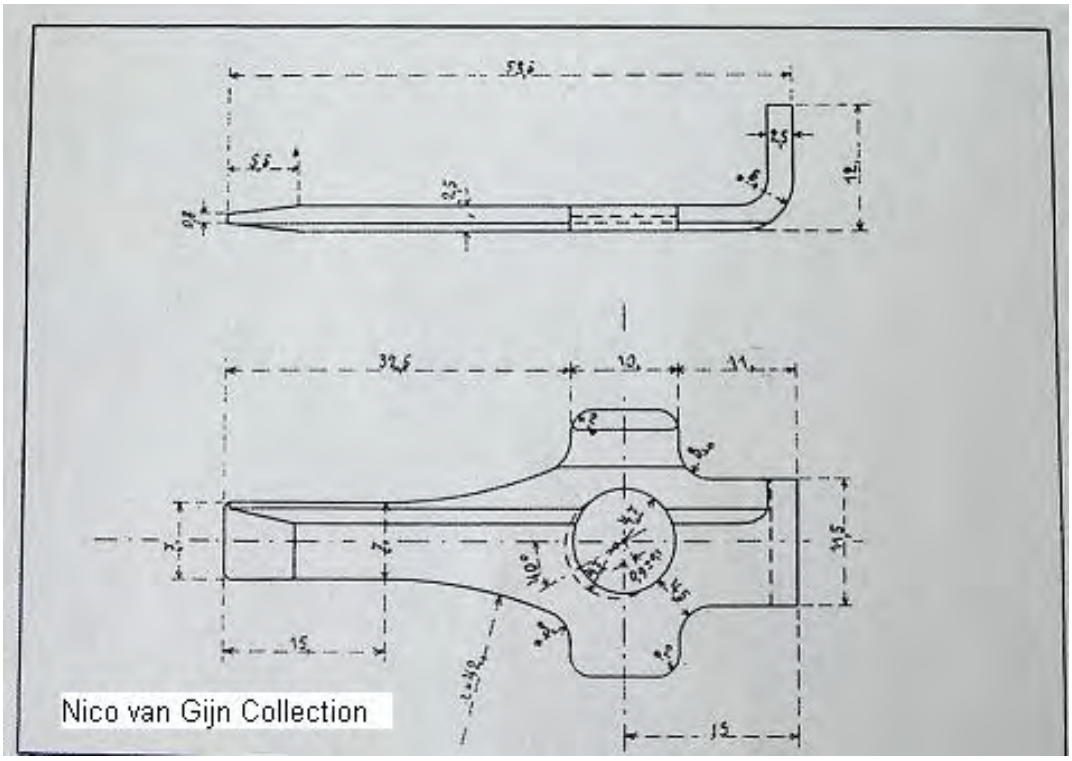
THE LUGER'S (PARABELLUM) SCHRAUBENZIEHER 1900-1946

"For over twenty years now, I have wanted to write an article explaining the differences of the Parabellum or P.08 pistol's screwdrivers that were produced between 1900 and 1946 by at least five different manufacturers during three production periods. At long last, my efforts gave birth to this article entitled "The Luger's (Parabellum) *Schraubenzieher* from 1900 to 1946." *Stated by the author, Klaus Merzbach of Rineburg, Germany.*

Klaus's article was translated from the original German to American by Joop van de Kant of Antwerp, Belgium, and George Anderson, Ron Wood, and Dave Lindsay of the USA. The terms of screwdriver, loading tool, tool, combination tool, skate key, key, and the German word for screwdriver '*Schraubenzieher*' are used every day to describe this item. I will use the term tool in the article. The terms "broken with a file" and "worked or smoothed with a file" have the same meaning.

Beginning with the commercial tools, it should be said that these were well made by *Deutsche Waffen und Munitions Fabriken* (DWM), using hardened spring steel.[1] The shape of the tool was stamped from a sheet of steel, leaving the edges sharp. The sharp edges were later broken off or smoothed by a file. They have a finish that I like to describe as having a color obtained by tempering the steel.[2]

According to the surviving original drawing dated 1901, personally signed by Georg Luger, the screwdriver had a total length of 53.5 mm. This length was maintained until 1906. On page 27 of the well illustrated book, Luger, the Multinational Pistol by Charles Kenyon, such a screwdriver is pictured.



The 1901 drawing signed by George Luger courtesy of Nico van Gijn

Note 1: Hardened spring steel is high-carbon or alloy type steel, used in the manufacture of springs, lending itself to appropriate heat treatment; it is usually made in an open hearth or electric furnace. It may be shaped into sheets, wire, or other forms. In its final form, it maybe hardened or tempered.

Note 2: A blued tool means it has been treated, and a blue protective coating is visible; blank or white means that there is no protective coating on the metal, and the item retains the metal color; tempering color indicates that the metal has been heat treated; and patina color indicates that unprotected metal has changed color due to time, conditions, and storage

Starting from 1906, the overall length of the tool changes to between 50 and 51 mm. It has to be assumed that DWM maintained the same shape of all tools manufactured between 1906 and 1915 -16. The material used probably changed around 1913.

Before the Parabellum pistol was accepted as the German Army's standard ordnance weapon, extensive tests had been accomplished. The well-known fifty-five pistols used in the 1902/03 trials have at the left side of the rear portion of the receiver and above the lanyard loop a crowned "D" in *Fraktur* (Gothic style) writing. The tools used during the pistol trials appear to have the same acceptance stamp as the test pistols. The appearance is different from all others. It does not appear to have the tempering color[2], and the overall length as well as the other external dimensions are the same, but the distance of the thumb lever to the center of the circular hole is 14 mm. This is clearly larger than all other known tools of the different manufacturers and time periods. Nevertheless it is somewhat smaller than the 16 mm of the example found in the drawing of 1901 above.

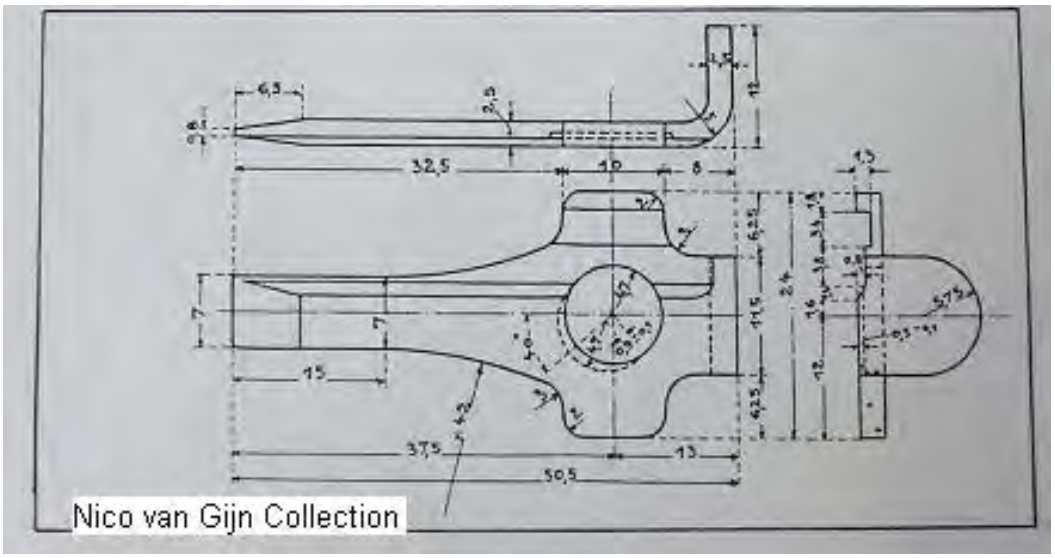
Above is a tool with an acceptance stamp, that was found on the Parabellum pistols of the 1902/03 German Army pistol trials

In the US, another screwdriver having this acceptance stamp emerged. The measurements and finish are comparable to tools that were later produced by DWM. This fact undermines my long cherished theory that the tools that were issued with the test pistols during the German pistol selection trials were the only ones that ever had the two-lobe crown over "D" acceptance mark (Danzig Proof).

The model of the Parabellum pistol that was introduced in 1904 for the German Navy also had a helpful accessory, the tool. The first stamping of the navy acceptance stamp might have taken place with the delivery of the larger quantities in 1906 or even in 1910. Until now, only the second version acceptance stamp pictured below has been found on these tools. The early acceptance stamp, as found on the navy pistols having the long frame and the grip safety, has yet to be found on a loading tool. The navy tool had the absolute same shape and measurements as the 1906 commercial tools.

German Naval Mark
on key circa 1910

German Naval Mark
1904 Central Powers
Pistols by Jan Still



The drawing above is a combination of two earlier tools: (Selbstiade Pistole 1904 or navy model [15 cm barrel]) above and the Imperial Navy tool below.

Even before the introduction of the Parabellum pistol as the German Army's Ordnance pistol, the manual of 1907 mentions the screwdriver. This manual was needed because the newly created machine gun units of that time received the Parabellum pistol as a personal sidearm. In 1908, when the "Pistole 08" eventually was accepted, every pistol came with a tool. It would take until 1910 before the tools were marked with an acceptance stamp. The directive, which was published by the *Infanterie Konstruktionsbüro* in Spandau, changed that. Consequently, with the exception of the fifty-five tools used with the trial pistols, the German Army had NO acceptance-marked tools until 1910. The 1910/1911 DWM-produced P.08 pistol only had two acceptance marks on the receiver. The pistol was issued with a tool which was marked with one of the three approved acceptance marks (C/E, T, or Z). With the exception of the above mentioned trial tools, all DWM tools having an acceptance stamp may show the tempering color,[2] will be the same in measurement and shape, and will have sides which are worked with a file. From 1913, the keys were made from *Tiegelflussstahl* (crucible steel, spring hardened).[3] On top of the bent thumb-handle/lever, DWM tools sporadically show characters or digits. Their meaning is not clear. With some imagination, they may be seen as worker's markings as also found on the frames and receivers of the P.08 pistol. Note the examples below.

Note 3: *Tiegelflussstahl* (crucible steel, spring hardened) is defined as high grade steel prepared by melting select materials in a crucible.

These tools have typical acceptance stamps, which are also found on early DWM P.08 pistols.

At the end of the 1910 and during the year of 1911, *the Staatliche Gewehrfabrik Erfurt* was added as a manufacturer of the P.08. The tools which came with these pistols were marked in the same way as DWM. The stamp appears to be an initial of the government inspector who was working in the factory, but the shape and color are totally different from the DWM-made tools. The total length corresponds to the directive and drawing of 1910, but the Erfurt-made tools are white[2] and do not have the tempering color. Moreover, the start of the blade under the central hole is broader when compared to the DWM tools but retains the same shape while running down to the blade tip. Later, from 1914/15, Erfurt tools will show more rounded corners at the "T"-shape when compared with pecies produced earlier. The two variations of the Erfurt screwdrivers have measurements which are absolutely identical, and the markings left by the tooling all go lengthwise. The DWM screwdrivers have only similar tooling markings within a certain time frame or with the same acceptance stamp. The edges of Erfurt tools were also smoothed with a file. It seems that there are very few or no Erfurt tools which do not have an acceptance mark.

Below are typical examples of Erfurt tools in the white,[2] with acceptance stamps that can only be found on P.08 pistols manufactured by Erfurt. There are three similar acceptance marks that are addressed below. The tool's dark color is from the photography or patina[2] on the tool.

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A few tools from both the DWM and Erfurt factories are known to have similar acceptance stamps and show the same character. At the left is a DWM-manufactured tool and the right an Erfurt-manufactured tool. Both of the tools displayed below show the “H.” Look at the difference between both shapes below, especially around the acceptance marks. DWM tools have slimmer shoulders under the “T-arms” where the Erfurt tool is wider at that location. This is an excellent example of the difference between the two tool shapes. Note the number of lobes in the crown; DWM normally has four lobes with several exceptions. The exceptions are three lobe crowns over the H, (small) S, (small) X plus a three or four lobe crown over th M. For the most part, Erfurt tools have three lobe crowns. A noted exception is the letter ”V”. It will have a four lobe crown.

DWM-produced tool *Erfurt-produced tool*

DWM-produced tool *Erfurt-produced tool*

The classical difference in the coloring of the two tools is very clear here: left-the tempered color DWM tool, right-the Erfurt tool in the white.

Occasionally numbers are found on the front side of Imperial tools having an acceptance stamp and a marking showing a combination of a large digit (2.5 mm high, value from 1 to 12) and a second smaller digit (2 mm high), mostly two digits but possibly three. The first number represents the number of the company or squadron within a regiment, and the second value represents the number of the firearm within the unit.

These stamps were applied according to the regulations during the Weimar period *(Reichswehrzeit)*. The drawing in the army directive H. Dv. 464, Part 1 from 1924 *"Infanteriewaffen und Infanteriewaffengerät"* (Infantry Arms and their Accessories), confirms these markings (on the back).

Only very few tools have been reported that have unit identification stamps on the front or back side. There may be one or more unit markings on a tool due to re-naming or re-assignment of pistols or units. Certainly these were stamped by the “old” Imperial Army, mostly for machine gun units.

These tools from the Imperial era have various unit markings.

A tool having a marking of a Saxon unit: Reserve Regiment number 133, Third Company

Sometime between the end of 1915 and the beginning of 1916, there is a change in the shape of the tools of both manufacturers. At the state rifle factory at Erfurt, the corners of the “T” (flanges) crossing in the middle were rounded off. The tools of the private company, DWM, show a narrowing of the blade under the “T” crossing. This exact shape will be maintained into the early Mauser K date production (1934) of the P.08 pistol.

DWM

ERFURT

Each of these pictures show the changes between the early and the later keys as indicated in the text above.

During the Weimar period for the German Army *(Reichswehrzeit)*, we find only a few different acceptance marks on the tools. Of the three variations that are found on the Simson pistols (eagle/6, SU50, eagle/SU25), there are also two navy variations of the anchor/M. The two Spandau SU-marked tools and the navy variations have the basic shape of the DWM tool. The eagle/6-marked tools are directly related to Simson production. They have the Erfurt shape but show a slimmer tool shaft outline from the cross "T" (flanges) to the blade's end.

The German police also used the P.08 pistol during the Weimer period. For the most part, these were leftovers from the Imperial period. Undoubtedly these pistols needed tools. It is also likely that one separate order for tools was given to one manufacturer. Many of the tools that I examined have a different shape, yet a very few have the DWM shape. It is also very obvious that the sides have not been "broken" or worked by a file.

Tools having the eagle/6 acceptance stamp show smoothed sides. Navy-marked tools show particularly round sides and no file marks. As mentioned above, the police tools do not have file marks. We may conclude that the screwdrivers of the Weimar period cannot be mistaken for other eras.

Some of the tools of this era have a one to five digit number on the back side. These are serial numbers of the police P.08 pistols to which the tools belonged.

Simson tools

Tools from the Weimar period are in the white.[2] There is no protection from corroding. The tools marked with eagle/6 were delivered with Simson-produced pistols. Only these will show sides smoothed by a file. They will have the late Erfurt shape. All others from this era will have the late DWM shape and color. Variations of the Weimar period are as shown. Above are three variations of the eagle/6 acceptance marks, which may also be found on the right receiver of the Simson-produced pistols. Notice the eagle/SU25-marked key illustrated below.

Eagle over SU/25

Two Reichsmarine (German Navy) variations: these are in the white, and the sides are not smoothed with a file.

The tools, belonging to the P.08 pistols of the navy station for the Ostsee, do not have acceptance marks. From 1935 on, these were marked with the property numbers of the pistols.

In the journal of the Ministry of the Interior of April 12, 1922, an illustration of a tool can be found that shows the identification markings that were found on the early police tools. The tools were stamped on the top side of the blade (beginning at the top of the shaft) with number of the "*Hundertschaft*" (group of one hundred) with a height 3.1mm and the property number of the pistol (height 2.1mm). The arms of the so-called "*Revierhauptmannschaften*" (District Main Police Station) had the same stamping with the addition of an "R" at the end for additional identification. See the photos below.

There must have been an earlier directive, which was overruled by the above mentioned directive of 1922, because on almost every example of the early police markings the original serial numbers have been overstruck.

It is interesting to note that the early police tools did not have an acceptance mark. The Imperial stamp would have indicated that the tool came from that period. The unmarked tools that were acquired for the pistols do not have their edges smoothed with a file. Therefore, it can be assumed that there was not only a shortage of P.08 pistols directly after WWI but also of tools, which supports my earlier statement.

The tools above show the former "Revierhauptmannschaften" stamps. On the back side of each, there is a four digit pistol serial number.

These five screwdrivers show Imperial acceptance marks as well as the Weimar Republic Police unit marking as directed in 1922. Note the "Hundertschaft" as well as the arms number.

In the "*Waffenverwaltungsvorschrift*" dated 1932 (Directives for the Prussian Police Nr. 40a), we find in appendix 10 a list of the characters which are valid from that point on. The directive describes the use by the "*Schutz*"and "*Kriminal - Polizei*," or the "*Landjägerei*," and also the governmental district they were operating in. There are also abbreviations for the police schools. The upper case block letters have a height of 4mm. Roman digits which indicate the precinct in a large city, as ordered by the local presidents, also have a height of 4mm.

Above are examples of police tools from the late Weimar era having markings as indicated in the 1932 directive. Their edges are not smoothed with a file!

Three additional tools of the same era

Above and below are many tools from the era after WWI that have various police stamps. The meaning of the "L." is not yet known.

Apart from the fact that the edges are not worked with a file, there is another property that helps to identify the tools of the Weimar Republic. The knife-edged rim, which is so important for the loading of cartridges, is more prominently shaped. These properties indicate that the production of the tools was based upon a separate drawing and that they were very probably procured from one single source.

Above, from left to right: two commercial tools model 1906, one tool commercial/army, one from Erfurt, an early Mauser K-date from 1934, and a replacement tool made by Mauser. When compared with the row of tools from the Weimar Republic below, the larger knife-edged rim in the central hole is strikingly evident.

Tools for the Schutzpolizei Arnsberg were produced in a separate batch and have unique measurements.

Only the very early tools (of the thank goodness only few years enduring) of the “Thousand Year Third Reich” showed the stamps Ö|37 and B|90 (1934) and have the DWM shape. All but a few do not have the DWM tempering color. A study of the production marks on the actual sheet steel the tool is stamped from leads me to believe that these early tools did not come from DWM stocks but were produced by Mauser. From 1935 (G-date pistols), the tools show the typical Mauser shape. This shape resembles the Erfurt tools; only the “shoulder” under the round hole is wider. The first five acceptance stamps on these tools do not show an eagle; only at the end of 1935, the first eagle appears (droop-eagle/ 211). Again, within the various batches of ordnance pistols produced for the German Army, we find exactly the same acceptance stamp on the right receiver and also on the screwdriver. The screwdrivers are made from hardened spring steel,[3] having a percentage of 0.8% carbon. Only the lower left side of the tools have smoothed edges. The very homogenous tempering color was obtained by submerging the tools for five minutes in a salt bath, having a temperature of 380°C (716°F). The early tools, having the acceptance stamps Ö|37 and B|90, may partly show no tempering color.[2] The material of these white tools will be like the tools of the Reichswehr period. Time and conditions may have allowed a coating of patina to appear and darken the appearance.[2] See the eagle/SU25-marked tool on page 10.

The blade tips of the early Mauser tools are really narrow on the front side. The tip of the screwdriver in the middle of the picture above has even been tooled afterwards and lengthened. From 1935, at the late W|154 stamps, the blade tips show a longer shape. From 1935, we also find unmarked pieces.

During this period, the tools made for and accepted by the German Police are essentially different from the tools described above. This is not surprising as the police, like the navy, took care of their own procurement and acceptance procedures. The police tools are always in the white[2] with the length of 52mm or more. The length of an army tool is but 50.50mm. The shape is very much like the DWM-produced tools, showing narrower shoulders below the round opening for the magazine follower knob. The acceptance stamps were an eagle over an encircled swastika with the letters B, L, or K to the viewer's right of the encircled swastika. I have not found such a tool with filed edges.

The police tools from the Third Reich era are always white[2] and longer than all other tools! The knife edge in the hole, preventing the magazine follower knob to escape during loading of cartridges, is not found on the usual left side but in the middle or mostly on the right side as displayed below.

Many police tools have a property number as well as the acceptance stamp.

The "*Luftwaffe*" (German Air Force) procured their pistols and tools independently as well. The tools having a Luftwaffe acceptance stamp show the same color as the famous pistols, manufactured by Krieghoff. The appearance of this color is probably the result of bluing, not from tempering. The shape is very much like the Mauser tool, but all edges are smoothed with a file. Two different acceptance stamps can be found. The first stamp was made upside down, positioned just below the center hole and oriented to the left. This was not done accidentally; the place and regularity of this stamp leave no doubt that it is the intended position and location. The magazines of the Krieghoff pistols also occasionally display the upside down acceptance stamps. When observed from above, we find on top of the bent and rounded thumb lever of these tools at least one but often two small stripe-like markings. These marks occurred during the tool production. This marking and the special file strikes which go diagonally over the length of the tools are easily identifiable properties.

I believe that unmarked Krieghoff tools, not having a *Luftwaffe* acceptance stamp but having the properties of those produced by Krieghoff, were destined for the commercial market. These are even more rare than the *Luftwaffe* accepted tools, which are already a rarity on their own. See the tool below.

Unmarked Krieghoff tool

A FEW OTHER VARIATIONS:

Finland received a contingent of P.08 pistols as military aid. These were accepted and marked with the well known SA stamp. The tools that came with these shipments were also stamped with SA for *Suaomi Armeija* (Finnish Army).

There is also a tool that appeals to me for its shape and color, having a length of only 48mm. It is marked with a crest above a "W". I am grateful to Martin (Sauerfan), who pointed me to the very similar crest of the Saxon country's flag. All these tools have been worked with a file by someone who mastered the use of a file. I would like to solve the mystery surrounding this tool someday.

Screwdrivers produced in Norway are easy to recognize thanks to the grayish finish color which can almost be associated with Parkerizing. Special are the concentric rings on the blade edge caused by the machining of the blade.

Norwegian tool

Note machine marks on the blade

As both the DDR and *Kongsberg* tools have been available in large quantities and at relatively low prices, they were purchased more and more for forgeries. When rare and sought after tools reach prices of hundreds of dollars/euros, an "upgrade" seems worth the trouble. Therefore it is very important for any potential purchaser of such a piece to learn the specific properties of these tools. I am fairly sure that it is impossible to fake a tool. There are always sufficient points of judgment enabling us to recognize a forgery. Without going into more details here, it must be stated that both the tools made in the DDR and in Norway have specific characteristics which make them recognizable as post WW II production. These forgeries may be quickly identified for what they are. The production of tools in the DDR took place during 1958 and 1959. These are easy to recognize because the distinctive structure of the material, the eight serrations under the thumb lever, the typical dark bluing, and occasionally the crackled finish.

Serrations

DDR loading tool detail 1958: note the crackled surface and the serrations on the thumb lever.

Mauser Jagdwaffen G.M.B.H. produced commemorative Parabellum pistols and loading tools during 1969-1988. The tools were marked with the "Mauser Banner" of various sizes and in a linear and a cross direction.

PROPERTIES AND ACCEPTANCE STAMPS OF THE MAIN TOOLS

DWM was a privately owned firm that supplied the German Army and Navy until 1918. The tool has a unique shape and color. The edges are smoothed with a file.

Until 1910, these tools did not have an acceptance stamp. From 1910, there are at least fourteen different acceptance stamps, some showing a four-part crown above D, E, F, G, H, J, L, M, large S, T, large X, and the letter Z. Three lobed-crowns are found above letters H, small S, and small X. The letter M is found with a three or four lobe crown. One tool has the stamp of the Imperial Navy.

E

F

J

M

S large

S small

T

X small

X large

Z

Imperial Navy

Because the full alphabet can be found on the tools and the pistols, the original practice of using the initials of the family names may have been abandoned during the Imperial era.

ERFURT was a state-controlled rifle factory (armory), which supplied blank (in the white) tools[2] having a unique shape and smoothed edges. At least eleven acceptance stamps were used, having a (mostly three part or lobed) crown above C, D, G, H, J, L, N, S (small and large, both underlined), and U. The exception, the crown above the letter V, has a four lobes.

L

C

D

H

J

S large underlined

S small underlined

U

V

Tools from Erfurt: C, D, G, H, J, L, N, S, S, U and V

The tool with an acceptance stamp “V” is “ambiguous”; it has the DWM shape, a crown showing four parts, but it is always white.[2] This acceptance stamp can only be found on tools, never on the P.08 pistols. In the meantime, it is the most encountered variation of screwdriver from the Imperial era.

The two tools below are from Erfurt. The blank or white surfaces are almost unchanged. This is from use and storage. The surface often looks as if it has been treated but is patina.[2]

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As the directive requiring the acceptance marking came into force only during 1910, the tools dating from the early years do not have an acceptance stamp. It is very probable, but not yet proven, that these early pieces had broken edges like the later tools that have an acceptance stamp of the German Imperial Reich. I have twenty-six screwdrivers from this early era which I have examined for the presence of smoothed edges. Eleven have indeed broken edges on all sides, but fifteen do not show any treatment at all. Even though this lot includes a few tools which have unit markings which I think originate from the Imperial period, I could not draw a serious conclusion from the above mentioned examination.

Weimar-Simson period: The screwdrivers that were supplied to the Reichswehr and Reichsmarine have the shape of the DWM tools but are mostly in the white. They do not have filed edges and are very often stamped with unit markings or acceptance stamps (SU50, eagle/SU25, anchor [small or large] under an “M”). The discussion and photos appear on pages 10 and 16 in this article.

The tools which came with the Simson pistols have a slightly different shape like the Erfurt tools; they are in the white (blank)[2] and have three different shaped acceptance stamps: the Weimar eagle/6 as discussed and shown on page 10.

Third Reich: Mauser supplied tools with the first army pistols in 1934 which had a DWM shape, both white[2] and tempering colored,[2] smoothed edges, and acceptance stamps Ö|37 and B|90. As of 1935, the tools have the new typical Mauser shape, a unique tempering color,[2] and at least the lower left side has been worked with a file. During 1934-35, most of the acceptance stamps do not yet have an eagle over a number. Examples are the Ö|37, B|90, S|92, S/42G/S92, and two different W|154s. Late in1935, the two different shaped droop eagle/211 marks and the first droop eagle/63 appear. There are four different shaped droop eagle/63s. From 1936 on, we find almost only eagle stamps: WaA63s and six more different shaped stick eagle/63s, four slightly different stick eagle/655s, and two different stick eagle/135s. The two different S/42 and four different 42 Mauser code stamps, which did not use an eagle. They were Mauser not army (WaA) stamps. Mauser supplied the army with tools, that had in total at least thirty-two different or variations of the major acceptance stamps.

As I did with the unmarked examples of the early Imperial period, I have examined the sides of the Mauser tools. Surprisingly from all tools made in 1934 and 1935 (having acceptance stamps Ö|37 to droop eagle/63) only the lower left back edge has been smoothed with a file. Many of the tools having the S|92 acceptance stamp (with or without the additional S/42G), which were produced at the end of 1934 and into 1935, have on top of the bent thumb lever a pair of machine-markings which run parallel at a same edge. These look a lot like the one to two markings as found on the thumb levers of Krieghoff tools. These markings are only found on the S|92 marked tools; it might be possible that Mauser was experimenting with methods of production during 1934/35.

The first screwdrivers supplied by Mauser still have their original DWM shape.

All early tools having the Mauser shape and marked with ö|37, B|90, S|92, S/42 G/S|92, most of the W|154s, some droop eagle/211s, and a few DE/63 tools have very short blade ends. An example is above. Note the S/42 G/S|92 tool(center) has had the blade reworked.

Three tools above have the acceptance stamp S|92. These show the above discussed markings, which were left by the tooling during production. I found these only on the S|92 variations. They have a resemblance to the markings found on Krieghoff-made tools.

From the end of 1935 to mid-1939 Hauptmann (Captain) Krimer was the army official for the acceptance procedure at Mauser. He used the code 63 under an eagle; the droop winged variation is shown above. These stamps are small, just as on the right receiver of the P.08 pistols.

Two more droop eagle/63 variations: at the left is the most commonly found. The one at the right shows the stamp which was used in spite of the fact that the "6" had partly broken off. It is interesting to note that it was not immediately replaced.

During 1937, the eagle received "stick" wings. The mark has four different sizes and each size can be found in two slightly different patterns.

This tool has the very rare eagle/WaA63 acceptance stamp; until now, it has not yet been precisely scheduled in a time frame. Due to the stick winged eagle, it is safe to presume 1937-1939.

From 1939 to 1941, Technical Inspector Gerbig acted as the official for the army acceptance procedure at Mauser. He used the number 655 under the eagle. There are at least four variations of this model. See below.

From the end of 1941, another change of inspectors took place; Major Rosenhagen used the number 135. As *on the pistols, there were two slightly different shapes of eagle/135.*

These are code S/42 Mauser replacement tools.

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When tools were lost, replacements were available. During the III Reich period, these were stamped with Mauser's army production code, before 1939 S/42 (photo above), thereafter the 42 (photo below). The Mauser S/42 stamp is known in two very slightly different variations.

The code 42 Mauser replacement tool stamp is found in two sizes plus some small differences create variations.

From 1936-1937 (so from the first use of the stick eagle/63 stamp), both edges on the backside of the tools were smoothed.

From 28 screwdrivers in my collection having a stick eagle/655, only one was worked on the back left side with a file, four were worked only on the back right side, exactly twenty on both back sides, and three were not worked at all.

In conclusion we can confirm that at least one edge (on later screwdrivers mostly two edges) has been polished on the backside of Mauser-made tools. Only three out of all examined screwdrivers had edges on the front side which were worked with a file (two have the middle size eagle/63 stamp, and one has the code 42).

It must be noted that the various surviving scaled drawings of the screwdrivers, dated from 1901 to 1913, including the drawing that Mauser inherited from DWM, have partly different measurements of details. The only size that never changed is the curved part of the tools. According to the drawings, it always started 15mm upwards from the blade's edge, followed a curve having a radius of 42mm, which ended in the broad cross-like arm. It is interesting to note that Mauser was the first producer to respect this radius. Screwdrivers made by Erfurt had a larger radius, but DWM had the largest.

I would like to close by showing some tools, which justly did not received an acceptance stamp.

These screwdrivers were rejected during production.

Often, the machine that should produce the knife edge in the central hole did not function correctly and went fully through the material.

Sometimes the right angle of the thumb lever was not reached.

The bending tool was not well positioned and left markings. Sometimes the material broke.

This concludes my short article on the Parabellum pistol's loading tool.

KLAUS MERZBACH, RHINEBERG, GERMANY