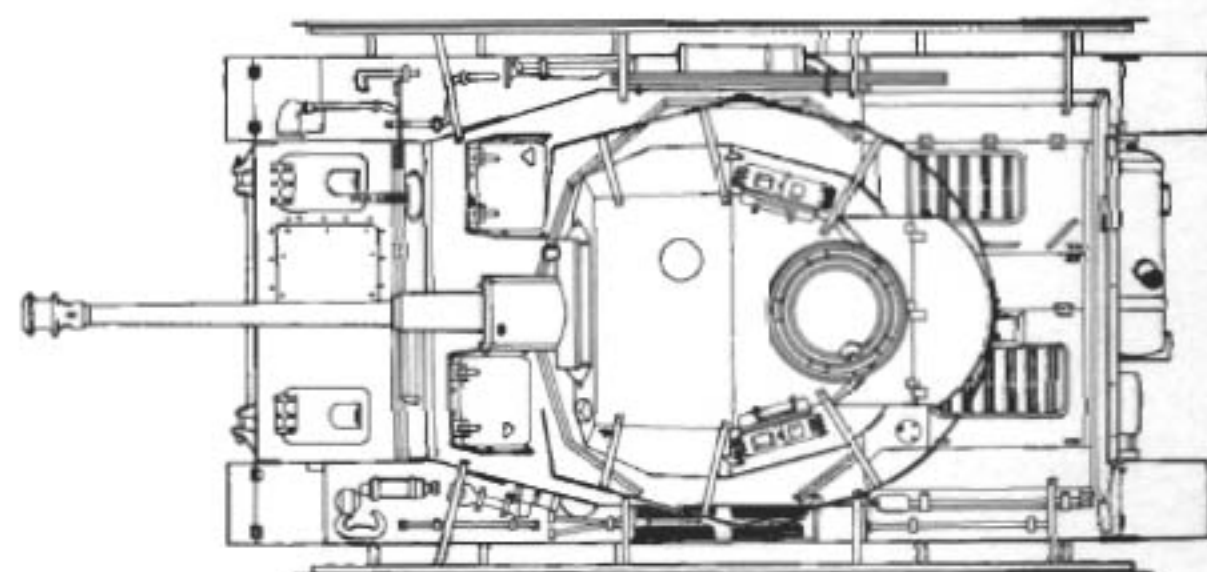
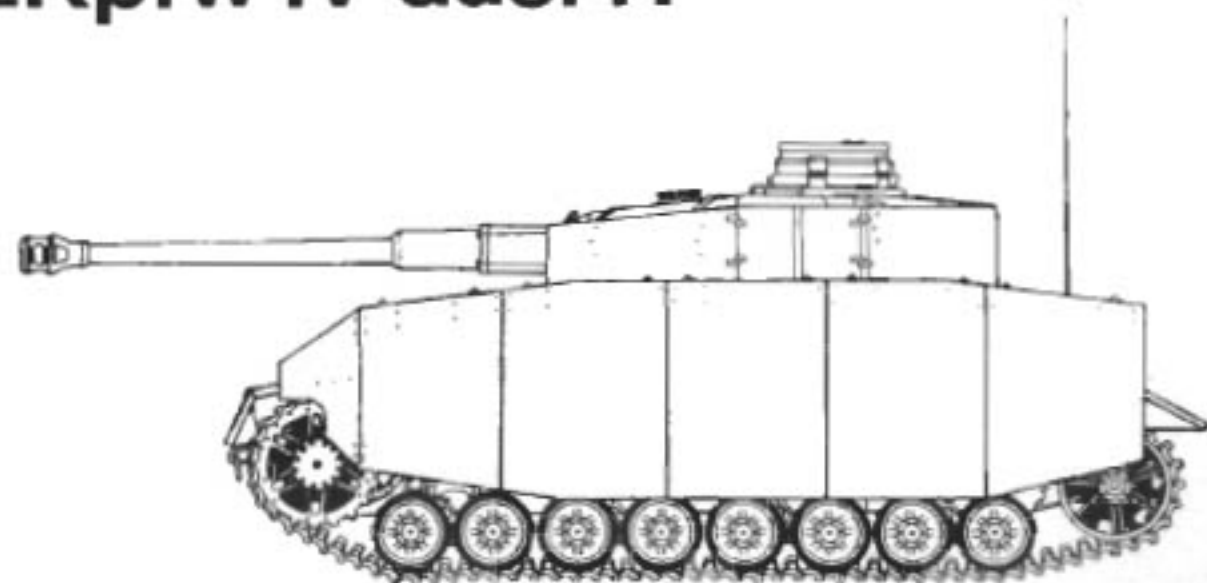
A good side view of the early ausf H - note the railroad label on the side of the turret skirting. Many tanks had a much smaller rectangle with only the loading class letter stencilled. Note the upper hooks engage the skirts at the side edges, the lower hooks are in the middle of each piece. (Bundesarchiv)

(Lower Right) An excellent comparison of the early ausf H skirting with that of a PzKpfw III. Except for the shape and number of sections, the mounting system is the same. The PzKpfw III ausf L has been camouflaged while the PzKpfw IV has not. Because of the greater clearance available on the PzKpfw III rear deck, these lighter tanks often carried extra stowage boxes on racks on the rear hull. (Bundesarchiv)

These PzKpfw IV ausf H's have been camouflaged, probably with olive green. The skirting has uneven zimmerit antimine paste, roughly scored and textured. Note the leather head protecting pad on the inside of the cupola hatch. (Bundesarchiv)

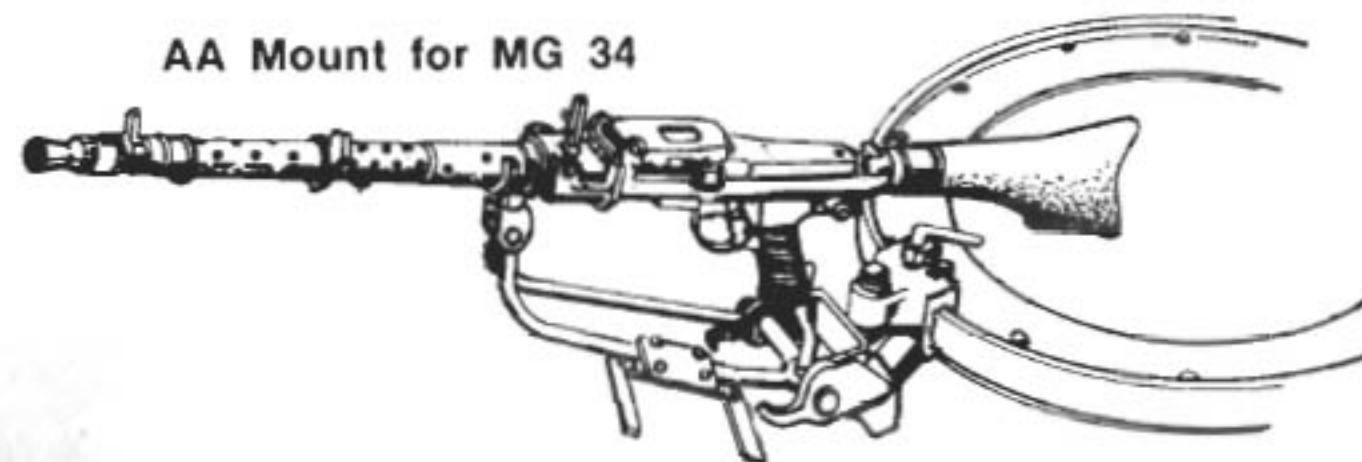


PzKpfw IV ausf H



1:76 th scale (4 mm:1 foot)

AA Mount for MG 34



This rear view of a PzKpfw IV ausf H shows the only significant rear detail differences from the later ausf G's: the relocated radio antenna, now fixed upright. The side skirts were fitted to a few very late G's, and the added length of the L/48 gun cannot be seen from this angle. The towing pintle is flipped up on this tank. (Bundesarchiv)





This close view of an ausf H of the 3rd Panzer Division in Russia shows a bolted front plate addition, but now the usual type of skirt mounting is used. The skirt sections hung loosely from triangular teeth welded to the rails. In this way, a skirt section that snagged on an obstacle would fall off

the vehicle, but without damaging the rails and brackets as could happen in the other design. Note the added front skirt sections adopted in this design. (Bundesarchiv)

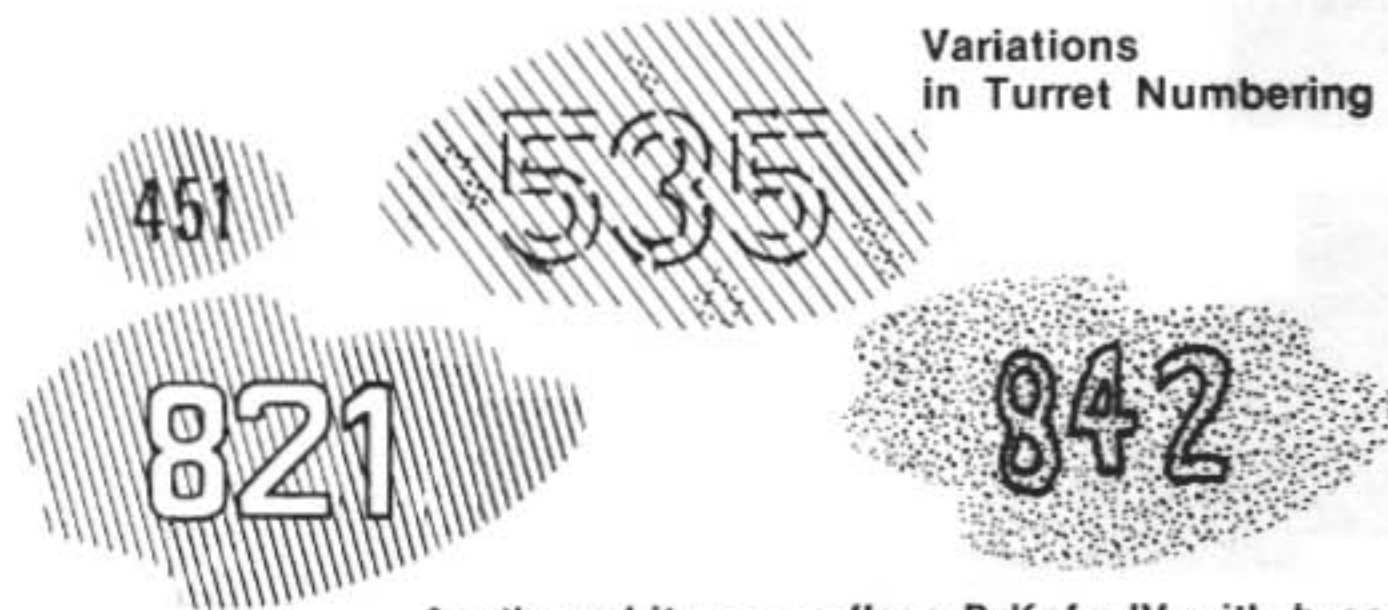


This relatively new ausf H traveling over a log bridge in Russia has unusual side skirts in that the "standard" system of brackets, rails, and teeth are used to hang the skirts, yet the front three sections have the edge cutouts and central holes used with the older hook-type design. (Bundesarchiv)

On this ausf H the turret numbers are thin white stencilled outlines on a patch of dark yellow - the rest of the vehicle is a scruffy whitewash. As can be seen, stowage of extra tracks all over the vehicles was a common practice. (Bundesarchiv)



Variations in Turret Numbering



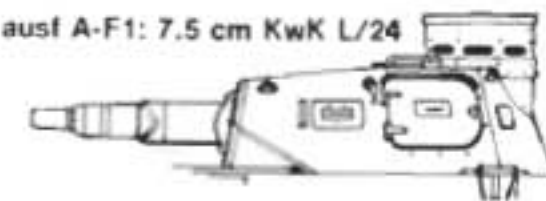
Another white camouflage PzKpfw IV with base color showing through the white spray on the turret skirting and KwK 40. The turret numbers are thin black outline stencils. Note that some of the spare tracks were added after the tank was painted, and are probably a weathered metallic gray-brown. (Bundesarchiv)





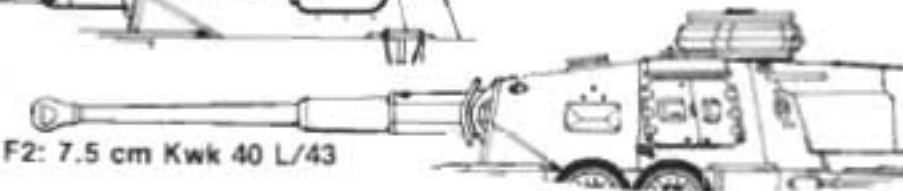
This ausf H in Russia, 1943/44, shows well the new cast drive sprocket with open web-type spokes, and the original rubber tired return rollers. This H is from the 3rd Panzer Division, and is the subject of a color profile. The personal name is somewhat unusual, as the practice of naming vehicles (except for propaganda purposes) was not as common in the Wehrmacht as it was in Allied armies. (Bundesarchiv)

ausf A-F1: 7.5 cm KwK L/24

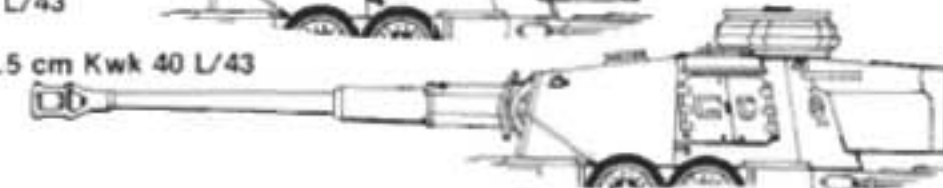


Development of 7.5 cm KwK for PzKpfw IV

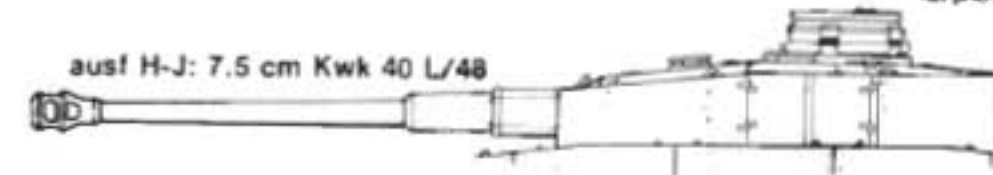
ausf F2: 7.5 cm KwK 40 L/43



ausf G: 7.5 cm KwK 40 L/43



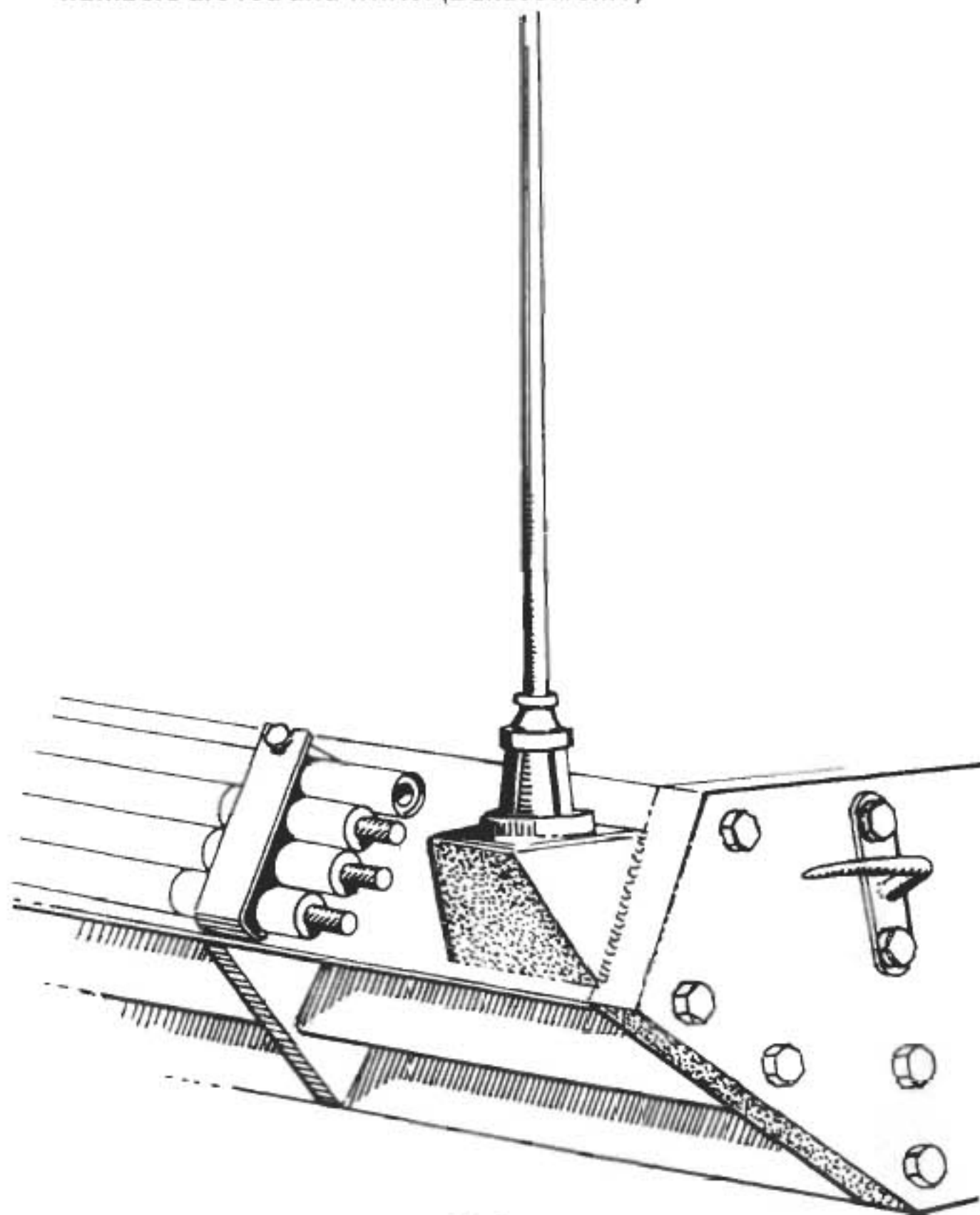
ausf H-J: 7.5 cm KwK 40 L/48



These ausf J's in Russia have side brackets but no skirts. As was usual after a time, the winter white color is rather scruffy and worn, especially on the rear vehicle. (Bundesarchiv)



A PzKpfw IV ausf H opened up for maintenance of the transmission and brakes. The left track lies in front of the vehicle. Note the extensive use of cut pine branches to camouflage the tank. Turret numbers are red and white. (Bundesarchiv)



Radio antenna, ausf H & J

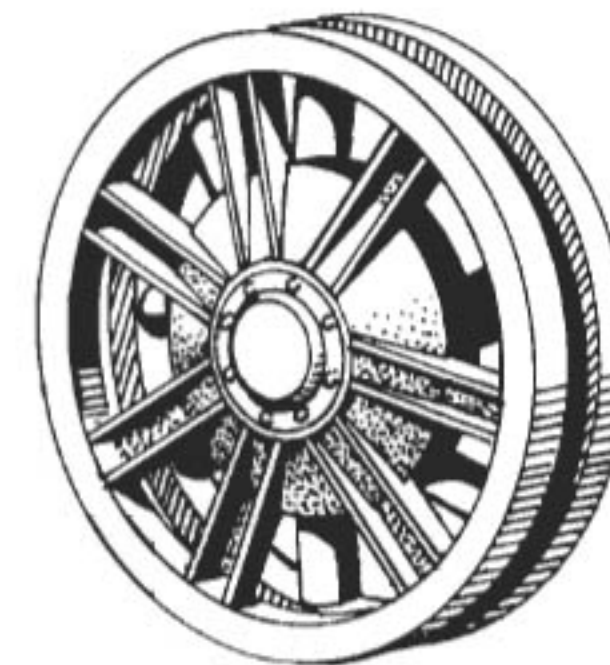
This PzKpfw IV ausf H sports lengths of T34 track used to protect the front of the vehicle. A softly sprayed 3-color scheme is used, as is zimmerit paste. (Bundesarchiv)



PzKpfw IV ausf J

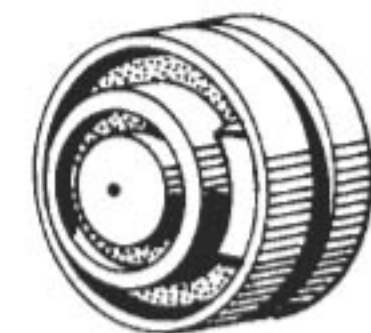
Introduced in March of 1944, the ausf J was the final production model of the PzKpfw IV. Very similar to the ausf H, the J featured a simplified structure with various details being eliminated during the production run. The side vision ports for the driver and R.O. were dropped, as were the vision devices and pistol ports in the turret doors. The 2-stroke engine for the turret traverse was eliminated, the power traverse being replaced by a 2-speed hand gear, and thus, the small muffler for this engine was removed from the hull rear - this is the only sure way of differentiating ausf J's from ausf H's. Later production J's had a simplified cast rear idler design, and although **most** ausf J's carried the same metal skirts as the ausf H, some J's did have "Thoma shields" - antibazooka skirts made of heavy wire mesh, and intended to provide adequate protection while using far less metal. A variant of the ausf J was the **Panzerbeobachtungswagen** - an observation tank fitted with extra radios, and identified by the extra armored antenna mount at the upper right of the hull rear. PzKpfw IV's were built up to the last month of the war, and served after WW 2 in several countries, lasting in active service long enough to take part in the 1967 Arab-Israeli war, used by the Syrian armored forces primarily as dug-in antitank weapons.

This vehicle, an ausf J, is missing the hull skirts and brackets. Usually, initial shipment by rail was done with the hull brackets and skirts removed to stay within the width limits on the railroads; the using units would then install them after delivery, but on many occasions, this appears not to have been done. (Bundesarchiv)



Late cast rear idler used on many ausf J's and some ausf H's.

Steel return roller





These ausf J's bear the remnants of winter camouflage, most of which has worn off. The crew of the nearest vehicle wear reversible camouflage smocks, with the white snow side turned inside. The track on the glacis plate is a length of the "Ostketten" wide track; the rest is the standard 40cm type. (Bundesarchiv)

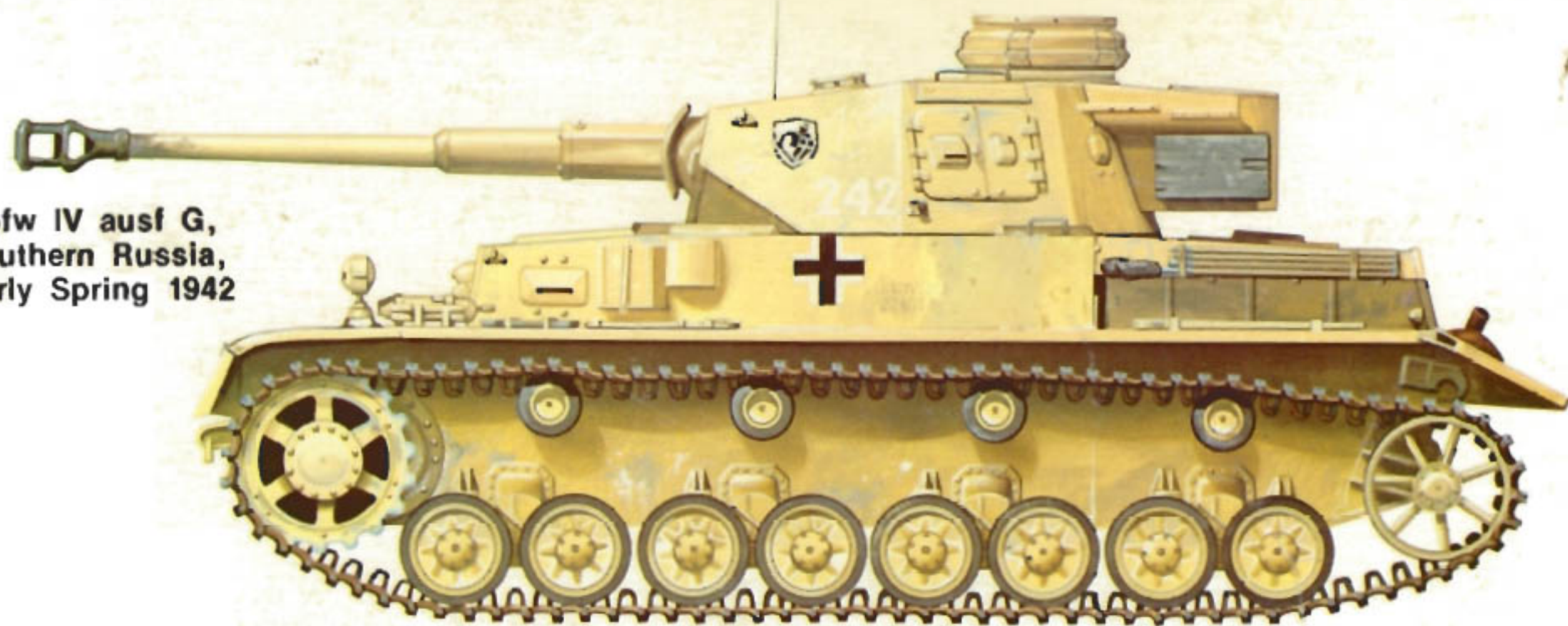


(Above Right) This is a previous shot of the knocked out ausf J shown below. The return rollers are all steel. The standard side rails and triangular teeth for mounting the hull skirts are well illustrated. Note the cylindrical air filters just behind the jack; there were two of these, one above the other, and were fitted to many PzKpfs used in Russia. (Bundesarchiv)

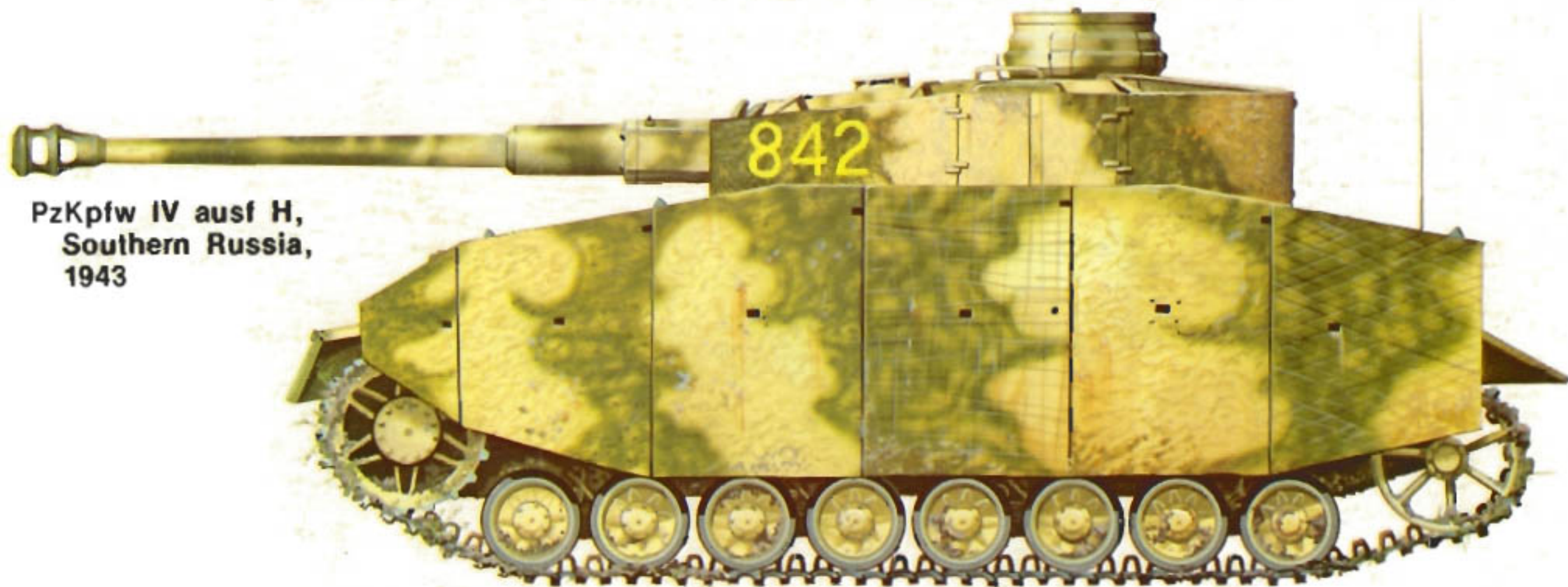
A J with damaged right mudguard and missing front skirt sections. Again the rapid deterioration of the temporary white winter camouflage can be seen. This vehicle has been knocked out and the body of a crewman lies across the top of the hull. (Bundesarchiv)



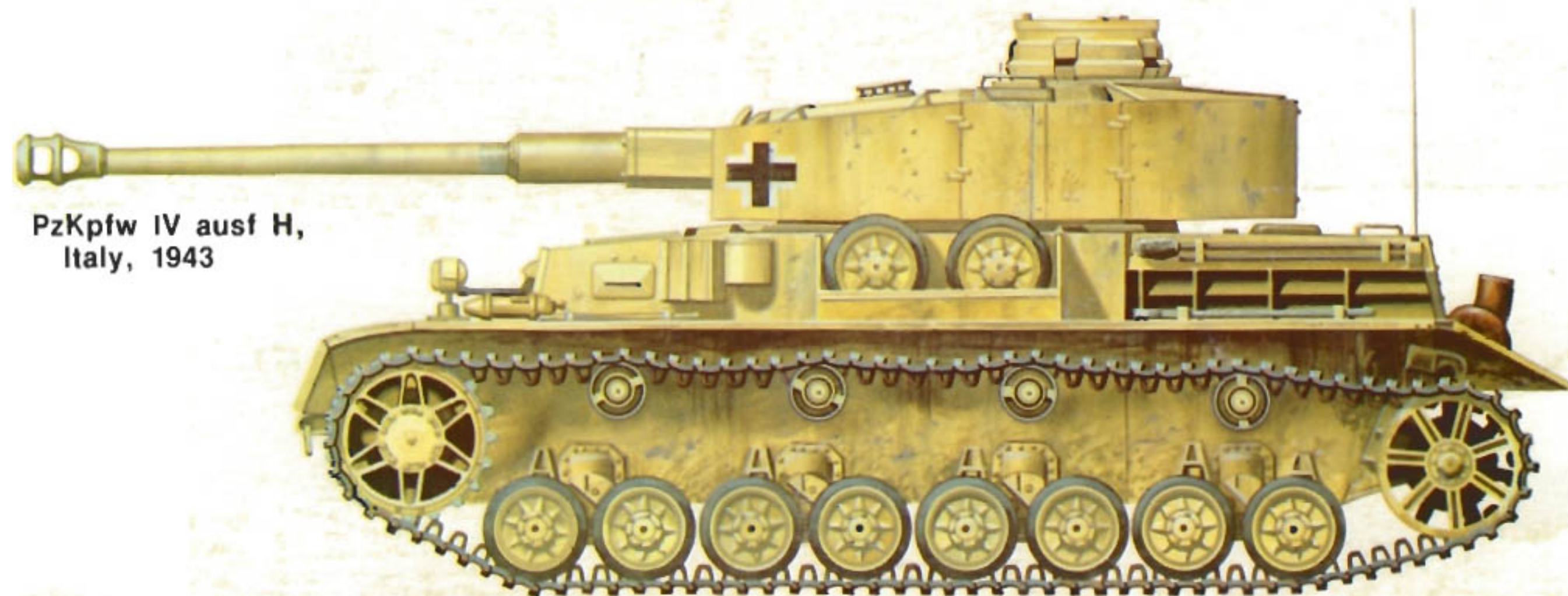
**PzKpfw IV ausf G,
Southern Russia,
Early Spring 1942**



**PzKpfw IV ausf H,
2nd Panzer Div.,
France, 1944**



PzKpfw IV ausf H,
Southern Russia,
1943



PzKpfw IV ausf H,
Italy, 1943