

# MG 42

Maschinengewehr 42	
	
MG 42 (top)	
<b>Type</b>	General-purpose machine gun
<b>Place of origin</b>	 Nazi Germany
Service history	
<b>In service</b>	1942–1959
<b>Wars</b>	World War II
Production history	
<b>Designed</b>	1942
<b>Manufacturer</b>	Metall und Lackierwarenfabrik Johannes Großfuß AG
<b>Produced</b>	1942–1945
<b>Number built</b>	Approx. 750,000
<b>Variants</b>	MG 45/MG 42V, MG 1, MG 2, Rheinmetall MG 3
Specifications	
<b>Weight</b>	11.57 kg (25.51 lb)
<b>Length</b>	1120 mm (44.1 in)
<b>Cartridge</b>	7.92x57mm Mauser
<b>Action</b>	Recoil-operated, roller-locked
<b>Rate of fire</b>	1,200 rounds/min (varied between 900–1,500 rounds/min with different bolts)
<b>Muzzle velocity</b>	755 m/s (2477 ft/s)
<b>Effective range</b>	1000 m
<b>Feed system</b>	50 or 250-round belt

The **MG 42** (shortened from German: *Maschinengewehr 42*, or "machine gun 42") is a 7.92mm universal machine gun that was developed in Nazi Germany and entered service with the *Wehrmacht* in 1942. It supplemented and in some instances, replaced the MG 34 general purpose machine gun in all branches of the German Armed Forces, though both weapons were manufactured and used until the end of the war.<sup>[1]</sup>

The MG 42 has a proven record of reliability, durability, simplicity, and ease of operation, but is most notable for being able to produce a stunning volume of suppressive fire. The MG 42 has one of the highest average rates of fire of any single-barreled man-portable machine gun, between 1,200 and 1,500 rpm, resulting in a distinctive muzzle report. There were other automatic weapon designs with similar firepower, such as the Hungarian-Gebauer single-barreled tank MGs, the Russian 7.62mm ShKAS aircraft gun and the British Vickers K machine gun. However, the MG 42's belt-feed and quick-change barrel system allowed for more prolonged firing in comparison to these weapons.

The MG 42's lineage continued past Nazi Germany's defeat, forming the basis for the nearly identical MG1 (MG 42/59), and subsequently evolved into the MG1A3, which was in turn followed by the MG 3. It also spawned the Swiss MG 51, SIG MG 710-3, Austrian MG 74, and the Spanish 5.56mm Ameli light machine gun, and lent many design elements to the American M60 and Belgian MAG. The MG 3 served with many armies during the Cold War and remains in use to this day.

## History

### Development



A German *Landser* involved in heavy fighting in and around the French town of Caen during the summer of 1944. He is carrying an MG 42 configured as a light support weapon with a folding bipod and detachable drum magazine.

During the 1930s the German Army introduced the MG 34, considered to be the first modern general purpose machine gun. Equipped with a quick-change barrel, the MG 34 could fire for much longer periods of time than weapons like the Browning Automatic Rifle and Châtellerault LMG, while being much lighter than crew-served weapons like the Vickers machine gun. The weapon was also quite versatile. It was able to be fed from belted ammunition and a saddle drum magazine (the feed cover had to be changed for magazine feed) and fired from heavy tripods or various pintle mounts for armored vehicles. It even became a primary defensive gun for the Luftwaffe, in its MG 81 form, and as secondary armament on tanks as the MG 34 Panzerlauf. However, it did have its drawbacks, such as sensitivity to dust and comparatively expensive production. One attempt at improvement was the **MG 34S**, an incremental improvement on the basic 34 design.



*Fallschirmjäger* defend the ruins of Monte Cassino. Well entrenched, the Germans inflicted heavy casualties on the assaulting Allied forces.

In order to address these issues, a contest was held for a true MG 34 replacement. Three companies were asked to submit designs: Metall und Lackierwarenfabrik Johannes Großfuß AG of Döbeln, Rheinmetall-Borsig of Sömmerda, and Stübgen of Erfurt.<sup>[2]</sup> Of the number of proposals submitted, Großfuß AG's proved to be the best design, by far, employing a unique recoil-operated roller locking mechanism whereas the two competing designs used a gas-actuated system.<sup>[2]</sup> Interestingly, the company had no prior experience in weapons manufacture, specializing in pressed and stamped steel parts (the company's staple product was sheet metal lanterns).<sup>[2]</sup> Ernst

Grunow, one of the leading design engineers with Großfuß, knew nothing about machine guns when he was given the task of being involved with the project, but he specialized in the technology of mass production. Grunow would attend an army machine gunner's course in order to familiarize himself with the utility and characteristics of such a

weapon, also seeking input from soldiers. He then recycled an existing Mauser-developed operating system and incorporated features from his experiences with army machine gunners and lessons learned during the early stages of the war.<sup>[2]</sup> The new design required considerably less tooling and was much simpler to build—it took 75 man hours to complete the new gun as opposed to 150 man hours for the MG 34 (a 50% reduction), and cost 250 RM as opposed to 327 RM (a 24% reduction).

The resulting **MG 39** remained similar to the earlier MG 34 overall, a deliberate decision made in order to maintain familiarity. The only major changes from the gunner's perspective were dropping of most of the drum-feed options, leaving the weapon to fire with a loose belt of ammunition or from a single 50-round drum magazine fitted to the gun's receiver, and simplifying the weapon's open sights for aiming purposes; all these changes being intended to increase, maintain, or accommodate the gun's high practical rate of fire. Although made of relatively cheap parts, the prototypes also proved to be considerably more rugged and resistant to jamming than the somewhat temperamental MG 34. A limited run of about 1,500 of its immediate predecessor, the MG 39/41, was completed in 1941 and tested in combat trials.

The weapon was officially accepted, and the main manufacturing of the production design began in 1942, as the **MG 42**. contracts going to Großfuß, Mauser-Werke, Gustloff-Werke, and others. Production during the war amounted to over 400,000 units (17,915 units in 1942, 116,725 in 1943, 211,806 in 1944, and 61,877 in 1945).

## Service history

One of the weapon's most notable features was its comparatively high rate of fire of about 1,200 rounds per minute, twice the rate of the British Vickers machine gun and American Browning at 600 round/min. At such a high rate the human ear cannot easily discern the sound of individual bullets being fired, and in use the gun makes a sound described as like "ripping cloth" and giving rise to the nickname "Hitler's buzzsaw", or, more coarsely, "Hitler's zipper" (Soviet soldiers called it the "linoleum ripper"). German soldiers called it *Hitlersäge* ("Hitler's saw") or "Bonesaw". The gun was sometimes called "Spandau" by British troops from the manufacturer's plates noting the district of Berlin where some were produced, much like the Germans' own World War I MG 08 had been nicknamed. Notwithstanding the MG 42's high rate of fire, the Handbook of the German Army (1940) forbade the firing of more than 250 rounds in a single burst and indicated a sustained rate of no more than 300–350 rounds per minute to minimize barrel wear and over-heating.

So distinct and terrifying was the weapon that the United States Army created training films to aid its soldiers in dealing with the psychological trauma of facing the weapon in battle. The high rate of fire resulted from experiments with preceding weapons that concluded that since a soldier only has a short period of time to shoot at an enemy, it was imperative to fire the highest number of bullets possible to increase the likelihood of a hit. This principle was also behind the Vickers GO aircraft gun. The disadvantage of applying this principle was that the weapon consumed exorbitant amounts of ammunition and quickly overheated its barrel, making sustained fire problematic.

The method of barrel change made the MG 42 unsuitable for secondary or co-axial armament on WW2 era German tanks with one exception, the Jagdpanzer IV. Early versions of the Jagdpanzer IV carried two standard (no modification made) MG 42's on both sides of the gun mantlet/glacis, firing through a ball slot which was protected by an armored cover (with the MG 42 retracted) when not in use. Later version Jagdpanzer IV's carried only one MG 42 on the left side.

## Operation

The MG 42 weighed 11.6 kg in the light role with the bipod, lighter than the MG 34 and easily portable. The bipod, the same one used on the MG 34, could be mounted to the front or the center of the gun depending on where it was being used. For sustained fire use, it was matched to the newly-developed *Lafette* 42 tripod, which weighed 20.5 kg on its own. The barrel had polygonal rifling and was lighter than the MG 34's and heated more quickly, but could be replaced in seconds by an experienced gunner.

The optimum operating crew of an MG 42 for sustained fire operation was six men: the gun commander, the No.1 who fired the gun, the No.2 who carried the tripod, and Nos.3, 4, and 5 who carried ammunition, spare barrels, entrenching tools, and other items. For additional protection the commander, No.1 and No.2 were armed with pistols, while the remaining three carried rifles. This large team was often reduced to just three: the gunner, the loader (also barrel carrier), and the spotter. The gunner of the weapon was preferably a junior non-commissioned officer (or Unteroffizier).

It was possible for operating crews to lay down a non-stop barrage of fire, ceasing only when the barrel had to be replaced. This allowed the MG 42 to tie up significantly larger numbers of enemy troops. Both the Americans and the British trained their troops to take cover from the fire of an MG 42, and assault the position during the small window of barrel replacement. The high rate of fire of the MG 42 sometimes proved a liability, mainly in that, while the weapon could be used to devastating effect, it could quickly exhaust its ammunition supply. For this reason, it was not uncommon for all soldiers operating near an MG 42 to carry extra ammunition, thus providing the MG 42 with a backup source when its main supply was exhausted.

## Design details

The MG 42 is roller-locked and recoil-operated (short recoil) with gas assist. It fires belt fed 7.92mm ammunition from an open bolt.

The roller-locked bolt assembly consists of a bolt head, two rollers, a striker sleeve, bolt body, and a large return spring, which is responsible for pushing the bolt assembly into battery (the locked position) and returning it there when it is unlocked and pushed backwards by the recoil of firing or by the charging handle. As the striker sleeve is movable back and forth within the bolt assembly, the return spring is also responsible for pushing the striker sleeve forward during locking (described below). The bolt assembly locks with the barrel's breech (the end the cartridge is loaded into) via a prong type barrel extension behind the breech. As it is recoil-operated and fired from an open bolt, the weapon must be manually charged with the side-mounted charging handle.

The roller-locked recoil operation functions as follows: two cylindrical rollers, positioned in tracks on the bolt head, are pushed outwards into matching tracks in the barrel extension by the striker sleeve and lock the bolt in place against the breech. Upon firing, rearward force from the recoil of the cartridge ignition pushes the striker assembly back and allows the rollers to move inwards, back to their previous position, unlocking the bolt head and allowing the bolt assembly to recoil, extracting the spent cartridge and ejecting it. The return spring then pushes the bolt assembly forwards again, pushing a new cartridge out of the belt into the breech, and the sequence repeats as long as the trigger is depressed. The MG42 is only capable of fully automatic fire. Single shots are exceptionally difficult,



The MG 42 mounted on the *Lafette* 42 tripod.



MG 42 roller-locked system

even for experienced operators, due to the weapon's rate of fire. Usual training aim is to be able to fire a minimum of three rounds. The weapon features a recoil booster at the muzzle to increase rearwards force due to recoil, therefore improving functional reliability and rate of fire.

The MG 42 fires from an open bolt, meaning the bolt (not the firing pin) is held in a rearward position when the trigger is not depressed. Depressing the trigger releases the bolt assembly, of which the firing pin is a component.

The shoulder stock is designed to permit gripping with the left hand to hold it secure against the shoulder. Considerable recoil otherwise causes the stock to creep from its intended position. If the weapon is not properly "seated" on the bipod, a prone gunner may be pushed back along the ground from the high recoil of this weapon.

## Variants and developments

In 1944, the acute material shortages of the Third Reich led to a newer version, the **MG 45** (or **MG 42V**), which had a different operation mechanism used retarded blowback as opposed to roller locking, used steel of lesser quality, reduced weight to only 9 kg, retaining the horizontal cocking handle. First tests were undertaken in June 1944, but development dragged on and eventually only ten were ever built. The tested MG 45/42V fired 120,000 rounds in succession at a rate of fire around 1,350 rounds per minute. The **MG 42V** had some influence in the post-war development of roller-delayed blowback system, as employed in Heckler & Koch modern small arms. The MG 45/MG 42V should be considered a different firearm however as the mechanisms of these guns were different from that of the MG 42.

The American military tried to copy the MG42 during the war, the new version being adapted for the .30-06 cartridge. Saginaw Steering Gear constructed a working prototype designated as the **T24 machine gun**. However, a design flaw in the prototype and the realization that the cartridge might be too powerful for the gun's mechanism to easily cope with resulted in the discarding of the project.

The MG 42, with small modifications, resulted in the MG 42/59 and Rheinmetall MG 3, which is the primary general purpose machine gun of the modern German army (*Bundeswehr*). A number of other armies around the world have adopted versions of the original, especially the MG3, and it remains in widespread service today. Its belt-feed mechanism was copied and used in the design of the M60 machine gun. The T161 beat the FG 42-derived T52 during tests in the 1950s to become the M60. The T161 used a different gas system and was easier to make than the T52, but they both used a similar belt-feed and basic configuration. The trigger mechanism of the FN MAG or MAG-58 is a virtual copy of the MG 42's and the MAG-58's belt-feed is also very similar.

The final variant to date is the **MG74**, developed by Austria. The modifications to the basic MG 42/MG 3 design include an extremely heavy bolt (950 grams vs. the 675 gram MG 3 bolt) which slows the rate of fire to around 850-900 rounds per minute. In addition, a select fire trigger group was added to allow semi-automatic fire (single shot) compared to the traditional fully automatic only fire capability of the original MG 42 design. Manufactured by Steyr, the MG 74 also has a modern polymer stock and handgrips usually colored a dark green. It is chambered for the NATO 7.62 x51 round.

- **Rate of fire:** Variable, from 900 rounds/min to 1,500 round/min or more depending on installed bolt weight (different weight bolt components introduced to regulate rate of fire, lighter assemblies providing faster rates of fire). Throat erosion and component wear also introduced significant variation. Up to 1,800 round/min on the MG



Various configurations of MG 42. The right-most object is a tripod for anti-aircraft use.

45 or without "recoil booster" (*Rückstoßverstärker*).

- **Parts changes:**

- **Barrel:** 3 to 7 seconds
- **Barrel and lock:** 25 to 30 seconds

The MG 42 was adopted by a number of armed organizations after the war, and was copied or license-built as well. Yugoslavia license-built the MG 42 as the **M53**, retaining the 7.92x57mm caliber. By doing so, the Yugoslavians retained the original weapon's design features, making the M53 a nearly exact copy of the German MG 42. The only major difference is a slower rate of fire. The aiming range of the M53 is 2000 meters, and the terminal range of the bullet is 5000 meters, the same as the MG 42. MG 42s captured in Yugoslavia at the end of World War II were put into reserve of YPA as **M53/42s**. The last military use of M53s in Yugoslavia was in 1999. Some quantities of M53s were exported to Iraq in the 1980s and saw extensive action during both Gulf wars.

## See also

- MG 51
- CETME Ameli, Spanish GPMG
- MG 3, modern successor of the MG 42
- SIG 710-3, Swiss GPMG derived from the MG 42

## Bibliography

- Willbanks, James H. (2004). *Machine Guns: An Illustrated History of Their Impact*. Santa Barbara, California: ABC-CLIO. ISBN 978-1851094806.

## External links

- Nazarian`s Gun`s Recognition Guide (FILM) MG 42, proper assault (video clip) <sup>[3]</sup>
- Modern Firearms and Ammunition: MG-42 <sup>[4]</sup>
- U.S. Report on MG-42 from World War II <sup>[5]</sup>
- MG42 Enthusiasts and semi-auto rebuilders <sup>[6]</sup>

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