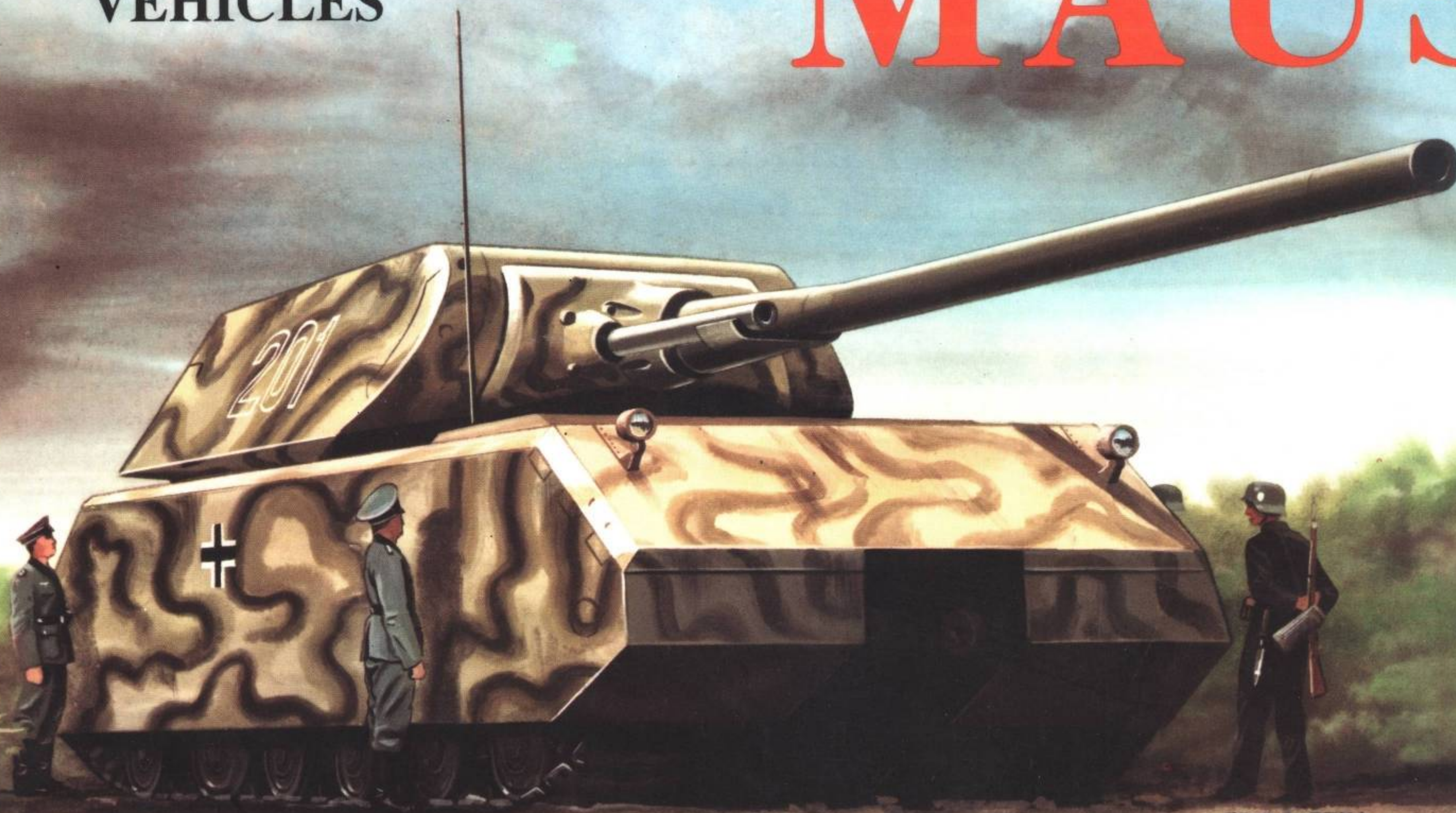
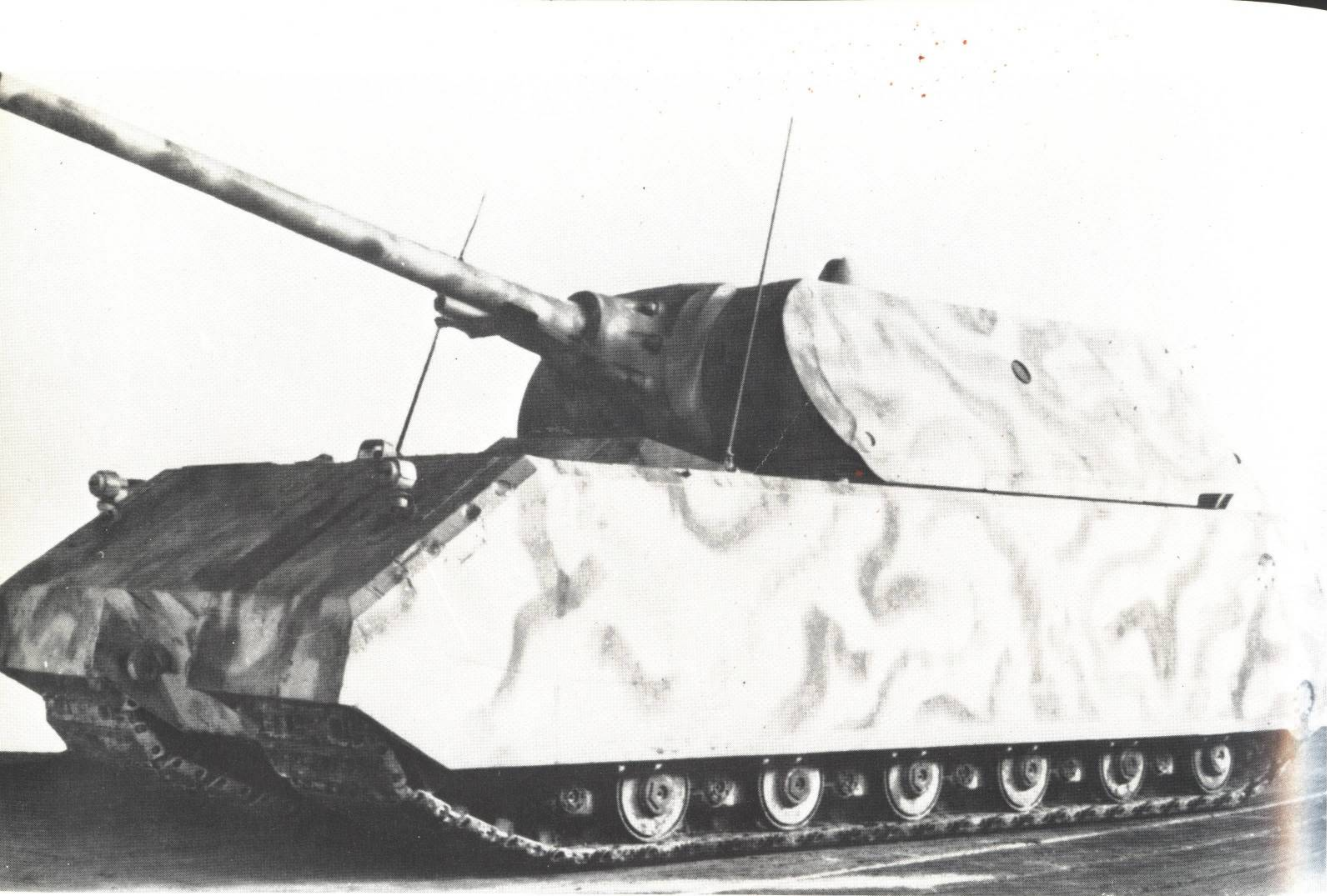


ARMORED MILITARY
VEHICLES

MAUS



AND OTHER GERMAN ARMORED PROJECTS



MAUS

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&
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Sources:

Archives of Ing. h.c. F. Porsche A.G., Stuttgart
Imperial War Museum, London
Royal Armoured Corps Tank Museum,
Bovington
Scheibert Archives
Mr. Suhany

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Translated from the German by Dr. Edward Force

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Prof. Dr. h.c. Ferdinand Porsche, who also gave evidence of his inventive genius in the realm of armored military vehicle construction, in 1942.

German Armored Projects

Along with the armored vehicles in actual military use, there were also a number of additional projects that were developed before or during the war. They are of interest because they were often experimental models embodying technological advances. The firm of Porsche was involved in these developments to a great extent, for its inventive chief suggested unconventional solutions to technical problems again and again, even if they proved in the end to be unfeasible because of too high cost and complexity.

Also of particular interest is the development of very heavy tanks, which could already be seen in the development of the Tiger I and II, and which led to the prototypes of the "Maus" (Mouse) and the E 100, with weights of 100 to 200 tons, and peaked in the proposals for truly giant vehicles of 1000 and 1500 tons. Similar suggestions for oversize vehicles had already been made in 1918 with the conception of the K-Wagon (150 tons), and between the wars other nations also followed up this idea of building heavily armored, large-caliber, but slow-moving support and breakthrough vehicles for the infantry (such as the 68-ton French Char 2 C and the 56-ton Russian T 100). In Germany, on the other hand, the idea prevailed of putting massed fast armored units into action, which was to bring about such overwhelming success at the beginning of the war and give priority in vehicle construction to mobility (speed, handiness and radio equipment) instead of weapon caliber and armor. Only during the course of the war, when the enlargement of weapon caliber and strengthening of armor escalated on both sides, and particularly when the German Panzer I-IV had met their master in terms of a successful combination of high firepower, effective armor and great mobility in the Russian T 34, did there arise, along with the one rational answer, the development of an equal vehicle. The "Panther" was to become the attempt to meet this threat with thick armor and large gun caliber (mobile bunkers). Considerations that must be seen clearly as the wrong path from today's point of view led to the construction of the heaviest armored vehicles of their time, the "Maus" and E 100.



This picture shows Prof. Porsche (second from left) next to Armament Minister Speer at the inspection of an armored vehicle. Prof. Porsche was Chairman of the Panzer Commission in 1942.

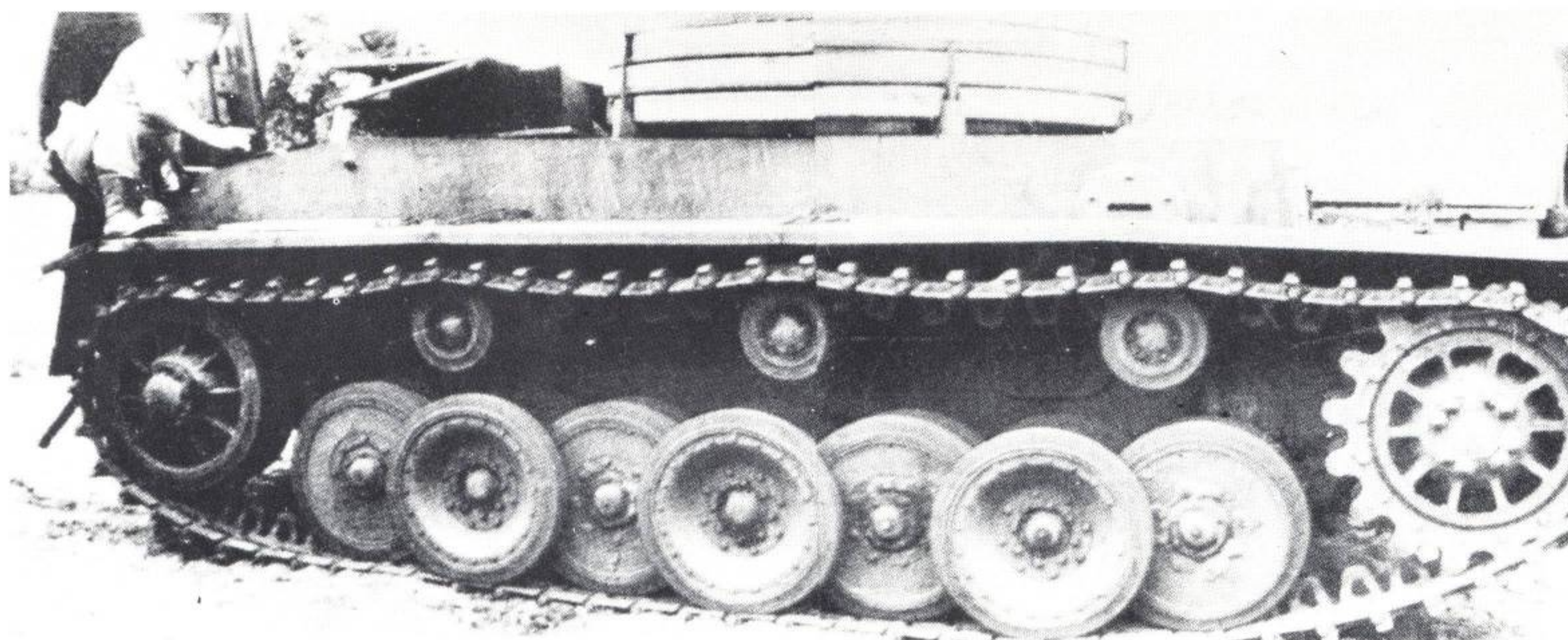
The Army Weapons Office marked the armored projects with the letters VK (Versuchskonstruktion: experimental construction), followed by a three or four-digit number, of which the first (or the first two) indicated the weight class in tons and the last two the ordinal number within the weight class. When competitive designs were submitted by various firms, these were given the same numbers followed by an additional letter in parentheses, such as VK 4501 (H) and VK 4501 (P) for the Tiger prototypes by Henschel and Porsche (weight class 45 tons, first design). The "Maus" project, probably for reasons of secrecy, never received such a VK classification. For the new series of armored vehicles conceived by the Army Weapons Office in 1943 the letter E (Entwicklung: development) was used, followed by the numbers indicating the weight class. Along with these official numbering system, the firms used their own; the Porsche firm, for example, used a chronological numbering system.

Porsche type	Official designation	Other name
100	VK 3001	(P)Leopard
101	VK 4501	(P)Tiger I (P)
131	produced in series, this Ferdinand vehicle had no VK number but rather Sdkfz No. 194	
180	VK 4502 (P)	
205	none Maus	Tiger II (P)

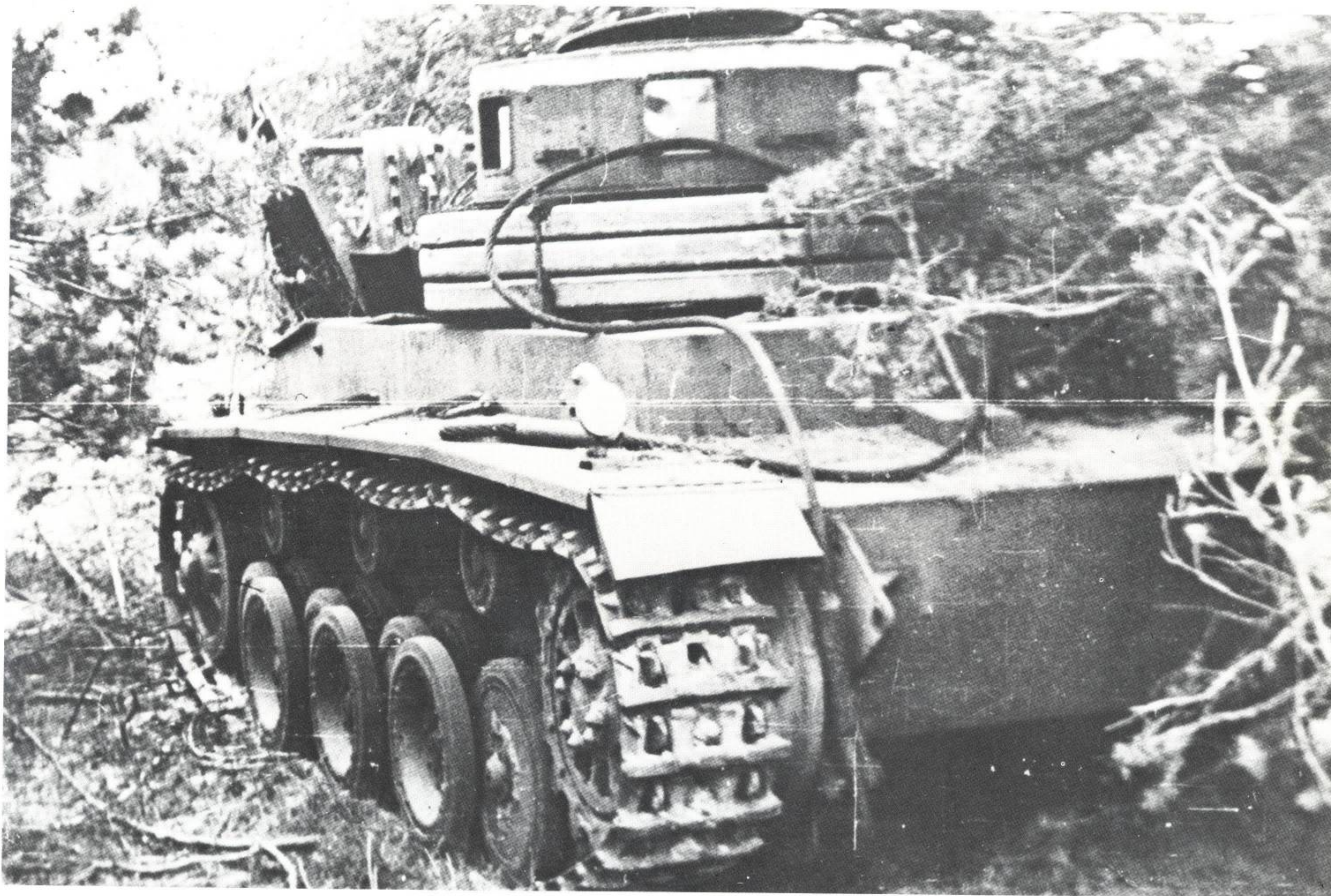
VK 3001 (H) and VK 3601 (H)

In 1937 Henschel was instructed to plan a vehicle to succeed the Panzer IV in the same weight class. Thereupon Henschel planned the D.W. (Breakthrough Vehicle) I & II. Both vehicles were very similar to the Panzer IV. The VK 3001 (H) was a further development of these vehicles. Four prototypes were produced, two in March of 1941 and the others in October of the same year. The vehicles produced in March were rebuilt by the Rheinmetall-Borsig firm in August of 1941 into 12.8 cm self-propelled gun carriages. The Henschel Type L 320 three-wheel steering system built into the vehicle was later used in simplified form in the Tiger I. In the French campaign, in which the German tanks encountered the heavily armored English and French infantry tanks, the meager penetrating power of the German ammunition was already evident. For that reason the task of developing the

VK 3001 was accompanied by another, that of building a heavy 36-ton armored vehicle. This vehicle, designated VK 3601 or Panzer IV Type B, had many components in common with the VK 3001. By eliminating the upper road wheels, the running gear unit typical of the Tiger and Panther was developed. The main weapon was originally to have been a gun with conical barrel (Weapon 0725). Since Hitler later banned their use, the vehicle had to be rebuilt so as to be capable of taking the turret built by Porsche for his VK 4501 (P) tank, as the shortage of time made it impossible to develop a turret just for this vehicle. These changes led to the Tiger I E. Both the VK 3001 (H) and VK 3601 (H) were completed as test vehicles, since their further development was abandoned in favor of the VK 4501.



A VK 3001 (H) with three concrete rings to simulate the weight of the turret, which was not mounted, in order to avoid false statistics during test runs. A good view of the 7-wheel running gear unit.



A VK 3001, parked in the bushes on the Henschel factory grounds in Haustenbek. Many tests were made with this vehicle until the war's end, including a ditching plow intended for the Panzer II. The mount for this plow, which could open ditches up to 80 cm deep, is visible on the back of the vehicle. The vehicle was often used at the factory as a recovery tractor.

12.8 cm Self-Propelled Gun on VK 3001 (H) Chassis

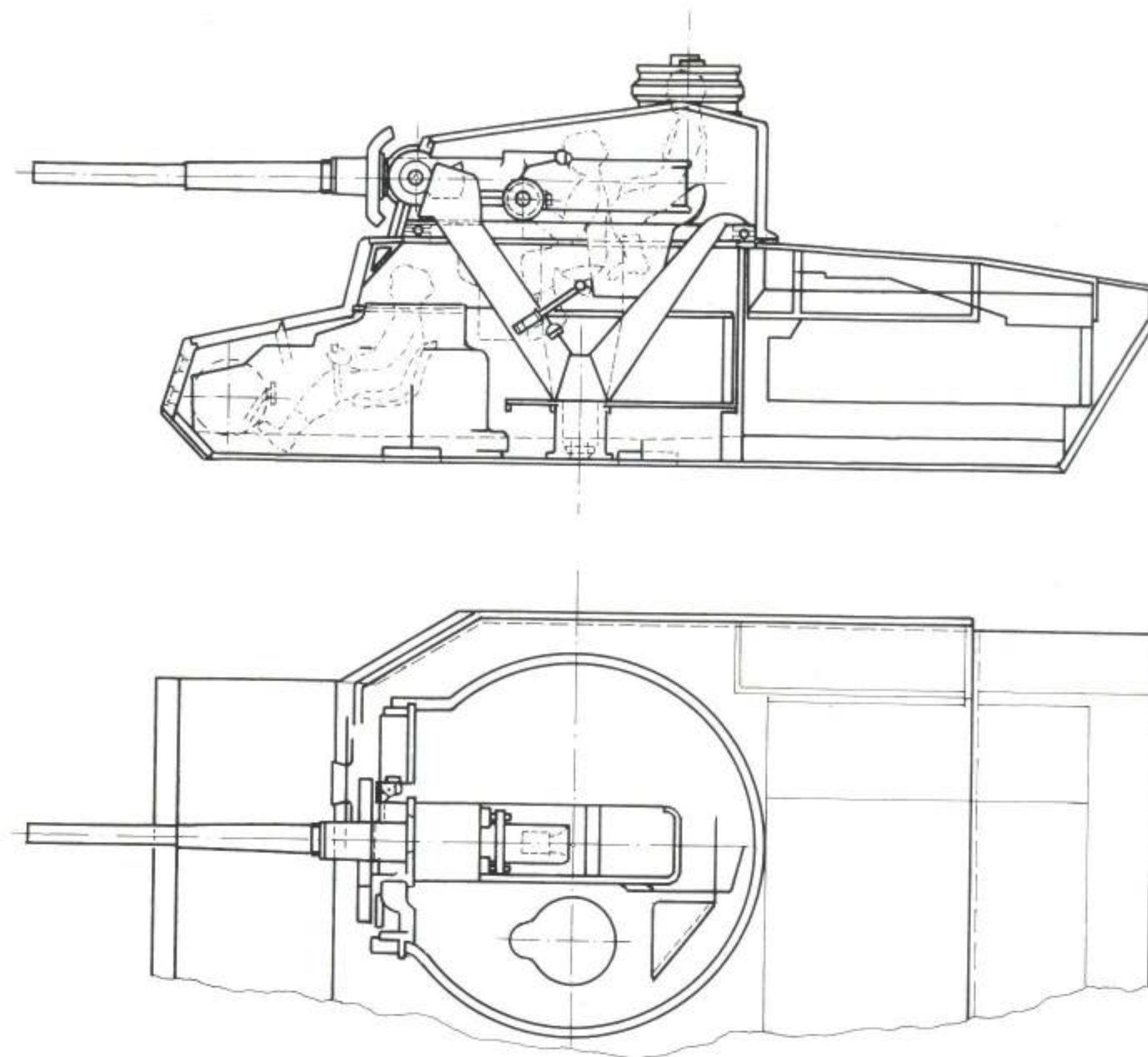
When the order for a 12.8 cm self-propelled gun to attack bunkers and fight off heavily armored English tanks was given, the two VK 3001 (H) chassis finished in March, became available to realize this request. The rebuilding was done at the Rheinmetall-Borsig factory. The body had to be lengthened in the rear to carry the gun. Because of this, an eighth road wheel was added. The fighting compartment, open at the top, was only lightly armored and could carry 15 rounds of ammunition. The first vehicle was delivered in August of 1941 and put in service in Russia. Further construction did not take place, since the Tiger chassis was better suited to carry large-caliber guns, and the tendency toward armored assault vehicles with low silhouettes developed in the realm of chain-driven antitank vehicles.

Below: A very rare photo! A 12.8 cm antitank gun was mounted on one 3001 and one 3601 test chassis for testing on the eastern front. Here is the "Test Hunter 3001" at the big bend of the Don in July of 1942, in service with the 2nd Armored Division. The troops were enthusiastic about its performance and called it "Stubborn Emil".

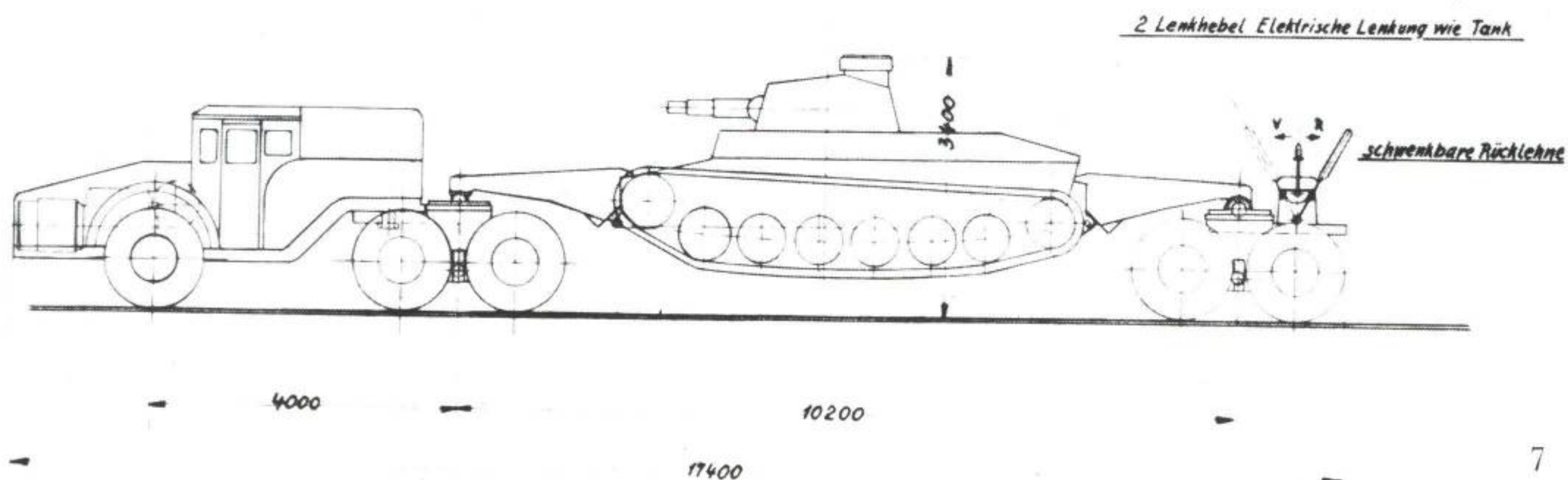


VK 3001 (P)

Along with Henschel (VK 3001 (H)), Daimler-Benz and MAN, the Porsche firm was also given the task in 1939 of developing a vehicle in the same weight class (25-30 tons). It was supposed to be capable of taking the 7.5 cm L 24 cannon or, if possible, a 10.5 cm gun. The VK 3001 (P) was Professor Porsche's first tank design, after the G.T. I developed at Daimler in 1927. On September 5, 1939 the first drawings for the tank were finished by Porsche's Chief Engineer, Karl Rabe, after which two test vehicles were produced at the Nibelungen Works in Lower Austria. They were never fitted with the intended turning turrets made by Krupp, though. A new principle of power was suggested: the gasoline-electric, which was later used in all Porsche models. The generators were driven by two 210-HP V-10 cylinder motors mounted side by side. These were built in Vienna by Graz-Simmering-Pauker. The motors and drive systems caused problems again and again during the ongoing test drives in 1941 and 1942. Yet the test runs provided valuable knowledge of the electric steering or clutch. But the vehicle never went into production, for the same reasons as the VK 3001 (H).



Above: A line drawing of the VK 3001 (P) body without the running gear. The division of space in the tank, including the projected but never built turret, is easy to see.

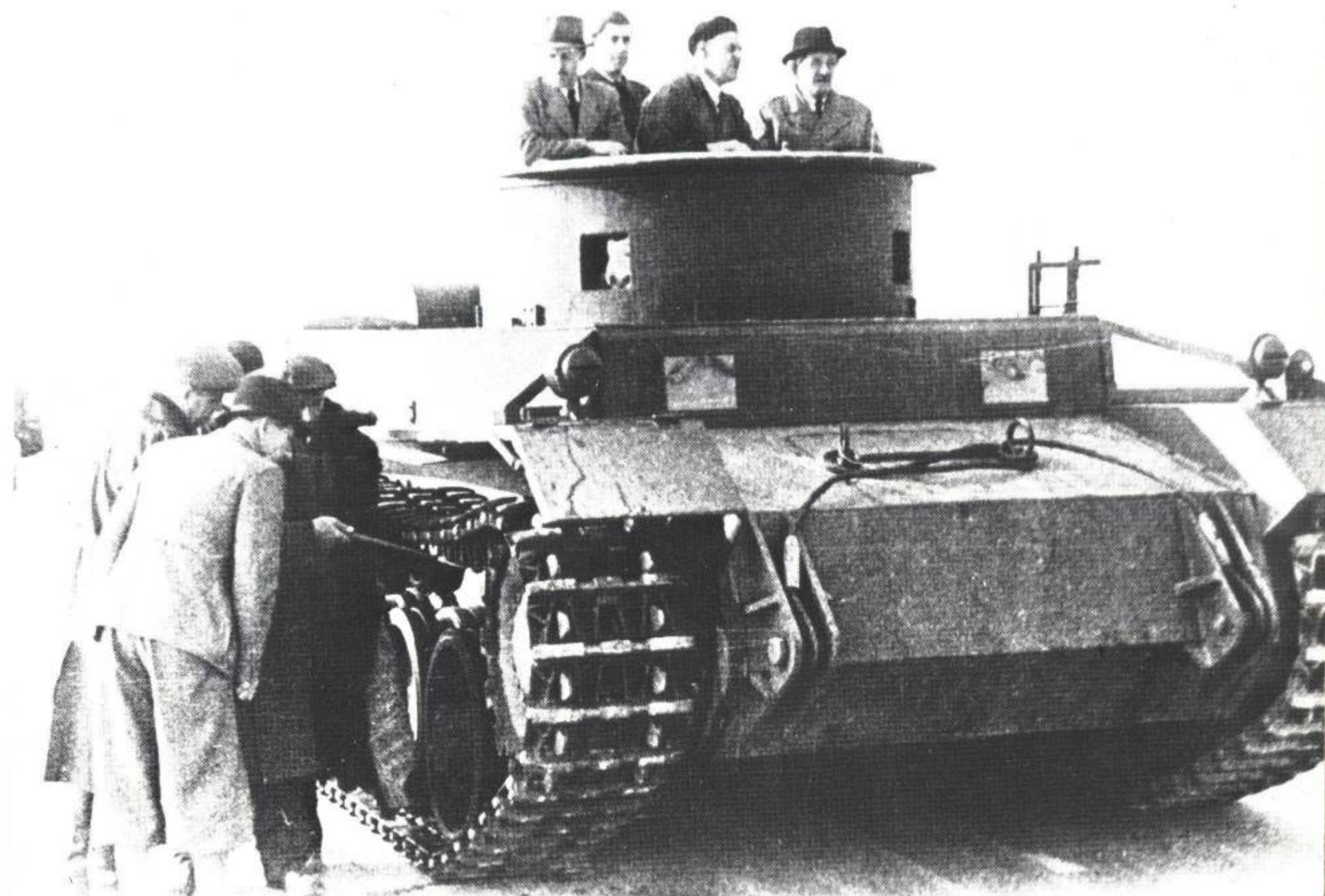


Right: Porsche also designed a tank transporter. This drawing shows it carrying a VK 3001 (P), which remained only a project.

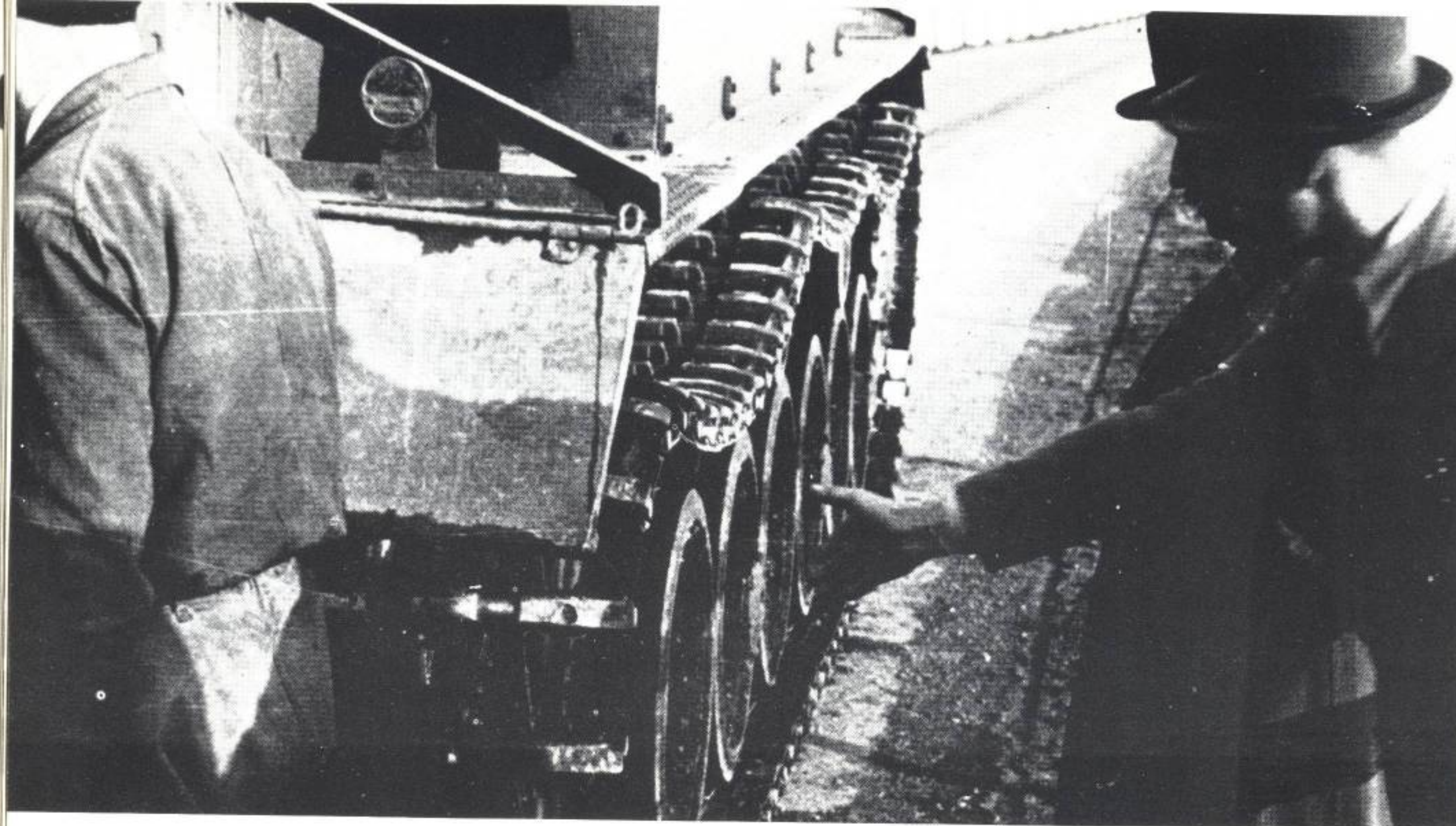


A VK 3001 (P) underway on the road leading from the Nibelungen factory to the proving ground. The vehicle achieved a top speed of about 60 kph. At that speed, fuel consumption amounted to about 170 liters per 100 kilometers.

Right: The "Leopard" (Porsche's name for the VK 3001) has stopped and is being examined critically. At right in the turret (with hat) is Professor Porsche.



Left: The rear view of the VK 3001 (P), clearly showing the exhaust system. The problems with the motor, experienced again and again during test runs, led to the design of a diesel engine for the vehicle (Porsche Type 200), which was never again built.



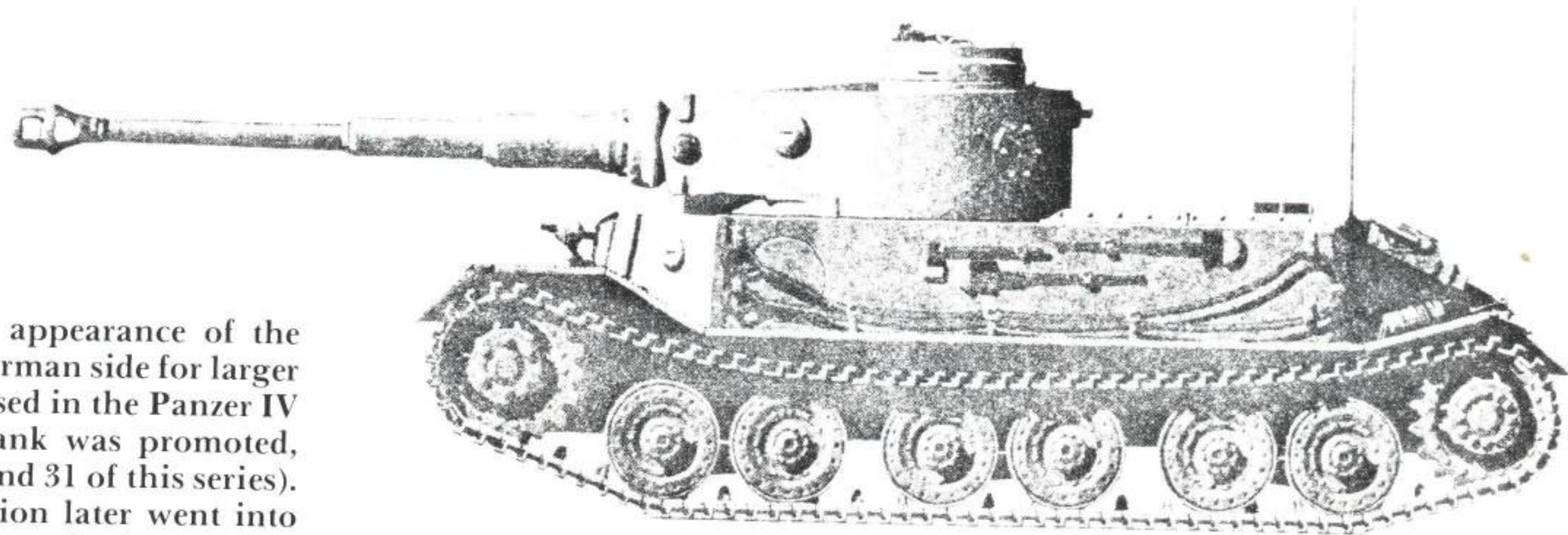
A close-up view of the running gear. This consisted of three road-wheel mounts suspended from longitudinal torsion bars by knee joints. This suspension system was likewise a new development that Porsche had developed for this vehicle, and was used thereafter in all subsequent tank designs.



In this picture the "Leopard" is just finishing one of its numerous test runs at the proving ground, located near the Nibelungen Works at St. Valentin (Lower Austria) during the winter of 1941-42. Though the vehicle never went into production, much of the valuable experience gained from it could be put to use in the firm's later tank developments.

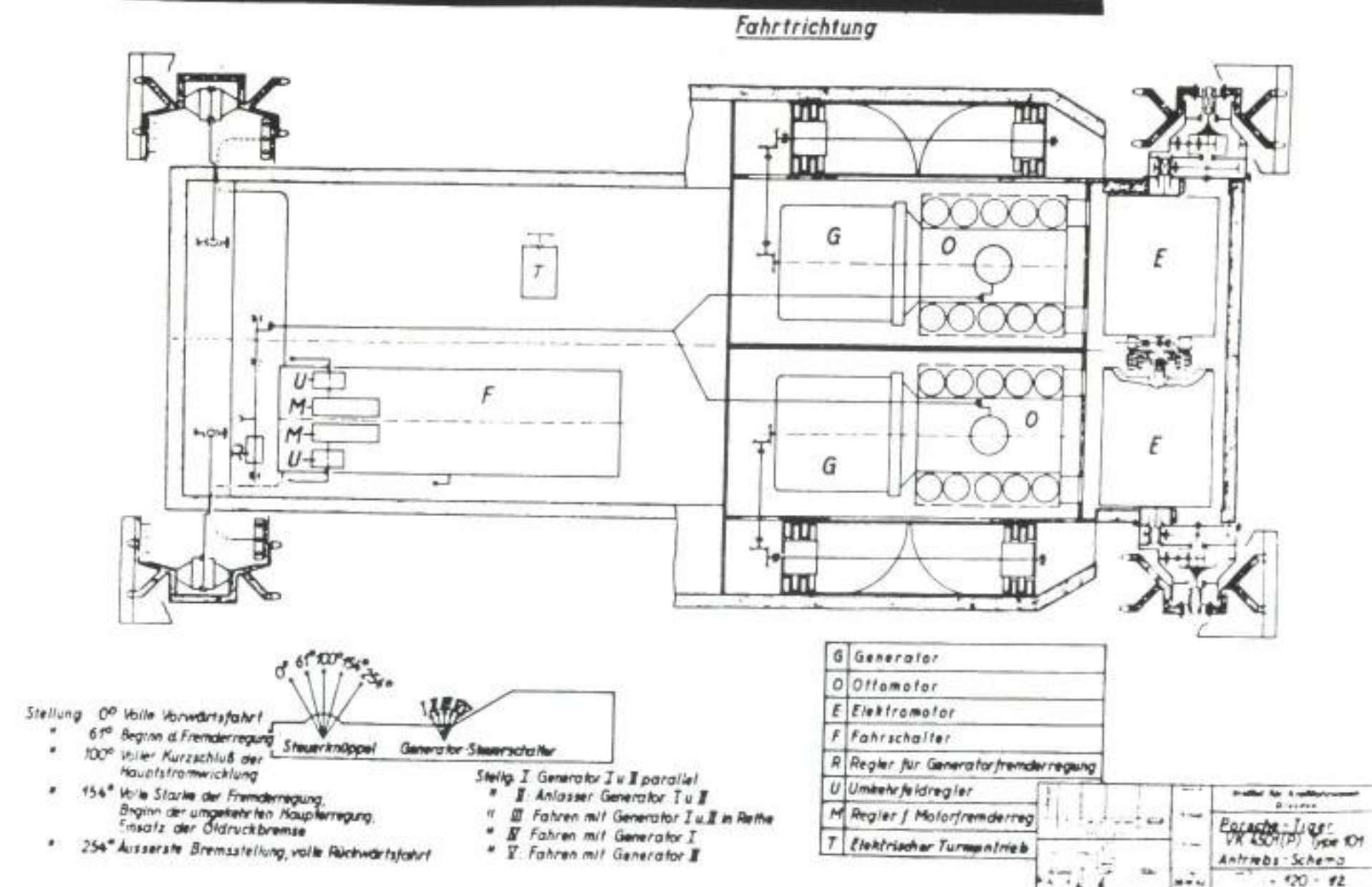
VK 4501 (P)

In the spring of 1941, even before the appearance of the Russian T 34, the need was voiced on the German side for larger gun calibers and heavier armor than were used in the Panzer IV series, and the development of a 45-ton tank was promoted, leading to the later Tiger I (see Volumes 1 and 31 of this series). Along with the Henschel firm, whose version later went into series production, the Porsche firm also received a similar developmental directive. The vehicle thus created was known as VK 4501 (P), and was the Porsche version of the Tiger tank. Many components of the VK 3001 (P) were adapted for the heavier weight and utilized. The motor was moved to the rear, to assure an equal weight distribution on the tracks despite the considerable weight of the turret. The power of the two motors was raised to 320 HP each. The power transmission took place, as in the VK 3001 (P), on the gasoline-electric principle, the weaknesses of which contributed significantly to the fact that when the competing designs were compared on April 20, 1942, that of the Henschel firm was preferred. Ten tanks of the Porsche type were completed at the Nibelungen Works and fitted with the planned turning turrets. This turret held one of the 8.8 cm guns, developed from anti-aircraft guns, with a barrel 4930 mm long. cooled Maybach engines and moved forward to increase the space in the fighting compartment. This tank destroyer (which was named "Ferdinand" after its constructor) was the only vehicle designed by Dr. Porsche that saw action. The last of these 90 "Ferdinands" was delivered to the army on May 8, 1943, but this version, which was actually just an expedient to make use of the available Tiger (P) chassis, did not accomplish much. Most of them were lost on the Italian and eastern fronts because of technical failures in the complicated power system and because of their clumsiness.

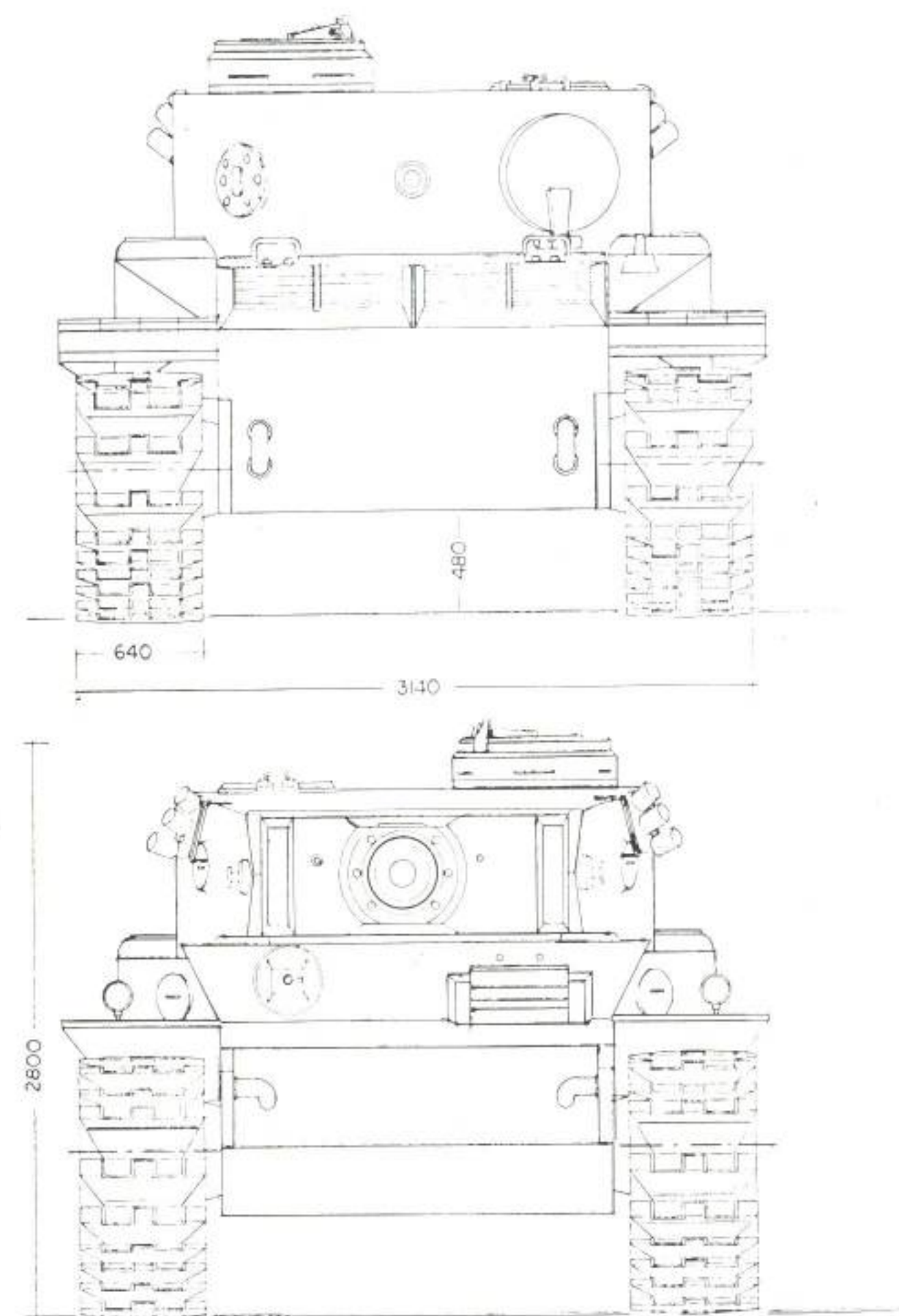
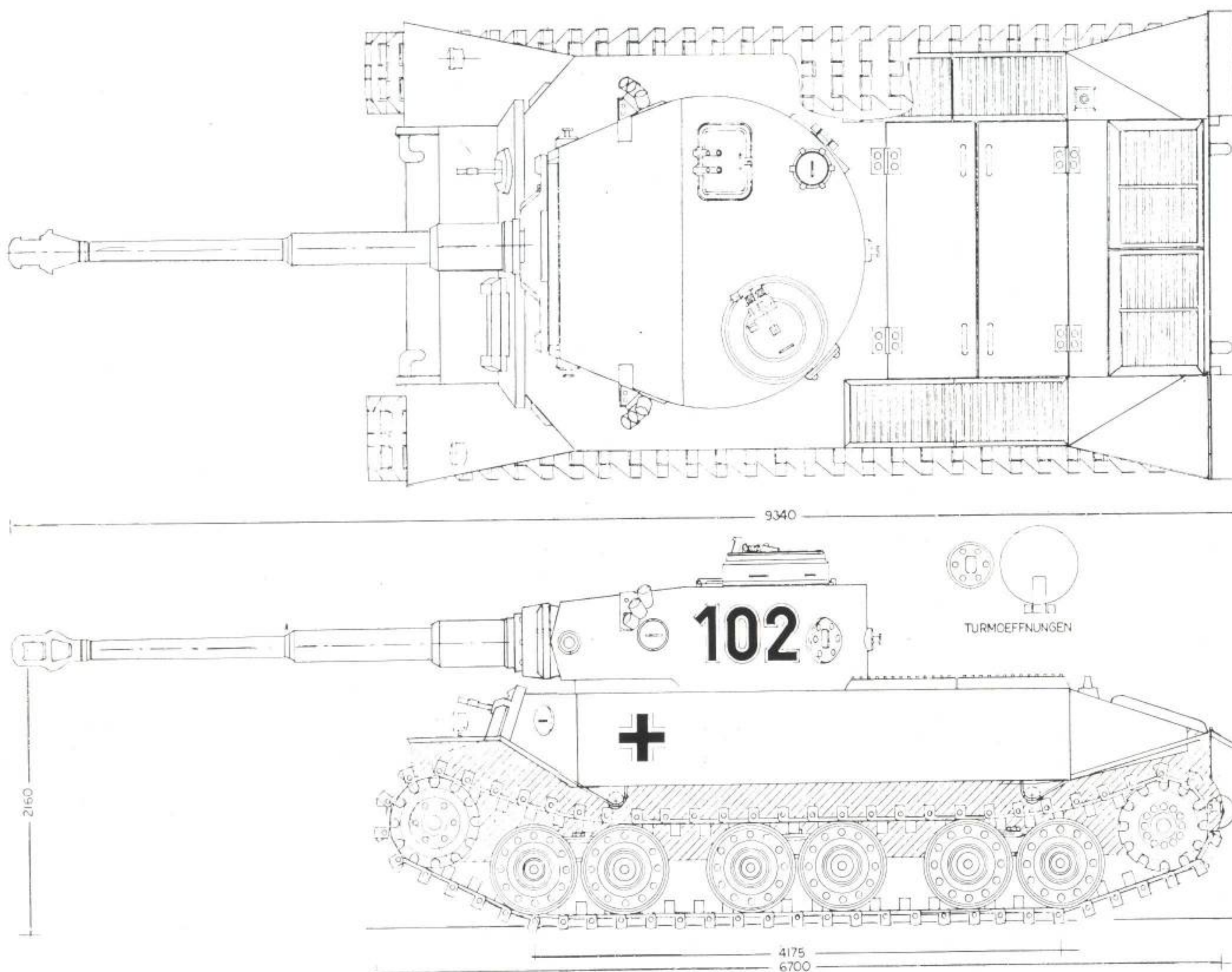


VK 4501 (P) Tank

Power system of the Porsche-Tiger Type 101



Above: The power system of the Porsche-Tiger, on the gasoline-electric principle.



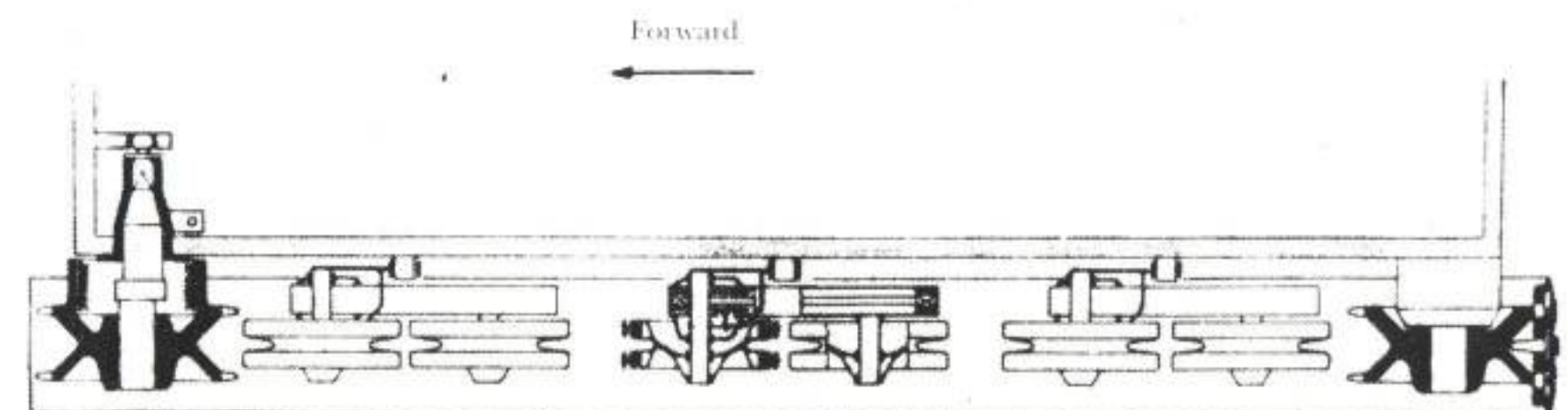
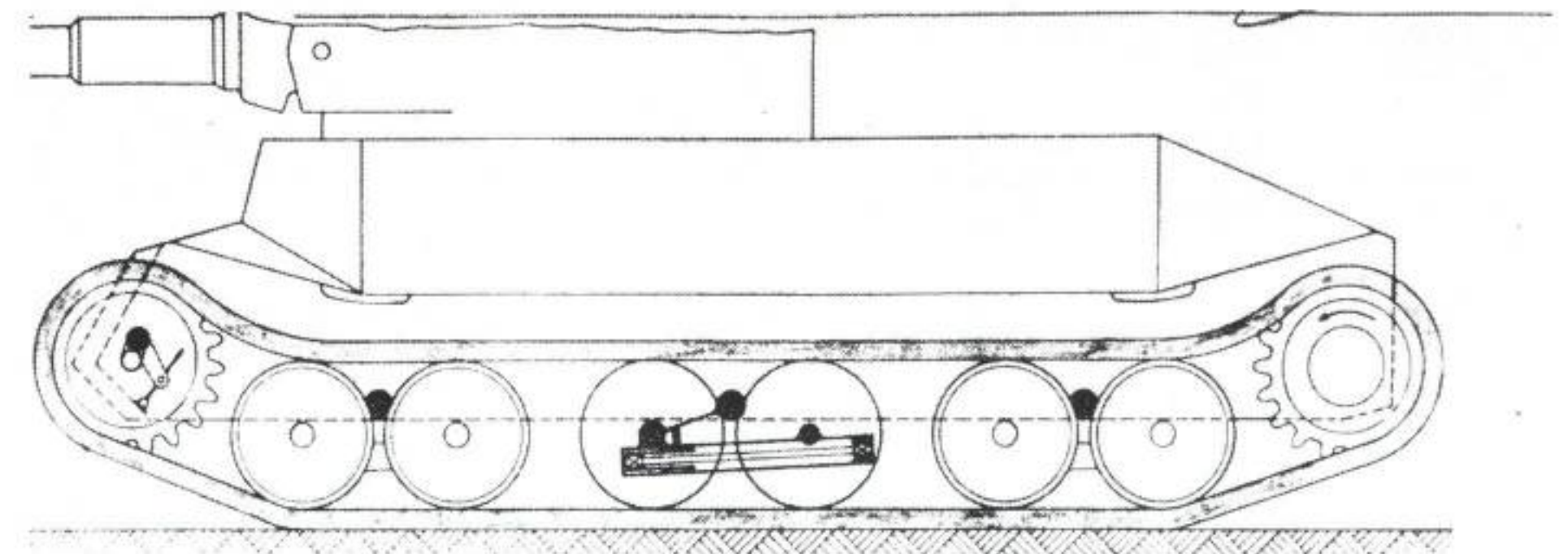
TEIL	BEZEICHNUNG	MATERIAL
ZEICHNUNGS NR	ZUSAMMENBAUZEICHNUNG	
10 001	MODELL 1:20 PANZERKAMPFWAGEN TIGER PORSCHE TYP 10.	10 JAN 1964 WJS

12 The assembly drawing of the Tiger P. It was prepared by the Chief Engineer of the Ing. h.c. F. Porsche A.G., Mr. Rabe.

Part Designation Material
Drawing Assembly drawing
no. Model 1:20 Tiger Tank
10001 Porsche Type 10..Jan. 10, 1964
WJS



Above: One of the ten completed "Tiger P" tanks with the 8.8 cm L 56 KwK. At Hitler's order, the possible mounting of a heavier gun (10.5 or 15 cm) had also been discussed. At left in the photo is Prof. Porsche, in discussion with officers.



Right: Drawing of the Tiger (P) running gear, in which the special suspension of the road wheels via torsion bars can be seen. This system had already been used on the "Leopard" and had proved itself very well.

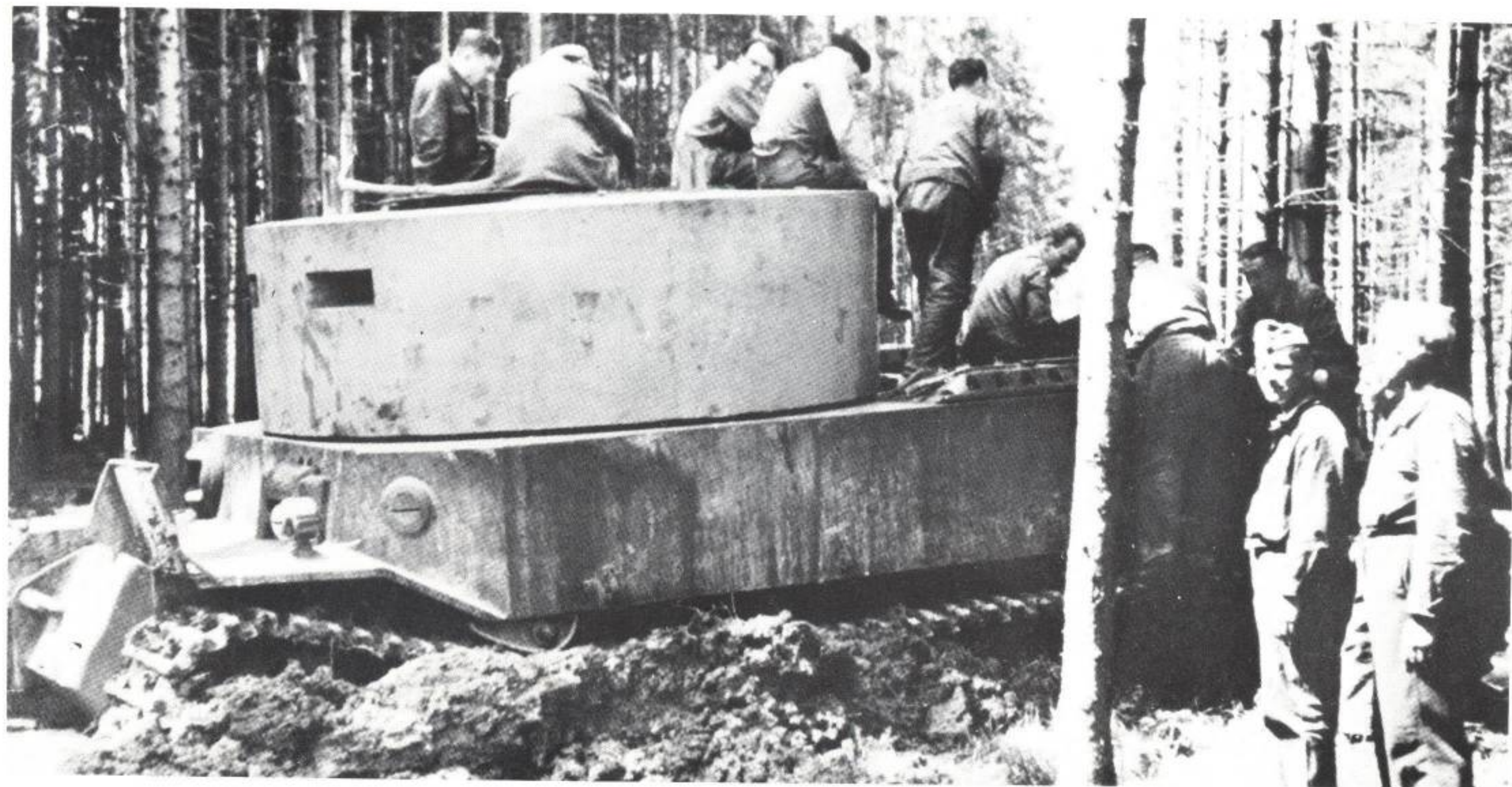


The competing Tiger designs by Henschel and Porsche were to be displayed to Hitler on his birthday in 1942. The air-cooled motors of the Porsche vehicle, built at Graz-Simmering-Pauker, showed defects, which meant that their installation was delayed and the work was done under pressure of time. In order to conduct enough test runs before the demonstration, an expedient was used, with a VK 3001 (P) supplying power to the electric motors of the VK 4501 (P). The connection was made by a cable.

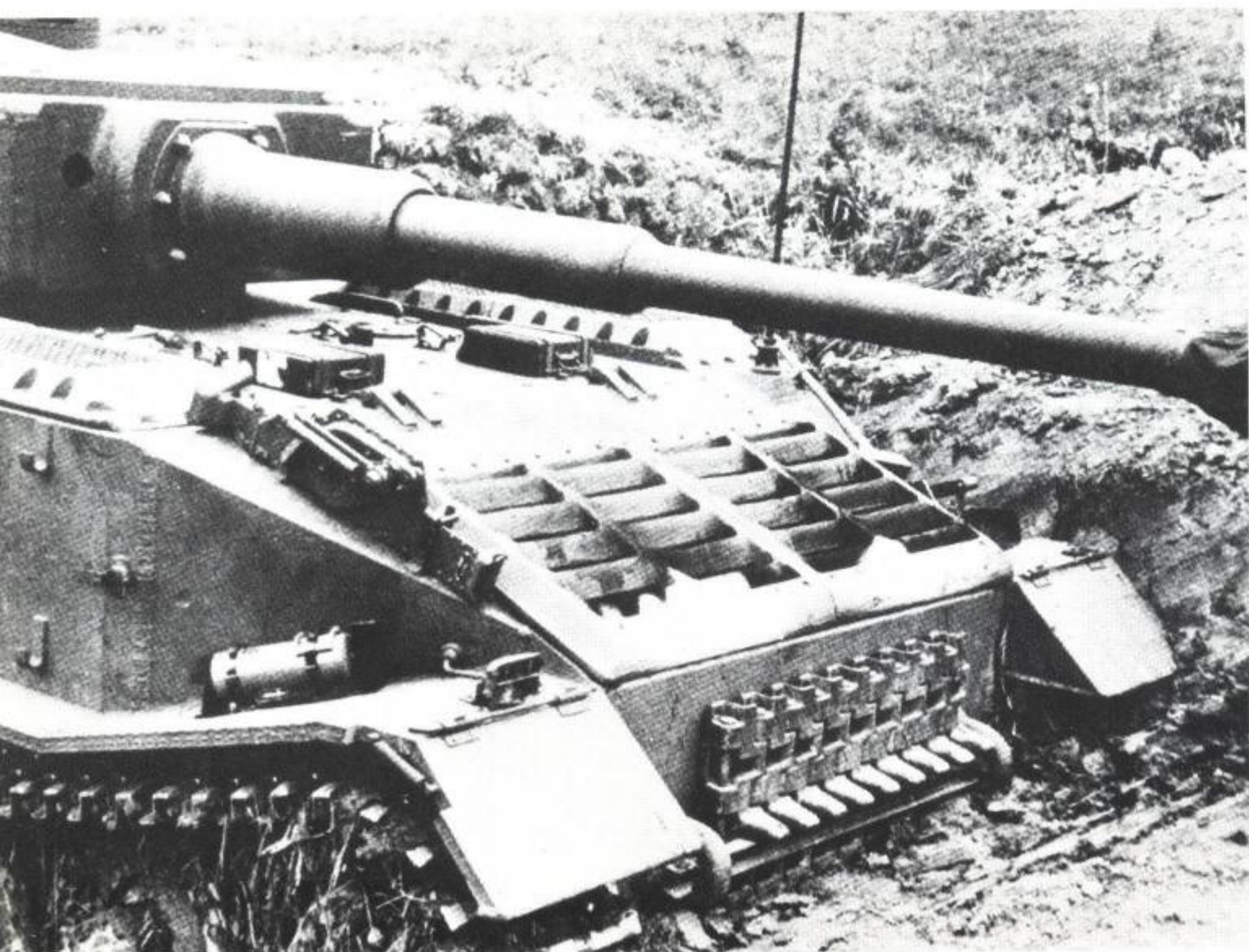


Another picture of the first test runs of the Tiger P. The engine cover of the vehicle has been removed to give the mechanics free access to the engine compartment. The power supply cable is fastened to an outrigger on the VK 3001 (P).

Right: On a later test run, the air-cooled motors are already installed, but the turret is replaced by a weight simulator, the VK 4501 (P) plows through rough country.



Left: The fact that the Tiger P often sank into the ground or dug itself in was due to the vehicle's high ground pressure. The track width had been set at 500 mm when planning began, but had to be increased several times because of the increased weight of the armor, finally reaching a width of 640 mm with a ground pressure of 1 kp per square cm.



Upper left: In the rear of the Tiger P was the exhaust fan for the air-cooled motors; its louvers are especially easy to see here. At left near the cannon is the MG 34 machine gun for short-range defense, accompanied by another on the bow.

Above: A Porsche Tiger sunk into a muddy trench. Such accidents happened again and again during test runs. Often the vehicle got out under its own power, but sometimes it had to be towed by other VK 4501 (P) tanks. Such an accident in battle would have sealed the fate of the tank.



Left: The type 101 (Porsche designation for the VK 4501 (P)) has stopped and is being checked by army officers. The metal box attached to the turret was to hold equipment and the crew's personal effects in battle, since there was so little space inside. The turret is turned backward to a 6:00 position. A towline is already attached to the tank.



Two Tiger (P) tanks parked side by side at the proving ground. The picture shows the rear of the bodies; the turrets are turned to the rear.

On this VK 4501 (P) the muzzle brake of the 8.8 cm KwK has been equipped with a muzzle protector. This was meant to prevent the entrance of dust and dirt into the barrel. The Tiger P's fuel tank was located over the generator and held 520 liters. But this allowed the tank a cross-country action radius of only 50 km. Hitler demanded, of course, that the tank carry enough fuel for 150 km, but this requirement could not be attained for lack of space.

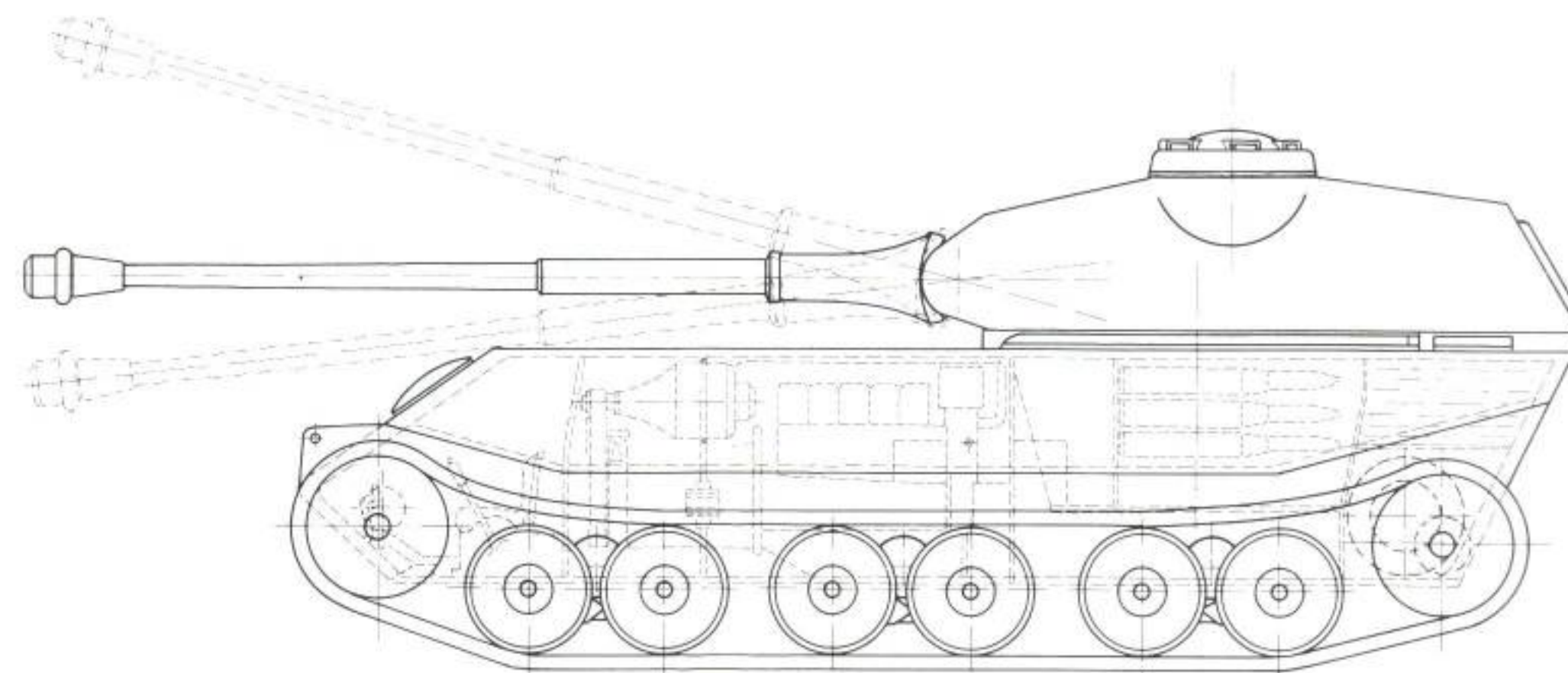




When in 1942 the decision was made in favor of the Henschel Tiger, the 90 Tiger (P) tanks already under construction were rebuilt as 8.8 cm Tiger (P) tank destroyers. This picture affords a view of the production building of the Nibelungen Works, where the completed vehicles are lined up ready for delivery.

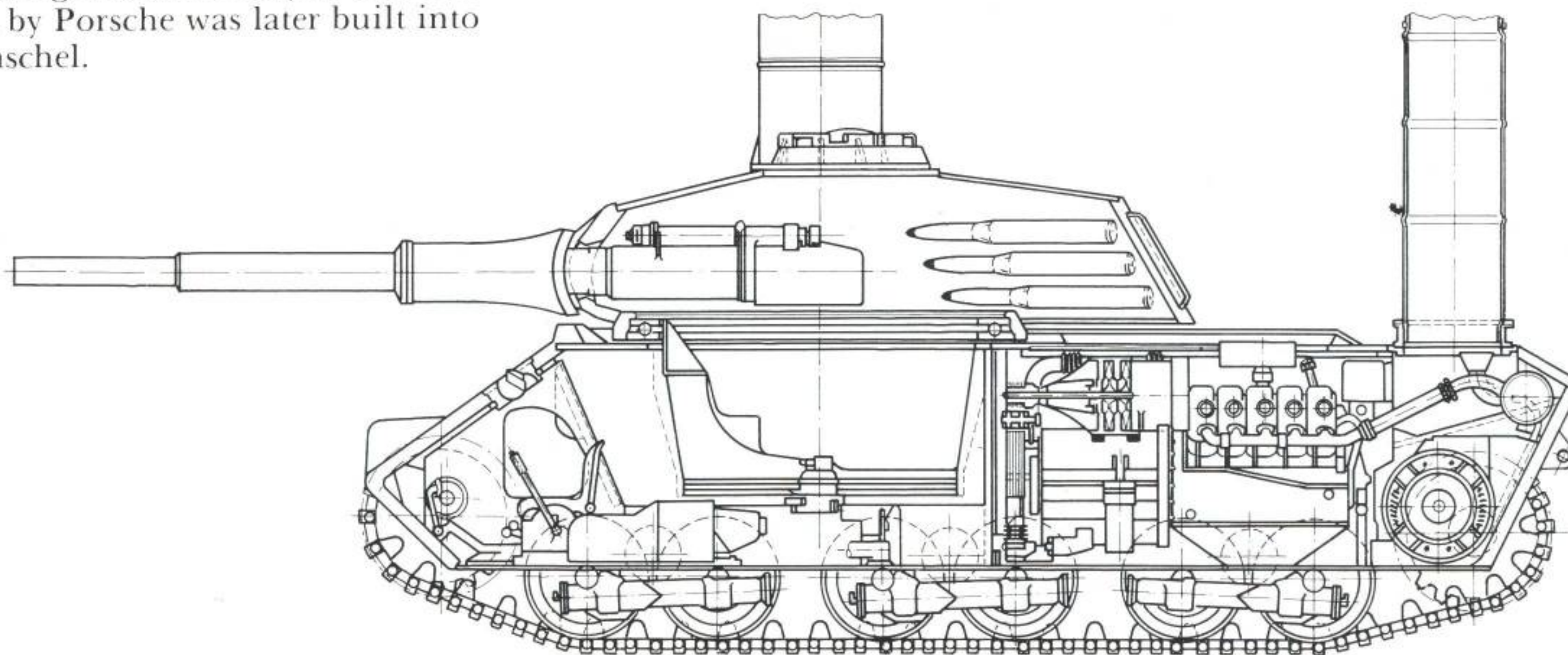
VK 4502 (P)

When in the fall of 1942 the Army Weapons Office requested a further development of the Tiger I, Porsche constructed the Type 181 (VK 4502 (P)). The vehicle, based on the VK 4501 chassis, had angled armor plates and a better-shaped turret with an 8.8 cm L/71 KwK. The complete VK 4502 (P) only progressed as far as the drawing board; only the turning turret intended for it was built in a quantity of 50 units and later built into the Tiger II Henschel (see Volume 25). Porsche planned two versions of the tank, one with its turret forward, the other aft.



Right: Drawing of the vehicle with aft-mounted turret. The raising arc of the cannon is indicated.

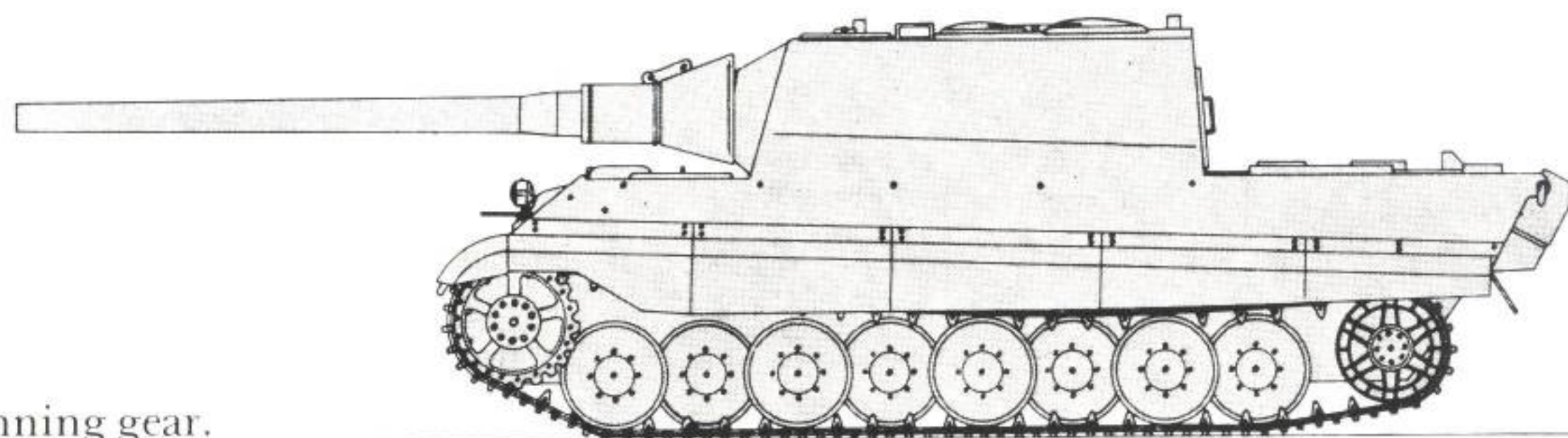
Below: The vehicle with the turret in forward position and fording equipment. The leaf-spring trucks are easy to see. The turret for the VK 4502 designed by Porsche was later built into fifty Tiger II tanks built by Henschel.



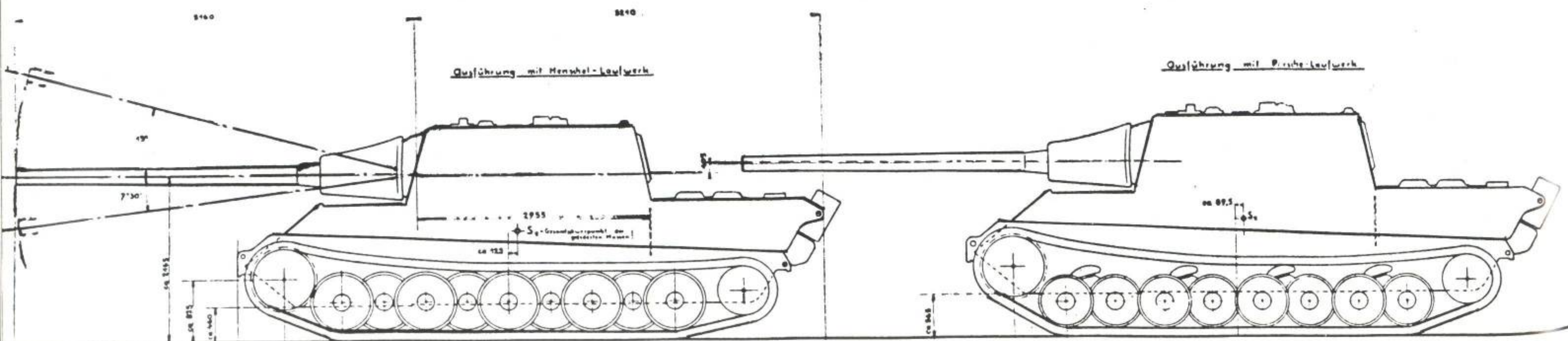
In 1944 the German armaments industry was already suffering so much from lack of materials that simplified ways of manufacturing tanks were sought. Thus the Porsche firm was directed to design a thrifty running gear for the Panther and Tiger tanks that were being developed further. By war's end, though, it could be built into only ten Pursuit Tigers. Porsche turned back to the roller trucks with two wheels apiece, as already used in his earlier designs, which were flanged over pivots externally. In the process, the torsion bars projecting through the hull, customary in running gear unit construction, and the borings needed for them, were eliminated. This led not only to a considerable saving of materials, but also reduced the time it took to produce the hull from 340 to 140 hours.

JAGDTIGER (Pursuit Tiger)

with Porsche running gear



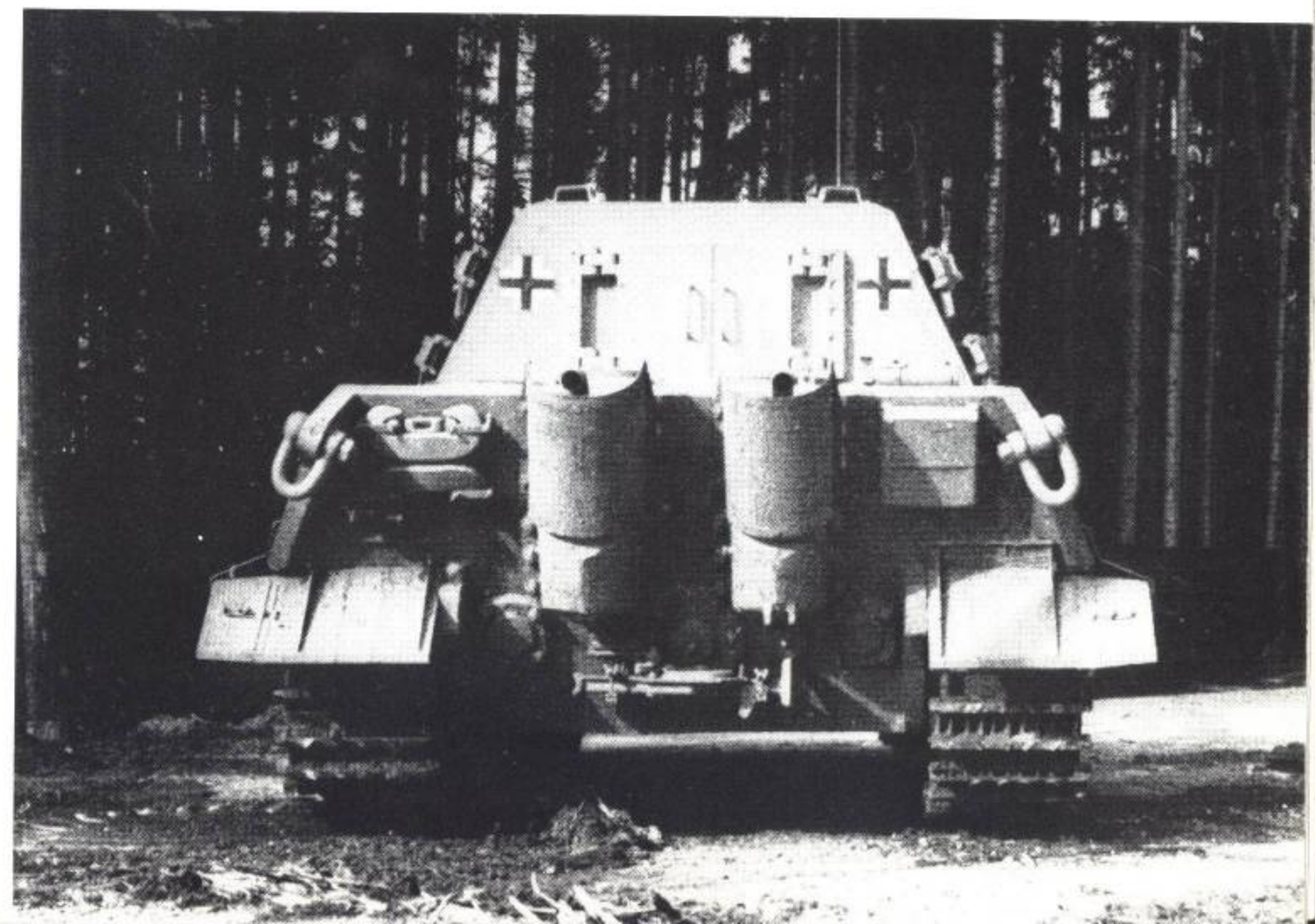
Below: Comparison of the Porsche and Henschel running gear. The pairs of wheels in the four Porsche trucks can be seen, as compared to the nine wheels of the unit construction.





Above: The new chassis not only brought progress in production, but also simplified servicing greatly. If road wheels had to be changed, the Porsche road wheels could be removed individually, with all attachments accessible from outside. On the other hand, demounting the swinging arm of the unit running gear required the removal of the neighboring wheels as well.

Upper right: A front view of the Porsche Jagdtiger. The vehicle has a Zimmerite coating to keep magnetic mines off, and a muzzle protector has been attached to the cannon to keep out dust.



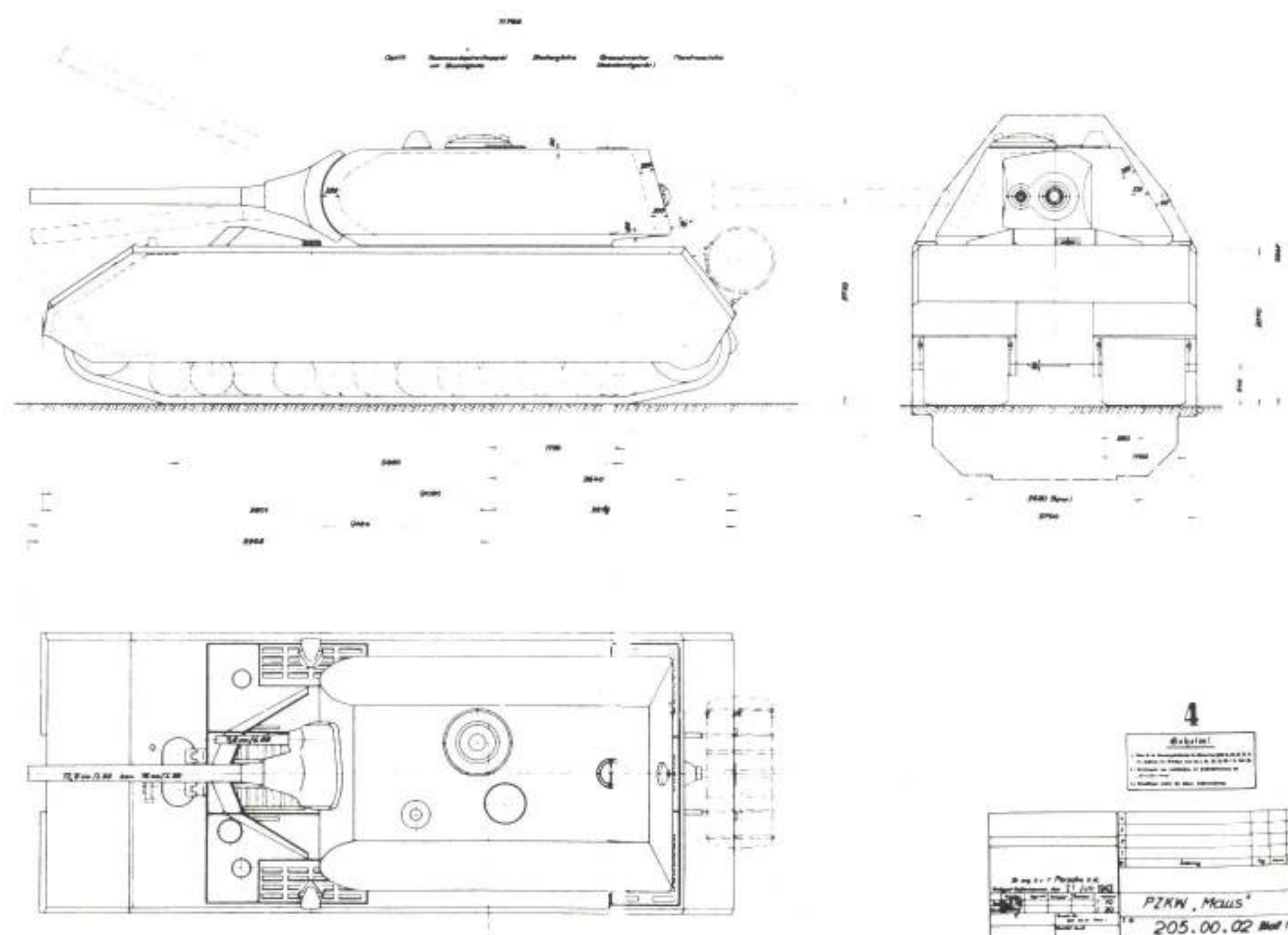
Right: This picture shows the rear of the vehicle. The tank is equipped with transport chains. The width of the battle tracks can be seen clearly by the overhanging track aprons.

Armored Military Vehicle MAUS 11

The “Maus” (Mouse) armored vehicle and the related plans for ultra-heavy tanks did not arise—as often claimed—from Hitler’s mania for the gigantic alone, but rather can be traced back to the army’s reports on the heavy Russian T 35 A, B and C tanks as well as the rumor that Russia was planning a 100-ton tank. As early as 1941 Krupp had received orders to develop a vehicle of similar size. Thereupon Krupp made numerous studies of 110, 130, 150 and 170-ton tanks, none of which progressed beyond the drawing board. Because of their ungainly bulk they at first bore the code name of “Mammut” (Mammoth), then one went to the other extreme for the purpose of camouflage and called them the (Krupp) “Maus”. As if this were not enough for the already overburdened German armaments industry, Hitler sent orders to Porsche on March 21, 1942 to design a 100-ton vehicle as well. This big tank went by the name of Porsche-Maus. In May of 1942 Hitler demanded that the development of oversize tanks be carried on at top speed; he regarded a decrease in weight to 70 tons as wrong but an increase to 120 tons to be feasible. He was of the opinion that the heaviest armor and a cannon of the highest performance were more important than speed. In December of 1942 Prof. Porsche and Dr. Müller of Krupp gave a report to Hitler on the status of the preliminary work to production of the “Maus”. The production of five vehicles per month was striven for. Production was to take place at Krupp. In January of 1943 Hitler decided in favor of the Porsche-Maus after a comparison of the competing designs from Krupp and Porsche. The choice of the 12.8 cm KwK was agreed on. On May 1, 1943 Hitler was shown the wooden mockup of the “Maus”. After the first prototype was built, a weight of 150 tons was reckoned with, caused above all by Hitler’s repeated wishes for even heavier armor, which finally reached a thickness of 240 mm (in comparison, the Tiger II had frontal armor of 150 mm). But the weight still increased, little by little, to 188 tons. To move this monster of

a vehicle, which was more like a traveling bunker than a tank, many difficult technical problems had to be solved. Prof. Porsche and his construction team dealt with them so well that the giant was, though slow (20 kph), remarkably nimble for its size.

The tracks were driven by the gasoline-electric principle already used by Porsche for his earlier projects (VK 3001, VK 4501, VK 4502). For it the motor, a straight 12-cylinder Daimler-Benz engine that produced 1080 HP, supplied the energy, through an intermediary drive with a toothed clutch, to an electric generator. The power produced by it was used to drive two electric motors, which set the vehicle in motion via planetary drives. The main armament consisted of a tank cannon developed from the 12.8 cm anti-aircraft gun and a coaxial 7.5 cm L/44 KwK. Short-range defense was handled by one MG 34 machine gun. On the rear of the turret there was an additional port through which a machine pistol could be fired.



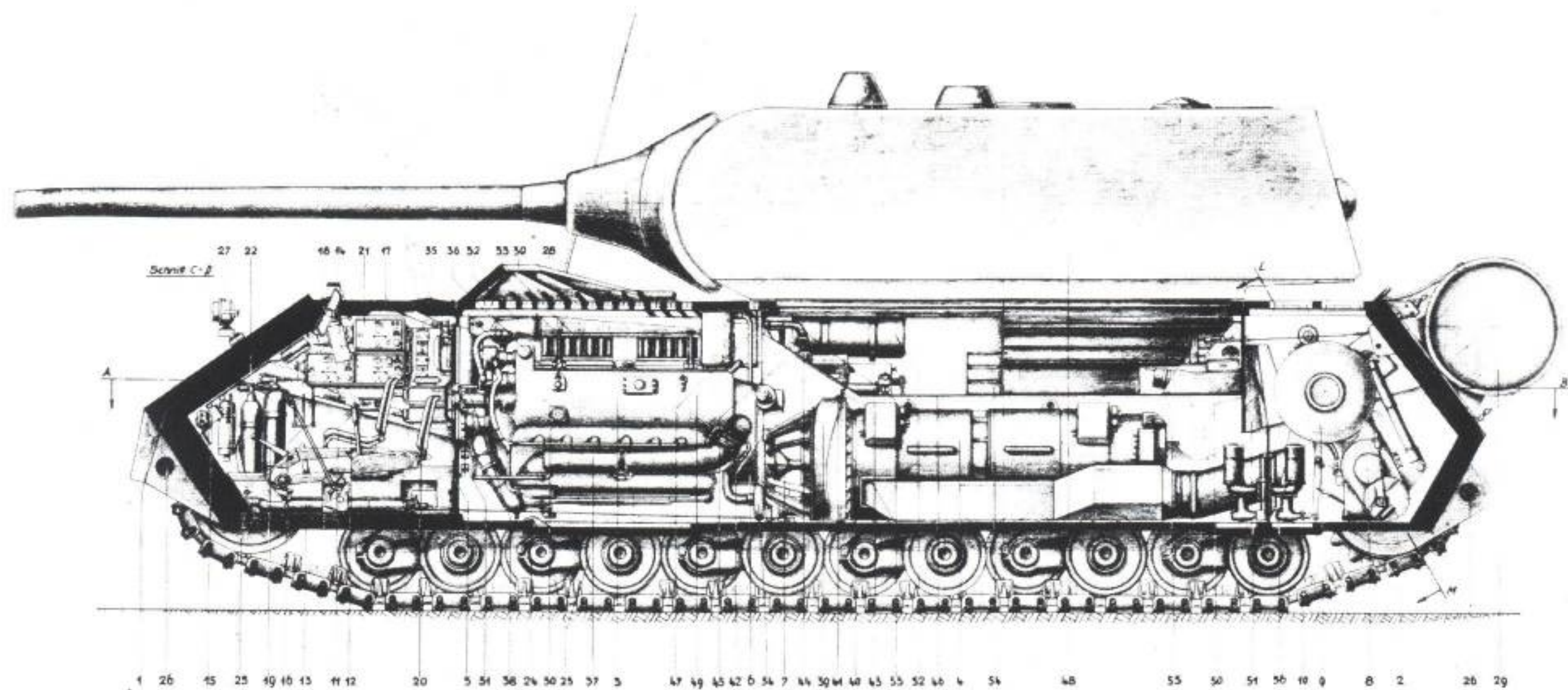
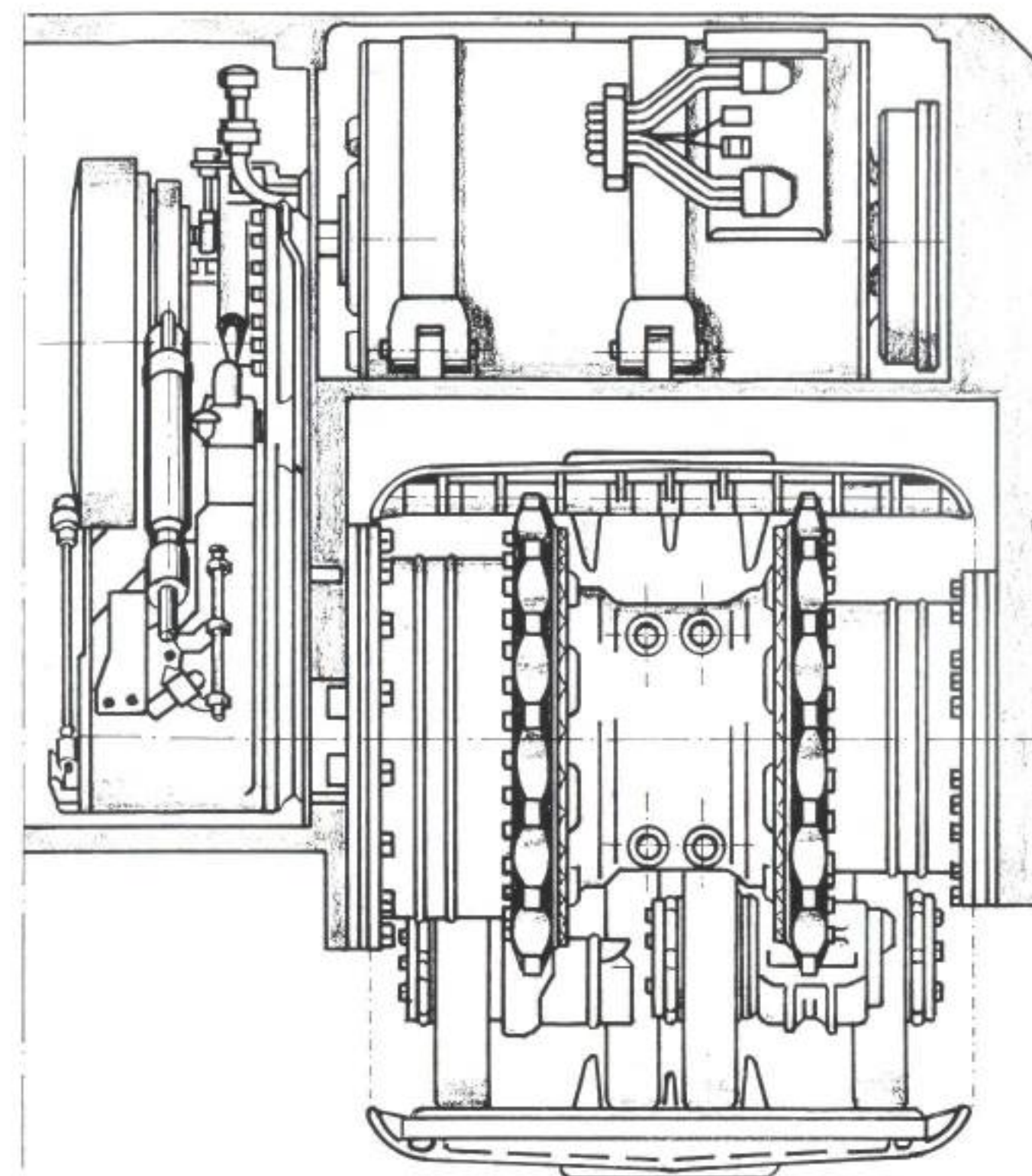


Bild 1 Fahrzeug-Längsschnitt

K 3685

Above: This side view shows that the gasoline-electric motors take up more than two-thirds of the hull.



Above: This cross-section shows the power transmission to the tracks. The electric motor located above the tracks drives the cogwheel, and thereby the track, via the planetary gears in the interior.

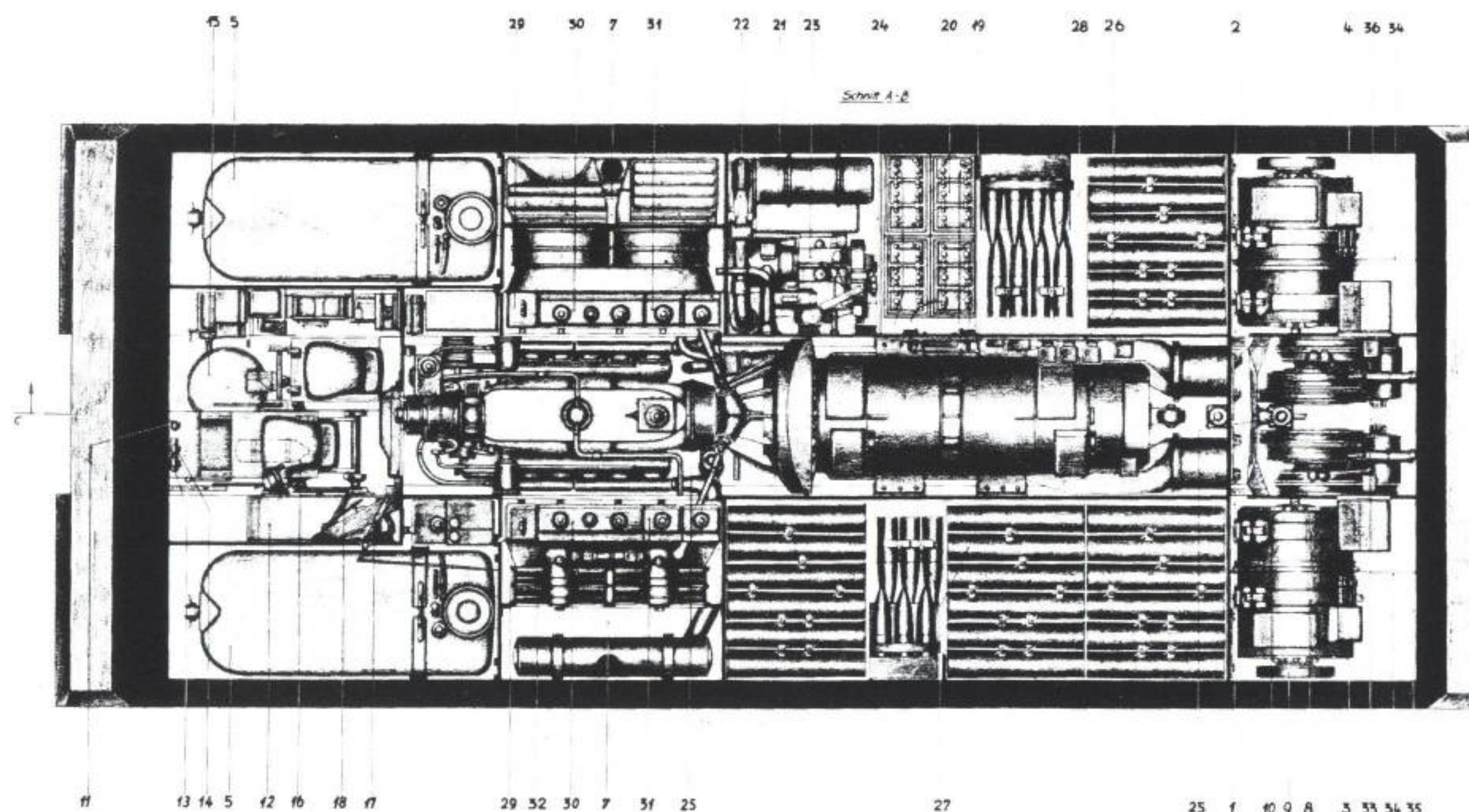


Bild 2 Fahrzeug-Schnitt in Draufsicht

K 3728

Left: This overhead cross-section of the vehicle shows the space division in the giant tank particularly clearly. Next to the driver's compartment are the two fuel tanks. The Daimler-Benz MB 509 Otto motor, linked to the generator by an intermediary drive, is behind the driver's compartment. The auxiliary motor located next to the generator produces the power for the main and starter batteries. The electric motors and planetary gears are located at the rear.



Left page: Upper left: On December 24, 1943 the first Maus was finished by Alkett. The Minister of Armaments, Albert Speer, though, had expressly reserved permission for the first test run. Yet the builders could not restrain their curiosity as to whether the monster would actually allow itself to be moved and steered as Porsche had predicted. So they persuaded the guards and drove around the factory grounds without permission. And indeed—the Colossus could be maneuvered remarkably well!

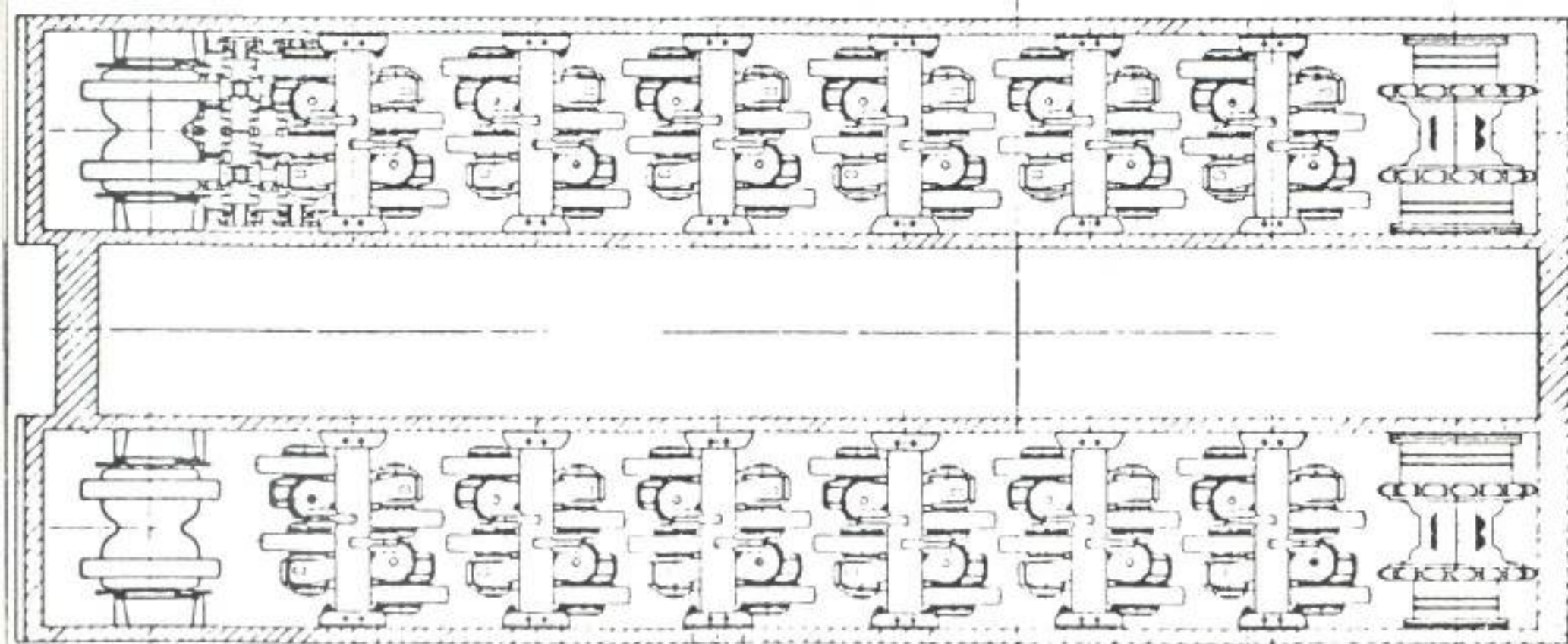
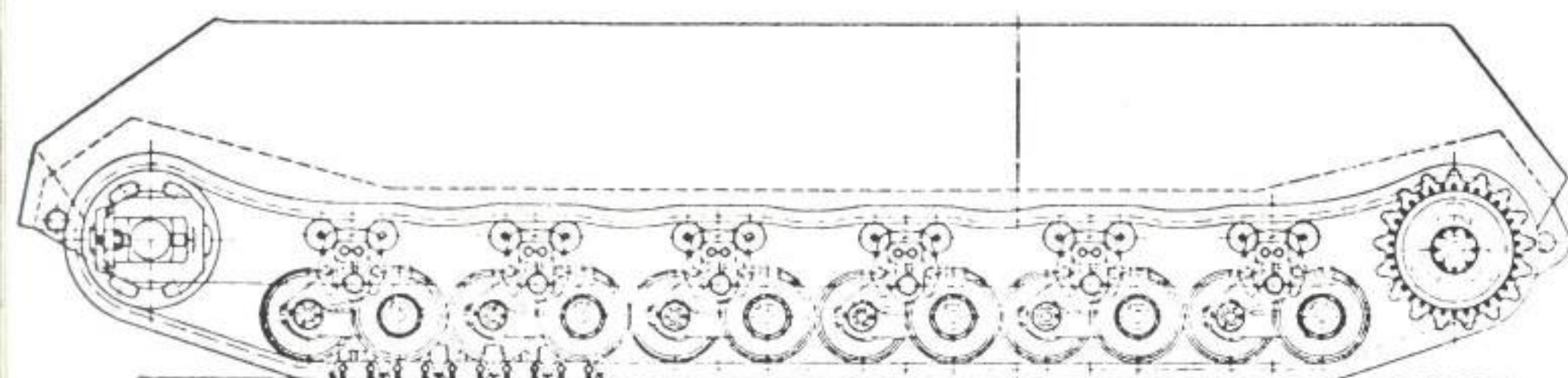
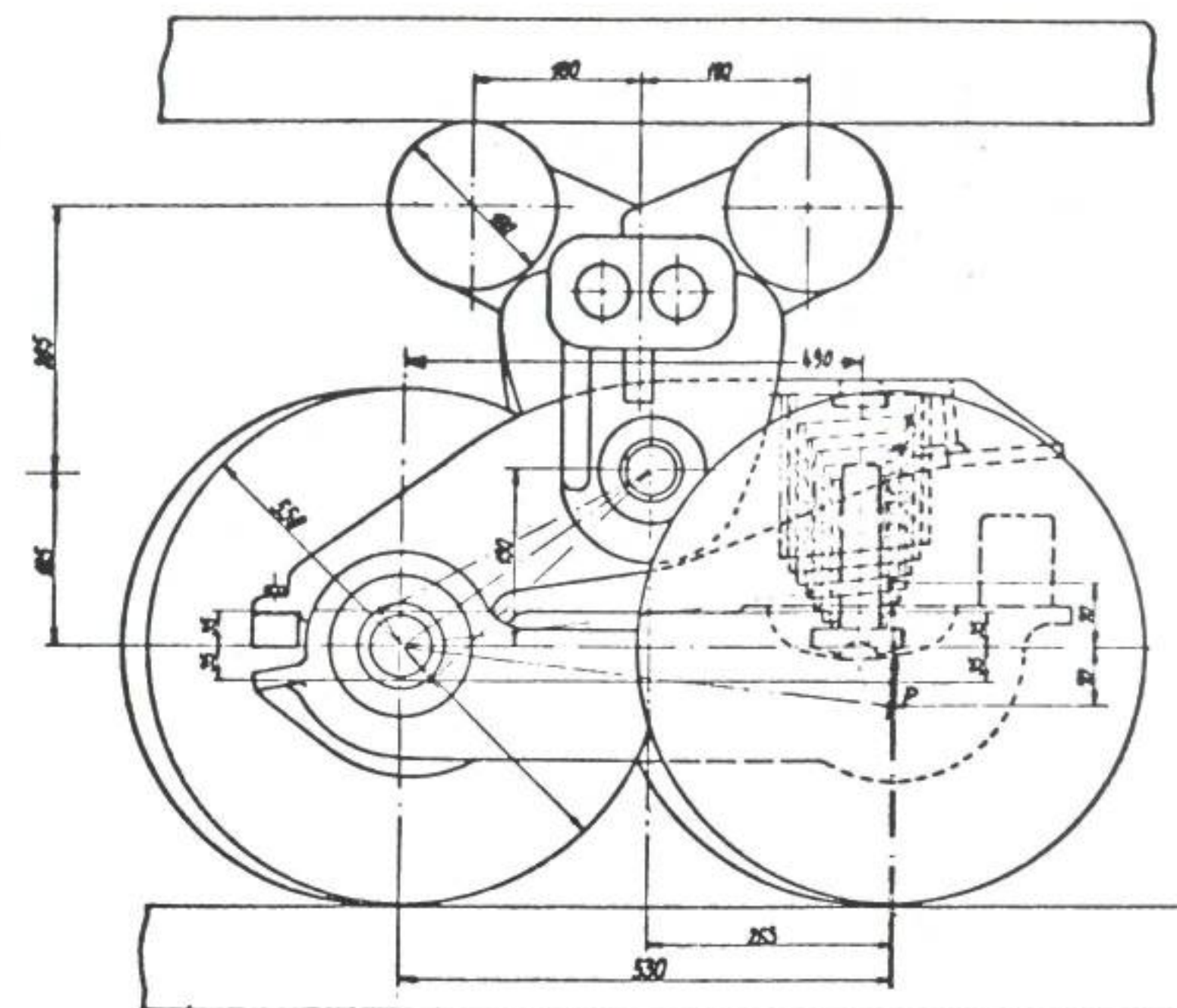
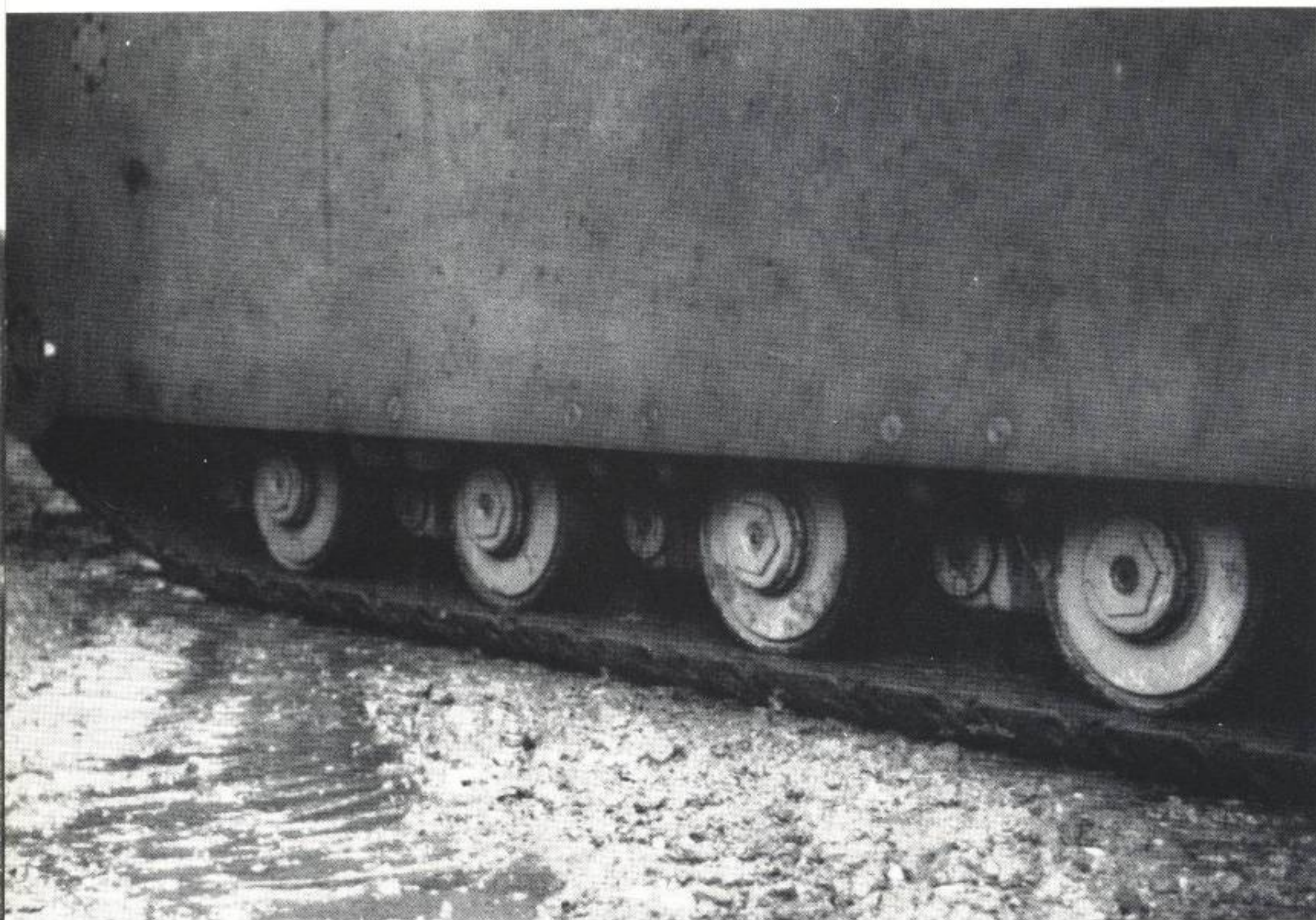
Upper right: As they left the production building, there were only a few centimeters to spare between the vehicle and a view-blocking fence. But driver Karl Gensberger was able to squeeze the Maus through.

Lower left: After snaking their way through the narrow works area, they could move at a faster pace into the open riding grounds located next to the Alkett factory.

Lower right: Even on soft ground, the Maus lived up to expectations.



Above: Finally they turned the Maus around. The turning circle amounted to 8 meters. They were so encouraged by all of this that they immediately reported to Prof. Porsche by telephone. But his joy in the successful run was tempered by one annoyance: According to his calculations, the Maus should have turned around on the spot. So he immediately summoned Dipl. Ing. Zadnik, who had just fallen ill, from his sickbed, as Zadnik was responsible for the electric drive. He in fact found a starting fault; after it was corrected, the giant could indeed turn on its own axis.

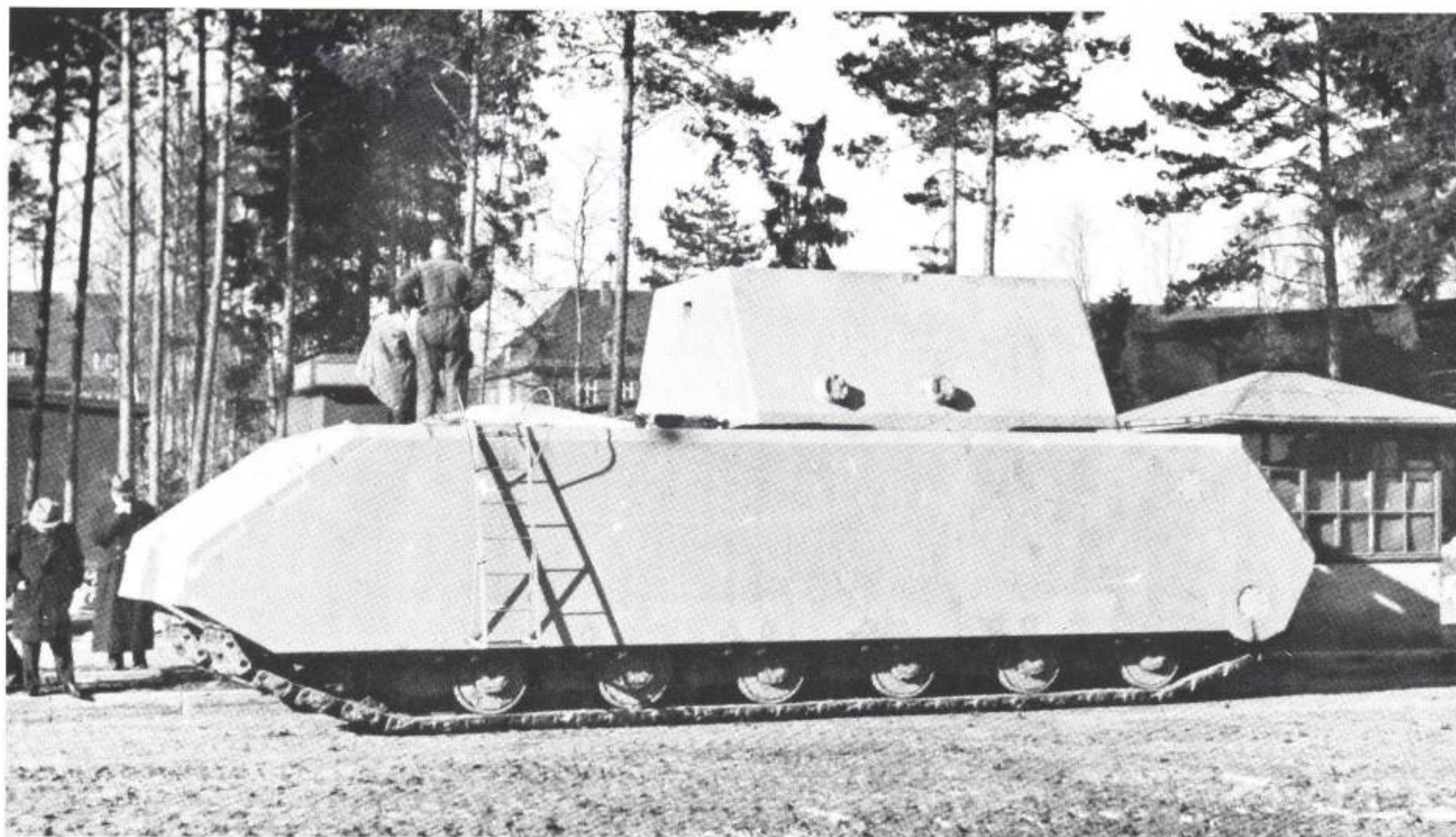


Double-wheeled Trucks

Drawings and close-up photo of the Maus running gear show the six double-wheeled trucks on each side with their wheels in a rubber-sparing arrangement, mounted on two torsion bars and sprung by means of knee joints with equalizing effect. The returning tracks, which had a width of 1.10 meters, were supported above by twelve return rollers.



At the end of the test run, the Maus is steered back into the factory.



The Maus curves through the grounds. The vehicle was steered electrically via two steering levers and, as with all tanks, by blocking off one track and making it run more slowly.



Upper left: After the first Alkett test run, the Maus was then taken to the armored vehicle proving grounds at Kummersdorf, near Berlin. Because of the extreme shortage of spare parts caused by bombing attacks, it was decided to carry out the testing in the vicinity of the Porsche factory, and the grounds of the armored base at Böblingen were chosen. After a three-day train trip, the Maus arrived in Böblingen on January 14, 1944. The test runs lasted from mid-January to early October of 1944. This picture shows the Maus in front of the armored corps barracks in Böblingen just before the first of these test runs.

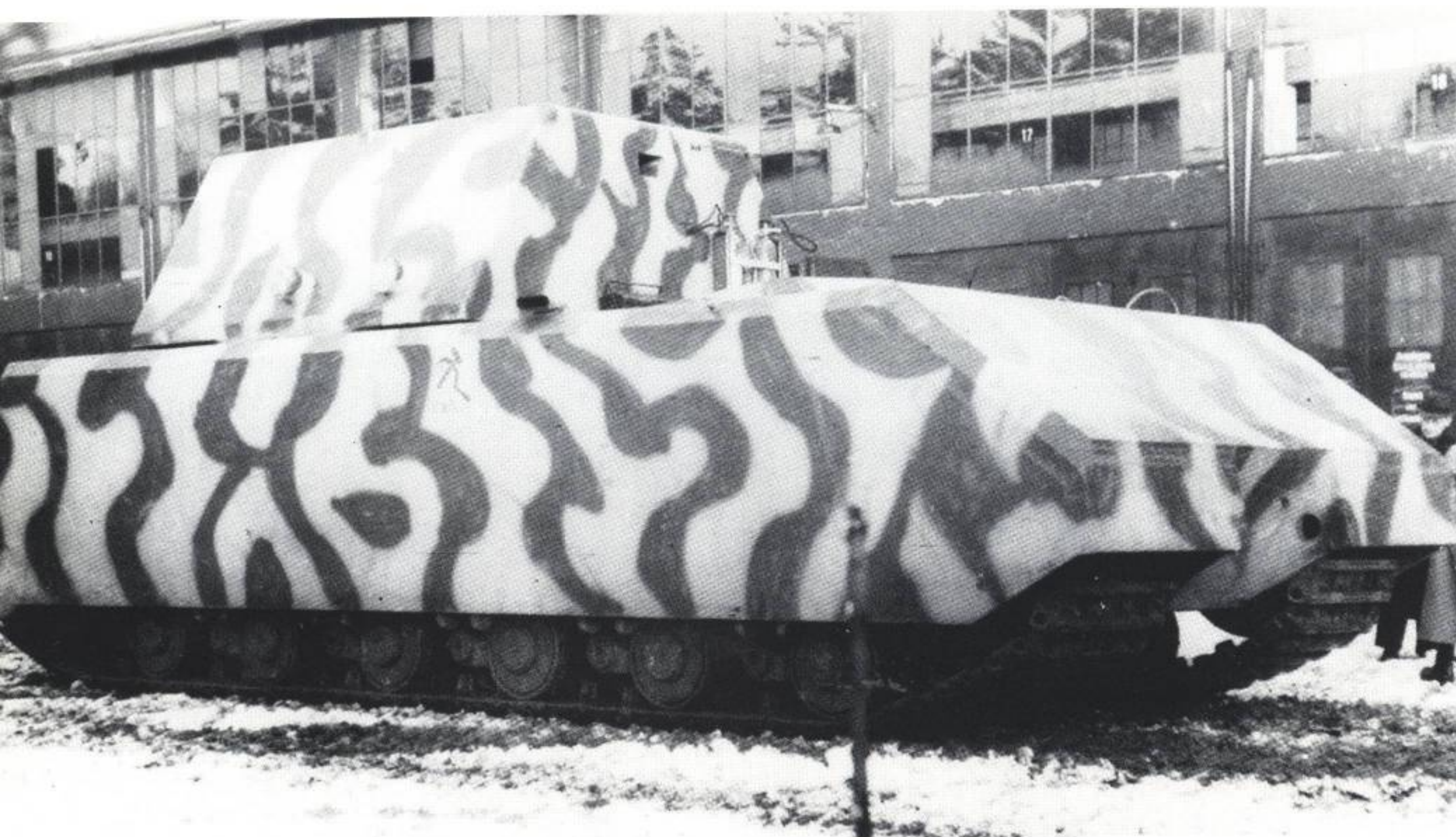
Left: The Maus crossing a ditch, whereby one tread only contacted the ground for 1 to 2 meters.



The Maus passes a destroyed Russian KV I during its first test run on January 31, 1944. The vehicle no longer has treads and shows damage on the side. Captured enemy tanks were often tested on the Böblingen tank proving ground and used for target practice.



Right: Giving off heavy clouds of exhaust, the Maus handles an upgrade.



Left: A side view of the Maus, already painted in camouflage colors. The hammer-and-sickle symbol painted on the hull is meant to make it look like a captured Russian tank—as often seen in Böblingen. Since the turret was being finished at the Krupp works and thus had not yet been delivered, the test runs were made with a dummy representing the weight of the turret.



Right: The Maus is prepared for a new test run. With an overall width of 3.67 meters, the two tracks together measured 2.20 meters in width, in order to keep the ground pressure, amounting to 1.45 kg/square cm for a surface area of 13 square meters, as low as possible. The frontal armor was 240 mm thick and could not be penetrated by any antitank shells then in use.



Above: The Maus leaves the Böblingen armored camp for another test run.



Upper right: The Maus on the grounds. The tread is hanging limply. Tension was attained via the front wheel.



Right: The trail of the Maus when turned on the spot, an operation that was very noteworthy for such a heavy vehicle.

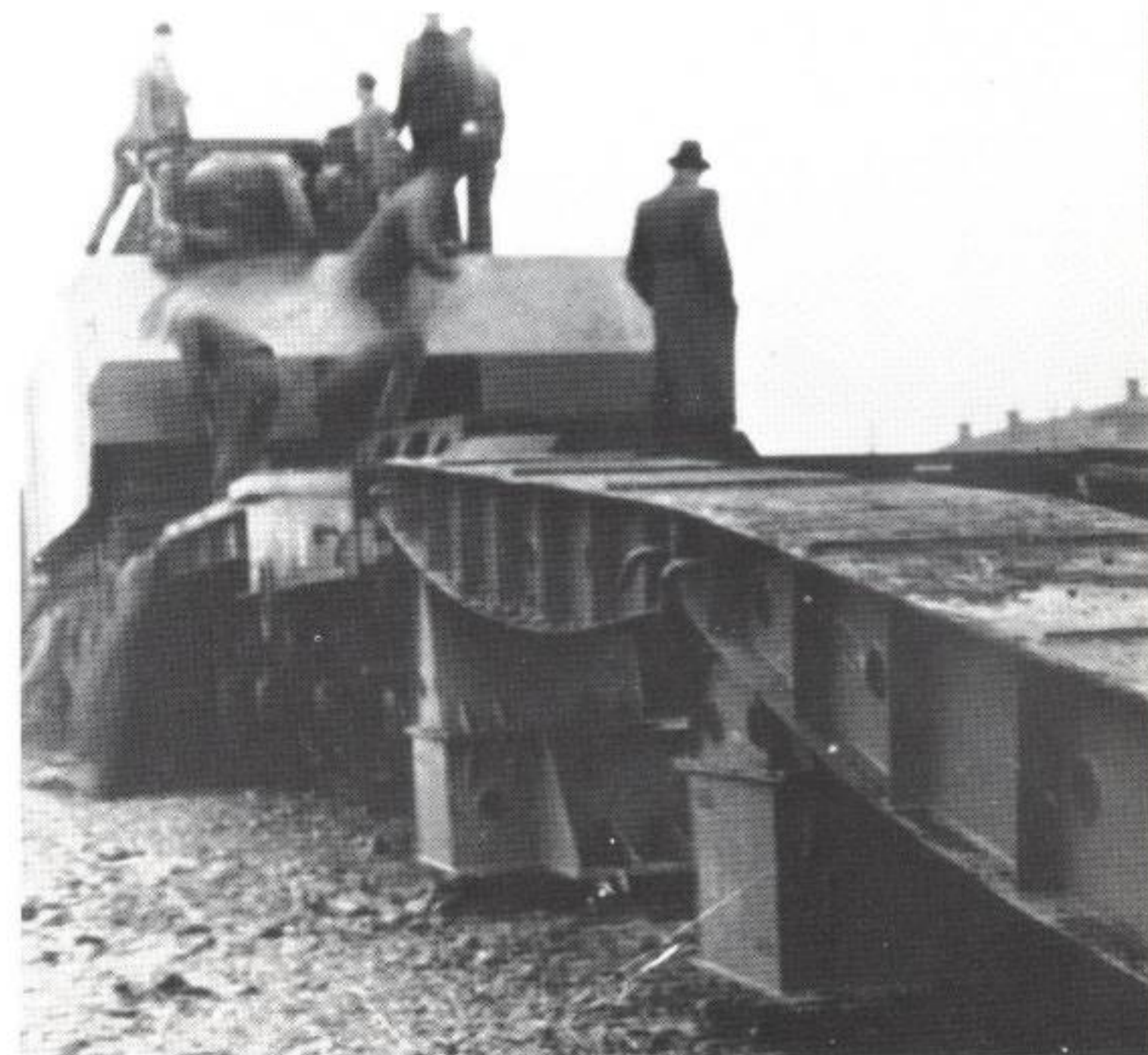




On March 16, 1944 the driver of the Maus, unfamiliar with the locale, drove into a swampy spot that was avoided even by the light training tanks of Armored Replacement Unit 7 in Böblingen. By digging away the mass of mud piled up at the rear and laying down planks, it was possible to get the vehicle free under its own power.



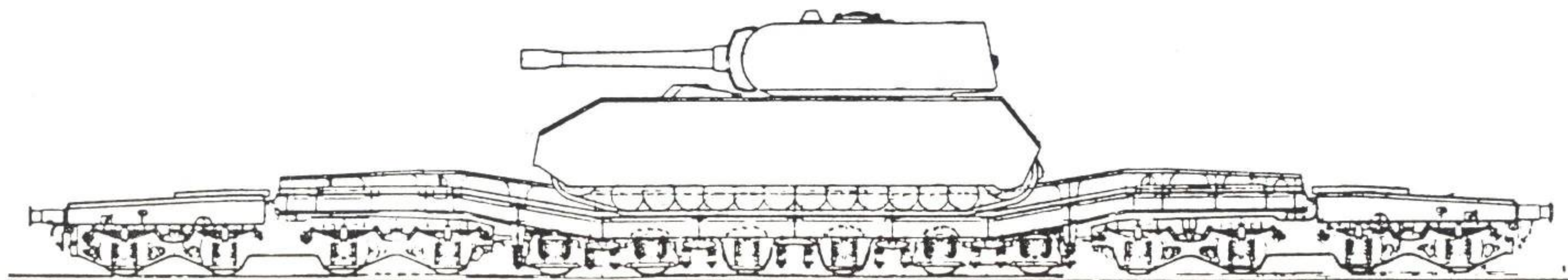
After the vehicle was free, it was cleaned. The picture shows clearly to what depth the giant had sunk in.



Upper left: On March 1, 1944 the second Maus, built by Alkett in Berlin, arrived in Böblingen by train. Since it had no powerplant as yet, it had to be towed to the Böblingen armored base by Maus 205/1. This can be seen at the right edge of the photo. In the process, a 12% grade on an ice-covered road was handled effortlessly. The Maus 205/2 was not tested in Böblingen, as it was shipped back to Kummersdorf after the motor was installed.

Upper right: The Maus 205/1 used as a towing tractor is hitched to the chassis of Maus 205/2. In the foreground is the loading ramp made especially for this purpose.

Below: The 14-axle special transport car of the German Railways, which was developed and built to transport the Maus by the Graz-Siemering-Pauker Works in Vienna. On account of the tank's size and weight, a rail route between Berlin and Böblingen had to be found that avoided all tunnels and large bridges. This was not at all simple and resulted in a very roundabout route.





The first Maus was used as a towing tractor for the motorless newcomer. The loading road, made of steel elements, could not hold the weight, but bent and was destroyed.



Another picture of the unloading of the second Maus in Böblingen, which naturally was of great interest to the personnel on hand. The locomotive at the end of the train had to counteract the pressure of the towing Maus.



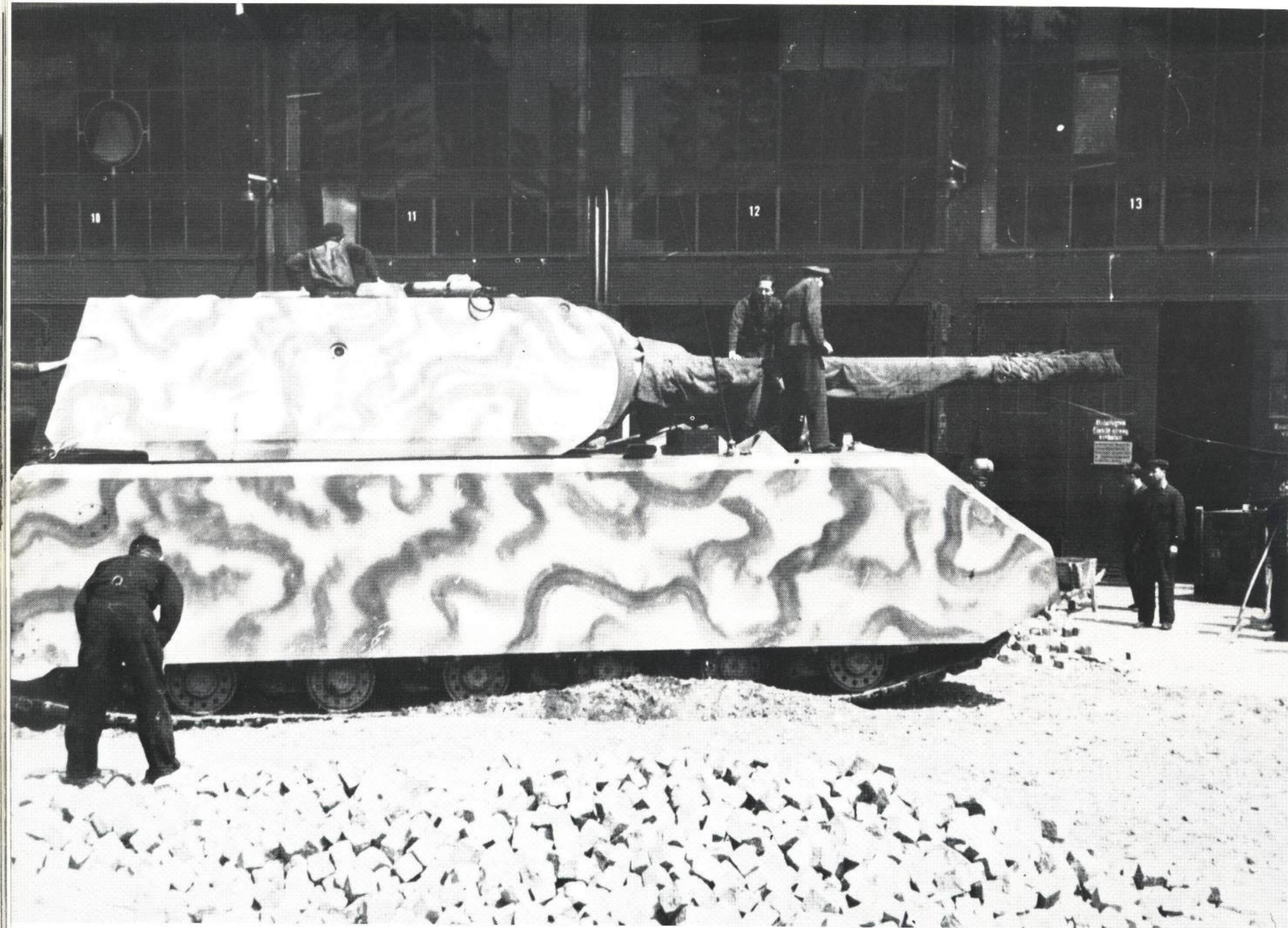
Above: The vehicles were parked for the rest of the day on the grounds of the Böblingen air base; further transport to the armored base took place only at night, for purposes of concealment.



Upper right: This picture shows the tensed towing cable very clearly. On the car in the background are loaded fuselages of He 111 planes for the nearby Böblingen air base.

Right: Now the second Maus also has solid ground under its wheels and is being towed over a mound of earth.





36 A side view of the finished Maus with its turret mounted. This was delivered by the Krupp firm only on April 9, 1944, after delays caused by bomber attacks on Essen. It was installed at once.



An imposing front view of the Maus, showing the two antenna staffs. Aiming the cannon was done with the help of an elevation gauge, aiming telescope and elevating machine operated by the gunner. The arc of elevation ranged from -7 to +23 degrees.



Left: A front view of the finished Maus on the proving ground. Naturally, the test runs were of great interest to all participants.



Below: The Maus on a test run. The commander could observe the terrain by means of a swiveling mirror located in the roof of the turret.

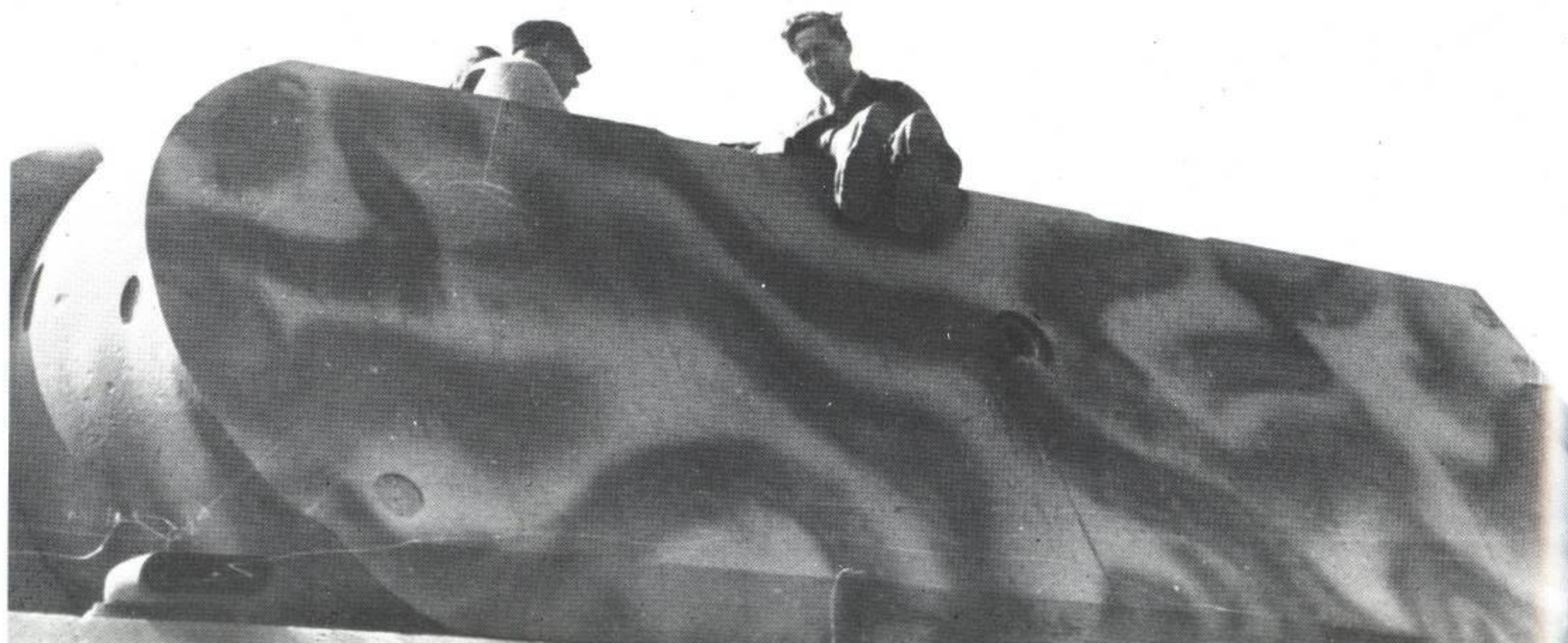
Right: The detachable tank mounted on the rear end held an additional 1500 liters of fuel, bringing the fuel on board to 4200 liters in all. The Maus consumed 3100 liters per 100 km cross-country and 1400 liters on the road.

Below: The Maus has stopped. In battle, with hatches closed, the crew was to be supplied with oxygen by built-on ventilators protected by armor plate.

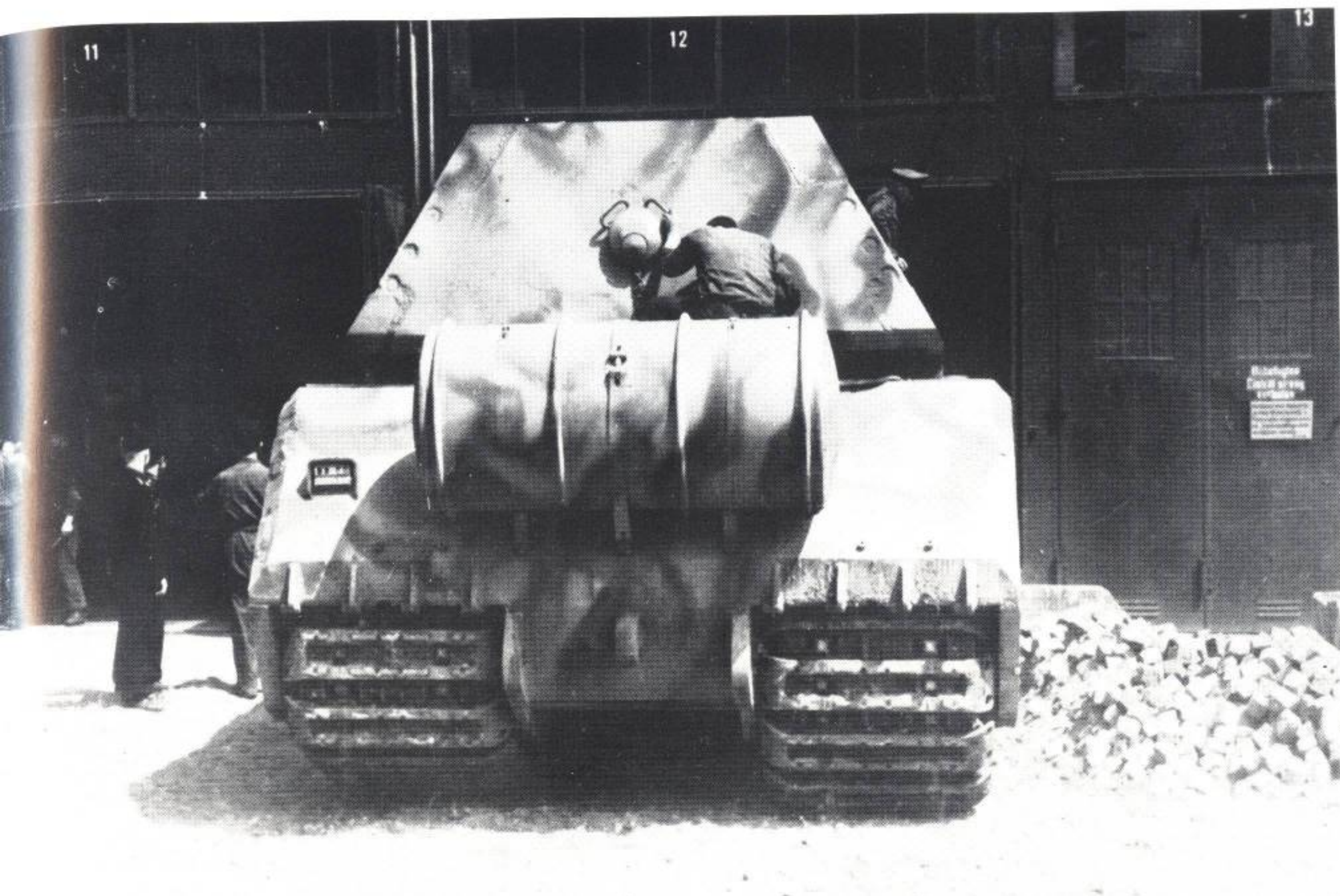




Below: A close-up picture of the side wall of the turret, which is angled 30 degrees out of the vertical. The opening in the middle contained a bullet shield for a machine gun and was to be protected externally by a thick plate that could be turned aside from within and secured internally by a bolt. For combat use, it was intended to add brackets for smoke-discharging canisters, smoke signals etc. While on the march, the turret could be secured by lashings on three rings. A hand-operated control enabled the 50-ton turret to be lowered (and raised) 6 mm to make it watertight for fording.



Above: The Maus, complete with turret, driving out of the armored base in Böblingen. In the background a VW personnel car with tracks can be seen, a test vehicle of which there are very few pictures.



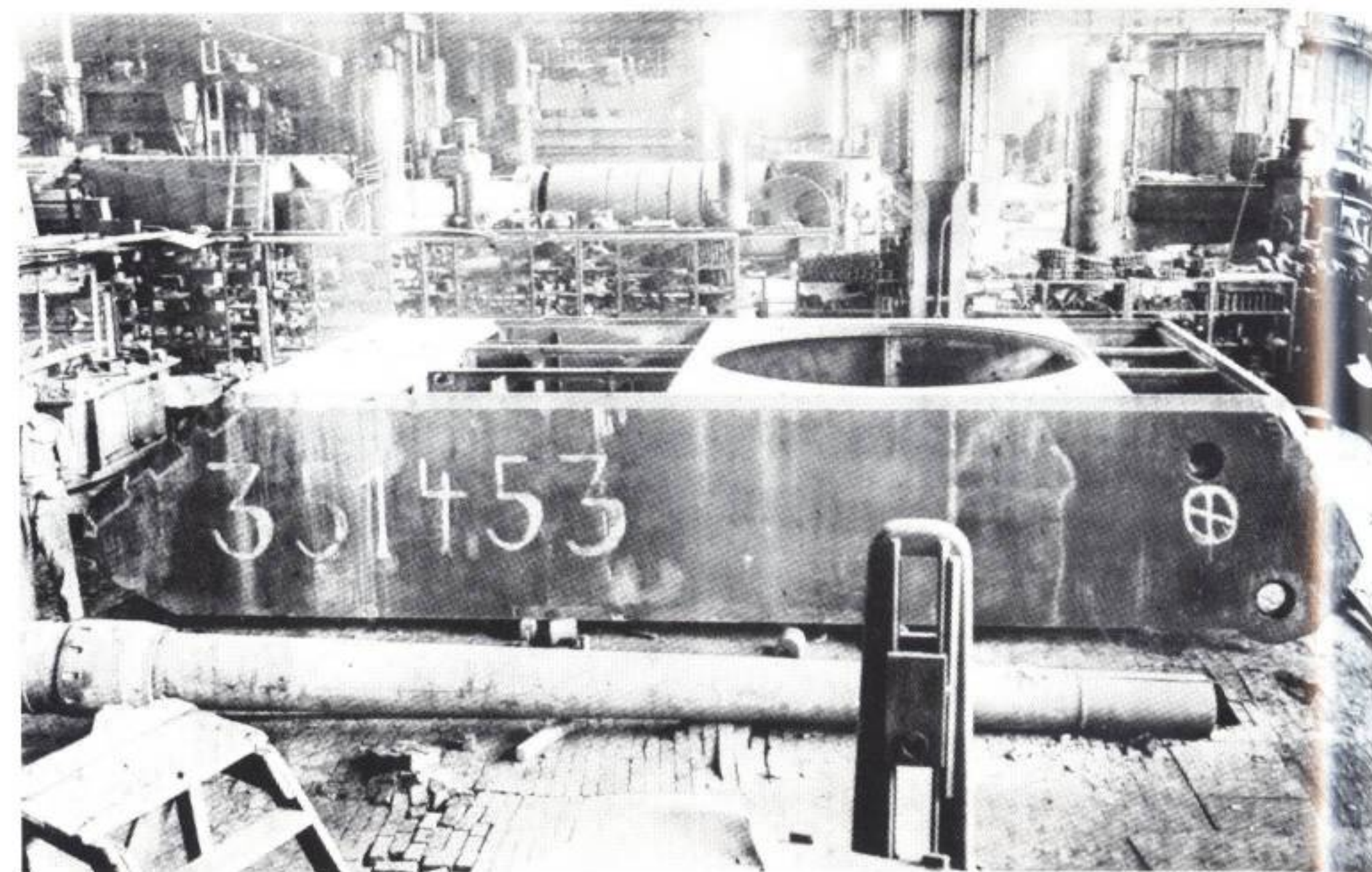
Left: On the rear of the turret, the Maus had a hatch through which ammunition could be passed in from a supply vehicle while in action. On the lower part of the hatch cover a panel can be seen that could be pushed outward to create an additional port for a machine pistol for short-range fire to the rear.

Right: The main armament of the Maus was a KwK (L. 55) developed from the 12.8 cm anti-aircraft gun and a coaxially arranged short-barrel 7.5 cm L. 36 cannon. The 12.8 cm barrel was ventilated after firing a shell by using a compressor to open the vent.

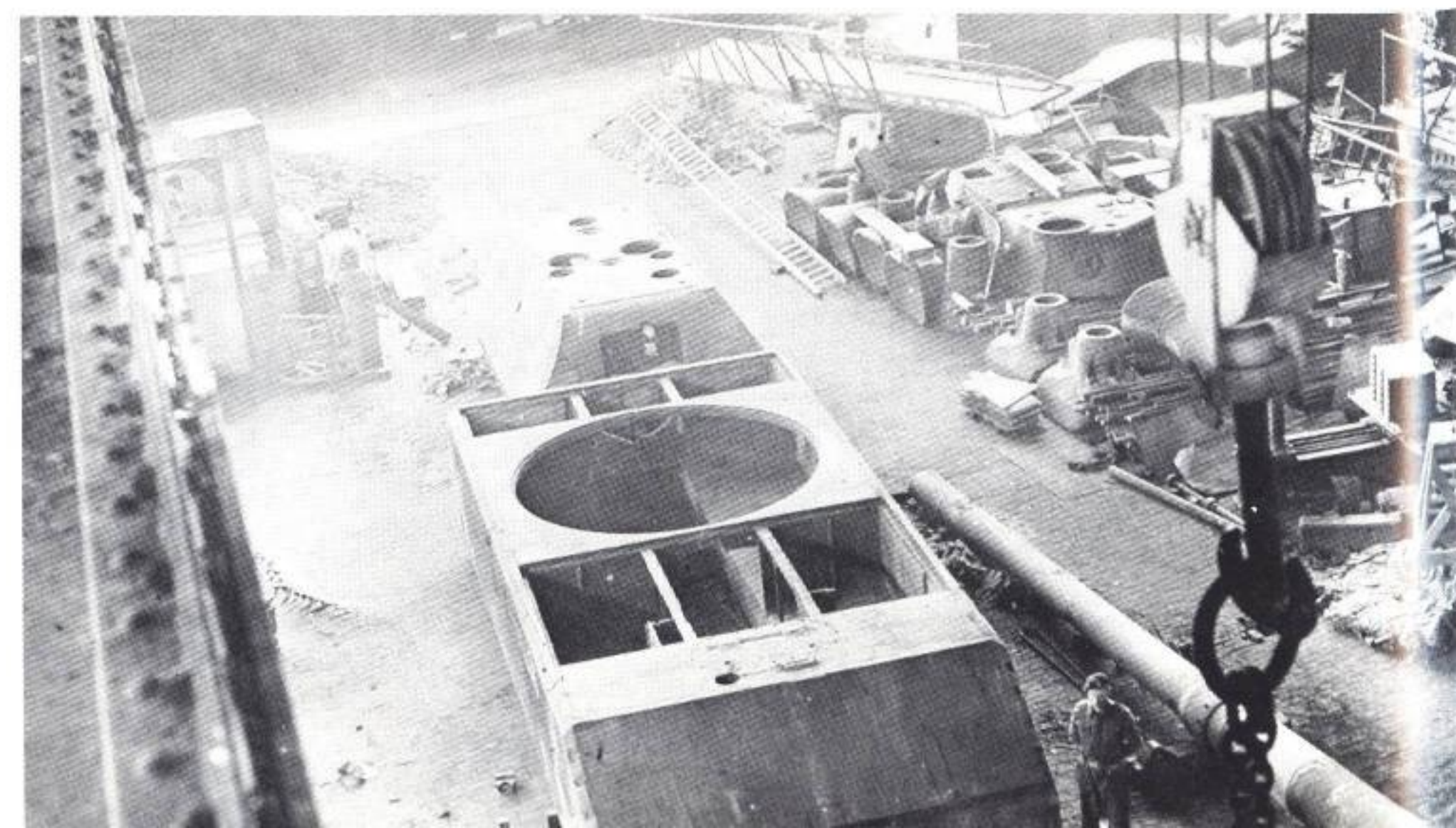
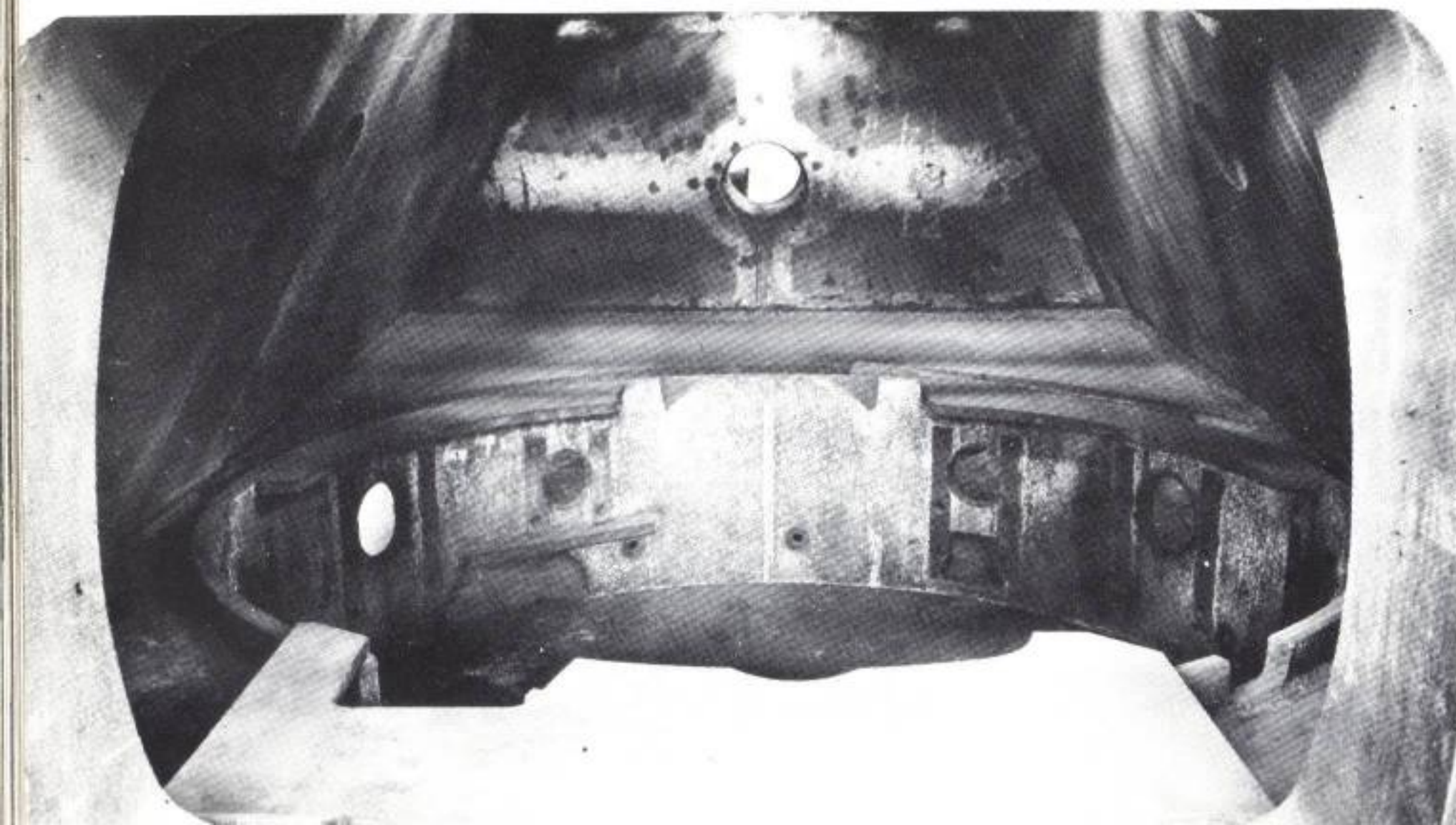




Above: Along with the two completed Maus tanks, there were three others under construction. Parts of them were found by the Allies at the Krupp factory in Essen. Here are two turrets; at the right edge of the picture a hull standing on end is recognizable. Below: View through the gun aperture into the interior of a turret casting. The ammunition hole is in the rear wall. 24 of the total of 68 shells for the 12.8 cm cannon were to be stored against the rear wall, while 125 of the 200 7.5 cm shells were intended to be stored in the turret.



Above: In front of the half-finished Maus hull in the Krupp factory is the raw casting of a large-caliber gun. Below: Another view of the Maus assembly area after being taken over by the Allies. The turret and hull of the Maus are lined up here. To the right one can see various tank turrets, including another for the Maus, all in half-finished condition, as well as two Maus gun cradles. The soldier standing next to the hull gives a good idea of the size.



THE E SERIES

At the beginning of 1943 the Army Weapons Office conceptualized a completely different series of armored vehicles, in which the weaknesses that had appeared in previous tanks were to be overcome. Those firms were included in the planning and production that were not then occupied in tank production but, in cooperation with other firms, ought to be completely capable of producing armored vehicles. Six basic models in all were planned for this series: E 5, E 10, E 25, E 50, E 75 and E 100, in which the number indicated the intended weight of each vehicle in tons. But it was clear from the start that these weight classifications would be exceeded. The following firms collaborated in the development: Adler, Argus, Auto-Union, Weserhütte and Klöckner-Humboldt-Deutz. The individual vehicles can be described as follows:

The E 5 was seen from the start as a smallest-size tank of the 5-ton class. This vehicle was to be used as an armored radio link car, scout car or light personnel carrier. Whether a wood-gas engine would have been used in this project, as it was in the prototype of the Rumanian smallest-size tank, remains questionable.

The Type E 10, which was designed by the Klöckner-Humboldt-Deutz firm in Ulm on the Danube, was a light multipurpose tank which was also to be the basis of an armored gun car and a light assault vehicle. The construction of a prototype was interrupted by the end of the war. The weapons carrier variation that was also planned can only be regarded as senseless, as there were already too many models included in the weapons-carrier program. No further information on this tank is available.

The Adler firm was responsible for the third model in the E series: the E 25, which was to be used as an assault and reconnaissance armored car weighing 25 to 28 tons.



The hull of the E 100 found by the Allies in Haustenbeck had its wheels mounted, but not its motor. This was completed by the English, along with the gearbox and power train, before they took the vehicle to Britain for testing. Note the sharply sloped front armor plate, which measured 240 mm.

To achieve the best possible armoring as well as a low silhouette, the so-called beetle form was chosen for these tanks, as it had proved itself very well in the Hetzer assault cars. In order to achieve the best possible utilization of the interior space, this project involved the use of so-called plate springs with hydraulic dampers, mounted outside on the hull of the vehicle. The gain in space thereby gained could be utilized for the arc of elevation.

Another technical innovation was the diagonally mounted motor, with power transmission to the running gear via spur gears. The running gear itself was the staggered type like that of the "Panther".

The end of the war likewise meant the end of this project. Only five prototypes had been produced by Alkett by the war's end.

In connection with this model it should be noted that the Porsche projects 245/1, 245/2 and 255 have nothing to do with this series. The Porsche projects were only studies by the firm itself that never progressed beyond the drawing board.

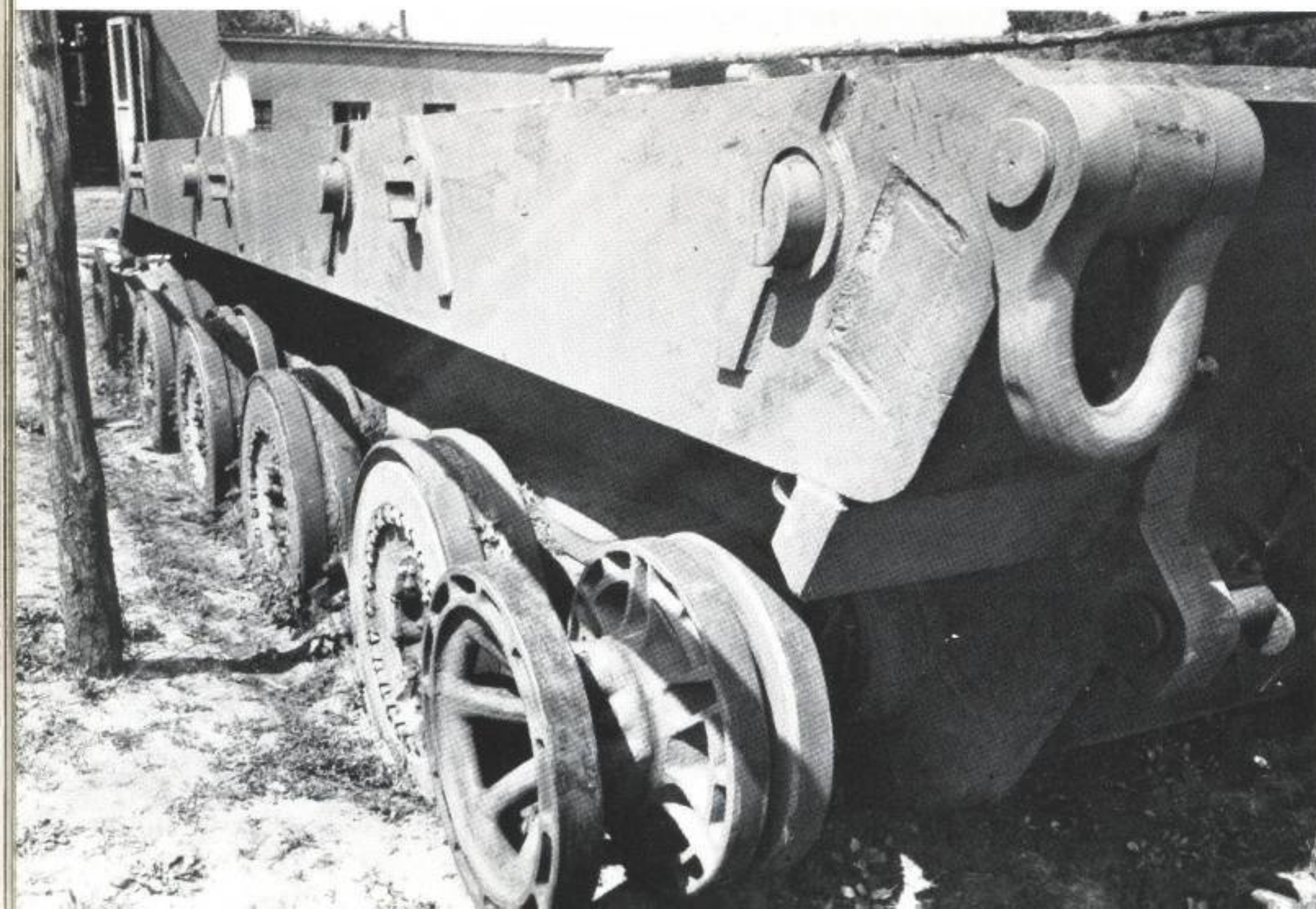


In many vehicles the hull, tracks, ventilation system, fuel tanks and other components were identical. The saving in work forces and factory costs thus achieved amounted to about 25%. The only differences between the E 50, which was planned as a replacement for the "Panther" tank, and the E 75 (successor to the "Tiger" tank) were as follows:

Top speed	E 50: 60 kph (lighter armor) E 75: 40 kph
Road wheels per side	E 50: six E 75: eight

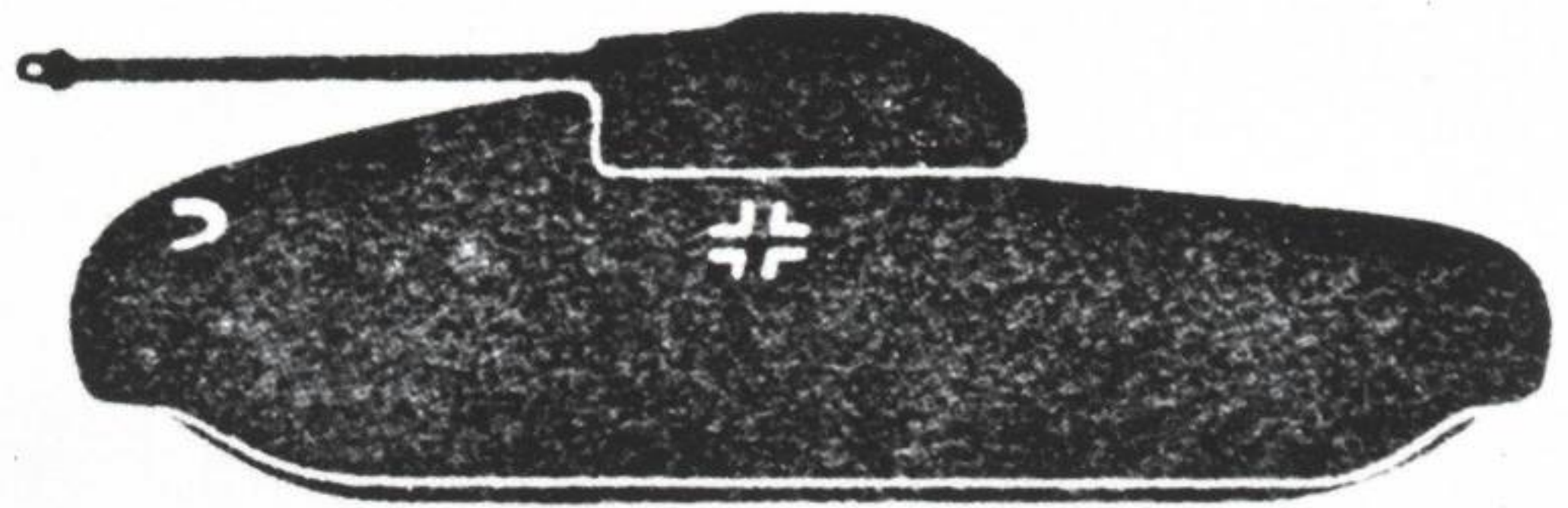
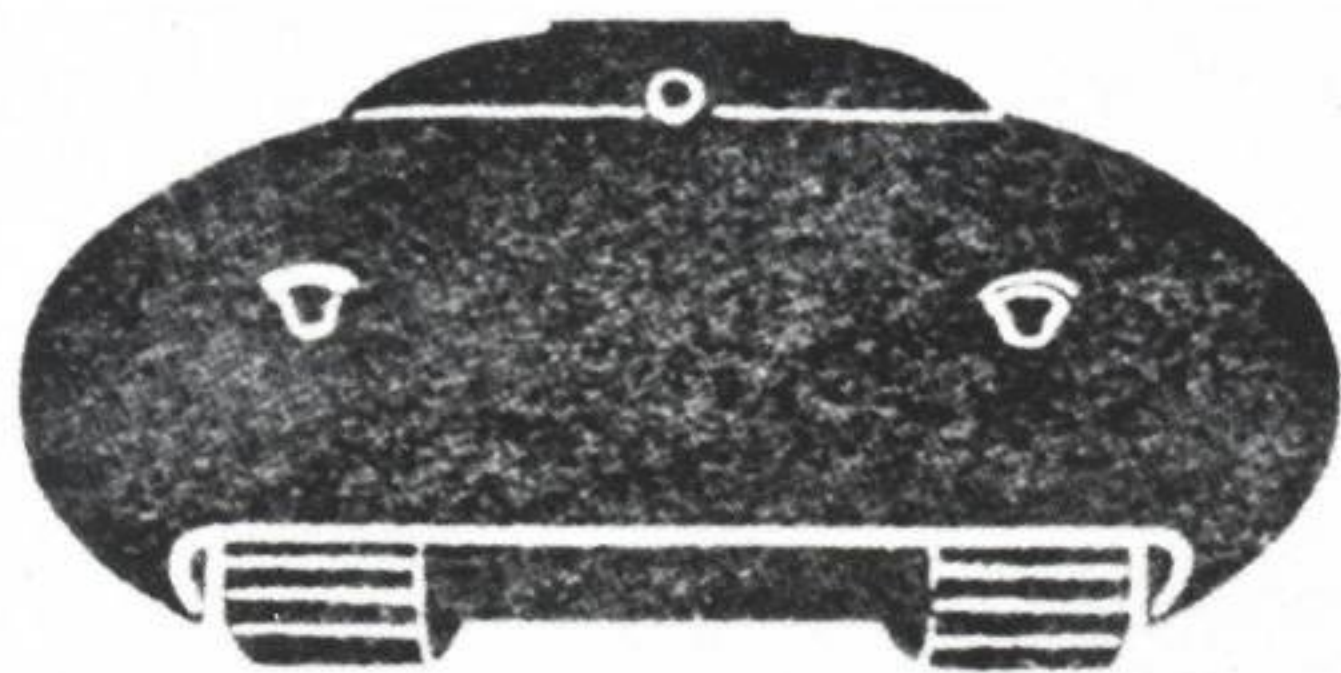
For these projects too, plate springs were to replace the otherwise customary torsion bars. A variant of the E 75 was planned as an assault gun carrier. This project too had to be abandoned at war's end.

Of all these vehicles, the most progress was made with the E 100, which was designed by the Adler firm. A prototype without a turret was found by the Allies at the Haustenbeck proving ground near Paderborn.

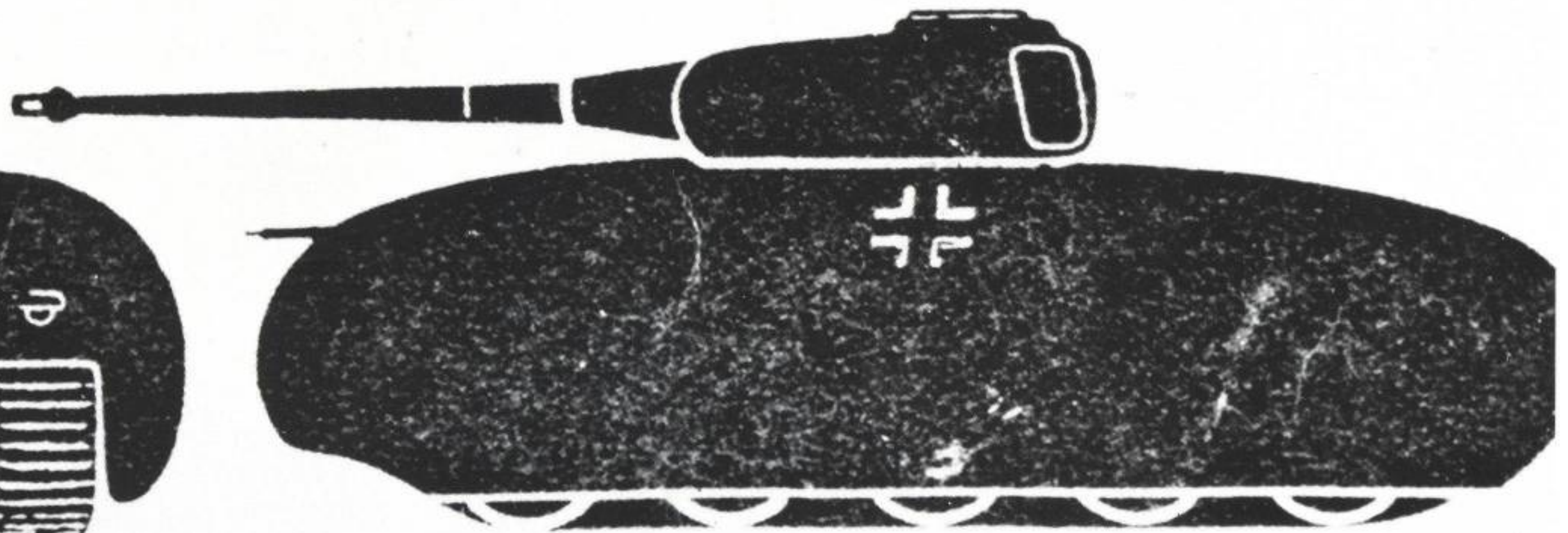
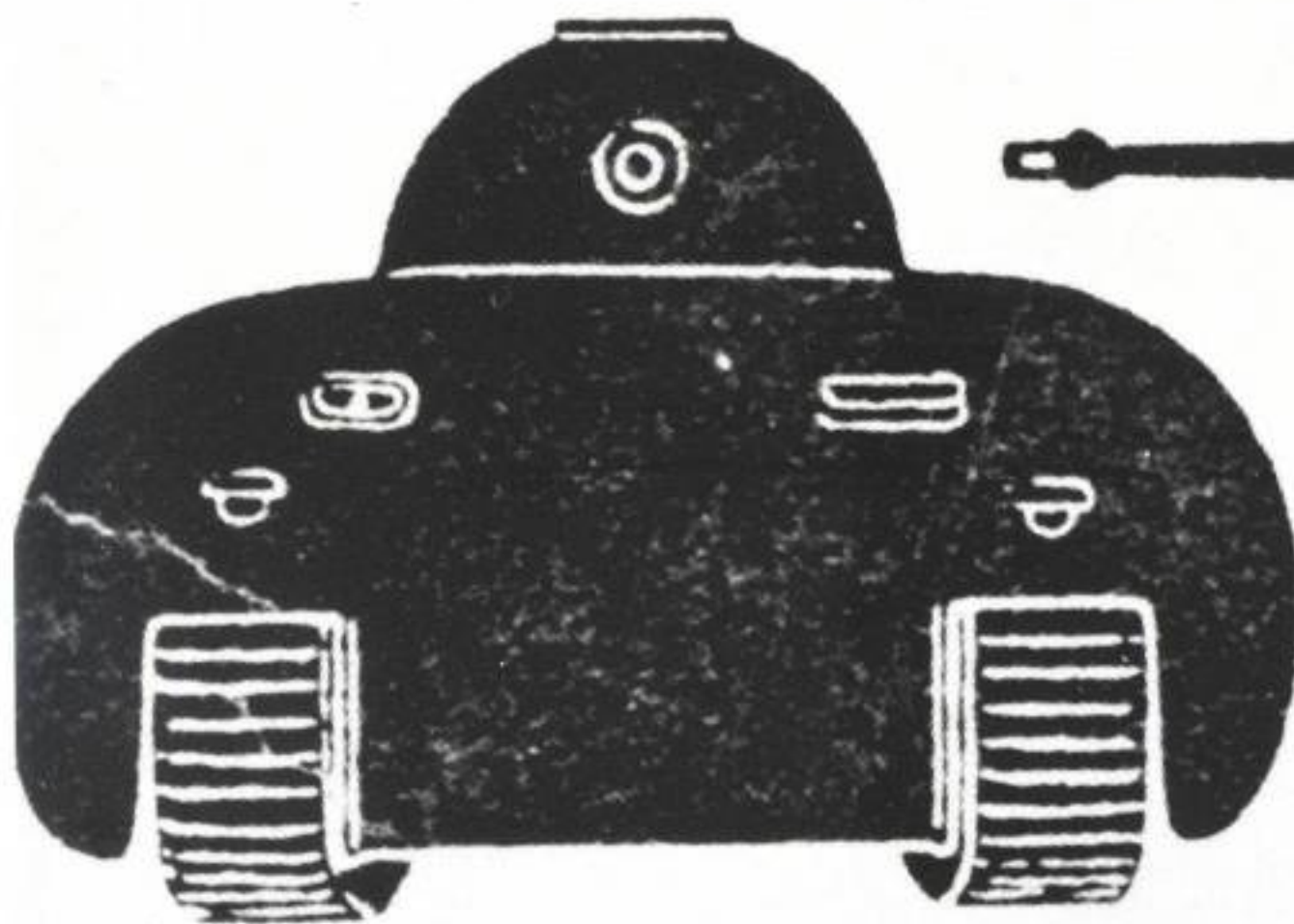


Upper left: Rear view of the E 100 hull with its two exhaust pipes.

Left: Close-up diagonal rear view, showing the road wheels and the gigantic attaching eye for the towing hook.



Pz. Kpfw. IX



Pz. Kpfw. X

In the archives is this drawing of two further German tank projects, Armored Vehicles IX and X. To date no further information on these vehicles, especially on who designed them, has been discovered. These drawings are another example of the variety of projects that either were rejected or could no longer be realized. A noteworthy feature of these tanks is the modern, turtle-like form, which also includes the lateral aprons.

Technical Data

VK 3001 (P & H)

Type:	VK 3001 (P)	VK 3001 (H) (Sf) 12.8 cm
Maker:	Nibelungen werke	Henschel Rheinmetall
Years built:	1939-1941	1939-1942
one:	two	
Weight:	30 tons	45 tons
Length:	6600 mm (gun) 7200 mm (gun)	
Width:	3200 mm	3170 mm
Height:	3030 mm	2670 mm
Motor:	2 72-degree V101 straight 6 Maybach	Porsche Type 100 1. 116 S (air-cooled) (water)
Power:	210 HP	300 HP
Gears:	2 forward, 2 reverse	6 forward, 1 reverse
Type:	Porsche Siemens	DB Wilson clutch
Track width:	600 mm	520 mm
Clearance:	490 mm	280 mm
Armor:	Front 50 mm, side back 40 mm, side 30 mm Front 40 mm, side 30 mm rear 20 mm	
Armament:	7.5 cm L. 24 or 10.5	12.8 cm L. 40 gun cm gun
Tracks:	88 links each, drive 85 links each, drive wheel forward, steering steering wheel aft, wheel aft	8 pairs of 6 road wheels, 2 road wheels, 3 return rollers

Fuel capacity:	?	450 liters
Consumption:	170 liters 100 km	?
Top speed:	60 kph	20 kph
Turning circle:	?	?
Drive:	Gasoline-electric	?
Pressure:	0.9 kp square cm	0.8 kp square cm
Gradient:	?	21 degrees

VK 3601 & 4501 (P)

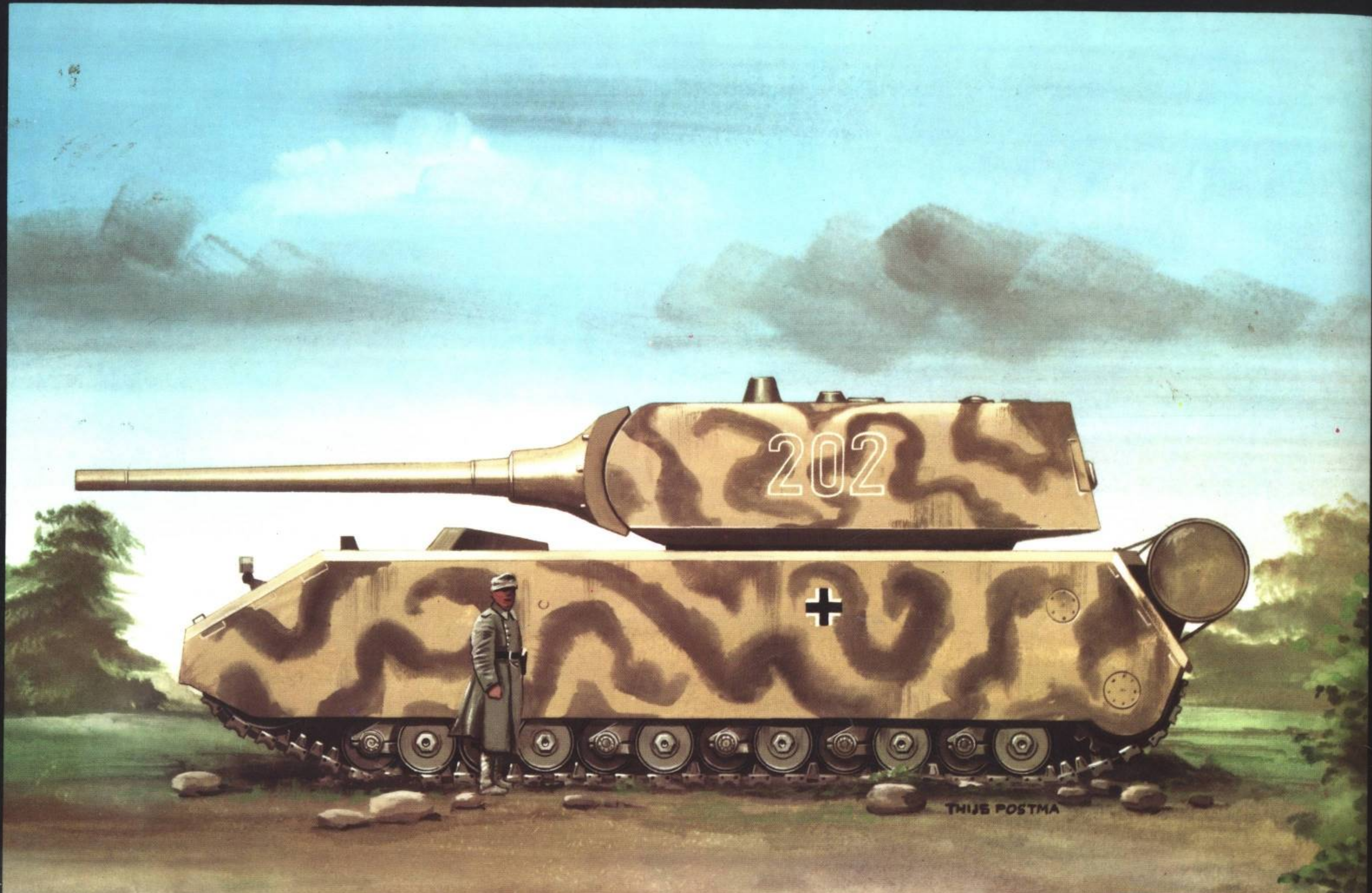
Type:	VK 3601	VK 4501 (P)
Maker:	Henschel	Nibelungenwerke
Years built:	1942	1941-1942
Number made:	fourteen	
Weight:	36-40 tons	57-59 tons
Length:	6050 mm (gun)	6700 mm (gun)
Width:	3140 mm	3140 mm
Height:	2700 mm	2800 mm
Motor:	V-12 Maybach 1H. 1742 V-10 (water-cooled)	Porsche 101-1 (air-cooled)
Power:	550 HP	320 HP x 2 + 640 HP
Gears:	8 forward, 1 reverse 3 forward, 3 reverse	

Clearance:	?	180 mm
Armor:	Front 100 mm, sides front 100 mm, sides 80 mm, 60 mm, rear 60 mm, rear 80 mm	
Armament:	Weapon 0725	8.8 cm 36 L 56 gun & 2 MG 34 machine guns
Tracks:	7 links, drive wheel 109 links, drive wheel forward, steering aft, steering wheel	8 road forward, 6 road wheels, wheels, no return rollers, rollers
Fuel capacity:	?	520 liters
Consumption:	?	466 liters 100 km
Top speed:	10 kph	35 kph
Turning circle:	7.0 meters	2.15 meters
Drive:	?	Gasoline-electric
Pressure:	?	1.06 kp square cm
Gradient:	35 degrees	30 degrees

Maus & E 100

Type:	Maus	E 100
Maker:	Alkett	Henschel
Years built:	1942-1944	1944-1945
Number made:	2 of 3 unfinished	1 unfinished

Weight:	188 tons	150 tons
Length:	9034 mm (gun)	8600 mm (gun)
Width:	3670 mm	1180 mm
Height:	3630 mm	3320 mm
Motor:	V-12 Daimler Benz	V-12 Maybach HL 230 P 30 MB 509
Power:	1080 HP	700 HP
Gears:	2 forward, 2 reverse	8 forward, 1 reverse
Type:	Porsche-Siemens	HS L801 2-radius
Track width:	1100 mm	1100 mm (530 mm ship-ping)
Clearance:	570 mm	570 mm
Armor:	Front 200-210 mm, sides 180-200 mm, rear 160-200 mm	Front 200-210 mm, sides 120-200 mm, rear 150-200 mm
Armament:	12.8 cm 11 (68) gun, 7.5 cm 44 gun, & 1 MG 31-151 20 machine gun	17.4 cm or 12.8 cm gun & 1 or 2 MG-4 machine guns
Tracks:	Links, drive wheel aft, steering wheel forward, 12 road wheels, 12 return rollers	Links, drive wheel forward, steering wheel aft, 8 double road wheels, no return rollers
Fuel capacity:	2700 liters (+ 1500 liter reserve tank)	1200 liters
consumption:	Road 1100 liters 100 km, country 3100 liters 100 km	100 liters 100 km
Top speed:	20 kph	25 kph
Turning circle:	On the spot	On the spot
Drive:	Gasoline-electric	?
Pressure:	1.51 kp square cm	1.43 kp square cm
Gradient:	30 degrees	?



Armored Military Vehicle MAUS



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