BATTLEGROUP-FRONTLINES

World War 2 Mod for Battlefield 2

User Guide

A GUIDE TO GERMAN AND SOVIET VEHICLES, AIRCRAFT AND STATIONARY WEAPONS

SECOND DRAFT

Contents

Introduction

Battlegroup-Frontlines is a Second World War mod (modification) for Battlefield 2; it was formed from the merger of the Battlegroup42, Frontlines and Warfront mods. BGF is set on the Eastern Front (Germany versus Soviet Union). It initially concentrates on the first half of the Great Patriotic War, from Operation Barbarossa (the German invasion of Russia in June 1941) to Operation Citadel (the German assault on the Kursk salient in July 1943).

This is the user manual for BGF. It includes details of the vehicles, aircraft and stationary vehicles in the first release of the mod; others will be added in future editions as the mod develops. Also, future editions will broaden coverage to include details of infantry weapons, maps and so on.

We put a lot of work into this mod, and we hope you enjoy playing it as much as we enjoyed developing and testing it.

Panzaman and the BGF Team
November 2007

There are many features unique to the Battlegroup-Frontlines mod. For those not familiar with it, here are some of the main ones:

1) Vehicles can only be entered at particular points close to their real-life door and hatch positions, for example they can't be entered from the rear, so typically aircraft are entered at the left side of the cockpit and tanks at the front driver's position (you might need to jump up to get close enough).

2) Tanks are directly controlled by one person, who is both driver and gunner, but there are separate driving and gunning viewpoints. Use the open driver's visor for driving and the gunsight for aiming, using the F key to switch between them.

3) Most tanks have additional player positions, for example for the front hull machine-gun and, on Soviet heavy tanks, the turret rear machine-gun. Some have additional positions, such as seated infantry positions on the back of the T-34 and the turret front machine-gun on the BT-7A.

4) Tanks have different ammunition types, select between them the same way as selecting between your infantry weapons. The main abbreviations to be aware of are HE (high explosive) for use against infantry and lightly armoured vehicles, and AP (armour piercing) for use against tanks and other armoured vehicles.

5) There are many stationary weapons ingame, not just machine guns but also anti-tank guns. Anti-tank guns are controlled not with the mouse but with the movement keys (usually W, A, S, D). Like tanks, anti-tank guns have a gunsight selectable via the F key.

German Vehicles

Kubelwagen Car

Designation:	Kfz1 Kubelwagen
Armament:	-
Crew:	1 – 4
Weight:	1 ton
Armour Thickness:	-

Built by Volkswagen, the simple and reliable Kubelwagen (“bucket car”) was the German equivalent of the American Jeep. This nimble four-seater, based on Ferdinand Porsche's original “People's Car” design of the 1930's, used the same rear-mounted, aircooled engine driving the rear wheels. Variants included the amphibious Schwimmwagen, as well as radio communications, maintenance, ambulance, and survey versions.

The BGF Kubelwagen has 3 seats. It is available in closed and open (roof down) versions).

Opel Blitz Truck

Designation:	Opel Blitz
Armament:	-
Crew:	1 + 5
Weight:	2100kg (payload 3290kg)
Armour Thickness:	-
Maximum Speed:	80 km/h
Engine:	54.8-kW (73.5-bhp) Opel 6-cylinder petrol engine
Range:	410 km

The Opel Blitz was developed in the early 1930's and entered service in 1935 (military production: 1937-1944 – production disrupted by Allied bombing) and it was found to be superior to its competitors. During this time the Opel company was under the control of General Motors which had acquired the company in 1929, however the management wasn't trusted by the German authorities and the company was nationalised in 1940 (General Motors only regained control in 1948). The Blitz came in two versions the A (4X4) and the S (2x4) types with only small differences (body and undercarriage) between the two. There were many different types ranging from open versions to closed versions and half-track versions (the Opel Maultier).

The BGF Opel Blitz is available in open and closed versions.

Opel Blitz Ambulance

This is an ambulance version of the Opel Blitz.

SdKfz 231 Armoured Car

Designation:	Schwerer Panzerspähwagen 231 8-rad
Armament:	20mm KwK gun (180 rounds) 7.92mm MG 34 machine gun (2100 rounds)
Crew:	4
Weight:	8,300kg
Armour Thickness:	8 - 30mm
Engine:	Büssing-NAG L8V engine (180 HP)
Maximum Speed:	100 kph (62mph)
Range:	167-300km

A complement to any armoured force is a fast moving, heavily armoured and armed reconnaissance vehicle, and the Germans often used the Schwerer Panzerspähwagen 231 8-rad for this purpose. The SdKfz 231 was a replacement for the 6 wheeled armoured car of the same designation as there was a need for a greater cross-country capability, and the process was completed by 1940. It became the backbone of the Wehrmacht's heavy reconnaissance brigades until the end of the war.

The 231 in BGF has full 8-wheel steering, and grey and summer camouflage schemes

The SdKfz 231 was armed with a 2 cm KwK 30 L/55 autocannon, and a Maschinengewehr 34 machine gun, and was very agile thanks to its 8-wheel steering design. There were a number of variants of the SdKfz 231 including the 232 (fitted with a long range radio), the SdKfz 233 (see below), and the SdKfz 263 command vehicle.

The 232 and 263 have been shown in BGF news, but are not in the current release.

SdKfz 233 Self-Propelled Gun

Designation:	Schwere Panzerspähwagen (7.5cm), SdKfz 233
Armament:	7.5cm StuK37 L/24
Crew:	3
Weight:	8700kg
Armour Thickness:	5 - 30mm

The SdKfz 233, nicknamed the “Stummel”, was an SdKfz 231 chassis modified to carry a short-barrelled 75mm gun in an open, fixed superstructure. This configuration allowed the Germans to move their premiere infantry support gun up to the front much more quickly than before.

Because it is an open vehicle with exposed gun, the driver and gunner are coded as separate positions. It will require good use of the built-in communication system BF2 offers to make it an effective force on the battlefield.

SdKfz 251 Armoured Personnel Carrier

Designation:	SdKfz 251/1
Armament:	7.92mm MG34 (2010 rounds) 7.92mm MG34 (Rear Pintle, 1125 rounds)
Crew:	1 + 4
Weight:	8500kg
Armour Thickness:	5 – 14.5mm
Maximum Speed:	Road: 52km/h (32mph) Off road: 21kmh (13mph)
Range:	Road: 300km (186 miles) Off road: 150km (93 miles)
Engine:	Mayback HL 42 TUKRM (100hp at 3000rpm)

The Sdkfz 251 was Germany's primary armoured personnel carrier in World War 2; it could carry ten troops or 1.5 tonnes of cargo and could also tow an additional 2.7 tonnes. The version C had a different nose compared to the previous two versions because of poor engine cooling which caused the engine to overheat.

During the war there were many different versions of the standard halftrack (23 officially named) which performed a number of roles from artillery support to specialised versions for towing and radio communications. Production was by Hanomag from April 1940 and 4165 were produced.

The BGF 251 is available in APC and ambulance versions.

Panzerkampfwagen III Tank

Designation:	Zugführerwagen / ZW, SdKfz 141
Armament:	37mm KwK L/45 3 x 7.92mm MG 34
Crew:	5
Weight:	15 tons
Armour Thickness:	5 - 14.5mm

The Panzer III was the main German tank of the first half of WW2 and will be found on nearly all maps.

The Heereswaffenamt issued development contracts in 1935 to MAN, Daimler-Benz, Rheinmetall-Borsig and Krupp. These were for a vehicle in the 15-ton class armed with a 37mm gun. General Guderian had planned two types of tank for Germany's new armoured divisions, one with an armour piercing gun as well as bow and turret machine guns; and the other a support vehicle, mounting a larger calibre cannon. The first of these was to become the PzKpfw III.

The Weapons Department and Artillery Inspectorate had considered the 37mm gun to be sufficient for the new vehicle, while the Inspectorate for Mechanised Troops demanded a 50mm gun. The infantry already had the 37mm anti-tank gun so this was chosen for the sake of standardisation. However, it was decided that the PzKpfw III's turret ring would be made large enough to take a larger calibre weapon in the future.

The first PzKpfw III model was the Ausf A or 1/ZW of which ten were built in 1936. The suspension each side included five large roadwheels supported by coil springs, plus two return rollers. This changed to eight roadwheels supported by two leaf springs, plus three return rollers, in the Ausf

B (2/ZW). Fifteen of these were built in 1937. Fifteen examples of the Ausf C (3a/ZW) were also completed and differed only in the suspension, in having three leaf springs per side. The Ausf D (3b/ZW) was almost identical to the Ausf C but the basic armour was increased to 30mm and the turret was fitted with a new pattern of armoured cupola that had sliding shutters over its five vision ports. All of these vehicles were in effect only development models and so were produced in limited numbers.

The Ausf E was the first full production model of the PzKpfw III. Its suspension had six roadwheels each side mounted on torsion bars fitted across the hull, plus three return rollers. This arrangement was to remain largely unchanged until the end of production of the PzKpfw III. Other changes on this model included an improved driver's visor with double sliding shutters and a new hull machine-gun ball mount (*Kugelblende 30*). Two-piece side hatches were also introduced on the turret. About 100 examples of the Ausf E were built during 1939 and 1940.

The Ausf G appeared in 1940 and all but the earliest examples were equipped with the 50mm KwK L/42. The turret had a new commander's cupola with narrow twin covers over each of its five vision ports that could be operated independently. The Ausf G was also fitted with a new driver's visor with a single hinged shutter to offer better protection against bullet splash. Total Ausf G production was 450.

The Ausf H saw the introduction of major changes to the suspension system. The track width was increased from 360mm to 400mm and the front return roller each side was moved further forward to give better support to the heavier track. Also fitted were new sprocket wheels with six apertures instead of eight circular holes, and new spoked idler wheels. Existing stocks of the old sprockets and idlers were also used in conjunction with spacer rings.

Experience in battle resulted in a demand to increase the relatively thin armour of the PzKpfw III. Ausf H vehicles leaving the production lines in 1941 were therefore fitted with additional 30mm armour plates bolted to the front faces of the hull and superstructure.

Ausf J (L/42)

Designation:	8/ZW
Armament:	50mm KwK 39 L/42
	2 x 7.92mm MG 34
Weight:	21.5 tons
Armour Thickness:	10 - 50mm

The Ausf J represents a major point in the development history of the PzKpfw III with its heavier armour and, in the second production run, its more powerful armament. In its complete form it was superior to any tank available to the Western Allies and in the Western Desert it was known to the British as the 'Mark 3 Special' or 'J Special'. However, as the Ausf J went into production the German Army advanced into Russia and there met the superior T-34 with its 76.2mm gun and sloped armour.

When the Ausf J appeared in 1941 its basic armour was 50mm thick, causing an increase in the total weight of the vehicle. Ground pressure was kept low by the wider tracks of the Ausf H while the Ausf J was kept in balance by increasing the rear armour as well as the frontal plates. The torsion bars were strengthened because of this increased load.

With the thicker armour the driver's vision slot was changed to a Fahrersehklappe 50, and a new ball mounting was introduced for the hull machine-gun, known as a Kugelblende 50. The hull itself was simplified with the towing lugs now formed from extensions of the hull side armour. Single forward-opening maintenance/escape hatches replaced the double-flap types fitted in the glacis plate.

From late 1941 the longer-barrelled 50mm KwK L/60 began to be fitted to Ausf J vehicles, though the L/42 was still fitted in some until about February 1942. Late production models had the right front and side vision slots on the turret omitted. Earlier models that were returned to Germany for refit were rearmed with the longer gun.

Ausf J (L/60 – J Special)

Designation:	SdKfz 141/1, "J Special"
Armament:	50mm KwK 39 L/60
	2 x 7.92mm MG 34
Weight:	21.5 tons
Armour Thickness:	10 - 50mm

From late 1941 the longer-barrelled 50mm KwK L/60 began to be fitted to Ausf J vehicles, though the L/42 was still fitted in some until about February 1942. Late production models had the right front and side vision slots on the turret omitted. Earlier models that were returned to Germany for refit were rearmed with the longer gun. Vehicles fitted with the longer gun were known to the British as the "J Special".

The Ausf L came off the assembly lines from the end of 1941 until mid-1942 and had serial numbers between 74101 and 76000. The fighting compartment was protected by a 20mm thick armour plate fixed 100mm in front of the driver's plate, and provision was also made for the fitting of a similar plate in front of the gun mantlet.

Sturmgeschütz III Assault Gun

Designation:	7.5cm Sturmkanone auf Fgst PzKpfw III, Sturmgeschütz III für 7.5cm StuK L/24, Gepanzerte Selbstfahrlafette für Sturmgeschütz 7.5cm StuK, SdKfz 142
Armament:	75mm StuK 37 L/24
Crew:	4
Weight:	19.6 tons
Armour Thickness:	11 - 50mm

Soon after the formation of the new Wehrmacht under Hitler's Third Reich, many high-ranking infantry officers came to see the need for a heavily armoured support gun that could eliminate strong points and obstacles during an assault. In 1936 the German High Command ordered the development of such a vehicle mounting the 75mm KwK L/24 howitzer then being adopted for the PzKpfw IV tank. Daimler-Benz designed the chassis and superstructure while Krupp developed the gun and its new mounting.

In 1937 five O-Series prototypes were built using a low, fixed superstructure built on the PzKpfw III Ausf B chassis and with a limited-traverse mount for the gun. The pilot models were identifiable by twin round access hatches in the nose plate. Since they were constructed of mild steel they did not see combat. The first production vehicles were based on the PzKpfw III Ausf F and were designated *Sturmgeschütz Ausf A*. The superstructure front and nose plates were 50mm thick while the vertical sides were 30mm thick. A rectangular radio pannier was installed on the left side. In front of this on the

left and all along the right side wall there were 9mm angled armour plates forming an outer wall that extended over part of the mudguards. The first series of Sturmgeschütz went into production in February 1940 and five examples appeared in time to see action in the invasion of France in May of that year. Full production began in September, and a total of 184 was built during 1940.

In the autumn of 1940 an improved model appeared, the Ausf B, incorporating the improvements introduced in the PzKpfw III Ausf H. Most Ausf B had the new pattern drive sprockets and idler wheels. However, as with the PzKpfw III Ausf H, some kept the old sprockets and idlers used in conjunction with spacer rings. All had the new 400mm wide track and the front return roller each side moved forward. The latter change, therefore, provides the best recognition point.

Ausf D

Weight: 20.2 tons

The Ausf C was introduced in early 1941 and differed from the Ausf B in having a redesigned superstructure front. The gunner's sight now protruded through a slot in the roof plates rather than through an aperture in the front armour. The side plates and driver's roof plates were also simplified, as were the front plates on the right side of the gun. The Ausf D was externally no different to the Ausf C but incorporated several minor internal alterations introduced during the production run.

The next model developed, the Ausf E, had a redesigned superstructure with the 9mm angled side plates being eliminated. The armoured radio pannier on the left side was extended forward. A second pannier was added to the right side of the superstructure; in command vehicles this was used for additional radios and in standard vehicles for the stowage of ammunition. The glacis plate hatches now had two small hinges per side in place of the single large hinges used on previous models. A more significant improvement was the provision of a machine gun for the crew. This was stowed inside the vehicle when not in use.

When the Germans first met the Russian T-34 and KV-1 tanks, the obvious superiority of the Soviet vehicles led to the call for more powerful weapons to be fitted to the main German armoured vehicles. The StuG III received the longer 75mm StuK 40 L/43; this was modified from the 75mm KwK 40 L/43 tank gun by moving the recoil cylinders from each side of the barrel to a position above it. This was done in order to provide adequate clearance for traverse of the gun within the constraints of the fixed superstructure. A new welded block mantlet with 30mm front armour was also fitted and the central part of the roof was raised in the rear. An electric fan and ventilator were fitted in this raised section. During Ausf F production the roof plates over the driver and on the right side of the gun were raised to become flush with the side plates and the superstructure front plate. Some Ausf F's were later rearmed with the 75mm StuK 40 L/48 but were otherwise unchanged.

After the Ausf F had been in production for a time it was modified by the introduction of a new gun, the StuK 40 L/48, that was 5 calibres longer. The chassis design also changed as it was now based on the PzKpfw III Ausf L and therefore most of the rear engine deck was altered. The cast deck ventilators now ran lengthways rather than across the engine inspection hatches, and the tail-plate was redesigned. Additional 30mm armour was bolted to the 50mm armour on the nose plates and the driver's and offside front plates. Some vehicles had the older single-baffle muzzle brake but most had the later double-baffle one as fitted on the L/43. Some vehicles had an MG 34 for the loader, with a folding shield, and some had Schürzen armour fitted.

Ausf F and F/8 vehicles saw service on the Eastern Front, in Italy and in the last stages of the North African campaign in Tunisia. Their low silhouette, thick frontal armour and powerful gun made them excellent anti-tank weapons when fighting from an ambush position.

Ausf G

Armament:	75mm StuK 40 L/48 2 x 7.92mm MG 34
Weight:	23.9 tons
Armour Thickness:	11 - 80mm

The Ausf G has been shown in BGF news, but is not in the current release

The Ausf G was the final production version of the StuG III and appeared in early 1943. It had a number of changes evident in the superstructure, and during its production run many smaller improvements were incorporated.

Panzerkampfwagen IV Tank

Designation:	Bataillonsführerwagen / BW, Versuchskraftfahrzeug 622, SdKfz 161
Armament:	7.5cm KwK 37 L/24 (80 rds) 2 x 7.92mm MG 34 (2700 rds)
Crew:	5
Weight:	17.3 tons
Armour Thickness:	8 - 20mm
Maximum Speed:	Roads: 42kph Off road: 20kph
Maximum Range:	Roads: 235km Off road: 157km
Engine:	1 Maybach HL 120TRM (300hp)

In 1934 the Heereswaffenamt issued a specification for a tank armed with a large calibre gun to fulfil a support role for the lighter tank design which was to become the PzKpfw III. Rheinmetall-Borsig AG completed a wooden mock-up by the end of the year and their first prototype went for trials in 1935. Both MAN of Augsburg and Friedrich Krupp AG of Essen submitted their proposals in 1935 and after intensive trials of all the prototypes the Krupp design was accepted in 1936.

The development and construction of prototypes took place at Essen whilst the production line was established at Krupp-Grusonwerke AG in Magdeburg. Thirty-five of the first production vehicles, the Ausf A (1/BW), appeared in

1936 and 1937. They were distinguished from later models by having a stepped front plate with the driver's position being some 20cm ahead of that of the radio operator. The radio operator was also the hull machine-gunner and had an MG 34 fitted in a simple ball gimbal mount.

The Ausf A had a number of features that were changed in later models. Both the driver and radio operator had hull top hatches in two sections with signal ports in the rear sections. The driver had a simple hinged armour plate covering the glass vision block in his front plate. The glacis plate had a large, flush, transmission access hatch screwed in place and was also fitted with two protruding brake access hatches. The engine was the 300hp Maybach HL 108TR linked to a ZF 5-speed SFG75 manual transmission.

The turret was fitted with electrical traverse powered from an auxiliary generator driven by a DKW two-cylinder engine. A small cylindrical silencer for this was fitted above the larger one for the main engine on the rear plate. The main armament was carried in an internal mantlet with an unarmoured coaxial machine-gun. The turret front plate had two hinged vision port flaps and two vision ports were also provided in the forward turret sides. Further back from these on either side were large single-piece access doors. The commander had a simple 'dustbin' cupola with twin hatches at the back of the turret, protruding into the rear plate. In front of it was fitted a small rectangular ventilation flap.

The Ausf B was the second series of the PzKpfw IV and forty-two were produced during 1937 and 1938. The frontal armour was now a single straight 30mm plate, and the front machine-gun mount was replaced by a vision port. The driver's visor had a double shutter as used on the PzKpfw III Ausf E. The hull top hatches were single pieces and the turret side hatches had pistol ports added. The pistol ports in the turret rear plate were covered with round flaps and the square visor flaps in the turret front were replaced with octagonal ones. The Ausf B also saw the introduction of the ZF 6-speed SSG76 gearbox, and a new cupola identical to that fitted on the PzKpfw III Ausf D.

A new engine, the Maybach HL120TRM, was introduced on the Ausf C, as was 30mm armour on the turret front. This model was externally identical to the Ausf B apart from being fitted with an armoured sleeve for the coaxial machine-gun.

Ausf D

Weight:	20 tons
Armour Thickness:	10 - 30mm

The Ausf D (serial numbers 80501 - 80750) reverted to a stepped front plate similar to that of the Ausf A but with a circular machine-pistol port in the centre. The ball-mounted MG was fitted in a new mount with a rectangular external frame (Kugelblende 30) as introduced on the PzKpfw III Ausf E. This model saw the introduction of an external mantlet that often carried a wishbone shaped frame for deflecting the radio antenna away from the gun as the turret traversed. The air intake grills on either side of the engine compartment were simplified, having one horizontal cross-bar in place of the three of earlier models.

A new track was fitted which was the same width as before, 38cm, but had higher guide teeth and so could not be used on earlier models. Photographic evidence indicates that there was also a change in the roadwheels at about this time. Previous models had roadwheels with smooth hubs but models from Ausf D onwards could be distinguished by having hubs fitted with six recessed bolts. Ausf D and E could be fitted with either type of roadwheel, and sometimes both types can be seen on the same vehicle. Early production vehicles were fitted with limit stops on the front and last roadwheel positions but late production ones had them fitted to every station. Late production models were also fitted with new engine covers with louvered air intakes for the cooling fans.

The Ausf D was refitted with additional armour from 1940, initially as a field modification. Later this was done as a factory improvement to vehicles being repaired, in which case they had the two signal port flaps and the ventilator flap on the turret roof plated over, and a fan ventilator was fitted instead. Armour plates 30mm thick were bolted about 8cm in front of the hull machine-gun position, and sometimes also in front of the driver. Additional armour was also bolted onto the superstructure sides and appliqué armour was welded onto the nose plate. From August 1942 Hitler ordered that all PzKpfw IV's returned for factory rebuild were to be rearmed with the long-barrelled 7.5cm KwK 40 L/43 gun.

The Ausf E had the appliqué armour of the Ausf D except that the plate in front of the driver's position was mounted slightly differently. It was bent forward at its lower edge where it was fixed to the glacis plate. A new driver's visor (Fahrersehklappe 30) was fitted identical to that of the PzKpfw III Ausf G. The nose plate armour was increased to 50mm but 20mm appliqué armour was still bolted to the superstructure sides. The brake access hatches in the glacis plate were now larger, single-piece and mounted flush, and fitted with single rather than double hinges.

The turret was extensively redesigned with most of the vision ports and flaps being better armoured. A new cupola was fitted, identical with that of the PzKpfw III Ausf G. The back of the turret was made from a single plate to simplify manufacture where previously the top of the plate was cut away and a second vertical plate continued the line of the cupola. On the turret roof the right-hand signal port was omitted and the rectangular ventilator flap was replaced by an electric extractor fan.

Late production Ausf D and E vehicles were refitted with the 40cm wide track of the Ausf F when it became available, along with the new design of drive sprocket, and sometimes the new rear idler as well.

Ausf F2 (L/43 – F Special)

Armament:	7.5cm KwK 40 L/43 (87 rds)
	2 x 7.92mm MG 34 (3192 rds)
Weight:	23.6 tons
Armour Thickness:	10 - 50mm
Maximum Speed:	Roads: 40kph
	Off road: 16kph
Maximum Range:	Roads: 209km
	Off road: 130km

The German invasion of Russia in June 1941 led to a reappraisal of German tank design when it was discovered that both the PzKpfw III and IV were outclassed by the Russian T-34 and KV-1. In November of the same year the Ordnance Department issued a contract to Krupp and Rheinmetall-Borsig to jointly develop a replacement for the short-barrelled 7.5cm PzKpfw IV gun.

From March 1942 mass production was ordered of a new longer-barrelled 7.5cm gun, 43 calibres long, with a greatly increased muzzle velocity. This new weapon was incorporated in the PzKpfw IV and made it a match for the T-34 in firepower, though it was still below par in armour. Vehicles so armed also made a name for themselves against the British in the Western Desert, where they became known as "Mark IV Specials".

Vehicles armed with the new 7.5cm KwK L/43 (serial numbers 82394 to 83700) were designated Ausf F2. To avoid confusion Ausf Fs armed with the 7.5cm KwK L/24 were redesignated Ausf F1 (serial numbers 82001 to 82393).

The Ausf F2 was externally identical to the F1 apart from the longer gun. This had a more angular recuperator housing than the L/24, and this housing was fitted with a flat front plate. All F2 guns were fitted with a spherical single-baffle muzzle brake, though some late-production Ausf F's appear to have been fitted with Ausf G turrets.

The Ausf G was distinguished from the Ausf F2 by its double-baffle muzzle brake, and a number of detail changes to the turret. The two vision ports on the forward sides of the turret were eliminated, as was the loader's observation port on the right side of the turret front. The driver's and hull machine-gunner's hatches also had their signal ports removed. Late Ausf Gs were fitted with smoke grenade launchers on either side of the turret front, and saw the introduction of Bosch AFV headlights on one or both front wings.

Toward the end of the production run a number of Ausf H features were introduced, including one-piece cupola hatches, 8mm spaced armour skirts and 30mm appliqué armour on the hull front plate and nose. Some were even rebuilt with hull Schürzen and the longer KwK 40 L/48 gun. All Ausf Gs can, however, be distinguished by the retention of the folding antenna mounted on the right of the hull, level with the turret front. Late production Ausf Gs appear to have been fitted with a circular bullet splash shield around the cupola.

The Ausf H has been shown in BGF news, but is not in the current release

Soviet Vehicles

GAZ-67 Jeep

Designation:	GAZ-64, GAZ-67
Armament:	-
Crew:	1 + 3
Weight:	1320kg
Armour Thickness:	-
Engine:	4 cylinder 4-stroke, 3.28litre (54hp)
Maximum Speed:	90kmh

The GAZ-67 was the Russian equivalent of the American Willy's jeep and its development started in 1938 with the GAZ-61. GAZ stands for Gorkovsky

Avtomobilny Zavod (Gorky Automobile Factory) which is where the vehicles were produced. The GAZ-64 was the next model off the production line and was based on the American prototype jeeps (Willy's MA, Ford GP and Bantam BRC-40) with power provided by a 3.8 litre, four cylinder engine producing 54hp/2800rpm for a top speed of 56mph (90km/h) and could carry 4 passengers (including a driver). The GAZ-64 went from theory to having a working prototype in 50 days without any blueprints and only having newspaper photographs and reviews of the Bantam BRC-60 sent back by Russian military personnel in the States.

Before an official jeep for the Red Army was decided on a competition was run between the GAZ and a vehicle from the NATI Research Institute, the NATI AR. Despite the NATI AR being a more modern looking vehicle the GAZ was chosen by Josef Stalin to be the jeep of the Red Army. With this decided, in September 1943 the GAZ-67 entered production, incorporating several improvements over the original GAZ-64, and remained in production until the autumn of 1952 with 92,843 vehicles produced.

ZIS-5 Truck

Designation:	ZIS-5
Armament:	-
Crew:	1 + 5
Weight:	3100kg (payload 3000kg)
Armour Thickness:	-
Maximum Speed:	60kmh

This ZIS-5 was an almost identical copy of an American Autocar Model CA. ZIS stands for “Zavod Imieni Stalin” and the ZIS-5 was produced from 1933 on.

The truck was an instant success and evolved to become the workhorse of Soviet Forces in the Great Patriotic War.

BA-64 Armoured Car

Designation:	BA-64, BA-64B
Armament:	7.62mm DT MG
Crew:	2
Weight:	2.4tonnes
Armour Thickness:	7 – 15mm
Engine:	GAZ-MM
Maximum Speed:	80kmh

The BA-64 was a 4×4 light armoured car, employed by the Soviet Army from 1942 into the early 1960s for reconnaissance and liaison tasks. It was a construction initiative of GAZ chief designer V. A. Grachev. Design work started in July 17, 1941.

The initial BA-64 model was based upon the GAZ-64 jeep and fitted with sloped armour that had some similarities to the German Sd kfz 222 design. One captured Sd Kfz 222 was transferred to GAZ for examination and analysis on September 7, 1941. The first prototype was tested on January 9, 1942. It had a small turret with a 7.62mm DT machine gun. The vehicle was operated by a crew of two. The next day the BA-64 prototype was shown to Kliment Voroshilov. The official presentation was in the Kremlin on March 3, 1942. The State Defence Committee adopted the BA-64 for Red Army service on March 14, 1942. It was top-heavy and could easily overturn on rough terrain.

The improved BA-64B model was introduced in 1943, based on the GAZ-67B jeep, with a wider wheelbase. The mass production of BA-64Bs continued through the rest of the Second World War and ceased in 1946. The last 62 vehicles were completed in that year.

BA-6 Armoured Car

Designation:	Broneavtomobil (BA) 6
Armament:	45mm 20-K gun 2×7.62 DT machine gun
Crew:	4
Weight:	5000kg
Armour Thickness:	10mm
Engine:	GAZ-A (40 hp)
Maximum Speed:	Road: 55kph
Range:	200km

The Ba-6 was developed in the early 1930's and was built on the modified chassis of the US Ford AA 4x2 truck (6x4 chassis was called the Gaz-AAA). This design limited its mobility to roads or hard ground (although mobility could be increased with tracks over the rear 2 wheels). It used the same 45mm cannon armoured turret that was used on the T-26 and the BT-7.

The Ba-6 was externally very similar to the earlier Ba-3 with only the absence of a rear door. It was also the first armoured car to use bullet resistant tires. With stricter weight controls decreased the overall weight of the car to 5.12 tons and just under 400 were produced between 1936 and 1938

With the same 45mm gun turret that is used on the T-26, it offers the Russians a very fast and lethal recon platform...but its thin armour also makes it extremely vulnerable to heavy machinegun fire and small calibre cannon fire.

The BGF BA-6 has both a standard green and a camouflage paint scheme, and there's also a commander's edition complete with radio antenna.

T-26 Light Tank

Designation:	T-26
Armament:	1 x 45mm 20K M1938 gun (165 rounds) 3 x 7.62mm DT M1929 machine guns (3654 rounds)
Crew:	3
Weight:	10,500 kg
Armour Thickness:	10 – 15mm
Range:	Roads: 178km Off road: 119km
Maximum Speed:	30kph

The T-26 was based on the British Vickers 6 Ton tank and over 10 years around 12,000 were produced. It replaced the aging T-18 and over the course of

its career the armament was increased (from 2 machine guns up to a 45mm cannon), this gave it more powerful armament than its contemporaries but it had light armour which was only corrected in the last version. At the time of Barbarossa it was the most numerous tank in the Red Army with 8,500 units however the losses mounted and it was gradually withdrawn from service on the Eastern Front from 1942.

BT-7 Fast Tank

Designation:	BT-7 M-1935
Armament:	45mm M-1934 2 x 7.62mm DT
Crew:	3
Weight:	13.8 tons
Armour Thickness:	6-22mm

Armed with a 45mm 20K L/46 gun, the BT-7 was a very nimble opponent, with a lethal bite!

The BT-7 (Bystrochodnij Tankov or 'fast tank') was lightly armoured, very manoeuvrable, and one of the fastest tanks in the CCCP`s tank corp. It replaced the earlier BT-5 series in production at KhPZ (Zavod No 183) in Kharkov in 1935 and remained in production until 1939. Though superficially resembling the BT-5, the BT-7 was a considerable modification of the BT-5 with an entirely new hull. It was powered by a new M-17T petrol engine and with greatly increased ammunition stowage and a modified 45mm M-1934 tank gun. The BT-7 dropped the wheel/track design and ran on tracks only. The main recognition feature of the BT-7 is the curved bow section.

In total 2596 standard BT-7 tanks were produced, 2017 BT-7RT command tanks fitted with radio and 156 BT-7A artillery support tanks (see below).

BT-7A Artillery Tank

Designation:	BT-7A
Armament:	76.2mm KT

The BT-7A was developed on the BT-7 chassis. It mounted a 76.2mm KT gun in a turret identical to the T-29 and BT-5A. It was produced in limited numbers and was used for artillery support.

Here the Soviets decided to pack a short-barrelled 76.2mm artillery gun in the BT-7`s turret, and the resulting firepower on such a fast chassis is sure to wreak havoc on our battlefields.

T-34 Tank

Designation:	T-34 M-1942
Armament:	76.2mm F-34 with 100 rounds 2 x 7.62mm DT with 4725 rounds
Crew:	4
Weight:	30,900kg
Armour Thickness:	47-60mm
Maximum Speed:	53kph
Maximum Range:	400km

The T-34 was designed by Mikhail I. Koshkin at the Kharkov Locomotive Plant (KhPZ) in the name of Komintern. The design was the culmination of earlier work at Kharkov on the A-20 wheel/track design and the A-32/T-32 which were field trialled in August 1938. The design work was carried out by

"We had nothing comparable" — Friedrich von Mellenthin (1956).

A. A. Morozov and N. A. Kurchenko under Koshkin's direction. The first T-34 prototypes were produced in January 1940 and in March the same year were driven from Kharkov – Moscow – Kharkov to test their endurance, a considerable road test for a tank even today.

In June 1940 the T-34 entered series production, with 1200 built by June 1941. Due to the rapid German advances after June 1941 the Kharkov plant was evacuated in late 1941 to Nizhniy Tagil, east of the Ural Mountains during which time the Stalingrad tractor Zavod (STZ) struggled to maintain production numbers, latterly in a besieged state.

The T-34 was called the Tridsatchetvyork {'Tridsatchetverka'} (literally "the 34"). After evacuation it was produced at Uralmash, Nizhniy Tagil, Gorkiy, Stalingrad and later at Omsk.

The T-34 was a revolution in tank design. There were close to a thousand T-34`s in service at the time of Operation Barbarossa and they surprised the Germans who found when they first met it in combat in 1941 that none of their anti-tank guns or tanks could penetrate except at close range. However the Russian commanders did not fully master the use of the T-34 until several months into the war. It was unmatched on the Eastern Front until the arrival of the Panzer IVF-2 and the Sturmgeschütz in 1942 but made a comeback in 1944 with the T-34/85 which had 80mm of armour and mounted an 85mm gun. Cheap and easy to build compared to their opponents, the Russians churned out almost 40,000 T-34`s during the Great Patriotic war. The T-34 was the mainstay of the Soviet tank armies until the end of the war with production of the later versions continuing until 1956.

KV-1 Heavy Tank

Designation:	KV-1
Armament:	76.2mm L-11 / F-32 / ZiS-5 3 x 7.62mm DT
Crew:	5
Weight:	47500kg
Armour Thickness:	75mm

The KV-1 (Klimenti-Voroshilov-1) was developed under the direction of Zh Ya Kotin at the SKB-2 design bureau at the Kirovsky Tank Plant in Leningrad. It was accepted for series production for the Russian Army in December 1939 and was produced in several versions with constant upgrading of the armament, armour and mechanical components. Relatively few KV-1's survived the war. The Russian Army did not readily distinguish production models of the KV-1, so the year and type provided here are generally accepted descriptions, not Russian definitions. The KV-1 "A", "B" and "C" references

are Western designations, based on wartime German intelligence reports. In total 4800 KV tanks of all types were produced.

The early M-1940 and M-1941's were provided with a welded steel turret of which there are several types, differing in dimensions and detail, particularly with regard to the rear turret bustle overhang. In November 1941, the LKZ plant was evacuated to Chelyabisk and by October 1941 was producing a modified tank with a cast turret, 76.2mm ZiS-5 gun and a simplified hull design. The new cast turret which was easier to produce and provided heavier, more consistent armour protection than the original welded design.

The KV-1 M-1941 E (Ekranirovanniy bronney - added armour) was developed as a result of experiences on the Finnish Front where the relatively light side armour of the original KV welded turret was found to be vulnerable to well placed anti-tank fire. The turret was consequently up-armoured using 25-35mmarmour plates secured to the turret with large bolts. The resulting gap was normally filled with sheet steel. On some tanks plates were also mounted on the hull above and below the track guards. The additional armour was an effective stopgap measure pending the introduction of the new cast turret design. From July-September 1941, some 25% of all KV`s were so modified. New roadwheels were also simultaneously used to reduce weight.

The Model 1942 has a cast turret of a later, up-armoured type, most easily distinguished by the armoured ring around the rear turret machine gun. Some of these later tanks also featured the sloped rear deck of the KV-1S, which slightly reduced overall weight.

KV-2 Heavy Tank

Designation:	KV-2
Armament:	152mm M-1938-40 (ML-20S) / 36 rounds 4 x 7.62mm DT / 3087 rounds
Crew:	5
Weight:	52000kg
Armour Thickness:	Hull front: 75mm Turret front: 75mm
Engine:	V-2-K diesel engine (500hp)

The KV-2 heavy support tank version of the KV series was developed for the destruction of bunkers and other difficult targets in support of KV-1 tanks. It was an unwieldy machine, with a massive slab sided turret. The KV-2 was used against the Mannerheim Line in Finland and during the opening stages of

the “Great Patriotic War” where it proved to be a formidable weapon when placed at strategic road junctions.

The original series production model KV-2 M-1940 model was built in very small numbers (only three). The early model had a bolted turret with a sloped frontal aspect. None survived Operation Barbarossa. The later M-1940-41 model was the definitive production model. Armed with a modernised M 1938-40 ML-20S howitzer, some 100 were built.

Civilian Vehicles

Buick 1926 Tourer

Designation:	Buick 1926 Tourer
Armament:	-
Crew:	1 + 3
Armour Thickness:	-

This is a civilian car that can be found on some maps.

German Aircraft

Messerschmitt Bf109 Fighter

Designation:	Messerschmitt Bf109
Armament:	2 cowl mounted 7.92 MG17 with 500 rpg 2 x 20mm MG/FF Cannon with 60 rpg in the wings
Crew:	1
Weight:	2505kg
Engine:	Daimler-Benz 601Aa Liquid Cooled Inverted V12 (1150hp)

The Messerschmitt Bf109 was the most produced of the German fighters during World War 2 with around 38,000 of all marks being produced. Development evolved from the Bf108 Taifun four-seat tourer and was entered in the competition for fighters against designs from Arado, BFW, Focke-Wulf and Heinkel. Messerschmitt's design emerged as a small angular low-wing cantilever monoplane with retractable landing gear, leading-edge slats and enclosed cockpit. These features, together with its all-metal, flush riveted monocoque fuselage, made it the most modern of the contenders. Heinkel's had an open cockpit and no slats, Arado had an open cockpit and fixed landing gear, and the Focke-Wulf design had a braced, unslatted high wing. Such modernity was striking, and rather controversial, drawing from Ernst Udet the comment that the aircraft would 'never make a fighter'. The first prototype was originally to be powered by the new Junkers Jumo 210A engine, but it was unavailable for the Bf109 V1 prototype and so in the resulting trials the Bf109 V1 was powered by an imported Rolls-Royce Kestrel V of 695 hp (518 kW) and it rolled out in September 1935. In the competition at Travemunde the Bf109 performed well and to the surprise of many was awarded a contract for 10 development aircraft (although Heinkel was also awarded a similar contract). Final trails were held at Travemunde in November 1935 and in these the Bf109 was selected for production. The first versions entered service in early 1937 and saw some action in the Spanish Civil War (1936-39) with the Condor Legion. Production of the 'E' (Emil) of the Bf109 started in 1938 with the first Bf109E-1's rolling off the production line in early 1939 powered by the 1,100 hp (821 kW) DB 601A engine and being armed with 2 cowl mounted 7.92 mm (0.31 in) MG 17 machine-guns and two more in the wings with provision for two 20 mm MG/FF cannon in place of the wing machine-guns.

The Emil was the first true mass-production model of the basic design, and by the end of 1939 it had replaced all previous models in the first-line service with the Luftwaffe, and 13 Gruppen, each consisting of 40 aircraft, were operating with this type when the Second World War started. The Bf109 was the main fighter of the Luftwaffe from 1939 until the summer of 1941 and it served on all fronts with the Luftwaffe before it was gradually replaced with the Bf109F (Friedrich) with the more powerful Daimler Benz DB 601E-1 of 1,200 hp (880 kW) and armed with one 15mm (0.59in) MG 151 mounted between cylinder heads and firing through the propeller hub and two cowl mounted 7.92mm (0.31in) MG 17 machine guns.

Junkers Ju87 Stuka Dive Bomber

Designation:	Ju87B
Armament:	2 x 7.92mm MG 17 machine guns in wings 7.92mm MG 17 machine gun in rear cockpit Plus either 500kg bomb on centreline Or 250kg bomb on centreline with 4 x 50kg bombs on wings
Crew:	2
Weight:	Empty: 2750kg Loaded: 5250kg
Engine:	B-1: Junkers Jumo 211 A Water-Cooled Inverted V12 (1100hp) B-2: Junkers Jumo 211 Da Water-Cooled Inverted V12 (1200hp)
Maximum Speed:	390kph
Maximum Range:	600km

The Stuka was feared during the German Blitzkriegs of 1939-41 and was a major component of the success of the attacks by providing deadly accurate tactical strikes against enemy armour, communications and transport. With this help from the "flying artillery" the Germans managed to roll through Poland, the Low Countries, France and Russia during the first few years of the war. The Stuka served throughout the war and although it was obsolete by 1942, it was continually upgraded and provided with different armament (including 2 37mm anti-tank guns in under wing pods in the G version).

Soviet Aircraft

Polikarpov I-16 Fighter

Designation:	Polikarpov I-16, Type 24
Armament:	2 x 20mm ShVAK guns 2 x 7.62mm ShKAS machine guns Option: 200kg of bombs
Crew:	1
Weight:	Empty: 1475kg Loaded: 2060kg
Engine:	Shvestov M-63 (1,100hp)
Maximum Speed:	515kmh
Maximum Range:	600km

The I-16 was developed in 1932 by the Polikarpov designers and after 1934 it began to be built in increasing numbers and continued to be produced until 1941. The I-16 was very rear balanced (more than 30%) which made it very unstable in flight and hard to train pilots on, although it made the I-16 very manoeuvrable. It became the world's first mass produced fighter with over 10,000 being produced (including a 2 seat trainer). The ease of its production and its good performance allowed it to remain in service for almost 10 years (and in numerous wars from the Spanish Civil war to China and then in Finland and on the Eastern Front). It remained in frontline service on the Eastern Front until 1942 when it was replaced by more modern fighters although some units retained them until the end of the war.

This nimble little plane wasn't much of a match for the Bf109 in 1941, but the Soviets who flew it pushed it to its limits and scored some victories over the Messerschmitt.

Mikoyan-Gurevich MiG-3 Fighter

Designation: MiG-3
Armament:
Crew:
Weight:
Armour Thickness:

By the time of Operation Barbarossa (Germany's full-scale invasion of the Soviet Union), over 1,200 examples of the Mikoyan-Gurevich MiG-3 were ready for action. While the MiG-3 was a formidable aircraft, it often found itself forced into roles that it was not designed for, such as low altitude fighting and ground attacking.

Il-2 Shturmovik Ground Attack Aircraft

Designation:	Ilyushin Il-2 Shturmovik
Armament:	600 kg of bombs and/or 8 rockets 2 x 23mm VYa cannon (150 rpg) 2 x 7.62mm machine guns (750rpg)
Crew:	1
Engine:	Mikulin AM-38 F (1,750 hp)

The Il-2 was a Russian ground attack aircraft that was built in huge numbers by the Russians to support its troops during the war. When the productions numbers are combined with its successor the Il-10 it is the most produced military aircraft of all time with over 36,000 examples made. The original Il-2 was a single seat heavily armoured plane which the pilots found to

be underpowered and very vulnerable to attack by enemy fighters despite its heavy armour.

Il-2M Two-Seater

Designation:	Il-2M
Armament:	600 kg of bombs and/or 8 rockets 2 x 23mm VYa cannon (150 rpg) 2 x 7.62mm machine guns (750rpg) 12.7mm BS machine gun in rear cockpit (150rpg)
Crew:	2
Weight:	Empty: 3250kg Loaded: 5872kg
Engine:	Mikulin AM-38 F (1,750 hp)
Maximum Speed:	452kph
Range:	600km

The defensive limitations of the Il-2 resulted in it being redesigned to accommodate a gunner for self-defence (although early on the gunner did not have the same armour protection as the pilot). This became the Il-2M which was hastily put together and was later again redesigned to give the Il-2M3 which was the definitive version of the family which continued in service from its introduction in 1942 until the end of the war in 1945.

German Stationary Weapons

Maschinengewehr MG-34 Machine Gun

Designation:	Maschinengewehr Modell 34, MG34
Calibre:	7.92mm
Crew:	2
Weight:	12.1kg
Rate of fire:	800-900rpm
Muzzle velocity:	755m/s

The MG34 was brought into service in 1936, and although officially superseded in 1943 by the MG42, supplies of the earlier weapon were never withdrawn. The gun introduced two radical ideas: the concept of a general or multi-purpose machine gun, and the use of a belt feed in a 'light' gun.

The MG34 was strong, but suffered from a tendency to jam in dust, dirt and snow; despite this, it lasted throughout the war in large numbers and was, at some time, present in practically every German first-line unit. It is regarded as one of the best machine-gun designs ever made.

As well as being an infantry weapon, the MG34 was also used as the coaxial and hull MG in most German tanks.

Flakvierling 38 Anti-Aircraft Gun

Designation:	2cm Flakvierling 38
Armament:	4 x 2cm Flak 38
Crew:	8
Weight:	1509kg
Rate of Fire:	800-1800rpm
Muzzle Velocity:	900m/s

The Flakvierling 38 anti-aircraft gun, with its four 20mm guns, is a match for any enemy aircraft, but not only for aircraft. The 20mm guns can be used in ground fighting against enemy troops and light armoured vehicles.

PaK 40 Anti-Tank Gun

Designation:	75mm Panzerabwehrkanone 40
Calibre:	75mm
Crew:	5-8
Weight:	1500 kg / 1425 kg deployed
Rate of Fire:	11 to 14 rounds per minute

The Pak40 carried by the PanzerIV F2 was a formidable anti tank weapon used as deployed weapon before it was mounted to tanks. The PaK 40 was the standard German anti-tank gun until the end of the war, and was supplied by Germany to its allies. This gun did its job so well, some captured pieces were even used by the Red Army.

The Pak40 is the result of cooperation with the German Front Mod for COD2. The model was done by Wyvern, who is also a member of OPK.

Soviet Stationary Weapons

DP Machine Gun

Designation:	Degtyarev DP
Calibre:	7.62mm
Crew:	1
Weight:	9.1kg
Rate of fire:	500-600rpm
Muzzle velocity:	840m/s

The DP was adopted by the Soviet Army in 1928 after two years of trials, and it was the first truly original development in Russia. It is extremely simple, yet remarkably reliable and robust; it proved to be resistant to dust and dirt and free from any serious vices. Its weak point was the long ammunition as it was difficult to load into an automatic gun without jamming. The distinctive flat pan magazine almost overcame this fault, but was itself liable both to damage and to distortion.

The DP remained the standard light gun until the 1950s and huge numbers were made, many of which survive today in the Eastern bloc countries and in Asia.

The DT machine gun used in Soviet tanks was a version of the DP adapted to fit into confined space through the use of a telescopic stock.

37mm Model 1939 Anti-Aircraft Gun

Designation:	37mm M-1939
Calibre:	37mm
Crew:	8
Weight:	2100kg
Rate of Fire:	80rpm
Muzzle Velocity:	960m/s

The Soviet recoil-operated 37mm antiaircraft guns are based on a Bofors design and closely resemble the 40mm guns used by both the British and United States forces during World Mar II. The ammunition was fed via five round charger clips.

ZiS-3 Field Gun

Designation:	M-1939
Calibre:	37mm
Crew:	
Weight:	
Armour Thickness:	

The 76.2mm Divisional gun, Model 1942, more commonly known as the ZiS-3, was a very successful gun, and many give it a place as one of the best artillery pieces of World War II.

This very powerful 76.2mm gun can knock out any German light and medium tank at a distance, while most heavy tanks can be dealt with at close range.

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