

TIGER I

GERMAN PANZERKAMPFWAGEN VI TIGER I (SD.KFZ. 181)

AUSFUEHRUNG E

TAMIYA
TAMIYA PLASTIC MODEL CO.



Engine, manufacturer, type Maybach THL 210 P 45 *
 Number of cylinders, arrangement 12, "V" 60°
 Bore 125 mm
 Stroke 145 mm
 Cylinder displacement 21353 cc/m
 Compression ratio 7.1
 RPM normal, maximal 2500 3000
 Output normal, maximal 650 BHP
 Power to weight ratio 11.4 HP/t
 Valve arrangement Overhead
 Crankshaft bearings 7-1 roller bearings
 Carburetor 4 Solex 52 JFF II D
 Firing order 12-1-8-5-10-3-7-6-11-2-9-4
 Starter Bosch BPD 6 24 ARS 150
 Suspension One transverse torsion bar per roadwheel
 Chassis lubrication High pressure
 Brake manufacturer Suedd. Arguswerke
 Brake type Disks, mechanically operated
 Footbrake acts on Steering brake
 Handbrake acts on Steering brake
 Kind of roadwheels Steel disks
 Size of roadwheels 800-95 E
 Track width 2822 mm, narrow track 2620 mm
 Payload 1500 kp
 Fuel consumption Street 535 Cross Country 935
 litres per 100 km

Generator Bosch GULN 1000/12-1000
 Number of batteries 2 x 12 V, 150 Ah
 Fuel system 2 mechanical pumps
 Cooling Water
 Clutch Multidisk, wet
 Transmission Maybach OLVAR "401216"
 Number of gears 8 F, 4 R
 Final drive Front sprockets
 Final drive ratio 10.75:1
 Top speed 38 km/h
 Range Street 100 km, Cross Country 60 km
 Steering Henschel "L 600 C"
 Turning radius 7 metres
 Length of track on ground 3605 mm
 Width of track 725 mm, narrow track 520 mm
 Ground clearance 470 mm
 Overall length 8241 mm
 Overall width 3547 mm
 Overall height 2880 mm
 Ground pressure 1.04 kp per sq cm
 Chassis weight 44550 kp
 Total weight 56900 kp
 Crew 5
 Fuel capacity 534 litres in 4 tanks

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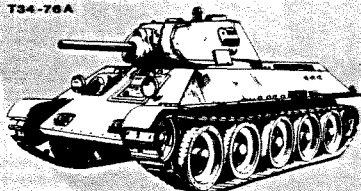
History of the Tiger I tank

Development of what eventually became known as the 'Tiger' Ausf. E, was initiated in a discussion with Hitler on 26th May, 1941.

Hitler had been impressed by the reports of the armour of the British Matilda and the French tanks, and wanted a heavier tank than the Pz.Kpfw IV to spearhead panzer attacks.

Whilst various medium and heavy tanks had

T34-76A



been under development in Germany since 1937, no immediate plans were in hand to supersede or augment the PzKpfw III and IV owing to the satisfaction felt with them.

Within a week of the invasion of Russia on 22nd June 1941 the German forces came into contact with the Soviet Medium T.34 and heavy KV. I tanks. Both Russian tanks out-classed anything the Germans had, either in the field, or under development, and it was this which gave the impetus to implement Hitler's recommendations as quickly as possible.

The demand was for a tank mounting a gun capable of penetrating 100mm (approx. 4") of armour plate at 1500 meters (1640 yards); this tank, in accordance with current German practise, to have frontal armour capable of withstanding attack by a similar weapon. The gun advocated was an adaption of the highly successful 8.8 cm Flak 36, but the Ordnance Department were in favour of a smaller calibre weapon of either 6 cm or 7.5 cm provided similar A/P performance could be obtained. By utilizing a smaller calibre gun the total size, and therefore the weight, of the projected vehicle could be lower.

Whilst the performance of the 8.8 cm. Flak 36 was known, the smaller calibre gun still had to be developed. The arguments in favour of a smaller tank were so self-evident however that it was decided to issue two separate specifications. The one given to Henschel designated VK 3601 (VK-Vollket-

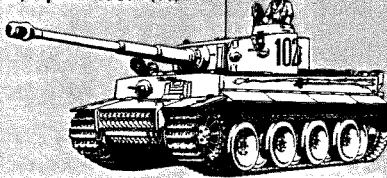
tenrafftfahrzeug-fully tracked motor vehicle) being for a 36/40 ton tank to be armed with the tapered bore weapon 0725. The one given to Porsche was for a 45 ton tank to be armed with the 8.8 cm KwK and was designated VK. 4501. Separate turrets for both designs were ordered from Krupp.

Because of the shortage of tungsten steel essential for taper bore guns, Hitler ordered their elimination, including the weapon 0725. A total of only seven VK 3601 prototypes were therefore produced, the last of these appearing in April 1942. With the cancellation of the weapon 0725, and in order to enable Henschel to produce a tank with the requisite fire power within the allotted time, it was decided to utilise the turret and gun developed by Krupp under the supervision of Professor Porsche for the VK. 4501 on the VK 3601 as well. A point of interest about this turret is that the sides and rear were formed from a single plate of armour 82 mm (3 1/4") thick bent round into the shape of a

Pz. Kpfw 4501 (P)



Pz. Kpfw 4501 (H)



horse shoe. Owing to this turret having a ring diameter of 6'-1" (185 cm) against the 5'-5" (165 cm) ring diameter of the VK 3601 Henschel was forced to alter their chassis to accommodate it. This was done by widening the hull above the tracks thus changing the section from a rectangular form to a 'T' shape. Due to these chassis alterations, the heavier gun, and heavier turret, the weight of the vehicle was increased considerably, and the designation was therefore changed to VK. 4501 (H). This new project vehicle had the same main components such as transmission, final drive, and roadwheels as were developed for the VK. 3601.

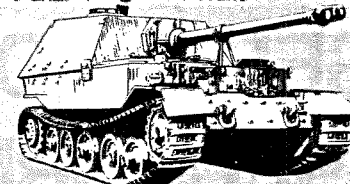
During development of the VK. 4501 (H) two versions were contemplated. The VK 4501 (H) which was as built with the Krupp turret mounting the 8.8 cm KwK36, and the VK. 4501 (H2) which was to have had a Rheinmetall designed turret mounting the 7.5 cm KwK 42 (L/70). This second version was never built.

By the middle of 1941 Henschel had made preparations for production of 60 vehicles and even before a prototype was finished they had increased their preparations to cover a further 1300.

The first prototypes of the VK. 4501 (H) and VK. 4501 (P) underwent their first competitive trials at Rastenburg in front of Hit-

ler on his birthday the 20th April, 1942. The results of these, and subsequent trials were supposed to have shown that the Henschel

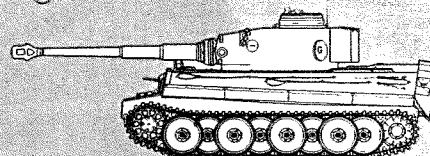
Panzr Jaeger "Elefant"



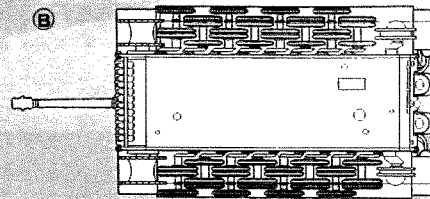
vehicle was superior, thus production orders were placed for it. The Porsche vehicle, known colloquially within the firm as 'Tiger' now drops out of the picture as a battle tank, although the chassis of the 90 already ordered by Hitler and under construction were eventually adapted as the Panzer Jaeger 'Elefant'.

Actual production of the Pz. Kpfw 4501 (H) commenced in August 1942 with twelve units a month. On Hitler's insistence, production was improved, so that by November 1942 the rate had reached 25 units per month. This increase continued and a maximum monthly output of 104 was obtained in April 1944. Production ceased in August 1944 after a total of 1355 had been built including prototype.

(A)

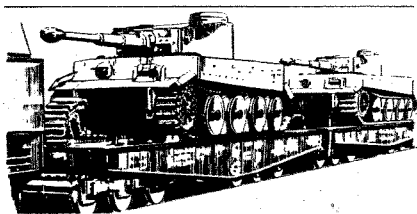
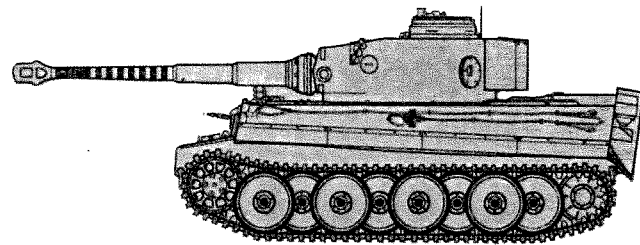


(B)

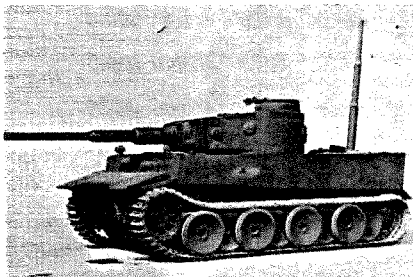


The designation Pz.Kpfw VI was eliminated through Hitler's order of 27th February 1944, the official designation from then on becoming Pz.Kpfw 'Tiger' Ausf. E, which had in fact appeared on official documents prior to this. The page consisting of the two view drawings shows a fairly early production model (Chassis No.250122) fitted with full equipment and battle tracks. As mentioned previously, in order to reduce the width for transportation purposes, the outer wheel of each set of three (shown shaded in the underneath view of the same vehicle) was removed, narrow tracks were fitted, the outer portions of the front and rear mud flaps were hinged upwards, and the side mud guards removed entirely. Normal ground pressure using battle tracks was 14.7 lbs per square inch, but on transportation tracks the ground pressure rose to 20.4 lbs sq".

In view of the size and weight of these vehicles it was envisaged that difficulties - would be



met in crossing rivers by normal methods, for even in Germany not many bridges were officially of carrying capable their weight. The original specification therefore included equipment to enable them to submerge up to depths of approximately 13 feet (4 metres) and cross on the bed of rivers. There is no evidence to prove that this feature was ever used in action, tank crews being very reluctant to go under water. When one considers that all hatches opened outwards, and that an engine failure would trap the crew with no fresh air being circulated, their fears were justifiable. After 495 vehicles had been built submersing equipment was discontinued, not even all of the 495 had it fitted. For submersion all hatches, ventilators, vision ports, gun mantlet etc., could be sealed relatively simply. A pneumatic tube was inflated to seal the turret ring, and a telescopic snorkel pipe was raised from the rear of the engine compartment. This pipe supplied fresh air, which first passed through the crew compartment, and was then utilised by the engine. Cooling of the engine underwater was by flooding of the radiator com-



partments after the fans had been disconnected. These fan compartments were positioned both sides of the engine compartment and sealed off from it. Clapper valves were fitted to the exhausts, but back pressure from the engine was relied on to keep water out.

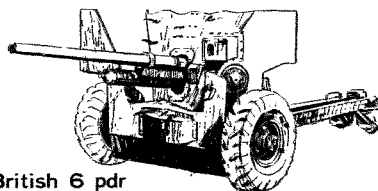


Hitler ordered in July 1942 that the first 'Tiger' Company was to be ready for action by September at the latest. This was against the advice of his Panzer experts and Generals, who wanted it to be thoroughly tested, crews trained, and then used for a massed attack in a Spring offensive in 1943. Following Hitler's orders the first company of 'Tigers' were used in action on the 23rd September 1942 in a secondary operation, in unsuitable tank country consisting of swampy forests near Leningrad. Here they were forced to move in single file along the roads which the Russians had covered with considerable numbers of well concealed heavy anti-tank guns. The results of this was heavy casualties among the 'Invincible' new 'Tigers'

and complete loss of secrecy and the surprise that could have been effected the following Spring. Even worse was the fact that due to the weather and terrain the objective of this attack was not even gained despite the cost. The introduction of the 'Tiger' was therefore a repetition in its way of the introduction of the British Mk.I tanks on September 15th 1916. After this debut 'Tigers' appeared in North Africa in April, 1943, Sicily, Italy, and North West Europe, continuing as fighting tank up to the end of the war. 'Tiger' Battalions were originally organised as independent units under G.H.Q. troops. Later it was decided to include 'Tiger' tanks in the basic organization of German Armoured Divisions, but this never took place except with certain S.S. Panzer Corps.

At the time of its introduction the 'Tiger' Ausf. E. was the most powerful tank anywhere in the world. Workmanship was of a very high order, and the transmission and steering were extremely complicated, requiring many man hours to produce. Some justification for the fully regenerative steering and eight forward ratios in the gearbox, which was fully automatic, was that the vehicle was very light to control. Whilst first class crews were available the 'Tiger' was an efficient tank, but as the standard of training dropped so the mechanical failure rate increased. The main drawbacks, apart from the difficulties of transportation, were a short range of action, due to a fuel consumption of 2 3/4 gals. per mile, and a slow turret traverse. Whilst the turret traverse was normally hydraulic, in case this became inoperative hand traverse wheels were provided for both the Commander and Gunner. A factor which had nothing to do with the design or construction of the 'Tiger', but which tended to hamper its use, was a High Command Order that they were not to be allowed to fall into enemy hands.

Although the original idea was for an offensive tank, their lack of mobility and the changing strategy of the war led to them being used and more as a defensive weapon. In this role they were formidable, being used more and more as a defensive weapon. In this role they were formidable, being completely impervious "Head On" to the British



British 6 pdr

6pdr., American 75 mm, and Russian 76 mm although the British 6 pdr could effect side penetration at close range. Until the advent of High velocity ammunition for the 6pdr. and the American 76 mm. and the introduction of the Russian 100 mm and 122 mm guns however the 'Tigers' frontal armour was considered shot resistant.

The engine used on the 'Tiger' Ausf. E. was a development by Maybach of their range of 12 cylinder Vee engines as fitted to Pz.

Kpfw III and IV but of far greater capacity. On the first 250 'Tiger' Ausf. E. they had the same engines as were mounted in the Panther D, differing only in details, mainly to do with the mounting. For the remainder of production these engines were increased in capacity for a larger power output. These improved engines were also fitted to the Tiger B, and the Panther Ausf. A. and G.

Respective Battalions and Divisions to which the Tiger I Tanks belonged

The African Front; The 501st Heavy Tank Battalion

This battalion was despatched in 1943 to Tunisia together with the 10th Panzer Division in order to secure this already occupied but increasingly dangerous part of Africa. It was the Tiger tanks belonging to this battalion that decided the fate of the tank battle on the Fail Pass by the sheer power of their 88 mm guns. Every one of these Tigers was painted sand colour. On the turret a three-figure turret number, was shown while a black and yellow Tiger crest was drawn on the front and rear sides of the tank.

The Italian front; The Parachute Panzer Division, "Herman Göring"

It was the Tiger company of this division that intercepted the Yankee forces at the beach when the Allied troops landed on Sicily. It was also the Tiger tanks of this company that made a dramatic exchange of fire, so rarely warshipr. These Tigers were painted uniformly in sand colour.

The Russian front;

The following forces participated in the great offensive operation, "Zitadelle" (the kursk battle) in July, 1943.

○ The 505th Heavy Tank Battalion

This battalion fought strenuously under the direct command of the 47th Panzer Corps of the 9th Army (commanded by Field Marshal Model), which advanced southward from Oryol in the north to attack kursk. The Tigers in this battalion were painted either in overall sand colour, dark-grey or dark-grey finished with dark-green spots.

○ The 503th Heavy Tank Battalion

This battalion fought under the direct command of the 3rd Panzer Corps of the Kempf Army (commanded by Gen. Kempf), which advanced northward from near Belgorod in the south in Ukraine.

The Tigers in this battalion were painted as other tanks in the same battalion.

○ The 1st SS Panzergrenadier Division, "Leibstandarte"

The 2nd SS Panzergrenadier Division, "Dass Reich"

The 3rd SS Panzergrenadier Division, "Totenkopf"

The above three divisions formed the nucleus of the German forces that attacked southern Russia. To each of them, a Tiger company had been attached. These three

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(The 2nd SS Panzer Division "Dass Reich")

divisions made up the 2nd SS Panzer Corps of the 4th Panzer Army (commanded by General Hoth). Tanks including the Tigers of those three divisions played a leading role in "the grand tank battle of Poloholovka," the greatest tank battle ever held in the history of war. These Tigers were painted in the same way as other tanks in those three divisions.

○ The Panzergrenadier Division, "Gross Deutschland"

This division was an elite division of the National Defence Force (German Army) and belonged to the 48th Panzer Corps which together with the 2nd SS Panzer Corps formed the 4th Panzer Army. The division was a formidable division, having not only a Tiger company under its command but also a Panther (Pkw V) battalion just formed at the time. It advanced northward to Obayan to back up and fight strenuously with the helpless 3rd Panzer Division.

Painting is the same as the Panzergrenadier Division.

(The 'Trum-number' of the Tiger Tank Forces)

When you see pictures of the Tiger tanks, you will notice the characteristic three-figure Arabian numbers written on the 88mm gun turrets of most them. These are the 'trum-number's (turret-numbers) of those Tigers. Each number represents the following:

First figure... The number of the Kompanie (Company) the particular Tiger belongs to.

Second figure... The number of the Zug (platoon) the particular Tiger belongs to.

Last figure... The number of the Tiger itself.

Also, some Tigers had a Roman numeral instead of the Arabian one in the last number

R... Regiment HQ
I... The 1st Regiment HQ (Roman numeral I)
II... The 2nd Regiment HQ (Roman numeral, II)

Some examples will be given below.

R01: No.1 regimental headquarters tank. i.e. the regimental commander's tank.

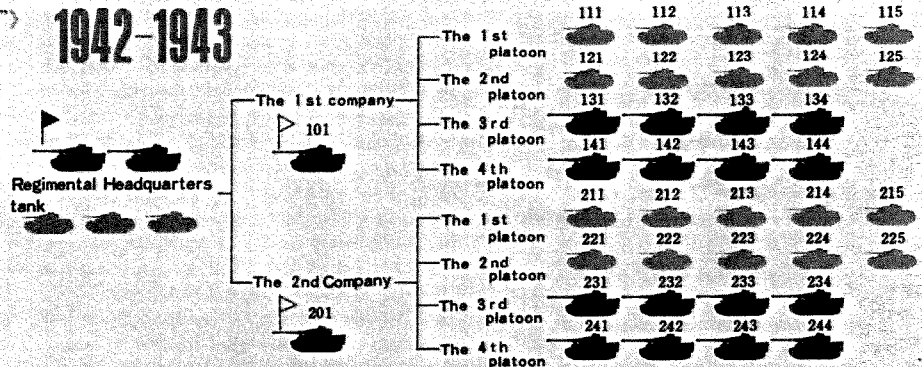
R02: No.2 regimental headquarters tank. i.e. The regimental adjutant's tank.

101: No.1 tank of the 1st company headquarters. i.e. the battalion commanders tank.

312: No. 2 tank of of the 1st platoon of the 3rd company.

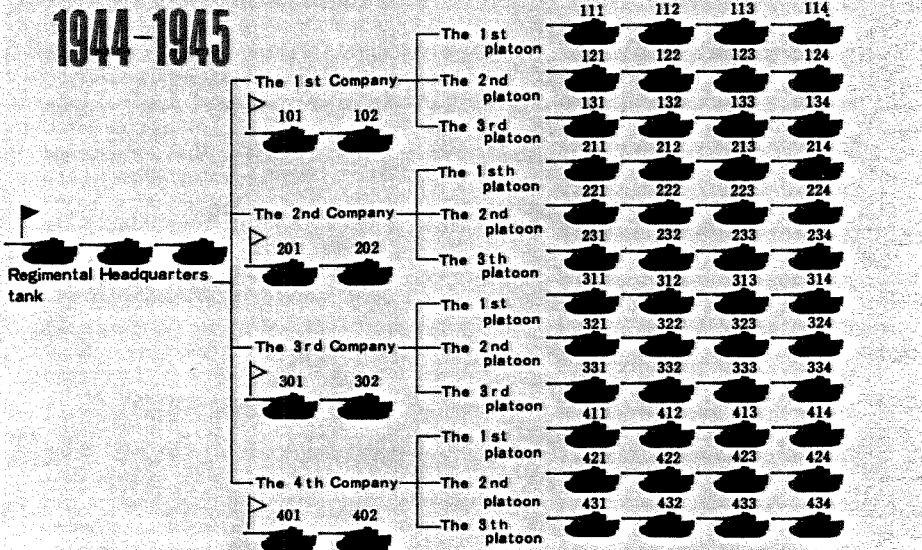
401: ie the 4th company commander's tank. In February, 1943, the German Army completely changed the colour of its tanks, issuing the order to have them painted in a unicolour of sand, Further, every tank was ordered to be camouflaged according to the topography and the

1942-1943



Respective numbers of tanks were; the Tiger I, 20 and the PzKw III

1944-1945



The number of tanks in all was 59 Tiger

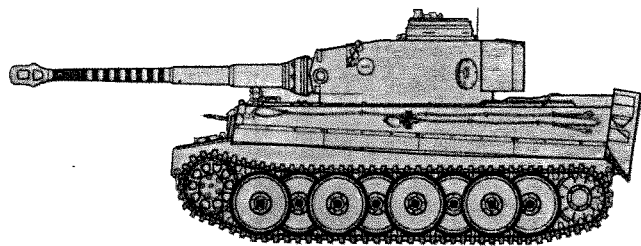
season in the aresa, in which that particular tank happened to be stationed. With this change of colour, the rule for the turret-number writing, too, was drastically altered. Naturally, the principal objective of the turret-number was to facilitate a free command of subordinate tanks during combat. Around this time, therefore, determination of what style, colour and form of turret-number employed was all entrusted to each commander of the tank unit, He was free to choose any numeral and mark peculiar to his own company or battalion quite independently.

In the spring of 1943 when the Tiger I tanks were employed as a group for the first time on the eastern front, they formed several Tiger heavy tank companies, each belonging like the 8th Company to the SS Divisions of the "Leibstandarte," "Dass Reich" and "Totenkopf," respectively. The turret-number, '805 of Wittmann's Tiger war used at that time. The number, '805' according to the rule above, may mean No.5 tank of the 8th Company Headquarters. This, however, goes against the actual formation of a company at the time.

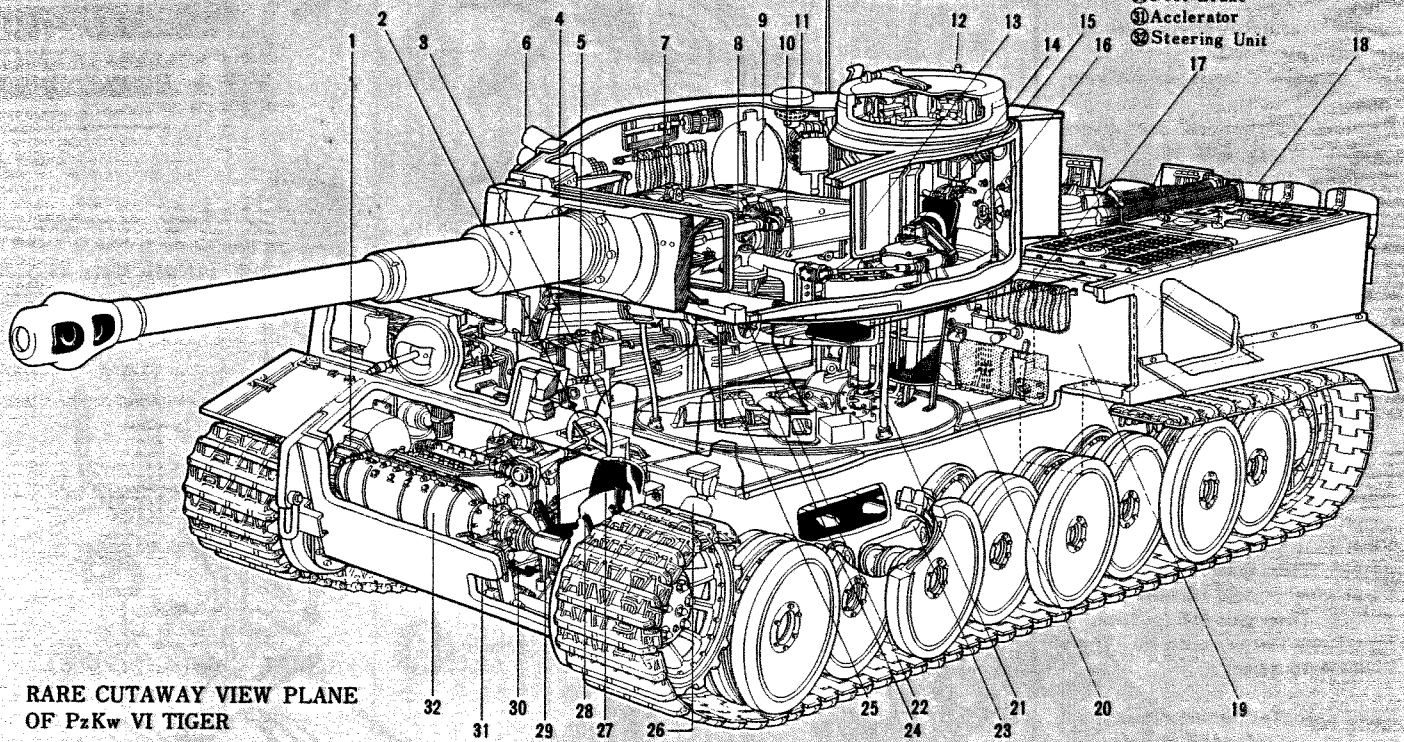
But still it is correct //

That is because the SS heavy tank company at that time employed the three-figure turret-number in a different way. True, the number, '801' still means the tank of the 8th Company commander, while '802', the tank of the company adjutant as heretofore. However, from then on, the number represented quite a different thing, Because this company did not use a platoon number but numbered all its tanks consecutively. Thus, the 1st Platoon commander's tank was numbered, '803', No.2 of the same platoon, '804', etc., until the last one had the number, '814', And numbers, '805' and '809' quite unthinkable from the usual three-figure rule emerged. It is said that this new rule was applied not only to the SS heavy tank companies but also to the self-driven gun companies of the National Defence Force.

However, in July, 1943, when the German Army staked all on its great "Citadelle" operation the Tiger tanks with new turret-numbers were concentrated in the battle of Kursk in European Russia. For tank divisions increased the number of their tanks. The three SS divisions men-



- | | | | | |
|-------------------------------|----------------------------|----------------------|-----------------------------------|-----------------------------|
| ① Disc Brake drum | ⑦ M. G. Ammunition | ⑬ Commander's Shield | ⑰ Petrol Tap | ⑳ Fire Extinguisher |
| ② steering wheel | ⑧ Binocular Telescope | ⑭ Traverse Gear Box | ㉑ Ventilation Control | ㉒ Shock Absorber |
| ③ Gear Box | ⑨ Escape Hatch | ⑮ Commander's Seat | ㉒ Gunner's Seat | ㉓ Driver's Seat |
| ④ Mounting for Wireless set | ⑩ Turret Fuse Box | ⑯ Revolver Port | ㉓ Elevating Hand wheel | ㉔ Emergency Steering Levers |
| ⑤ 88cm Ammn Bins | ⑪ Extractor Fan | ⑰ M. G. Ammunition | ㉔ Torsion Bar Suspension | |
| ⑥ Smoke generator Dischargers | ⑫ Mounting 50r Rangefinder | ⑱ Petrol Tank | ㉕ Hydraulic Traverse Foot Control | |
| | | | | ㉕ Clutch |
| | | | | ㉖ Foot Brake |
| | | | | ㉖ Accelerator |
| | | | | ㉖ Steering Unit |



RARE CUTAWAY VIEW PLANE OF PzKw VI TIGER

tioned above, likewise, increased its tank strength. Its heavy tank company, therefore, was changed from the 8th to the 9th. At that time, the rule for the three-figure turret-number was again changed. Instead, the letter, 'S' representing the German adjective 'Schwere' (heavy) was uniformly applied. For the 2nd and last figures, and serial numbers from 01 to 14 were employed. In the case of the 'Leibstandarte' Division, this partially changed rule was applied until the end of the 2nd World War. It is inferred that the number of Wittmann's famous Tiger tank, on the 88 mm gun barrel of which were drawn 88 'Kill-marks', was 'S03'.

rule for the turret-number notation primarily for the heavy tank companies. Now, we note below some exceptions to this rule. Generally speaking, the heavy tank battalions used the usual three-figure notation. But there were also many examples of only a single figure and in some cases, none at all. Especially in the latter half of the war, no definite rule was obeyed. It is therefore difficult to find out the correct meaning, of these numbers.

(The Company and Battalion Formation of the Tiger I Forces)



The Tiger I tanks had been active primarily in an independent heavy tank battalion (Heeres Schwere Panzerabteilung)

formation under the direct command of the Army Corps (Korps). The H.S.P. itself existed before the outbreak of the Russo-German war but the history of the H.S.P. with the Tiger I tanks at its nucleus had began in the autumn of 1942. The formation during the 1942-1943, period was as figure A (page 4).

During the 1944-1945 period, production of the Tiger I got on the right track and its war tactics were fully completed. With this progress, the Tiger H.S.P. was much improved in formation and increased in number. By 1945, its number increased to 9 in the National Defence Force and 2 in the SS divisions. The formation at the time figure B (page 4).

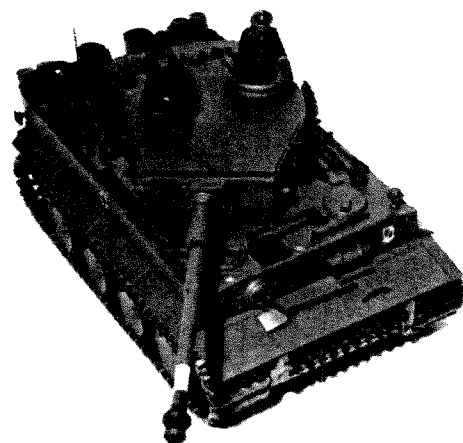
However, since 1942 there existed several heavy tank companies (Tiger Kompanie, or Schwere Kompanie) as an exception to the above. These Tiger I companies such as the 8th (later, 9th) Company, were always attached the 'elite' division of the National Defence Force and the SS forces.

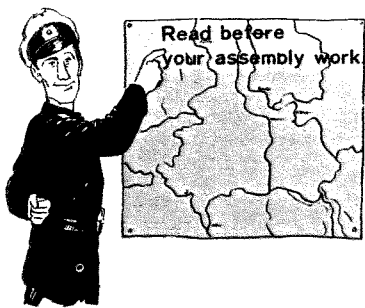
These elite divisions were as follows;

- The Parachute Panzer Division, "Hermann Göring" (under the direct commander of the Air Force)
- The Panzergrenadier Division, "Grossdeutschland" (the National Defence Force)
- The 1st SS Panzergrenadier Division, "Leibstandarte SS Adolf Hitler" (The SS forces)

- The 2nd SS Panzergrenadier Division, "Das Reich" (The SS forces)
- The 3rd SS Panzergrenadier Division, "Totenkopf" (The SS forces)

A heavy company consisted of 14 Tiger I tanks. Also, during the 1944-1945 period, there was the Tiger-Goliath-Kompanie. This company consisted of 14 Tiger tanks and 36 wireless-controlled tanks, each with a self-destructing device. It could indeed be called a genuine heavy tank company.





★The number of parts in this kit amounts to approximately 300. Read the instructions carefully before starting.

★Have a small screwdriver, tweezers, knife, tape, etc. handy.

★Use adhesives made exclusively for plastics.

★Painting instructions are given on pages 13, 15 and 16. It is much easier to paint all small parts while they are still on the runners.

★The blue colored portion of the sketches are areas to be glued.

Fig. 1 - Fixing of Torsion Bar
Fix torsion bar onto lower hull by matching each lower hull with the torsion bar number. Refer also to Figure 5.

Fig. 2 - Construction of Wheels
A. Insert cap (large) into sprocket wheel H2. Then glue sprocket wheel H1 to H2.

B. First glue wheels H5 and H6 together. Then glue H7 to same.

C. First glue wheels H5 and H8 together. Then glue H6 to same.

D. Insert cap (large) onto H3. Then glue H4 to same.

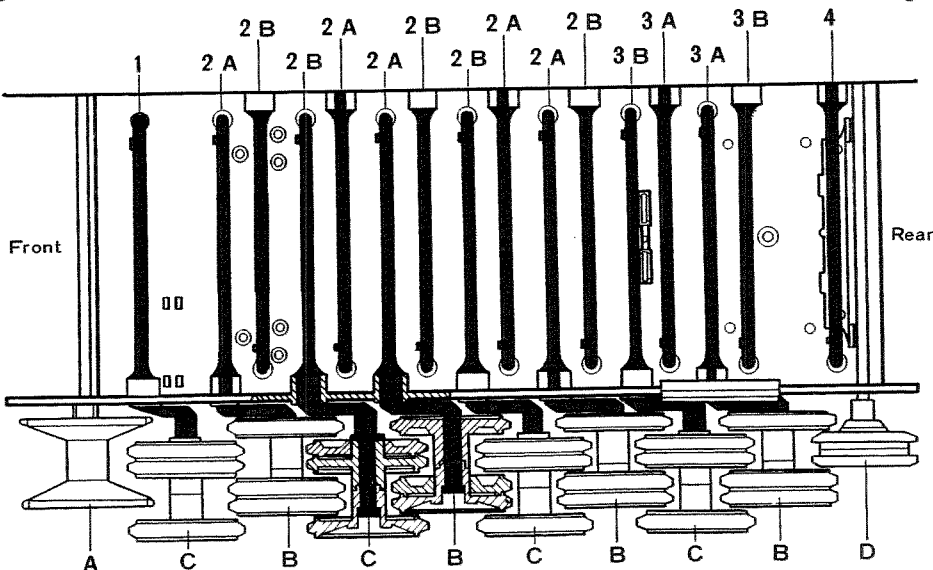
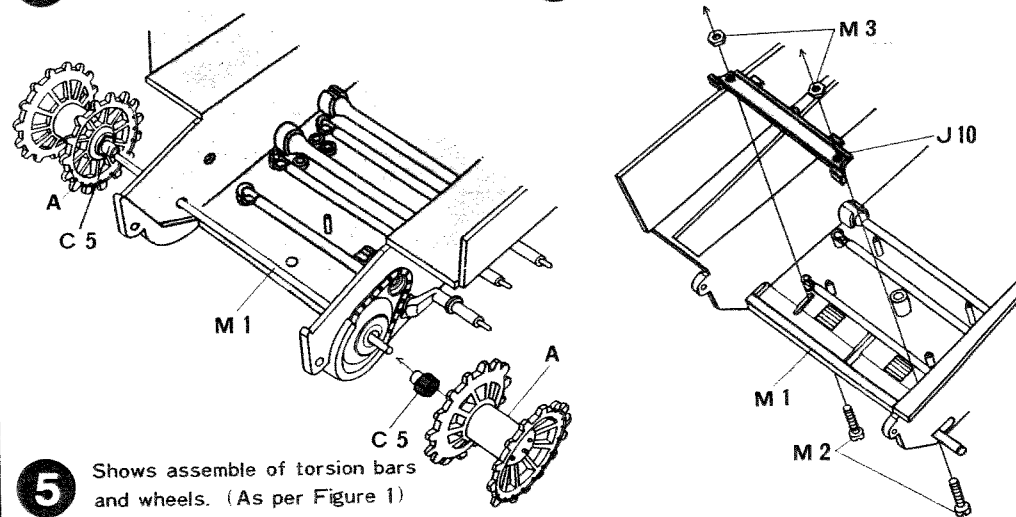
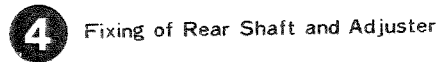
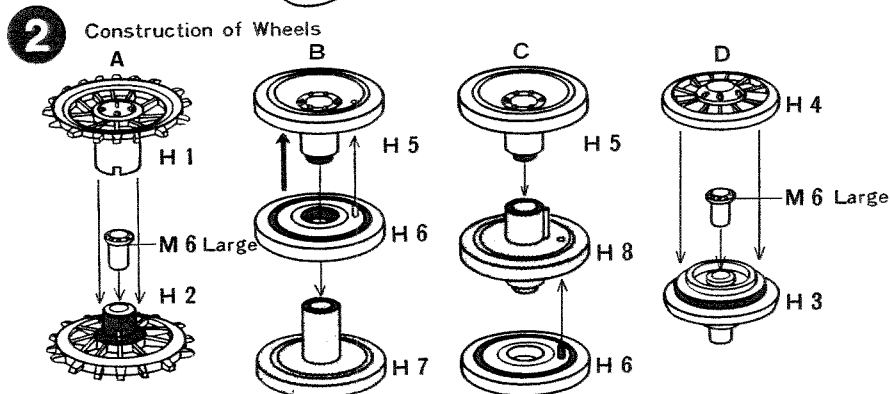
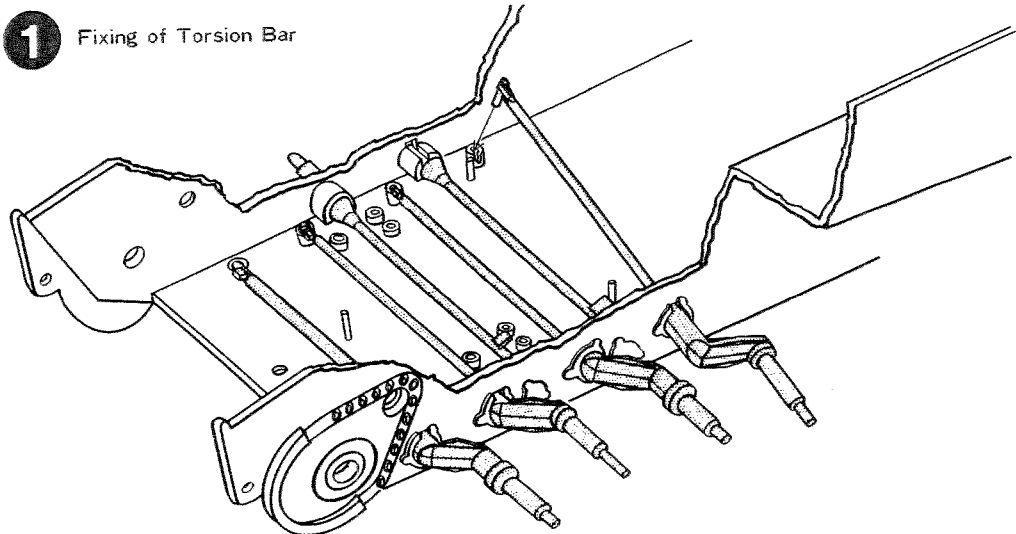
★Paint sprocket wheel teeth silver. The rim of road wheels are usually made of a rubber material. Therefore, paint these rims in flat black.

Fig. 3 - Fixing of Front Shaft
Insert the 3mm dia. shaft (106mm long, unplated) into lower hull and fix it with the hexagon nut. Then fix wheels A onto the shaft.

Fig. 4 - Fixing of Rear Shaft and Adjuster

Fix adjuster J-10 onto lower hull using screw M-3 and nut M. The adjuster is to adjust the tension of the track after the kit is completed. Insert 3mm rear shaft (106mm) into lower hull.

Fig. 5 - Shows assemble of torsion bars and wheels.
(As per Figure 1)



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Fig. 6 - Fixing of Wheels
Fix wheels C & B (have been preassembled per Fig. 2) onto torsion bars by twisting. Secure the wheels with cap (small) F6.

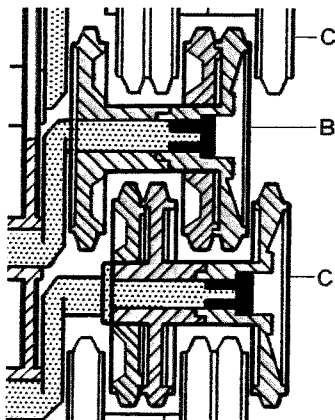


Fig. 7 - Construction of Transmission Unit

See diagram on right.
★Paint steering wheel and steering lever in white but the area where hands are placed on wheels should be painted in glossy steel grey.

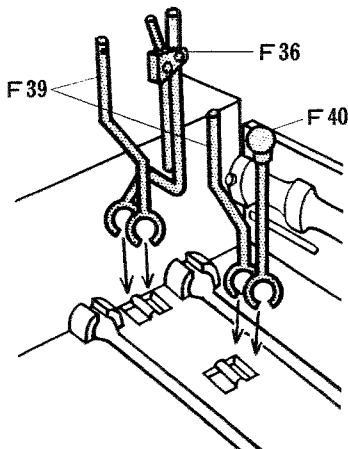


Fig. 8 - Fixing Transmission Unit onto Lower Hull

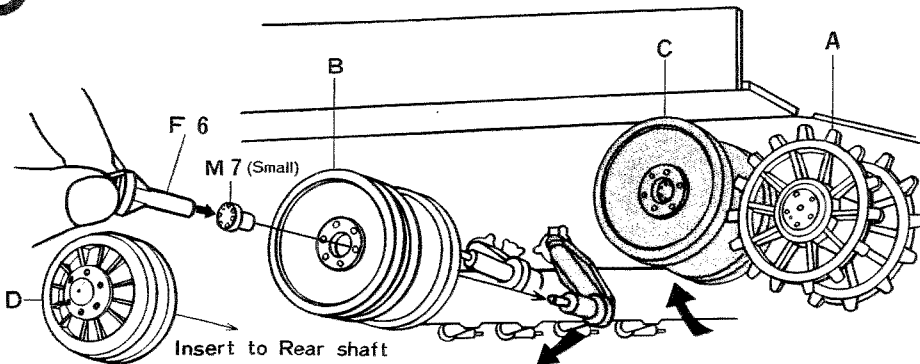
Snap onto lower hull steering lever F-39, control lever F-40, and hand brake F-36. Do not use glue here. Glue transmission unit to lower hull. Then glue driver's seat F-30 at both ends. Glue 88mm ammo boxes F30 and F33 in place as shown.

Fig. 9 - Fixing Engine and Checkered Floor Plate

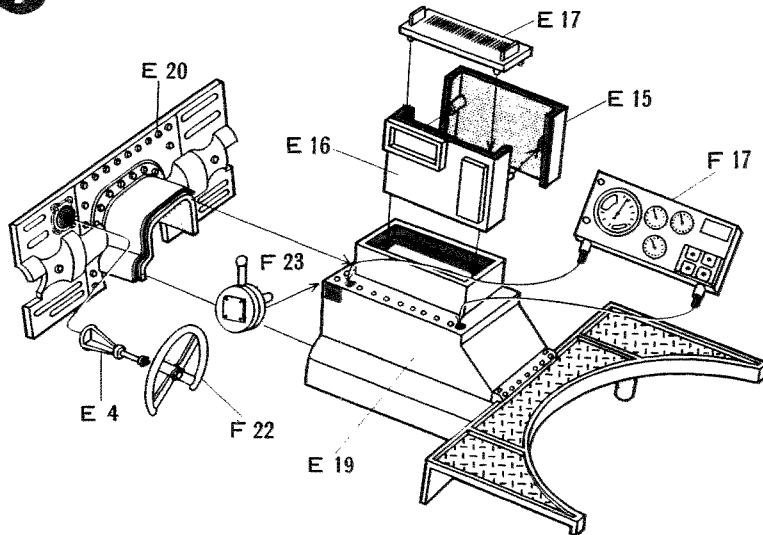
Fix 3 each MG ammunition magazines F-1 onto bulkhead E12. Put E12 and E8 together and glue them to lower hull. Mount engine F41 on stay as shown.



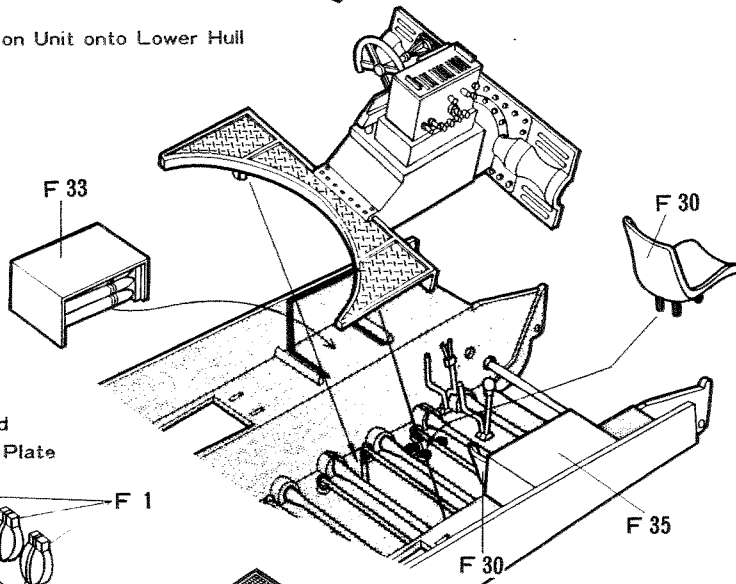
6 Fixing of Wheels



7 Construction of Transmission Unit



8 Fixing Transmission Unit onto Lower Hull



9 Fixing Engine and Checkered Floor Plate

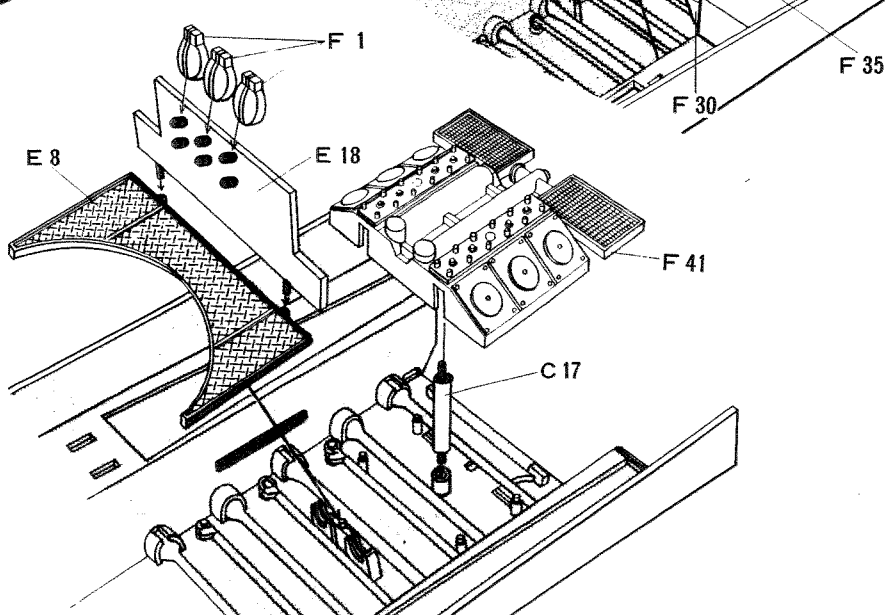
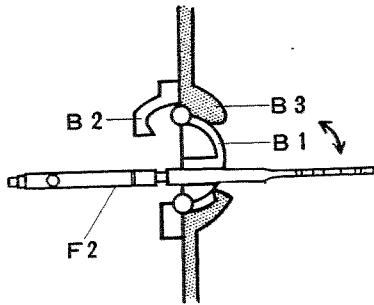


Fig. 10—Fixing of Front Panel Interiors

Be careful to face MG34 base B1 in the correct direction. Fix with B2 glued to B3. Be sure not to apply glue to B1 as it should be movable.



★Paint periscope interior in silver with the edges in steel grey. Paint 88mm shell in copper color and bullets in silver.

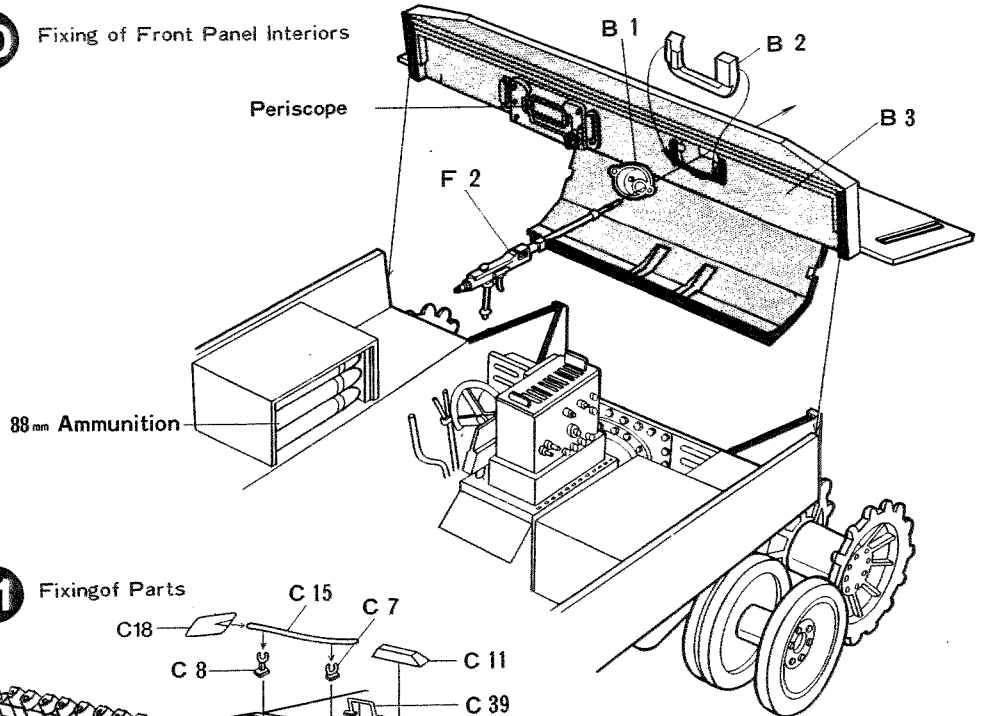
Fig. 11—Fixing of Parts

Fix hook C12 without using glue. No glue is to be applied to shovel C15 and C18. It should be detachable. Insert track link assemblies (9 links) as shown. Refer to the method of making tracks on page 24.

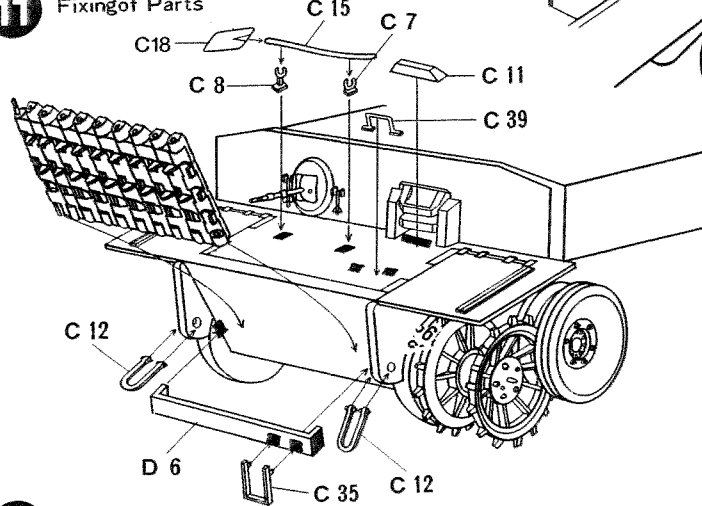
Fig. 12—Construction of Silencer, Jack, Air Intake Pipe—Silencer and air intake pipe come in two pairs.

Fig. 13—Fixing Rear Panel Parts
Glue rear panel B7 to lower hull. Snap onto lower hull fender D20 and D21 and hook C12 (no glue should be applied).

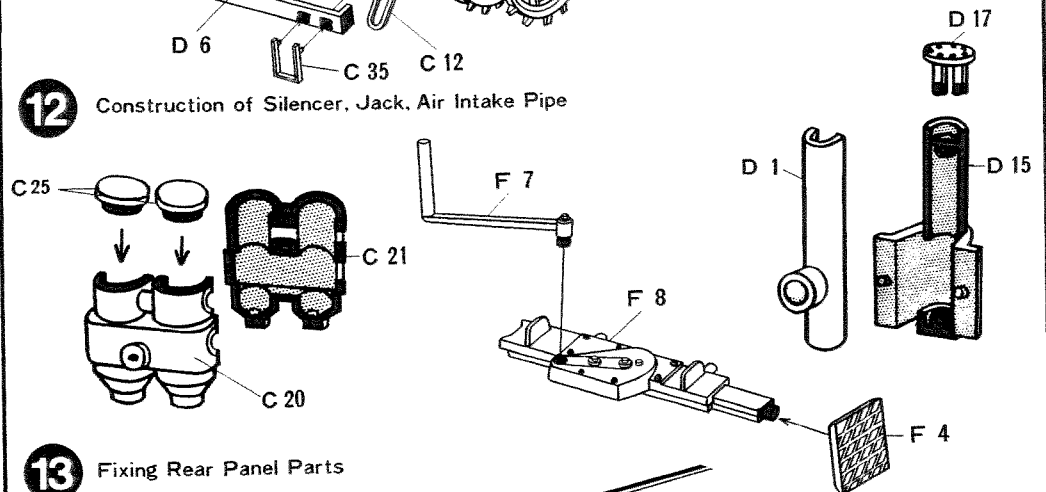
10 Fixing of Front Panel Interiors



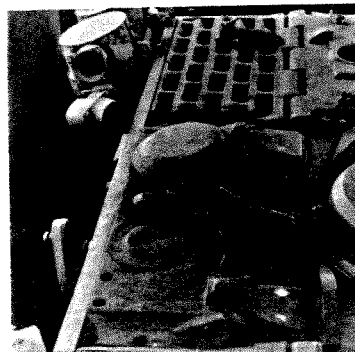
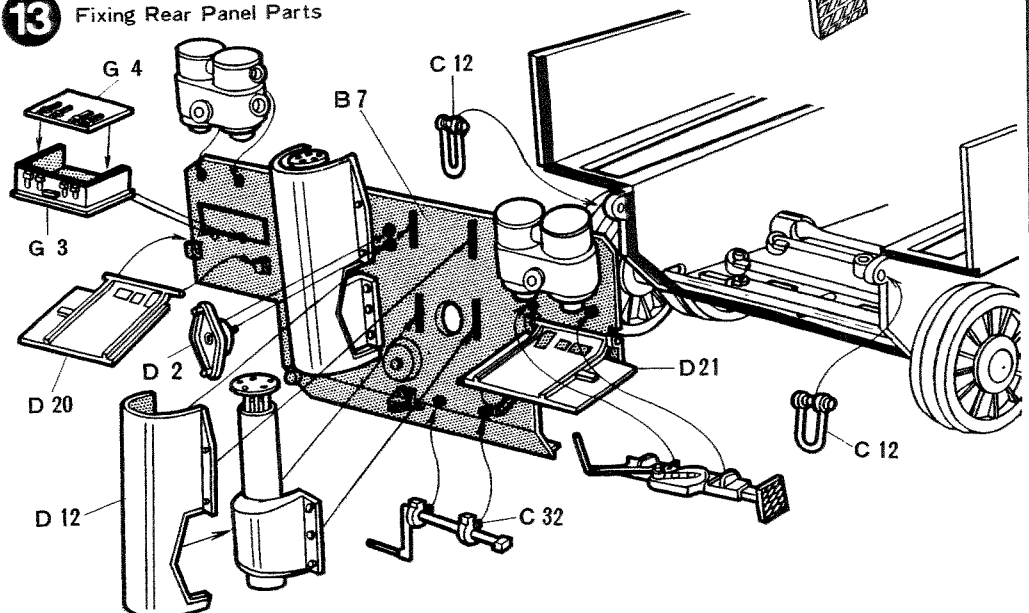
11 Fixing of Parts



12 Construction of Silencer, Jack, Air Intake Pipe



13 Fixing Rear Panel Parts



14 Fixing of Fender (Skirt) and Wire Ropes

Fig. 14—Fixing of Fender (Skirt) and Wire Ropes

Fix wire rope as shown. Put the wire rope, as shown in the illustration. Fixing the ends of the wire rope.

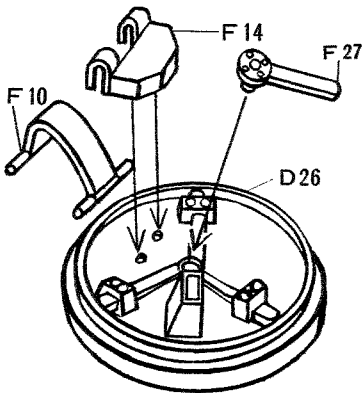
Put vinyl tube through the wire rope. Loop each end and secure the neck of loop with the vinyl tube.

Fig. 15—Construction of Upper Hull A

Do not glue C26.

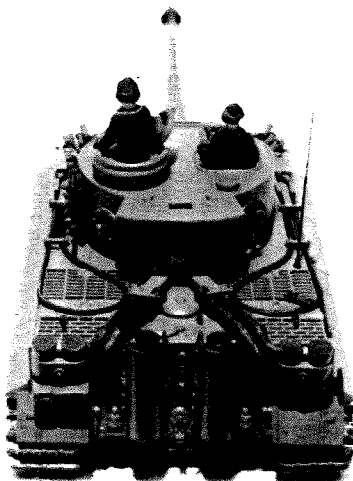
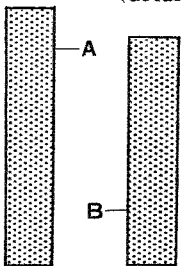
Fig. 16—Construction of Upper Hull B

In glueing F16 of driver's hatch with hinge F10 snapped therein, be careful not to let the adhesive overflow onto F10. —In constructing exhaust pipes,

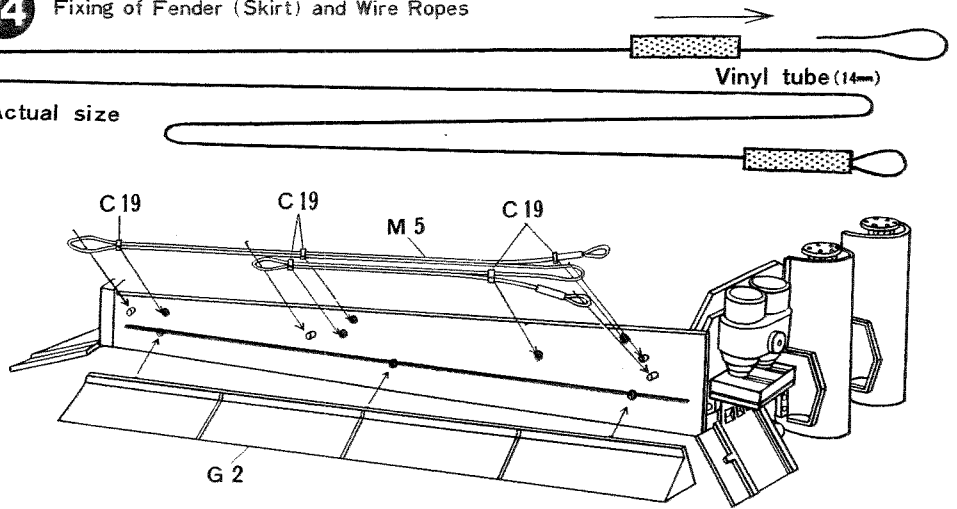


cut rubber tube into two pieces 34.5mm long and two pieces 30mm long and fix them together as shown.

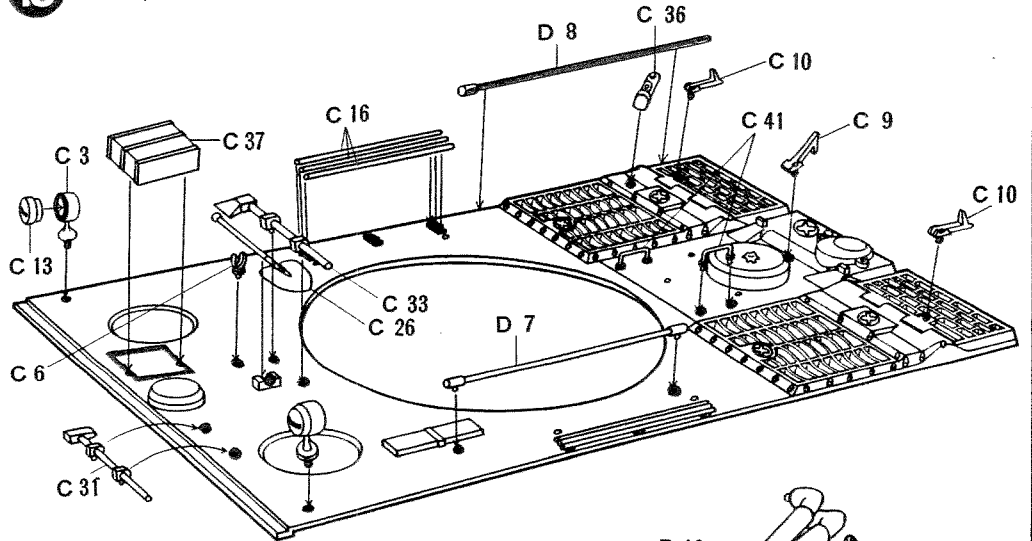
(actual size)



Actual size



15 Construction of Upper Hull A



16 Construction of Upper Hull B

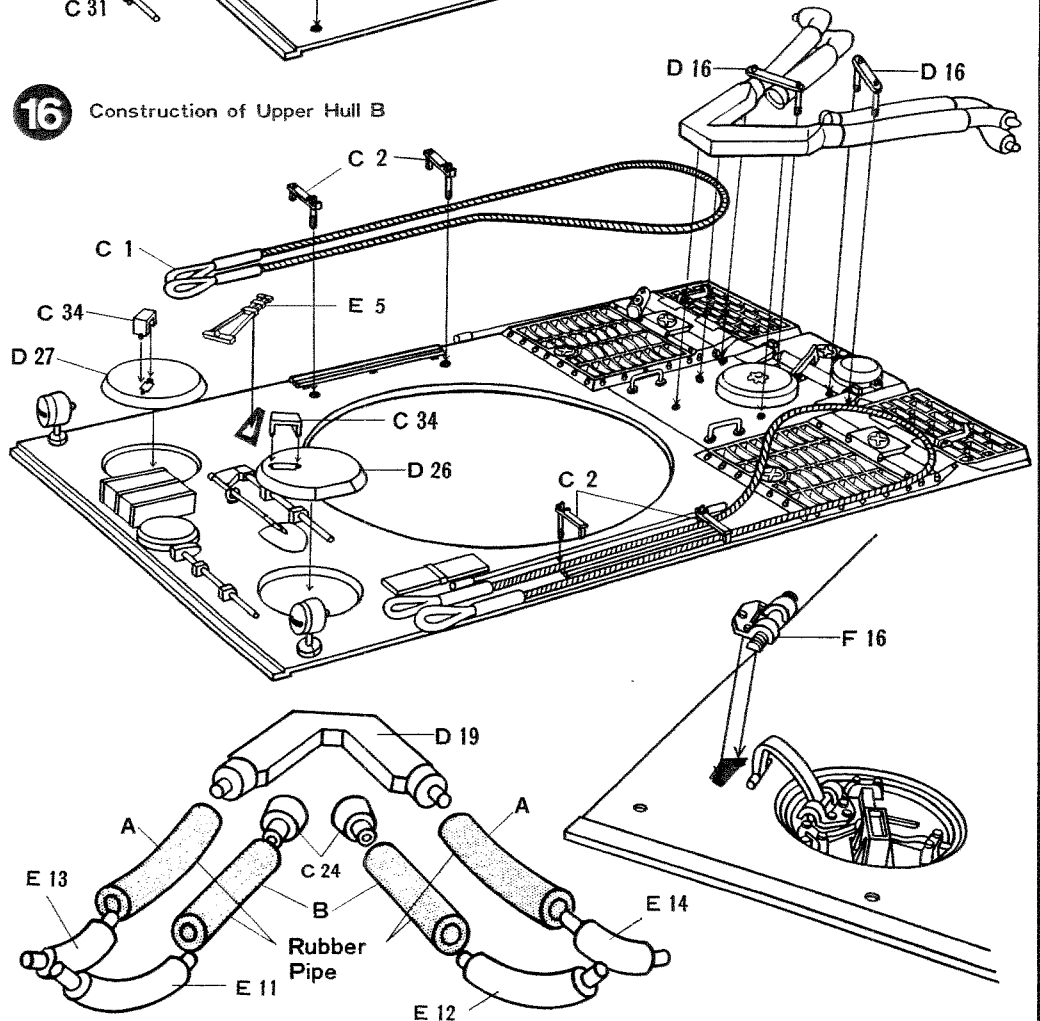


Fig. 17—Construction of Gun Barrel and Breech (A)

★The slant-lined area should be painted copper color.

Fig. 18—Construction of Gun Barrel and Breech (B)

★Paint the canvas sack for shells grey.

Fig. 19—Construction of Gun Turret Interior (A)

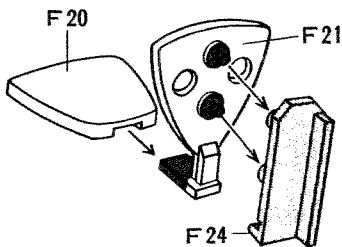
Note: Actual gunner's chair consisting of F26 and 31 is a revolving type.

★Paint the steering wheel white but the area where hands are placed on wheel should be painted glossy steel grey.

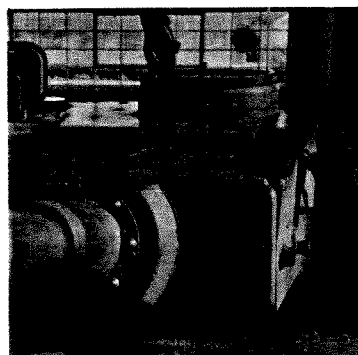
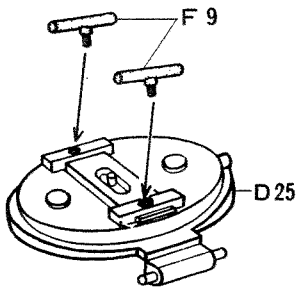
Fig. 20—Construction of Gun Turret (B)

In glueing F11 to mount escape hatch D25, be careful not to let the adhesive overflow onto D25. Glue 6 MG magazines F1 to turret side panels (3 pieces on each side of panel).

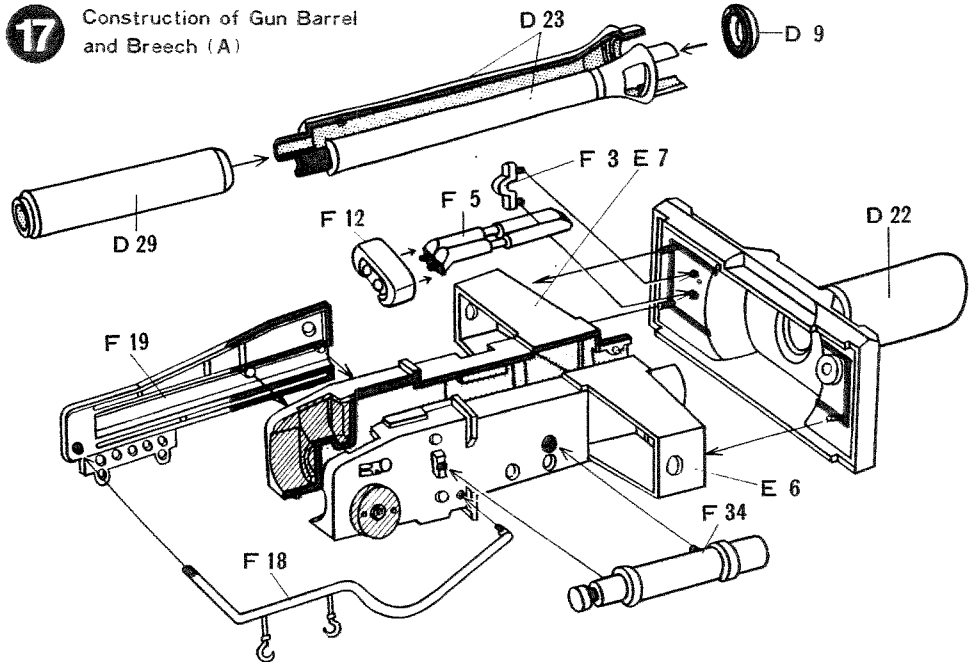
Construction of Commander's Seat



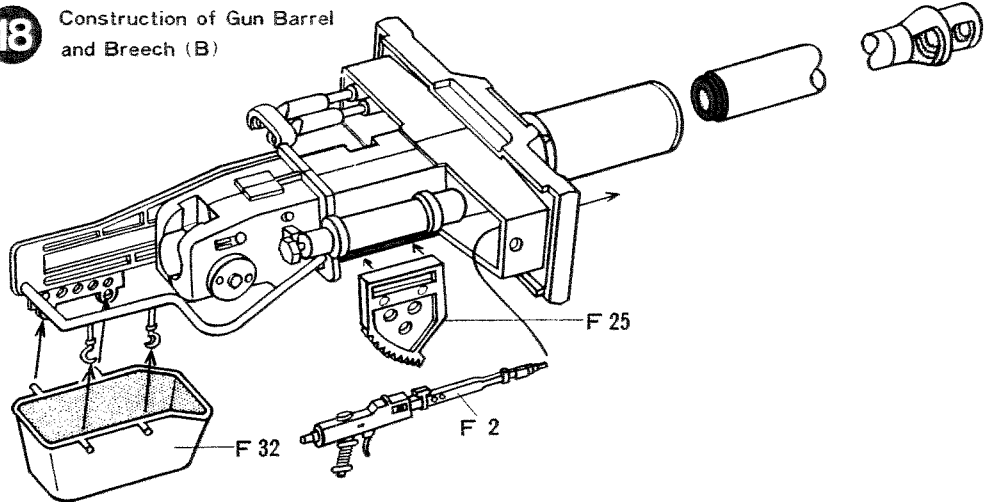
Construction of Escape Hatch



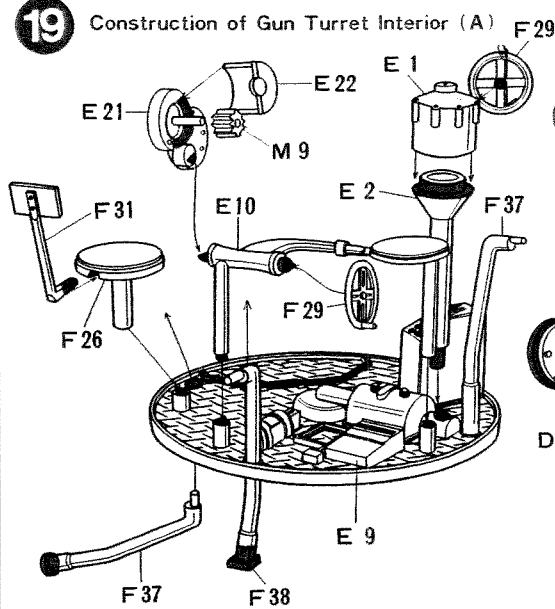
17 Construction of Gun Barrel and Breech (A)



18 Construction of Gun Barrel and Breech (B)



19 Construction of Gun Turret Interior (A)



20 Construction of Gun Turret (B)

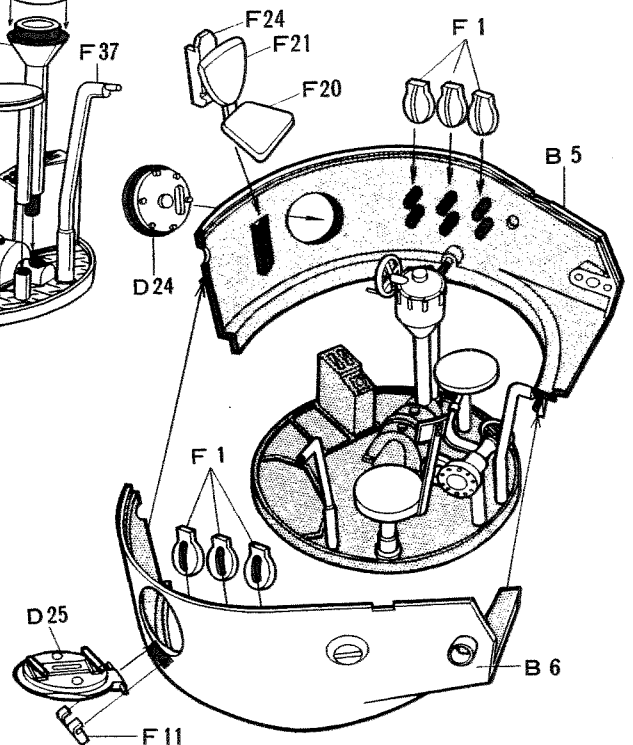


Fig. 21—Construction of Smoke Discharge Hatch

Smoke discharge comes in two pairs.
★Paint smoke discharge interior in black.

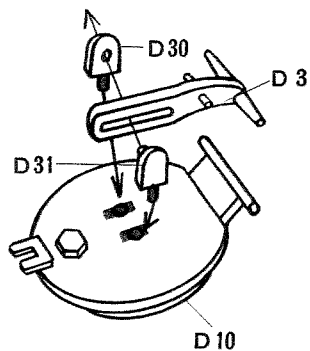
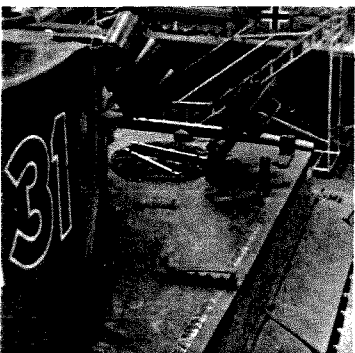
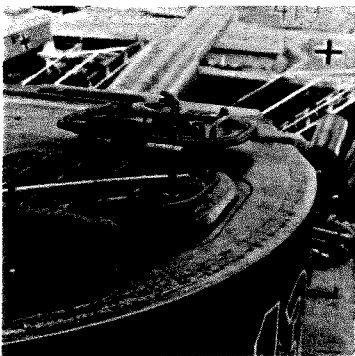
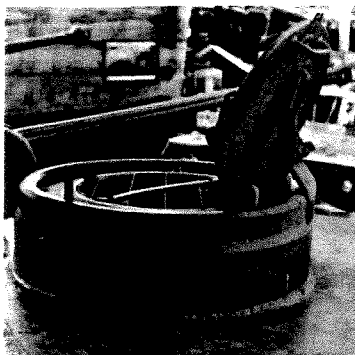


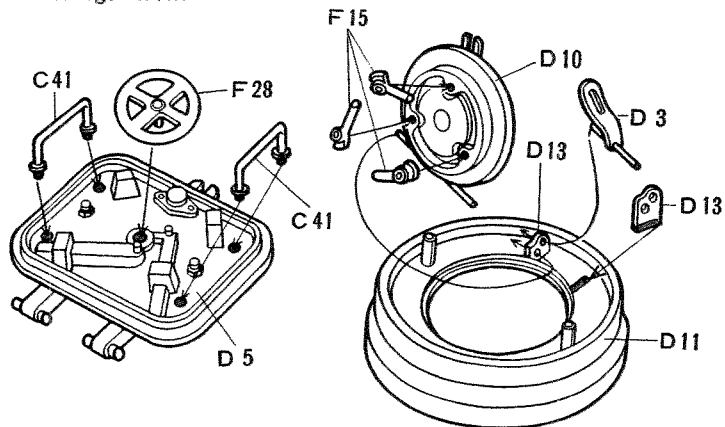
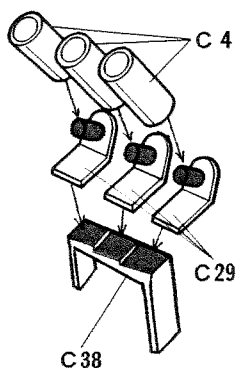
Fig. 22 Construction of Upper Gun Turret
Turret
Commander hatch construction.

Carefully distinguish between movable parts and fixed parts in construction so that no glue strays onto movable parts.

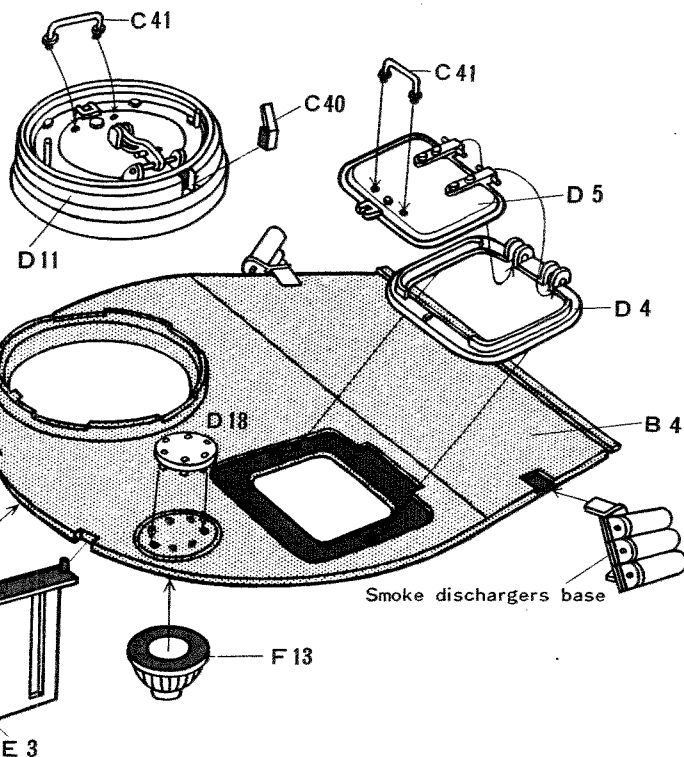
Fig. 23—Construction of Gun Turret
Do not glue box consisting of C27 and C28. It should be detachable from turret.



21 Construction of Smoke Discharge Hatch



22 Construction of Upper Gun Turret



23 Construction of Gun Turret

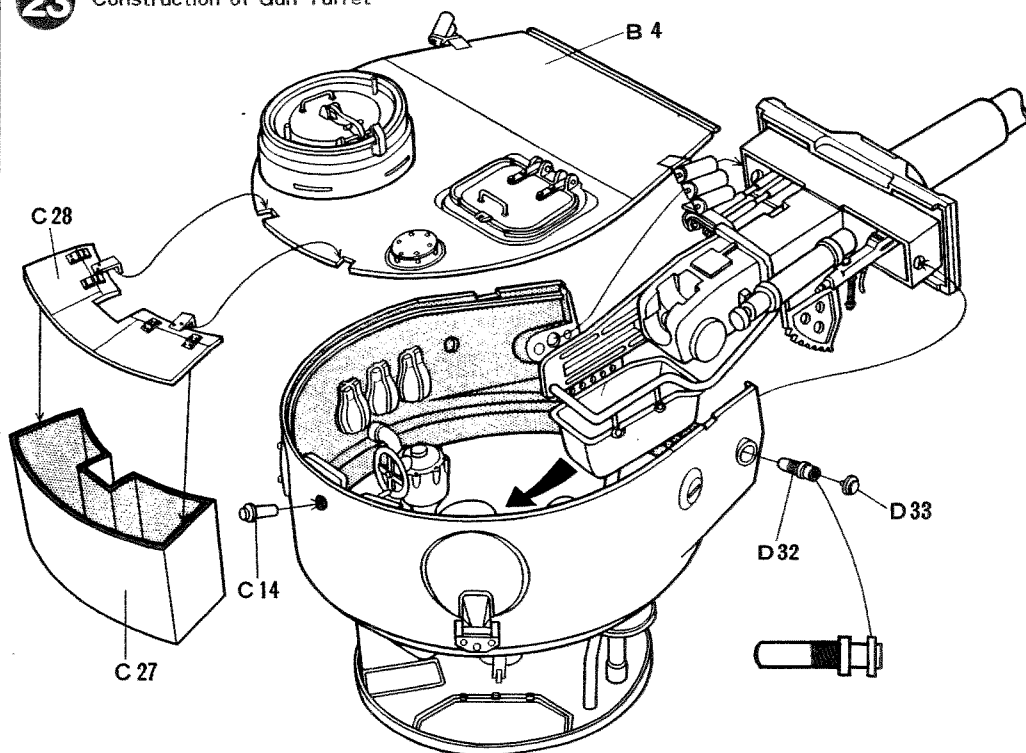


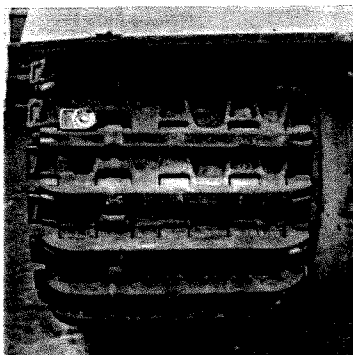
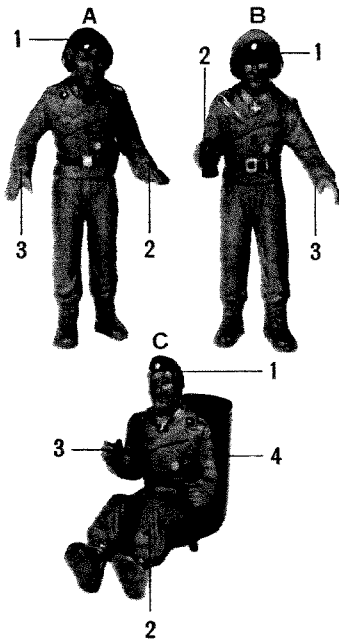
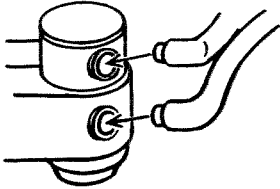
Fig. 24—Construction of Track Holding track link part as shown, slip in a link piece at one end of pin and bend the piece hard enough to fix the other end of pin to the track link part.

A total of 72 links (assembled) will make one caterpillar. Make two sets one each for the left and right side.

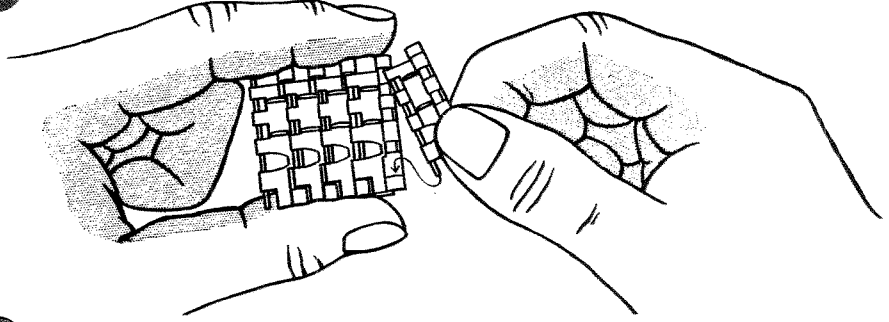
Fixing of Track
Refer to photo and built-up sketch, fix track carefully arranging its right side to engage sprocket wheel. Tension of track should be adjusted to a your preference by moving the abjuster (constructed in Figure 4) back and forth or by adding a link piece or vice versa.

Fig. 25—Mounting of Upper Hull and Gun Turret

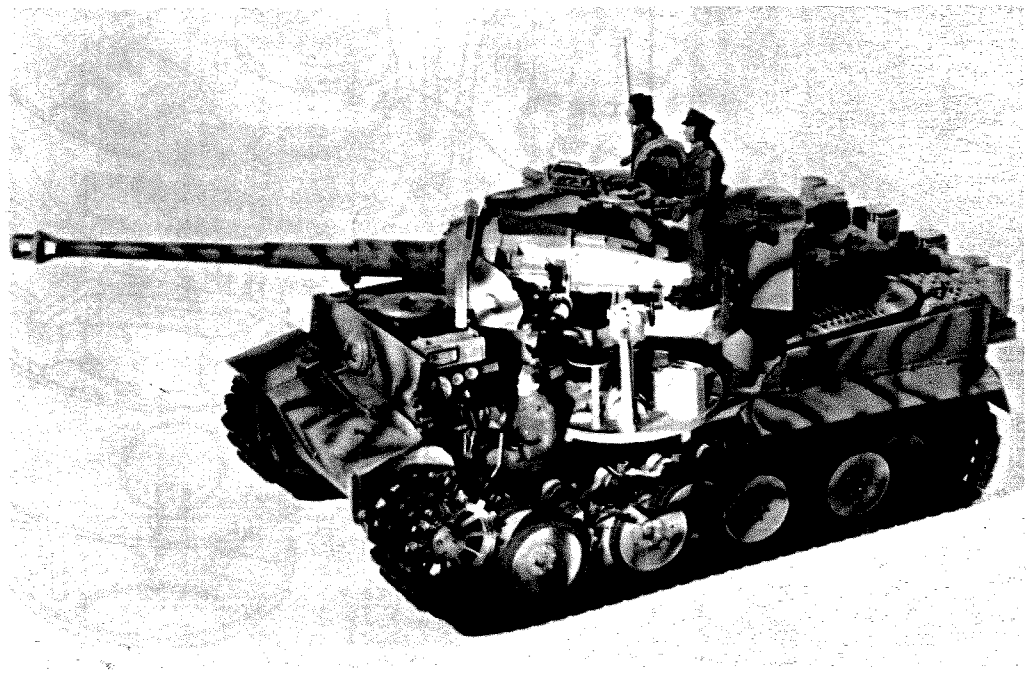
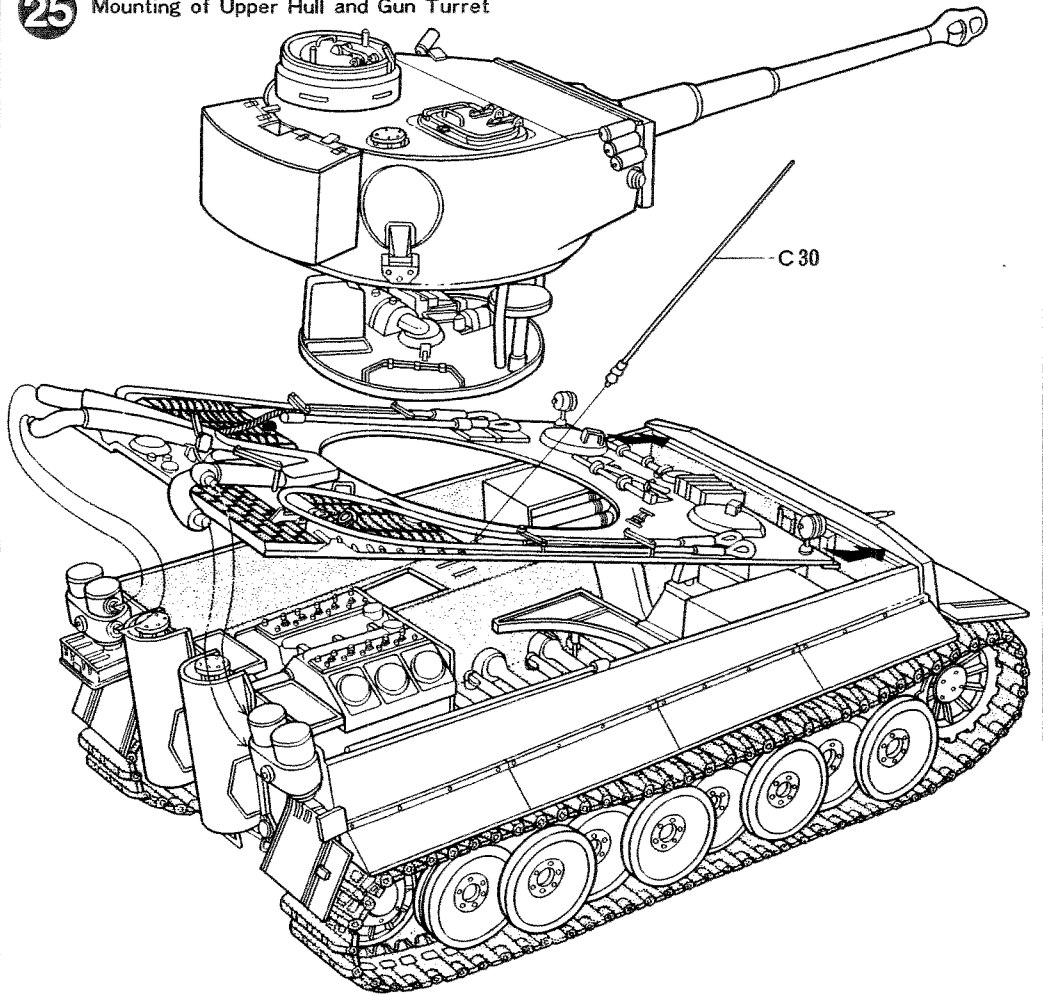
Push four exhaust pipes (two on each side) into silencer C20, C21 and C22 and C23 respectively. This serves to hold upper hull securely in position. Do not apply glue, as upper hull must be detachable.



24 Construction of Caterpillar



25 Mounting of Upper Hull and Gun Turret



PAINING

This kit is finished in dark grey like the original tank. However it was not possible to reproduce the iron tint in plastic. Therefore it is necessary to paint this model in order to reproduce the original effect. Also to achieve a really good result, much attention must be paid to painting the detailwork on the tank.

When painting, special attention should be paid to the following: Internal parts and certain others are difficult to paint once the model is constructed. So, paint them while they are still on the runner as instructed. All paints are inflammable. Take good precautions against fire.

(Paints and Solvents)

★ Use paints exclusively meant for plastics.

★ Thinners for solvent and cleansing of brushes respectively should be kept separately. For solvents, use those thinners exclusively meant for them. For cleansing, use methyl alcohol or lacquer thinner. Since methyl alcohol never damages plastic it can be used to wipe off mistakes painting.

★ When easy matted painting is desired, use magnesium carbonate. Mix a little magnesium carbonate with the paint. Then, thin the mixture with thinners. Apply the thinned paint and the desired matted finish will be obtained (Magnesium carbonate easily be bought at a dispensary.)

(Painting Utensils)

★ Before painting, prepare the necessary brushes. Better finish will be attained with good quality brushes. Following brushes are required.

Round brushes for water colour
— small, middle and large,
one each

Flat brushes for water colour
— small and middle, one each,
Round brush for oil painting
— a middle one.

Extremely thin brushes for work—two.

For shading off camouflage and other uses.

★ A dissolving bowl, the kit's blister (the transparent vinyl film that packs the parts) be substituted.

★ Painting—instructions are to be found in the of parts on the runner on Pages, 15 and 16. See the and paint the parts before taking them off the runner.

★ Next, samples of basic colour-mixtures of the original materials' given below:

Original materials	1 basic colours	2 combination colours
Metals	Silver & black	Brown, green & red
Rubber	Black	Yellow & white
Leather	Brown	Black & blue
Plating	Silver	
Wood	Yellow ochre	Brown & black
Glass	Silver	

Mix combination colours in the 2nd column a little at a time with the basic colour until the desired shade is obtain.

(Colour of the German Tank)

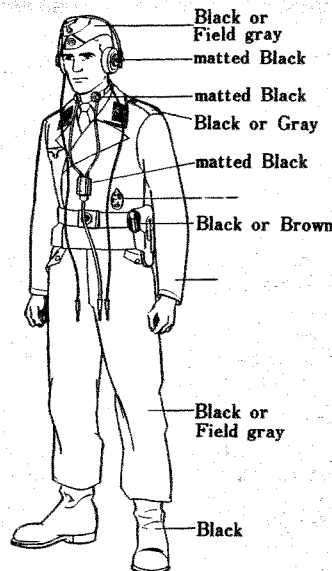
Around 1941, the color of all German military vehicles was a standardized grey except for those of the African Front which were painted in a combination of either yellow and light brown or grey and green. However, all these colors were dull, matted ones.

Then in 1942, the African vehicles were changed into brown-grey and in an eastern front, winter white (of a grey tint) was sprayed over the base color for those vehicles fighting against the Soviet forces. An aquatic overspray paint was used so as when wiped off the base color did not paint. Then, on February 19, 1943, all these colors were changed and dark yellow became the standard color for all military vehicles by order of the German Central Command. The German Mechanized Division had distributed among its tanks on the fronts, the following three color paints, 2 kg each: Olive-drab (color of the U.S. forces); red-brown (dark brown mixed with red); dark yellow (standard color). These respective forces sprayed their tanks to heighten camouflage effects. The painting was done either in large spots or stripe formations or by means of spraying all over, using freely those three colors. Any one of these painting method and free use of those colors was allowed until the end of the war. However, in the spring of 1945, dark grey German vehicles appeared on the front but these were limited to heavy tanks and large fire arms.

(Basic Painting of the German Tank Crew)

The combat uniforms including caps for the German tank crews armoured cars, destroyer-tanks, etc., were divided roughly into two main colours: Black and field-grey. However, shirts under the uniform were the same grey-coloured for both kinds. But this colour was changed to bright green in 1944. For formal occasions, a black tie was worn but during combat the crew seemed to dress up to their liking mostly without a tie.

Apparently, they preferred open shirts instead of tie, scarves or mufflers were worn around their necks. At the collar-edge of the black combat uniform, a pink-coloured decoration edge was attached; pink being the colour to distinguish the arm of the German Army. The decorated edge, however, was discontinued towards the end of the 2nd World War.



(The camouflaged uniform of the National Defence Force)

From around the spring of 1944, camouflaged combat uniforms were distributed to tank crew. However, the uniforms of the Waffen SS and the National Defence Force were different. So, when painting uniforms, refer to the picture below. Incidentally, we may add that all Wittmann's crew excepting Wittmann himself wore camouflaged uniforms off the Waffen SS when they were serving in Normandy.

The tank crew under the command of Lieut. Wittmann at the time of the Normandy battle



Refer to photo for painting. Dark Green, Light Green, Brown, Khaki, and Beige should be used.

The camouflaged uniform of the National Defence Force



Refer to photo for painting. Dark Green, Brown and Beige should be used.

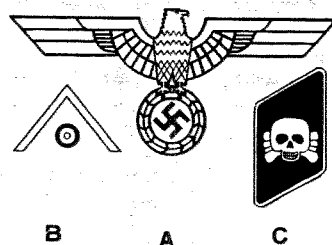
The German Army consisted of the National Defence Force and the Waffen SS. Besides, there were independent, special divisions like the Hermann Göring Parachute Panzer Division. Officers and men of these divisions wore different badges and collar badges. The difference is explained below.

(The National Defence Force)

Fig. A shows the German national crest of an eagle in silver or grey on dark-green background. This crest-mark was worn by all German soldiers including officers on their caps and on their right chests.

Fig. B shows a button (a small crown) representing the German nation which was worn on the front of their caps. It was coloured in order, red, white and black from the centre. A pink-coloured edge above distinguishes the arm of the German Army, to which the soldier belongs.

Fig. C shows a collar badge of oxidized silver depicting a skull on a black background. The ring around the badge is coloured in pink to distinguish the wearer's arm in the German Army.



(The Waffen SS)

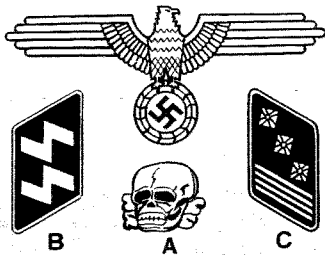
Fig. A shows the national crest mark of the Waffen SS on a black background. It is different from the one for the National Defence Force. This mark was worn on the left arm, or in front or on the left-hand side of the ordinary cap.

Fig. B shows a badge of a skull representing the Waffen SS. This badge was worn on the lower side of the cap.

Fig. C shows a symbol mark with an edge in white specially worn by all the SS men and officers on their right collars. It is a design of the letters, SS (short for Schutzstaffel) on a black background.

Fig. D shows a badge for the SS to be worn on the left collar. The shape is different and the collar, too, is differentiated in either silver or white according to rank.

These are fixed onto the right sleeves.



(The arm band was worn by all the soldiers on their right arm)



The "Grossdeutschland" Division



Officers of the "Hermann Göring" Divisions



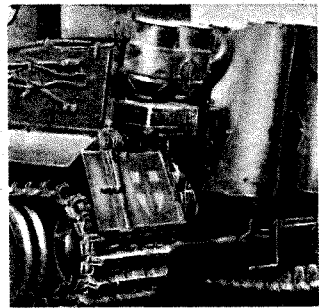
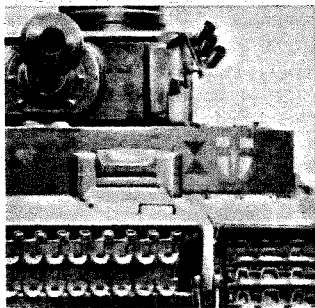
Officers of the "Hermann Göring" Divisions



The 1st SS Panzer Division



The 2nd SS Panzer Division

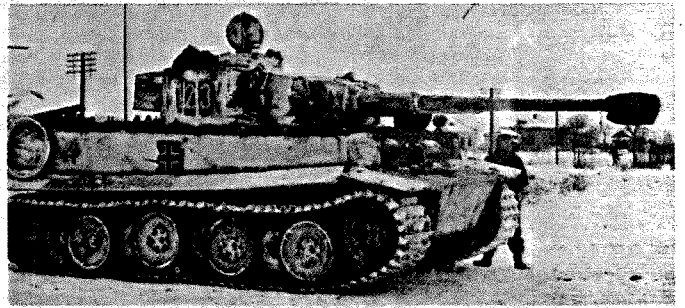


	The German Army Panzer Division, "Grossdeutschland"
	The German Army Parachute Panzer Division, "Hermann Göring"
	The 1st SS Panzer Division, "Leibstandarte SS Adolf Hitler"
	The 1st SS Panzer Division, "Leibstandarte SS Adolf Hitler" After the Normandy operation, the badge was changed to this one.
	The 2nd SS Panzer Division, "Das Reich"
	The 2nd SS Panzer Division "Das Reich" After the Kursk battle, the badge was changed to this one.
	The 28th Panzergrenadier Division

APPLYING DECALS

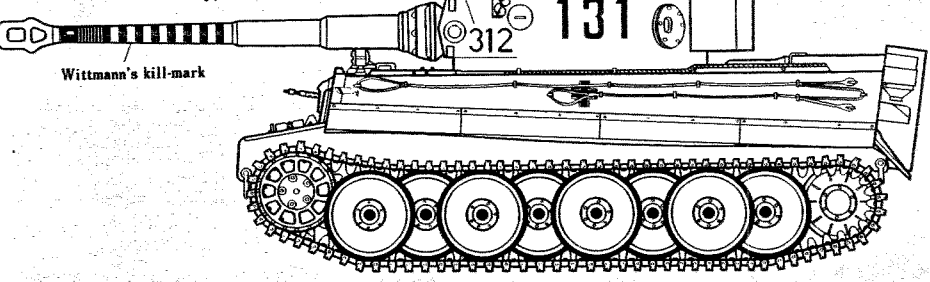
When applying decals, refer to the Four View on the below. Choose either of several versions. To apply decals, select the item you wish to apply and cut it from the sheet. For a neat job, work with one subject at a time and trim it close to color outline. Dip the decal in water for a few moments until it slides easily on the paper backing. next, slide the decal into position, press out trapped air bubbles and blot with soft rag.

	The crest for the 501st Independent Heavy Tank Battalion
	The Design of this badge for the heavy tank battalion utilizes the initial letter, 'S' of the German adjective, "Schwere" (heavy).
	The badge for the British 1st Army.
	The kill-marks drawn on the gun barrel of Wittmann's Tiger which destroyed 88 enemy tanks.
	The badge for the heavy tank battalion that was a change at the time of the Normandy operation

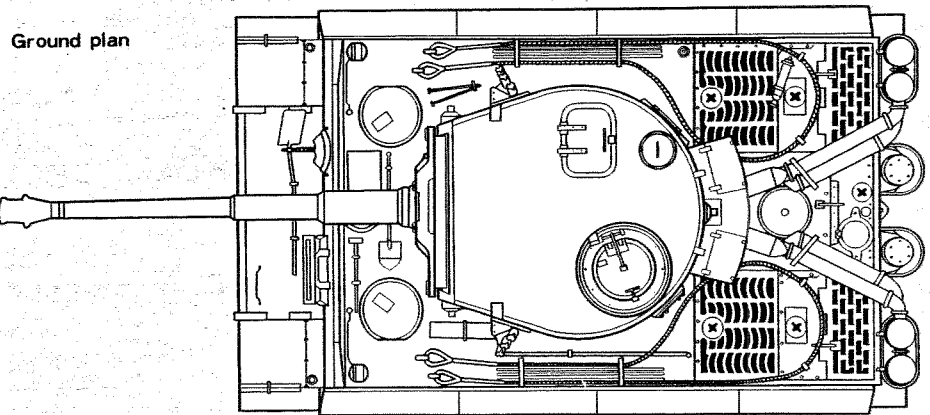


Side view

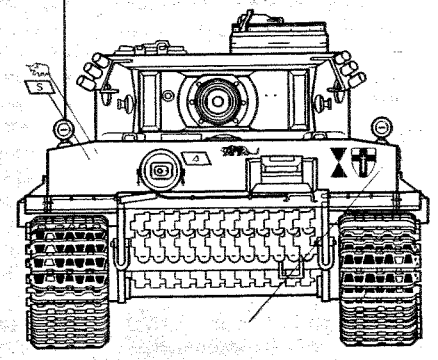
Either use the large number decals of the small ones, but you should not mix the two sizes as shown in the diagram. As the small number was used on the turret-number of Wittmann's Tiger. If you prefer Wittmann's Tiger, Use the small ones only.



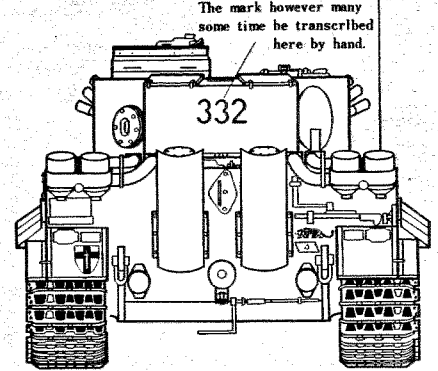
Ground plan



Front view



Respective marks of other divisions are to be glued here. The badge, however, may sometimes be transcribed here by hand.



The mark however many some time be transcribed here by hand.

PARTS

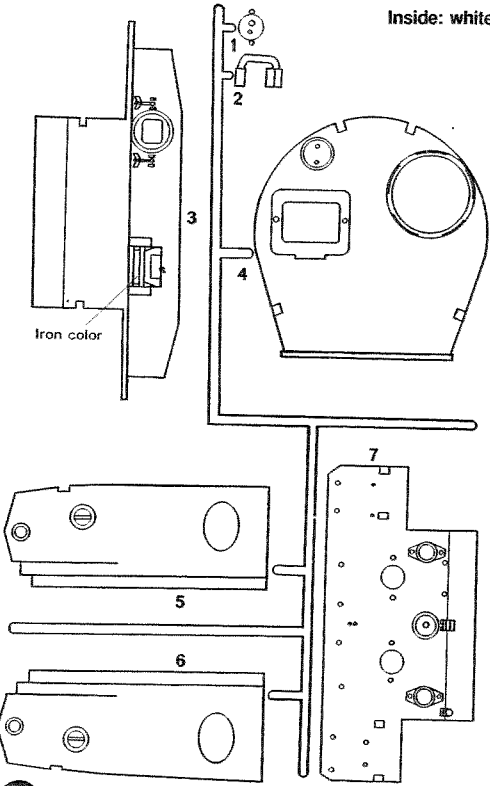
- B**
1. MG34 base
 2. Stopper
 3. 100mm frontal armour
 4. Upper turret panel
 5. Turret side panel (left)
 6. Turret side panel (right)
 7. Rear panel

- C**
1. Tow Rope
 2. Clamp
 3. Blackout light
 4. Smoke generator discharger
 5. Shaft Stopper
 6. Hook for tools (small)
 7. Hook for tools (medium)
 8. Hook for tools (large)
 9. Stopper
 10. Stopper
 11. Driver vision slit protector
 12. Towing shackle
 13. Black light lense
 15. Handle
 16. Crow Bar
 17. Engine stay
 18. Shovel
 19. Wire Rope Stopper
 20. Air cleaner (L.O)
 21. Air cleaner (L.I)
 22. Air cleaner (R.O)
 23. Air cleaner (R.I)
 24. Air Intake
 25. Air cleaner's Cap c c c
 26. Shovel
 27. Box of Rear Turret
 28. Box cover of Rear Turret
 29. Smoke discharger base
 30. Antenna
 21. Sledge hammer
 32. Hand crank
 33. Axe
 34. Periscope cover
 35. Step
 36. Fire extinguisher
 37. Hardwood Block
 38. Smoke discharger base support
 39. Handrail
 40. Stopper
 41. Handrail

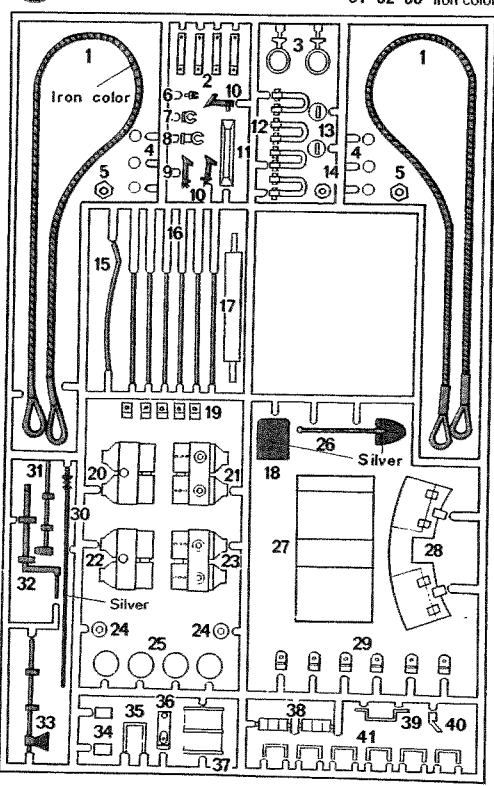
- D**
1. Exhaust pipe inside
 2. Accessory of rear panel
 3. Stopper
 4. Loader's hatch
 5. Loader's hatch cover
 6. Stopper for spare track links
 7. Cleaning rod
 8. Cleaning rod
 9. Muzzle brake
 10. Commander's hatch cover
 11. Cupola
 12. Exhaust cover
 13. Hinge
 14. Hinge
 15. Air cleaner, outside
 16. Clamp
 17. Cover
 18. Dry battery support
 19. Manifold
 20. Rear fender (left)
 21. Rear fender (right)
 22. 88mm gun shield
 23. 88mm gun barrel halves
 24. Revolver port
 25. Escape hatch
 26. Radio operators hatch cover
 27. Driver's hatch cover
 28. Extractor fan cover
 29. 88mm gun barrel
 30. Hinge
 31. Hinge
 32. Turret gun elevator cylinder shaft
 33. Elevator cylinder shaft cap

- E**
1. Upper traverse gear box
 2. Lower traverse gear box
 3. Commander's shield
 4. Front shaft cover
 5. Turret platform with gearbox
 6. Steering wheel shaft
 7. Wire cutter
 8. Breech half (right)
 9. Breech half (left)
 10. Platform
 11. Turret platform
 12. Bulkhead
 13. Radio mechanism
 14. Radio mechanism
 15. Radio mechanism
 16. Elevating gear case cover
 17. Gunner's seat
 18. Elevating gear case
 19. Air cleaner pipe (A)
 20. Air cleaner pipi (B)
 21. Air cleaner pipe (C)
 22. Air cleaner pipe (D)

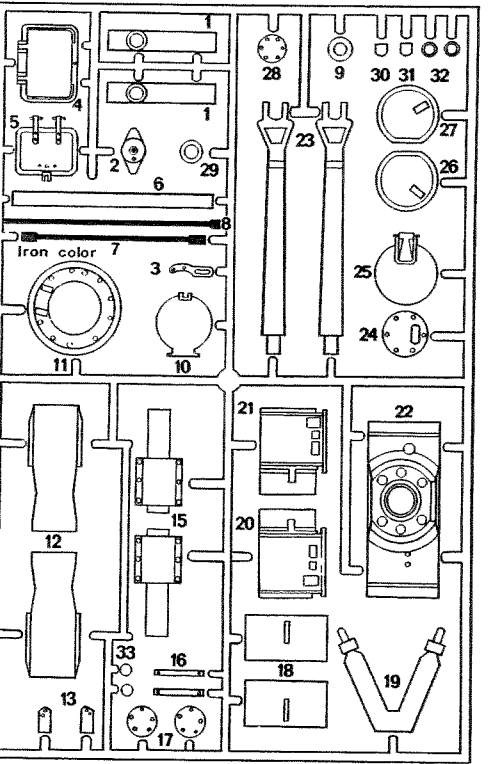
B PARTS



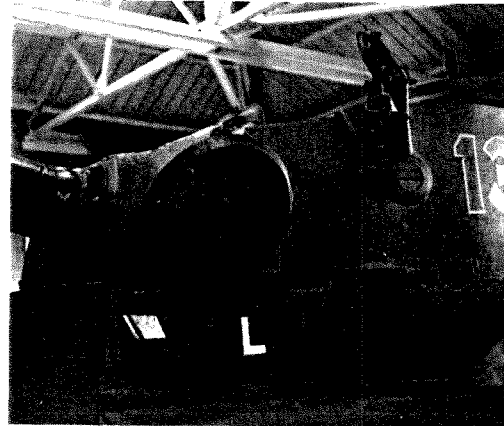
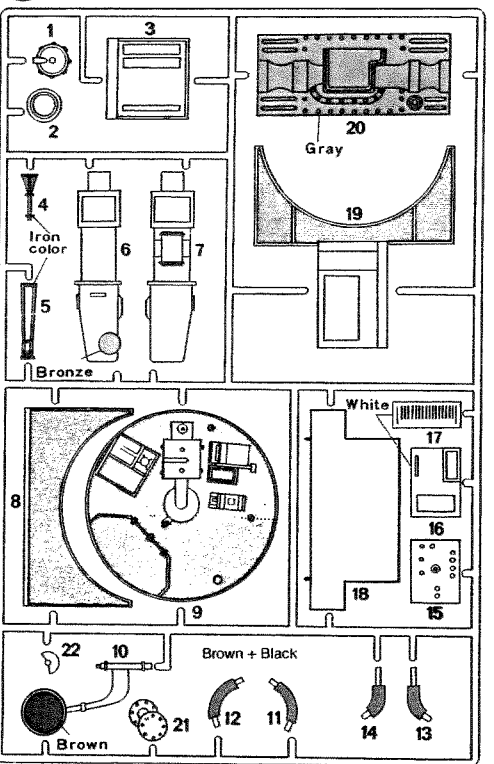
C PARTS



D PARTS



E PARTS



PARTS

- 1 .MG ammunition magazine
- 2 .MG
- 3 .Accessory, telescope
- 4 .Accessory, jack (A)
- 5 .Binocular telescope
- 6 .Wheel cap fixing part
- 7 .Accessory, jack (B)
- 8 .Jack
- 9 .Accessory, escape hatch
- 10 .Hatch cover arm
- 11 .Escape hatch cover hinge
- 12 .Sight base
- 13 .Extractor fan
- 14 .Hatch cover hinge (A)
- 15 .Accessory, commander hatch cover hinge
- 16 .Hatch cover hinge (B)
- 17 .Instrument panel
- 18 .Breech mechanism (A)
- 19 .Breech mechanism (B)
- 20 .Commander's seat
- 21 .Commander's back seat
- 22 .Steering wheel
- 23 .Control lever
- 24 .Commander's seat support
- 25 .Rack
- 26 .Gunner's seat
- 27 .Gunner's back rest
- 28 .Hatch cover hand wheel
- 29 .Elevating handwheel and traverse handwheel
- 30 .Seat
- 31 .Gunner's back rest
- 32 .Canvas sack
- 33 .Ammunition with rack
- 34 .Breech mechanism (C)
- 35 .Ammunition with rack
- 36 .Hand brake
- 37 .Turret platform support (A)
- 38 .Turret platform support (B)
- 39 .Emergency steering levers
- 40 .Direction control lever
- 41 .Upper engine

- 1 .Upper hull plate
- 2 .Upper hull plate side
- 3 .Side panel, tool box
- 4 .Tool box

- 1 .Sprocket wheel
- 2 .Sprocket wheel
- 3 .Front road wheel
- 4 .Front road wheel
- 5 .Road wheel
- 6 .Road wheel
- 7 .Road wheel
- 8 .Road wheel

- 1 .Torsion bar suspension
- 2 .Torsion bar suspension
- 3 .Torsion bar suspension
- 4 .Torsion bar suspension
- 5 .Speaker
- 6 .Joint
- 7 .Connector A
- 8 .Connector B
- 9 .Connector C
- 10 .Adjuster

- A1 .Loader
- A2 .Loader's right hand
- A3 .Gunner's left hand
- B1 .Commander
- B2 .Commander's left hand
- B3 .Commander's right hand
- C1 .Driver's upper half
- C2 .Driver's lower half
- C3 .Driver's left hand
- C4 .Driver's right hand

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