



Title  
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COLLECTOR'S GUIDES

# Glock

THE WORLD'S HANDGUN

Chris McNab

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**A US police officer wears his Glock handgun—the Glock has almost become the defining pistol of American law enforcement.**

# Introduction

**How does a gun become iconic? Don't immediately think that this is to do with the level of quality exhibited by the weapon. Firearms history is littered with excellent pieces of kit that are scarcely known to anyone outside the specialist firearms fraternity. How many members of the general public would be able to identify, say, a Sig P220 or a Steyr M handgun, both excellent weapons? Nor is iconicity necessarily dependent on some seminal advance in firepower. Kalashnikov's AK, undoubtedly the world's most famous rifle, doesn't actually offer superior firepower characteristics compared to many other fully automatic assault rifles.**

I would argue that three characteristics have to combine to give a firearm an iconic status—usability, reliability, and visibility. The first characteristic, usability, refers to the ease with which the weapon can be loaded, fired, stripped, cleaned, and generally maintained. Any weapon that is awkward to handle, and doesn't feel good in the hand, will quickly fall from favor and from the market. Reliability is one aspect of that usability. We must always remember that many firearms, including the Glock, are intended for law enforcement or military use. For soldiers and police officers, a jammed gun can literally mean the difference between life and death in a deadly-force encounter. So, a successful firearm is one that will send out rounds consistently and on target without failure, even after many years or even decades of use.





**Gaston Glock revolutionized the principles of handgun design with the eponymous Glock, despite having no prior experience of firearms production.**

Usability and reliability are very understandable concepts, even for the layman. But what exactly do I mean by visibility? Visibility refers to both the scale of distribution of the weapon and the extent to which the product's qualities are understood and appreciated. Take the AK rifle, for example. Who would deny that one of the central pillars underpinning its notoriety is the fact that it is the most mass-produced and widely distributed weapon in history (if we take the entire Kalashnikov series)? From entire armies to small insurgent groups and individual criminals, AKs have, in a sense, literally armed the post-war world, and have thus achieved the media presence that makes that curved 30-round magazine a globally familiar profile.

**Modern Icon**



## **Austrian police officers wear their Glocks in quick-draw holsters, also made from the tough Glock polymer.**

This book is focused squarely on the Glock series of handguns, which for reasons that will become progressively apparent, has also achieved something of an iconic status. Which is curious, because generally speaking handguns don't have the same pull on the public imagination as rifles, submachine guns, and machine guns. There are some exceptions—James Bond has given international prestige to the Walther PPK, although apart from being compact the PPK actually has little to recommend it as a combat handgun. Another Hollywood darling is the .44 Magnum Smith & Wesson (S&W) Model 29, popularized by Clint Eastwood in his husky portrayal of Harry Callaghan in the *Dirty Harry* series of movies. The Colt M1911, by contrast, has earned its stripes through more laudable means—longevity, wide distribution (and copying), and the thumping power of the .45 ACP cartridge.

That an Austrian handgun, developed for the Austrian Army by a man with no previous experience of firearms design, in 9mm caliber (not an especially powerful round) should enter this select pantheon is curious. What Gaston Glock brought to the world was a revolution in design. In every aspect of its construction, material technology and functionality, the Glock was a game-changer. Widely referred to as the “plastic pistol” (not always affectionately), on account of the substantial use of polymer materials in its construction, the Glock 17 handgun entered the market in 1983, offering a light, sleek, quick-firing 9mm (0.354in) handgun with a 17-round magazine capacity. These qualities not only endeared it to the Austrian Army, but also to military units and law-enforcement agencies throughout the world, plus hundreds of thousands of civilian shooters looking for a good personal protection or sporting handgun.

## **The World's Handgun**

Glock handguns are today used in official capacities in more than 50 countries around the world, with private sales going to many more. What really catapulted the Glock to public prominence, however, was its widespread adoption by the US police forces and law-enforcement agencies. Today, around 70 percent of the United States' 900,000 police officers have Glocks on their hips, an astonishing achievement considering that each of the country's police departments typically has autonomous choice over their

handgun acquisition. The high percentage of police issue also means that the public at large has become familiar with the Glock profile, and this awareness has been expanded by Hollywood and TV. Some of the dozens of movie stars who have wielded the Glock on the big screen include Bruce Willis, Tommy Lee Jones, Mickey Rourke, and Robert Downey Jr. Nor is this cinematic acquisition entirely accidental. The Glock company has been judiciously active in providing film companies with access to its weaponry through authorized suppliers, giving the handgun what Glock historian Paul Barrett has called its “*Dirty Harry* moment.”

But apart from the hype, the Glock series of handguns are fine weapons—their popularity has a sound basis in technology and performance. This book will delve into Glock handguns both in terms of design and functionality. What we will see is a weapon created for the hard realities of use, by people whose lives have to depend on 1.56 pound (0.71 kg) of plastic and metal strapped to their hips. Although this story is not without its controversies, the vast majority of those people have not been disappointed.



**Officers of the Royal Canadian Mounted Police (RCMP) line up with**

**their Glocks alongside Alaskan State Troopers (AST) during a shooting competition.**

# Development of the Glock

**To understand the Glock, you need to comprehend the market that it entered in the 1980s, and something about the products against which it competed. The key categories of handgun had been settled during the first decade of the twentieth century, and by the post-war years there had been little seminal advance in the basic technology.**

Handguns fell into two types—revolvers and semi-automatic pistols. The revolvers were the old guard, with an ancestry dating back to the days of the Wild West. In military use, revolvers had largely been replaced by pistols, but up until the Glock era the same could not be said for law-enforcement service. In the United States, for example, six-shot .38, .357 Magnum and (less commonly) .44 handguns were dominant among police forces until the 1980s and 1990s. Classic examples were the Colt Detective Special, the Ruger Speed-Six and the Smith & Wesson Model 10.

As with all types of firearms, revolvers had their pluses and minuses. One of the great virtues of the revolver was its reliability. Revolvers would rarely ever jam, and if there was a misfire all the operator typically had to do is simply pull the trigger once again to turn to the next cartridge; with a pistol, the user has to clear the jam manually, and sometimes empty and reload the gun. Unless the revolver's hammer was cocked, the gun also had the mechanical advantage that no parts (such as a firing pin) are held under spring tension, thereby reducing the possibility of mechanical wear. There were also some bonuses in ergonomics, particularly considering the fact that within a police force one gun would have to be used by a variety of human hand sizes. Because revolvers don't need to hold a magazine in the stock, they can be used more easily by individuals with small or slender hands.

So far, so good, but revolvers had a major deficit—ammunition capacity.

The maximum number of cartridges they could hold was six, and six rounds could be burned through with frightening speed during an actual armed engagement. Speed-loading devices were developed, in which new rounds could be dropped into the empty chambers in one go, once the spent cases had been ejected, but revolvers still required frequent reloading, and in these moments the user was exposed and vulnerable.

The striking virtue of pistols, by contrast, was that they could offer greater ammunition capacity, and that meant greater firepower and less downtime between shooting. Instead of the rotating cylinder of the revolver, they had a detachable magazine inserted (usually) into the pistol grip—reloading was a simply matter of pressing the magazine eject button, then inserting a new magazine into the grip. The weapon then used the forces generated by firing—usually in either a blowback or recoil mechanism—to work through the cycle of extraction, ejection, and reloading.



**Handloading a revolver chamber by chamber is a slow business compared to the rapid mag reload of a semi-auto handgun.**





**US soldiers conduct building-clearance training with their Beretta M9 handguns. The Beretta M9 has been the main handgun of the US military since 1985.**

### **First Automatics**

The first automatic handguns had been developed at the end of the 19th century, and by World War I they had achieved acceptance. Some landmark weapons had been developed by 1914. In the United States, the Colt M1911 had set a design that was so successful it is still replicated and copied to this day. A short-recoil weapon firing a powerful .45 ACP cartridge, the M1911 used a swinging-link system to facilitate the locking action between barrel and slide. When the slide was forward, and a round chambered, lugs on the top of the barrel locked into corresponding grooves in the slide wall. When the gun was fired, the blowback forces drove the slide and barrel back together until the swinging link mechanism, attached to the rear of the barrel, pulled the barrel down and the lugs/grooves disengaged, allowing the slide to run through its complete recoil cycle and reload the gun.

The M1911 was undoubtedly the landmark US handgun of the twentieth century, one that would be the standard US Army issue pistol from 1911 until

its replacement by the Beretta 92 in 1985. In Europe, pistol design took some different directions. The Soviets produced short-recoil workhorse handguns such as the 7.62 × 25mm Tokarev TT30, based heavily on the Colt system of operation, or 9mm weapons like the Makarov and Stechkin. But some of the greatest advances in handgun design took place in Western Europe. In Germany, for example, the two defining handguns of the world war era were the Luger Parabellum P-08 and its eventual replacement, the Walther P-38. Both were 9mm (0.354in) weapons, but while the Luger worked on a toggle-lock mechanism, the P38 used a wedge-shaped locking plate to secure barrel and slide together at the moment of firing. (Although the 9mm Parabellum that both weapons fired was perfectly suited to straightforward blowback operation, at this moment in history the German authorities did not trust a handgun that didn't have positive locking, hence opted for short-recoil weapons.)



**A West German trainee fires a 9mm Walther P1 during training in the**

## **1980s; the P1 was a post-war version of the Walther P38.**

The P38 was an enduring success—it was the standard Bundeswehr firearm until 1994 (as the P1), served with dozens of other armies and police forces, and remains a popular civilian weapon to this day. Nor was it the only pistol in the Walther range. Pre-1945 weapons included the Walther PP series, which included James Bond’s infamous PPK, and some diminutive blowback models such as the six-round .25 ACP Model 9. But there were alternative stirrings in Belgium, courtesy of the liaison between famous US gun designer John Browning and the Belgian gunmaker Fabrique Nationale de Herstal (FN). This liaison had begun in the early 20th century with the FN Browning M1900, a 7.65 × 17mm (.32 ACP) blowback handgun, but culminated in the 9mm Browning GP35 Hi-Power, which Browning began to design but which was completed after his death by FN designer Dieudonné Saive. Despite the “High Power” title, derived from the French *Grand Puissance*, the GP35 was actually no more powerful than any other 9mm handgun. However, it did break the mold in several important regards, and set a pattern that would have a direct influence on the future of gun design, including the Glock. Browning based the action on that of the Colt M1911, although made some modifications to the trigger mechanism, and used a shaped cam mechanism instead of a swinging link control the slide and barrel engagement. What was really ground-breaking about the P35, however, was its 13-round magazine capacity, courtesy of a double-stack magazine. The GP35 might not have had the physical punch of an M1911, but it had nearly double the ammunition, and that could give a soldier a crucial advantage in a close-quarters firefight.

The GP35 went into production in 1935, and did well from the outset—35,000 guns were made before 1939, and during the war it was put into production by Canada (for Canadian and Chinese forces) and also by Germany after its occupation of Belgium in 1940. But this was nothing compared to the success of the GP35 after the war, once FN had reestablished indigenous control over the production. Reliable, fast-shooting, and offering a then-unrivalled magazine capacity, the GP35 appealed to a post-war generation of armies wanting to upgrade personal firepower. The pistol was therefore adopted by the British Army in 1954 as the standard replacement for the .38 Enfield/Webley revolvers, and it served in this capacity until 2013, when it was chosen for replacement by the Glock 17 (more about this later).

Some 55 other countries took it on board in various official roles, and it remains in prolific use.



**The Browning Hi-Power ushered in the age of high-capacity handguns, with its 13-round detachable box magazine.**

### **New Types**

During the 1950s to 1970s, the European manufacturers especially began to roll out numerous new pistols, with more attention to the ergonomics of gun design and improvements in production quality. Companies like Steyr (Austria), Sig-Sauer (Switzerland), Heckler & Koch (Germany), Beretta (Italy), Star (Spain) and česká zbrojovka Uherský Brod (CZUB) (Czechoslovakia) produced dozens of new models between them, advancing the type in terms of design, ergonomics, and safety. In Germany, for

example, Heckler & Koch introduced the HK4 in 1967, a gun that looked back toward the Mauser HSc in terms of overall design, but which had interchangeable barrels so that caliber could be changed between 9mm Short (.380 ACP), 7.65mm (.32 ACP), 6.35mm (.25 ACP) and .22 LR (5.56mm). It was a double-action to single action pistol, meaning that the trigger pull alone cocked and released the hammer for the first shot, and the subsequent blowback action of the slide cocked the hammer for subsequent shots.

H&K subsequently upped its game with guns such as the double-action roller-delayed blowback P9S and the P7 (1976), the latter featuring a squeeze-action cocking handle integral with the pistol grip. SiG-Sauer, meanwhile, produced two landmark weapons—the P220 (1974) and the P225 (1978). The P220, for example, came in numerous calibers—9mm Para, 7.65mm Para, .38 Super, .45 ACP and .22 LR (the latter in the training variant of the gun). With an eye to the military and police markets, both of which demanded exacting safety requirements, the P220 had a four-point safety system, consisting of a decocking lever (set on the left side of the grip), patented firing pin safety block, a safety intercept notch, and trigger bar disconnecter. It was a high-quality and persuasive weapon, and became the standard-issue sidearm of the Swiss Army. The P225 was, in effect, a shortened version of the P220.



**An operator draws back the slide on a Heckler & Koch P7 handgun. The P7 uses a distinctive gas-delayed blowback operating system.**

Nor were the US manufacturers idle. As well as facing the influx of European models, the M1911 was joined by an increasing number of indigenous products, particularly from the 1950s onward. Colt's age-old rival, Smith & Wesson, came out with its first generation of semi-auto handgun in the form of the Model 39 of 1954, chambered for either 9mm Luger or .40 S&W. This weapon held eight rounds in a single-column magazine stack, but in the subsequent 9mm Parabellum Model 59, produced from 1971, this capacity jumped to 14 rounds, the significant advance in capacity due to a double-stack magazine. The M1911, by contrast, held just seven rounds.

Yet although the firearms differed between caliber types, layouts, and even operating principles, there was much uniting them. For a start, most of the guns were made of high-quality machining processes, which demanded

extensive production lines and numerous well-trained engineering staff. The days of computer-numerical-control (CNC) machines, with their capability to deliver multiple manufacturing processes in a single unitary process, had yet to embed themselves in industry. Furthermore, guns tended to still rely on high-quality steel and wood for their build (although pistol grip plates tended to be plastic, however). In short, they were expensive.



**A Czech CZ 75 handgun (here apparently having some ejection issues). The CZ 75 has been a global export success story.**

For this reason, it was often cheaper for large law enforcement bodies, such as the US police forces, to purchase relatively cheap revolvers rather than costly precision-engineered pistols from the European or US manufacturers. At a tactical level, furthermore, it is notable that many of the pistols produced during the 1960s and 1970s scarcely offered a significant ammunition-capacity advantage anyway. The P220, for example, had six to eight rounds, depending on the barrel and the series variant. The HK4 held

seven or eight rounds, while most of the Berettas of these decades had eight to 10 rounds. The Czechs did nod more toward the Browning Hi-Power with weapons like the globally successful CZ 75, with a double-stack magazine holding a prodigious 16 rounds. Generally, however, the large-capacity models were the exception.

## **Glock Enters the Market**

This was the context into which a certain Gaston Glock pitched himself in the early 1980s. What is incredible about his story, however, is the sheer audacity of a man who, with absolutely no experience of gun manufacturing, set about creating, manufacturing, and selling one the greatest handguns of modern history.

Up until 1963, Gaston Glock's life bore little evidence of his future as a giant of firearms manufacturing. Born on July 19, 1929, in Vienna, Austria, Gaston Glock was the son of the railway worker, but he took the step into engineering in his early adult years. His work, however, was in the distinctly unglamorous world of radiator manufacturing, in which he rose to become a plant manager. Yet the young Gaston was ambitious for his own business, which he founded in 1963 with his wife, Helga.

At first, the Glock company focused on commercial mundanities such as doorknobs, curtain rods, and assorted metal window fittings. The business was built up in a very modest workshop, but despite the limited production capacity Glock took the work forward successfully. He managed to secure contacts within the Austrian Ministry of Defense, and eventually began supplying the Austrian Army with various military products, principally knives and bayonets, grenades, entrenching tools, and machine-gun belts. Nothing, as yet, spoke of firearms design. Glock hadn't even much experience of using firearms, apart from a very brief spell serving in the German armed forces at the end of World War II.

In February 1980, Glock was fortunate enough to overhear a conversation between two Austrian military officers, discussing the fact that the Austrian armed service was looking to replace the venerable Walther P38 as the standard pistol. Quickly, Glock moved in to find out more, despite the fact that he would be pitted against some of Europe's most experienced and august gunmakers. He inquired about the replacement, and was given the Ministry of Defense's (MoD) official procurement criteria. This constituted a



list of 17 major points (see opposite), a truly demanding set of criteria with extremely high standards of reliability, maintainability, and user-friendliness, and showing a clear progressive evolution beyond the standards of the P38. Much to the incredulity of many, Glock decided to enter the race, which would be contested by companies with hundreds of years' combined experience. Nevertheless, Glock received approval from the MoD to enter the competition, and he set to work.

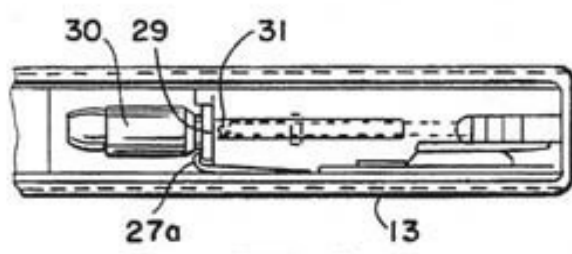
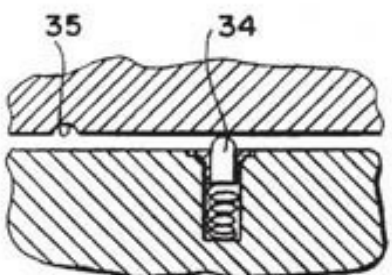
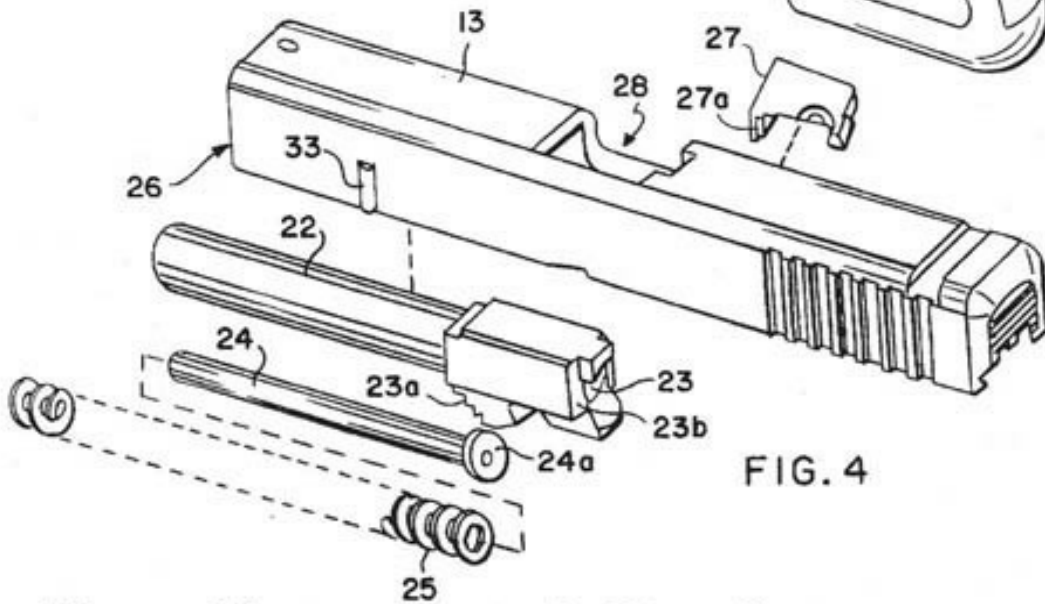
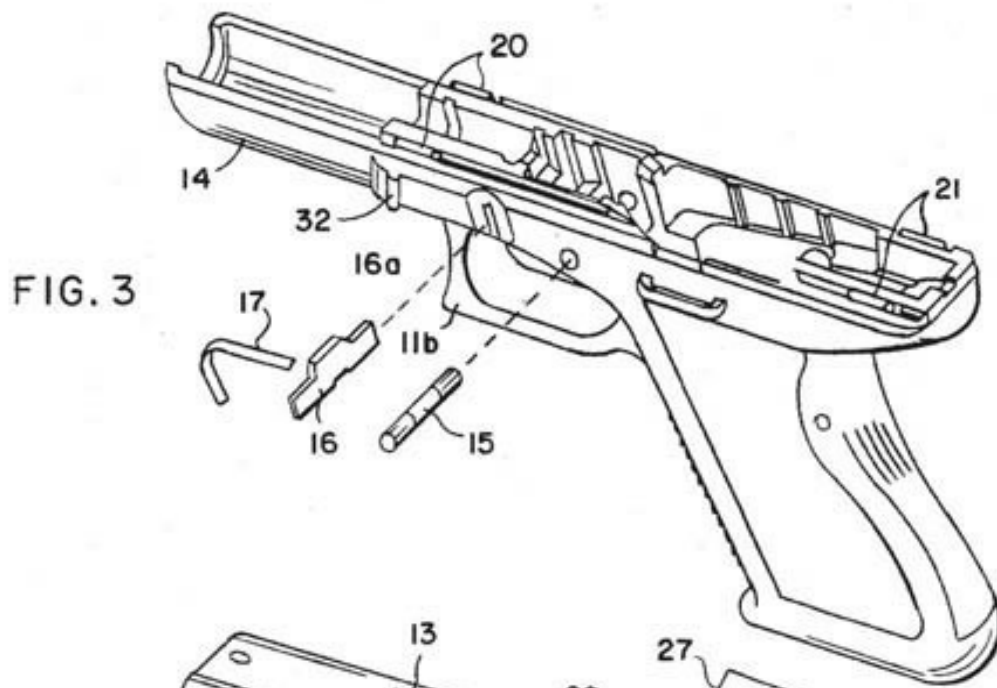


FIG. 3

FIG. 4

FIG. 6

FIG. 5

**A US patent document reveals, in an exploded diagrammatic form, the operating system of the Glock handgun, showing the frame, slide, and barrel groups.**

**AUSTRIAN MINISTRY OF DEFENSE  
HANDGUN SELECTION CRITERIA, 1980**

1. The system has to be a self-loading pistol.
2. The pistol has to fire the 9mm S-round/P-08 (parabellum).
3. The magazine must be able to be filled without any auxiliary devices.
4. The magazine must have a minimum capacity of eight rounds.
5. All operations for:
  - preparation for firing
  - firing itself and
  - manipulation of the pistol after firing must be capable of being performed single-handed, right-handed as well as left-handed according to the choice of the user.
6. The technical safety of the pistol has to be absolutely guaranteed under any circumstances from:
  - shock
  - stroke [glancing impact]
  - dropping from a height of 2m (6.6ft) on a steel plate.
7. The main parts of the pistol should be dismantled for cleaning and reassembling without any tools.
8. Maintenance and cleaning of the pistol should be performed without the need for tools.
9. The components of the pistol must not exceed more than 58 parts (equivalent to the P-38).
10. Gauges, measuring, and testing devices must not be necessary for long-term maintenance.
11. The manufacturer must provide the Armed Force, at least at the point the pistol series is supplied, a complete set of drawings and exploded views. The drawings have to show measurements, tolerances, the materials used, surface treatment, and any other important details for the production of the pistol.
12. All the component parts must be interchangeable [between the pistols]

without any modification.

13. During the firing of the first 10,000 rounds (using ammunition in accordance with valid TL regulations) no more than 20 jams are allowed, even if the jams do not require tools to clear them.
14. All the main parts of the gun will be examined and must be securely in place after the handgun has fired 15,000 rounds. Then the pistol will be tested with a test cartridge generating 5,000 bar pressure, after which the gun's main parts must continue to function properly and meet all the required technical specifications. If the gun cannot meet these requirements, then its testing cannot continue.
15. During correct use of the pistol the user must not be endangered in any way by the ejection of spent cartridge cases.
16. The muzzle energy must be at least 441.5 joules when firing a 9mm S-round/P-08 Hirtenberger Patronen AG.
17. Pistols that deliver less than 70 percent of the maximum points will not be issued for military use.

## **Development Stage**

The first step for Glock in this Herculean challenge was to familiarize himself with modern handgun design. He purchased numerous weapons, which he stripped down and studied intently, getting to grips with the fundamental operating principles. But he wasn't going to rely entirely on his own self-tuition. In May 1980, he also gathered together a group of internationally respected firearms experts to consult them about what they wanted from the next generation of handguns. This consultation brought some judicious feedback. Reliability was obviously of key importance, asserted the experts. The gun needed to be light and slender in profile—meaning it was easy to slip into a holster—and it also had to have “pointability,” meaning that the user could bring it to the point of aim almost instinctively. The experts also advocated that the MoD's stipulated maximum of 58 component parts for the handgun was too high, and recommended 40 instead. Keeping the number of parts low would ease maintenance and improve serviceability, as well as deliver obvious efficiencies for production.

One especially interesting discussion related to handgun safety. Most pistols at this time had a simple manually operated safety switch lever with “safe” and “fire” positions. The operator would, typically, engage the “safe”

position when the gun was holstered, and then click it off to “fire” when the pistol was drawn with intent. However, in reality, and especially in the heat of tense or violent situations, users often forgot whether they had engaged the safety or not. This could result in either dangerous accidental discharges or, conversely, the weapon not firing at a moment when the user really needed to send out rounds. Glock was particularly fascinated by this discussion, and set out to revise the principles of pistol safety.

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## **GLOCK 17**

**DATE:**

**1982**

**CALIBER:**

**9 × 19mm**

**LENGTH:**

**8.03in (204mm)**

**BARREL LENGTH:**

**4.48in (114mm)**

**WEIGHT (LOADED):**

**32.12oz (910g)**

**MAGAZINE CAPACITY**

**(STANDARD):**

**17**

**RANGE**

**50yds (45.72m)**

---



Armed with the feedback from his expert panel, Gaston Glock, aided by his wife, Helga, and a small group of engineers and technicians, set out to produce a prototype gun that could be submitted to the MoD pistol competition. Note that he was still running his regular engineering business at this time, and much of the development took place in a basic workshop in the garage next to his house in Deutsch-Wagram. Despite his lack of experience, which to outsiders appeared profound, on April 30, 1981, Glock filed for a patent on a new weapon, known as the Glock 17. The following year on May 19, 1982, after a huge amount of additional investment in time and money, Glock submitted the Glock 17 to the military trials. He was about to make history.

## **Glock 17**

It is now time to divert a little from the story of Glock's commercial

adventure, and look more closely at his first gun. It took one glance at the gun to tell the informed firearms enthusiast that here was something different. In some ways, and speaking in the broadest of terms, the Glock was familiar. It was a short-recoil slide-operated handgun feeding from a detachable box magazine inserted into the stock. It also fired the ubiquitous 9mm Parabellum cartridge.

Yet look closer, and a world of divergences from conventional thinking begin to make themselves apparent. First, there was the matter of construction. Although the Austrian Army specifications had stipulated that the new handgun could not exceed 58 parts, the Glock dropped substantially below that limit. Depending slightly on how you count the parts, the Glock 17 had just 34 components. But one of the Glock advantages was that all these parts were completely interchangeable with those from any other Glock. Author Peter Alan Kasler, in his recommended 1992 book *Glock: The New Wave in Combat Handguns*, explains one exceptional demonstration of this quality:

*“In May 1990, at the Raahaugee shooting Sports Fair in Ontario, California, members of the California Rangemasters Association fired 10,140 rounds of Federal 9mm Parabellum ammunition in a rather unique Glock pistol.*

*Twenty Glock Model 17s were completely disassembled. All their parts were then mixed up so it was impossible to determine which parts had been together in which pistols originally. Someone grabbed a receiver, serial number MU421 US, and then all the other parts necessary to assemble one complete Model 17 were taken at random from the various piles.*

*Following assembly and function checks, magazines were loaded, and the firing began. Three hours and forty minutes later, 10,140 rounds had been fired. During that period the pistol was fieldstripped and the breechface and chamber were cleaned every 2,500 rounds. Also during the three hours and forty-seven minutes, mandatory cease-fires (remember, the testers were all range masters) for target changes were accomplished.*

*The pistol malfunctioned once: at 4,500 rounds a trigger spring (\$1.95) broke. Another was grabbed from the mixed-up parts pile and installed in less than one minute, and firing resumed.”*

—Kasler (1992): pp. 132–33



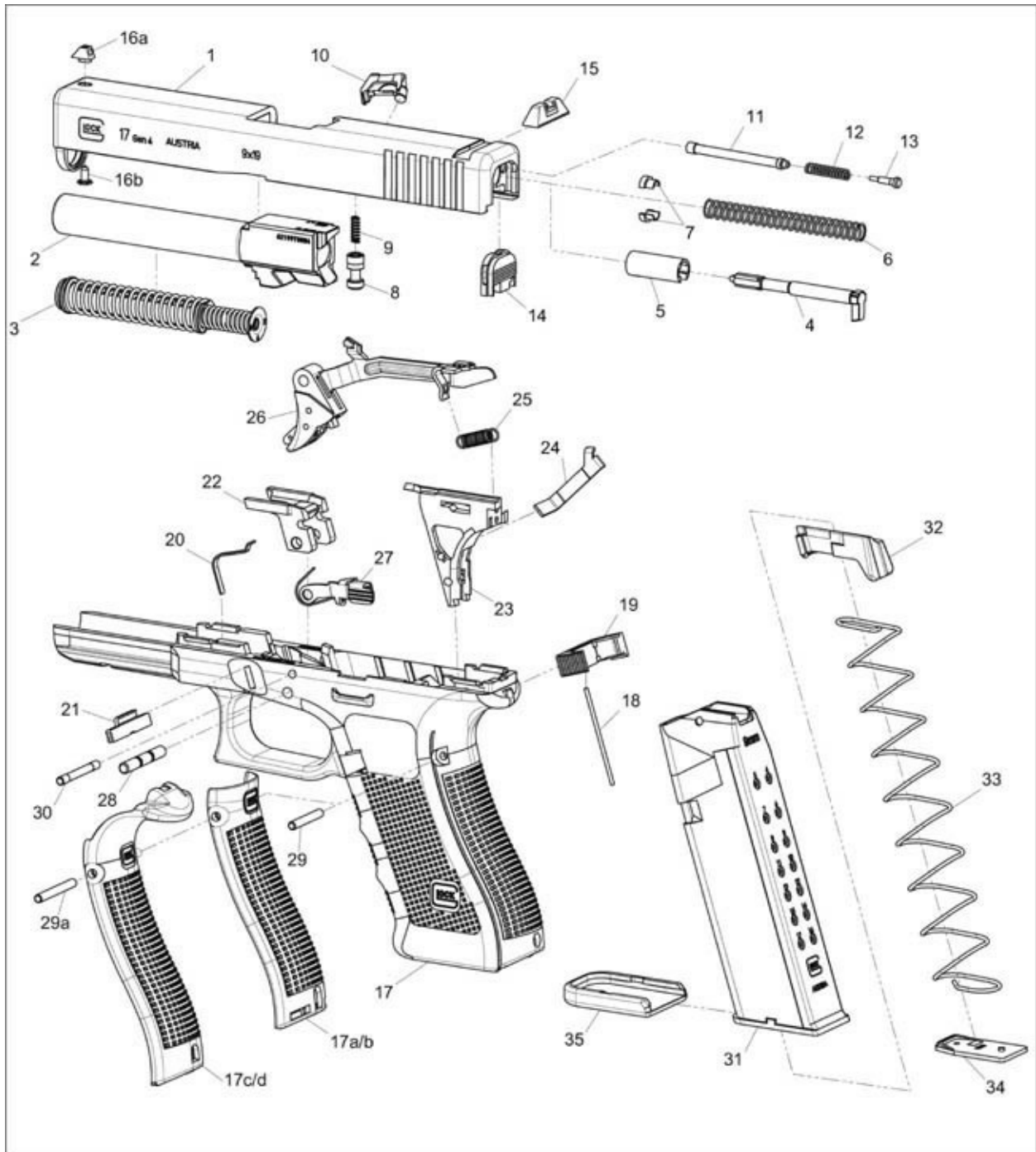
**A rear view of two Glock magazines, showing how the viewing ports at the back reveal how many cartridges are loaded.**



## **Parts and Construction**

This extraordinary feat demonstrated the perfect interchangeable of parts on the Glock. Although all handgun parts are machined to common measurements and specified tolerances, the individual tooling of the parts can mean that component replacement might require some work by a gunsmith before everything operates smoothly. By investing in the total uniformity provided by CNC computer-controlled machining, Glock developed what was in effect a collection of absolutely uniform parts, all of which could be assembled into an individual gun.

Such was very appealing to those who wanted convenient on-site maintenance of their handguns. Furthermore, as we shall see in the following chapter, the components of the Glock are grouped together logically in sections that, in many cases, can be disassembled, assembled, and modified without the use of tools.



**This exploded view reveals the essential simplicity of the Glock 17, with just 34 components. Some rival handguns have nearly twice the number of parts.**

Another aspect of the Glock that stood out was the actual materials used in its construction. Glocks are often widely—and on occasions negatively—

referred to as “plastic pistols.” Two points arise. First, we must not get the impression that the Glock is almost entirely cast in plastic; in terms of weight the gun is still 83 percent steel. Also, “plastic” doesn’t do justice to the capabilities of the actual polymer material used. The “Polymer 2,” developed by Glock himself, is a non-fiberglass reinforced material that is even stronger than carbon steel despite being much lighter, and is hugely resistant to physical distortions from extreme temperatures. The actual test parameters for Glock pistols are +140°F (+60°C) down to -40°F (-40°C), but the Polymer 2 materials can actually exceed these limits by a significant degree.

So which parts are actually made from the polymer? These include the receiver (frame, although the slide rails are metal), recoil-spring guide rod, magazine catch, trigger and trigger housing, and even the magazine. What this meant in practical terms was a gun that was very light—the entire weapon weighed just 1.45 pounds (0.66kg), whereas many other handguns weighed more around the 1.98 pounds (0.9kg) mark—but which was also tough and hard wearing. But the Glock paid equal attention to the metal parts. Chief of these was the slide, which was machined directly out of bar stock to produce an extremely solid piece, with a visually distinct rectangular cross section. The other major metal component was the 4.48in (114mm) barrel. One point to note about the barrel, apart from its hexagonal rifling, is the fact that it is made to slightly tighter dimensions than many other 9mm (0.354in) pistols, equating to .356 (9.04mm) caliber. The grip this gives on the bullet means that there is a better gas seal between the bullet and bore, thus producing higher muzzle velocities than many other competing pistols.



**A Glock 17 disassembled as it would be for a basic clean. Apart from some minor parts, nearly all of the lower receiver is made from polymer materials.**



**The Glock's low, flat profile makes it ideal for holstered use, while its absence of external safety switch means it can be drawn and fired rapidly.**

Before moving on to the Glock's actual operating mechanism, another material element that needs mentioning is the Tenifer coating applied to many of the steel components, including the barrel bore and exterior of the slide. Tenifer is a trademark name for a case-hardening process, in which nitrogen and carbon are diffused into non-ferrous metals. What this means, in practical terms, is that the key metal parts of the Glock have mighty resistance to scratch and abrasion damage and to corrosion. The coating is actually impregnated into the metal to give it a skin hardness beyond that of metal alone, and the corrosion resistance exceeds many other protective

coatings or materials, such as chrome plating, bluing, stainless steel, or Teflon.

## **Operating Mechanism**

It is when we venture internally that we truly reveal the ground-breaking nature of the Glock. For a start, we have to acknowledge the Glock 17's standard magazine capacity of 17 rounds, an extraordinary figure, especially when compared to the six-shot revolvers with which many police officers around the world were struggling. The capacity is achieved by using a double-stack arrangement, and although it forms a chunky grip, the large number of rounds between reloads is appreciated by many.

As noted, the Glock was a short-recoil weapon, meaning that the force of recoil provided the motive power for the extraction and ejection cycle. (Short-recoil means that the barrel and slide recoil locked together for a distance less than the length of the cartridge case before the two disengage and the slide continues rearward. In long-recoil weapons, mainly heavy machine guns, the barrel and bolt recoil for more than the length of the case before unlocking.) The key innovations with the Glock's recoil mechanism lay in the method of locking the slide and barrel together for firing, and in the mechanism of disconnecting them during the recoil phase.

Compare the Glock to the M1911. As described earlier, the Colt's barrel locks into the slide via two lugs atop the barrel that engage with corresponding slide grooves. This interconnection holds the two components together as they recoil backward when the gun is fired, before the swinging link drops the rear of the barrel down (when the bullet has left the gun and the pressures have dropped to safe levels) and allows the slide to go backward through its cycle. The Glock, by contrast, locked the barrel and slide together by means of the rear of the barrel, formed into a rectangular block, dropping into and locking against the shoulders of the ejection port. This is an ingeniously simple action, and a robust one as well.

Beneath the barrel are two angled lugs. The rear lug serves as the feed ramp for the cartridges, guiding fresh rounds smoothly into the chamber ready for firing. The front lug serves as both an assistance to locking the gun firmly into battery, through engagement with a slide lock piece, but it also provides the means of disconnecting the barrel from the slide during recoil. When the gun is fired, the barrel and slide travel rearward under the force of

recoil for a distance of about 0.06 inches (1.58mm).

At this point, the front lug then comes into contact with an angled and upward pointing piece of the locking block. As the two angled surfaces come together, the barrel is cammed downward and therefore disengages with the slide. As the slide continues its way to the rear, against the pressure of the return spring, the spent cartridge case is extracted and ejected through the now-open ejection port. Then the slide returns forward to battery, stripping a fresh round from the top of the magazine to chamber it; the front barrel lug reengages with the locking-block piece, but this time the barrel is cammed upward to lock again for firing.



**An Iraqi army instructor fires a G17 pistol during training at the Police Training Academy at Camp India, Baghdad, Iraq.**

### **Firing Mechanism**

The Glock mechanism was solid and dependable. But it was only a single aspect of an ingenious design. One thing that immediately struck those who first picked up the Glock was the absence of a hammer. In many handguns, such as the Colt M1911 and Browning Hi-Power, there is a hammer at the rear of the gun, which is cocked either by the user when he first pulls back

the slide to chamber a cartridge, or by action of pulling the trigger (in double-action weapons) or by the recoil action of the slide when the gun is fired. The hammer is held in the cocked position under spring tension by a sear connected to the trigger; pull the trigger, and the sear moves and releases the hammer, which then drives forward to strike the firing pin and fire the cartridge.

The Glock, by contrast, has no hammer at all. Instead it has a spring-loaded firing pin, activated by the trigger. When the gun is cocked and a round is chambered, the firing pin is pulled back into a half-cock position. When the operator then pulls the trigger, a trigger bar pushes the striker back toward its full cock position, the bar firmly engaging with the tail of the striker. At the end of the trigger bar's journey to the rear, it comes into contact with a connector, which cams down the sear plate at the rear of the bar and thus disconnects it from the striker. At this point the striker is released and goes forward to detonate the cartridge.

The Glock firing mechanism not only reduced the number of mechanical parts, but it also reinforced the principles of simplicity that inform every aspect of the Glock design. But there is a potential problem—safety. For those familiar with firearms, the presence of a hammer can be a reassuring sight. When it is cocked it indicates that the gun is ready to go; when it is lowered it is evidently safe until the trigger is pulled. With striker-fired guns, however, there is always the looming danger a hard knock on the gun might jolt the striker onto the primer, thus resulting in an accidental discharge. Furthermore, a half-cocked striker seemed in danger of easy release should the trigger be snagged or caught. Safety was one of the key issues that Glock faced in gaining acceptance of his new weapon. The concerns were accentuated by the fact that the Glock, unlike almost every other brand of pistol, had no external safety lever. But safety, as it turned out, was built into the handgun at numerous levels.





**The Glock has taken a near-starring role in many Hollywood movies, including in the hands of Jason Bourne in *The Bourne Ultimatum*.**



## **The Glock's safety trigger; if the central lever set into the trigger isn't pressed back fully with the trigger finger, the trigger can't be pulled.**

First, there was the trigger. If you study the Glock trigger closely, it features an additional small plastic lever projecting from the trigger face. This is actually a trigger safety; only when the finger is fully on the trigger and depressing the safety can the gun be fired. If the lever isn't pressed in, a plastic blocking piece behind the trigger butts against the frame, and prevents the trigger moving. Second—the firing-pin safety. This consisted of a small spring-loaded pin, which projects upward into the firing pin and holds it firmly in place. Only pulling the trigger will disengage the pin from the striker and permit the gun to be fired.

The final safety mechanism on the Glock was a drop safety, a further precaution against accidental discharge. With the Glock, the cruciform sear plate at the rear of the trigger bar engages on the left with a two-level slot in the trigger mechanism housing. What this means is that only when the trigger is pulled fully to the rear can the sear plate drop into the lower portion of the slot, and only then can the striker be released forward.

Taken together, the Glock's safety mechanism provided multiple levels of reassurance, sufficient to warrant the exclusion of an external safety switch. There was a tactical implication, however. What the Glock offered was a pistol that could be carried around safely with a cartridge chambered. If the gun needed to be used, all the operator had to do was draw it, aim it, and pull the trigger, without having to stop and click off a safety switch first.

All told, the new Glock 17 was light, immensely strong, and offered a level of firepower most other handguns could not match. Now Glock simply had to persuade the rest of the world that his was the firearm of choice.

## **The Rise of the Glock**

The Austrian Army pistol competition had a fresh face on the block. Gaston Glock, having been in firearms design and manufacturer for little more than a year, was going up against some of the mightiest names in firearms design—Heckler & Koch, Sig Sauer, Beretta, Fabrique Nationale, and Steyr. Each of the companies was fielding strong contenders for the Austrian gun, and Glock was not the only one offering high-capacity magazines. One of the rival guns, the H&K P9S, held 18 rounds. But the Glock had so many other advantages to offer, and incredibly it won the day. On November 5, 1982,

Glock was informed that the Glock 17 had beaten the competition and that he was to become the official supplier of the army's new handgun. Underwriting that point in clear commercial terms, the Austrian MoD gave Glock a contract for 20,000 guns in 1983.



## **An Iraqi Special Weapons and Tactics (SWAT) student fires his Glock 19 service pistol at select targets during live-fire training.**

And yet, this was just the beginning of the epic success story on which the Glock handgun was about to embark. Although Gaston Glock was, publicly, a somewhat reticent and formal individual, he was nevertheless ambitious and circumspect, and he and his representatives quickly began to scout out more markets. Essentially, the available markets broke down into three types: civilian, law enforcement, and military. The law enforcement category was particularly important, as the weapon that a police force carried was essentially given widespread and free publicity to the civilian market. Military sales, as the Austrian Army contract had proven, also had impressive potential, but there were more commercial pitfalls—military sales typically result in very low margins per unit and they are subject to political vagaries. For Glock, this latter point was proven by his refusal to participate in the 1984 XM-9 Personal Defense Pistol Trials in the United States, the competition to replace the aging M1911 Colt as the standard handgun of the US armed forces. Despite the potentially huge volume of sales that the contract would garner, Glock backed out of the competition both because it would involve too much modification of his production processes to meet the US specifications, plus he didn't want to hand over any production rights to the US government (a condition of the competition). In the end, the Beretta 92 won that competition, but it is fair to say that Glock wouldn't go on to live with regrets.



**These German GSG9 officers have fitted their Glocks with tactical lights/laser systems, to provide faster target acquisition in low-light conditions.**

With the Austrian Army purchase of the Glock, the rest of the world took notice and sales soon began to gather pace. The Glock had a particular appeal to special forces and elite police and security units, who appreciated its high magazine capacity, light weight, and fast-shooting characteristics. Early customers during this period included the German GSG9 counter-terrorism force, the Royal Canadian Mounted Police Urge Team, the Indian Special Protection Guard, and numerous VIP protection squads. Despite the potential

pitfalls of military sales, the Glock was also doing well there. Sweden and Norway both trialed the gun in 1984–85, and like Austria, eventually adopted it as their standard side arm. As more European countries either embraced the Glock or at least showed a definite interest in it, the Model 17 was authorized as a NATO standard issue firearm, widening its potential markets.

But there was one key market that as yet was closed to Glock—the United States. Here was a ripe fruit for the picking, not least because the emergence of the Glock coincided with the point in history at which many US law enforcement agencies were looking to replace their five- or six-shot revolvers with modern semi-auto pistols packing much better firepower. People in the United States were certainly taking notice, and Peter Kasler notes that between 1982 and 1985, not fewer than 36 US firearms importers actually contacted Glock for licenses to import the weapon into their country.

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## **GLOCK 17 GEN2**

**DATE:**

**1988**

**CALIBER:**

**9 × 19mm**

**LENGTH:**

**8.03in (204mm)**

**BARREL LENGTH:**

**4.48in (114mm)**

**WEIGHT (LOADED):**

**32.12oz (910g)**

**MAGAZINE CAPACITY (STANDARD):**

**17**

**RANGE**

**50yds (45.72m)**

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One of the key figures who facilitated the Glock's movement into the US market was Austrian émigré Karl Walter. Walter first came into contact with the Glock handgun during a business trip to Germany and Austria in 1984, in the presence of firearms journalist Peter Kokalis. They met with Gaston Glock personally, and he demonstrated the gun's virtues, which impressed the visitors. Walter suggested that Kokalis write an article about the Glock in the internationally popular *Soldier of Fortune* magazine, which would help lever the Glock into US consciousness. Cannily entitled "Plastic Perfection," the article appeared in October 1984. Some select extracts sum up the degree of respect the weapon commanded:

*"The best pistol will not win the current XM9 (Personal Defense Weapon PDW) trials. The finest military pistol in the world today, in my opinion, is not entered in the XM9 tests.*

*Currently in service only with the Austrian Army, the revolutionary Glock 17 pistol was withheld from the U.S. XM9 trials at the behest of its inventor, Gaston Glock, who would not accept U.S. government requirements to release the winning contender's production and patent rights to open bidding. The Glock pistol represents an entirely new era in small arms*



technology....



**An Austrian Army soldier, armed with a Glock 17 on his hip, conducts a vehicle search.**

*Five thousand miles is a long way to travel just to shoot another 9mm pistol. But the Glock 17 is not just another pistol. I must admit, however, that my initial reaction was genuine skepticism. Is nothing sacred anymore? Now they're even making pistol frames out of plastic? In our pop culture 'plastic' has come to mean vacuous or devoid of substance. Yet, plastic is a salient feature of the Glock design. Not only the frame, but the trigger and magazine as well are made of this material....*