

LORCIN L9MM AND L380 PISTOL BREECHFACE TOOLMARK PATTERNS

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KEY WORDS: Lorcin, breechface, manufacturing marks, subclass

ABSTRACT

Lorcin model L9MM, and more recently, model L380 pistols are manufactured with a steel breechface insert. The implications of the manufacturing methods of the inserts on firearms identifications are discussed.

Background

During a Drugfire search of casings images similarities were noted with respect to test fired casings from a Lorcin L9MM recovered by the Los Angeles Police Department and a fired evidence casing recovered by the San Bernardino Sheriff's Department (figure 1). Based on the similarities, the firearm was obtained from LAPD and test fired.

The test fired cartridge cases were compared to casings from the crime scene. The breechface signatures were similar, but there was insufficient detail for an identification. Further comparisons of chamber and extractor marks were made. No similarities were found in the examination of these marks. Something wasn't right.

The firearm itself was examined. The Lorcin L9MM pistol possessed a non-ferrous alloy slide and frame. Also noted was a steel breechface insert cast into the slide (figure 2). This was confirmed with a magnet. This discovery, along with the similarities of the Drugfire hit, led me to examine the nature of the manufacturing of this breechface insert. Evan Thompson had earlier alerted us to this insert situation and the possibility of non-unique breechface markings.¹ Evan wisely cautioned Drugfire and Bulletproof users to exercise caution when interpreting screen images.

In order to investigate the method of production of the part, I contacted the Lorcin factory and requested a few samples of uninstalled

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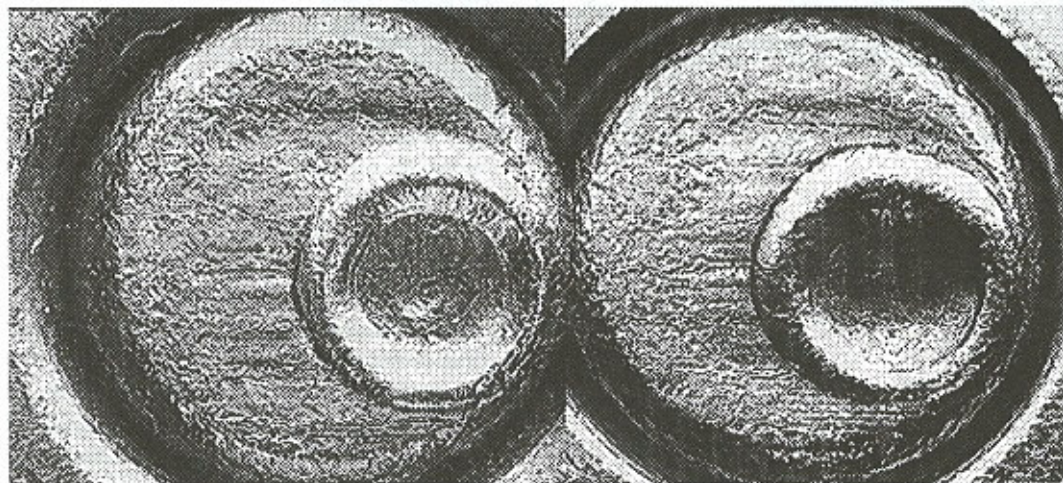


Fig. 1 Drugfire "Hit"

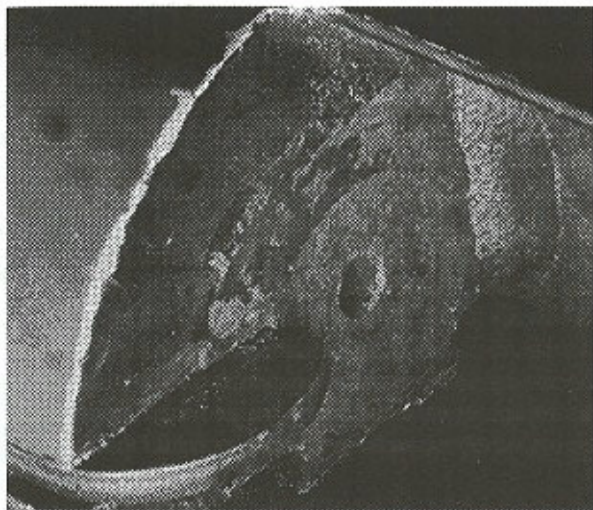


Fig. 2 Lorcin L9MM Slide/Breechface

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breechface inserts for microscopic examination. Seven of the inserts were provided to me by Lorcin.

Preceding the introduction of the L9MM, Lorcin manufactured the L25 and the L380 pistols. These pistols had a relatively soft alloy slide without a steel breechface insert. In these pistols the breechface area would become battered during firing as the slide hit the rim of a cartridge in the magazine as it fed the cartridge into the chamber. This battering altered the contours of the breechface which led to a changing pattern of marks on cartridge cases fired in those guns. This has been recently discussed in the A.F.T.E. Journal by John M. Collins² and Robert H. Kennington³. With the introduction of the L9MM, Lorcin rectified the problem with the steel breechface insert. (Note: current production L380 pistols now have an insert similar to the L9MM). This construction is similar to the old Raven .25 Automatic pistol (and also the newer Phoenix Raven) in that the Raven has a steel insert cast into the slide. The Raven insert is of a different construction, however. This insert and the individuality of it was the subject of an AFTE article some time ago.⁴

The seven inserts were microscopically examined. They had a very fine pebbly appearance as well as several parallel stria from the manufac-

turing process (figure 3). These inserts were microscopically compared and based on these manufacturing stria, were segregated into two groups. Figures 5 and 6 each show an identification of two inserts from each of the two groups. As can be seen in figures 5 and 6, the nature of the toolmarks is quite different when comparing the two groups. The identifications made are to the tool that made the marks on these parts. It is apparent that these marks will remain in the finished firearm and can also mark casings fired in such firearms. This explained the correspondence seen in the Drugfire comparison described earlier along with the lack of any other confirming markings.

Insert Manufacturing

A subcontractor to Lorcin manufactures the inserts. As a quick overview, they are a formed, stamped sheet steel part. They start with sheet cold-rolled steel which is die-cut (blanked) to shape. This blanking process punches out the firing pin hole and extractor recess. Then the outer edges of the insert are bent backward in a die. The finished part is hardened after forming. After hardening the parts are cast into the slide, which is ultimately powder-coat painted.

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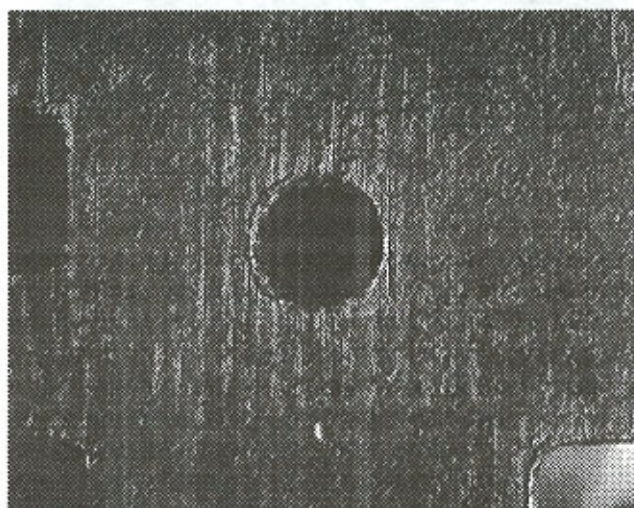


Fig. 3 L9MM breechface insert

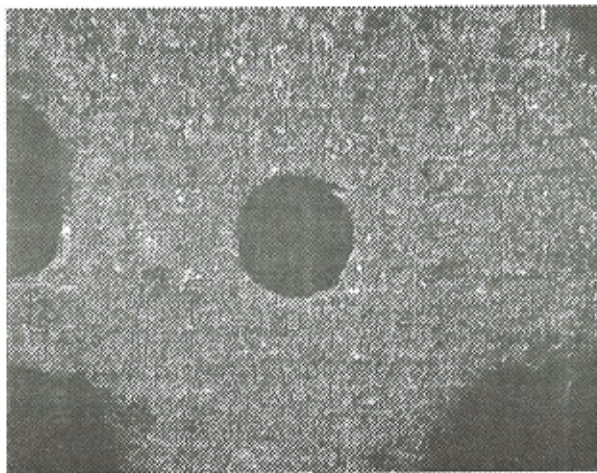


Fig. 4 L380 breechface insert

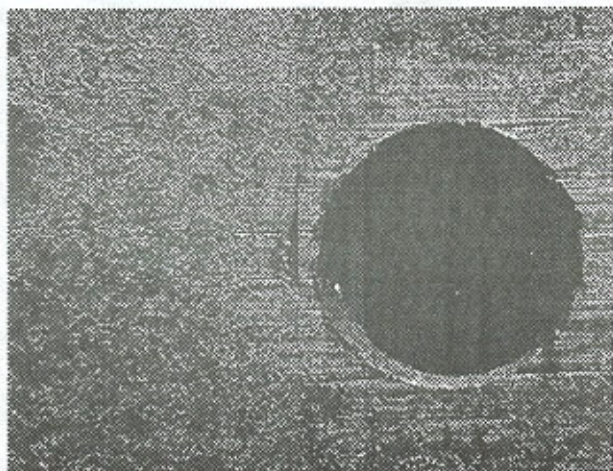


Fig. 6 Group 2- L9MM breechface inserts

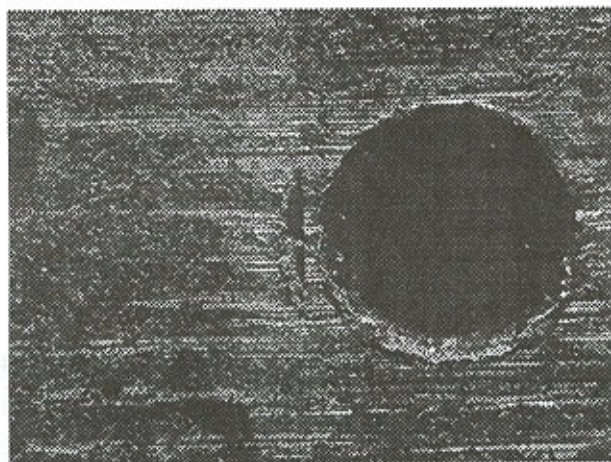


Fig. 5 Group 1- L9MM breechface inserts

To elaborate on the process for making the L9MM inserts, it starts by blanking, or die-cutting, two parts simultaneously. In blanking the parts are die-cut with a male top punch pushing the metal through a female lower die. The stria found on the parts is created by the top punch as it pushes the metal through the female lower die. This top punch is sharpened by grinding as necessary. The grinding creates the stria pattern on the punch. The die is sharpened approximately every 30,000 to 50,000 parts. Because of the design of the die, two insert flats are created with each cut which explains the reason two groups were developed in microscopic comparisons.

The breechface inserts on both the L9MM and the L380 are made by the same subcontractor. The orientation of the parts as they come from the blanking dies differs between the two parts as to which side faces forward in the gun. The L9MM guns have the punch toolmarks on the front of the part (which contacts the cartridge case), but the L380 has the punch toolmarks on the back (!) of the part.

What does this mean to the Firearms Examiner?

While the breechface is painted in the L9MM and L380 as it leaves the Lorcin factory, once the paint is worn away, the bare metal breechface insert will contact a cartridge. The inserts are hardened and the stria should be quite persistent. Literally thousands of L9MMs could be encountered with the same breechface stria patterns. Any identification of cartridge cases which utilize these manufacturing stria will be an identification of the tool that stamped the part rather than an identification to the firearm in question. The breechface stria pattern should be viewed as a subclass characteristic on the L9MM.

The L380 breechface patterns present no identification problems. The surface of the metal is slightly pebbly (from the rolling of the steel) when viewed under magnification (figure 4). Mi-

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croscopic examinations of uninstalled L380 inserts showed no repetitive patterns of any type in the breechface area and no manufacturing toolmarks from the stamping process.

Since it has been demonstrated that the breechface stria patterns on thousands of L9MMs will be similar, other areas such as chamber marks or extractor marks should be used for attempted identifications during microscopic comparisons. The firing pin hole edges also are useful for comparison. When the inserts are initially blanked, the firing pin hole is also punched. This leaves a microscopic fracture pattern with a less than perfect edge. This pattern varied on the L9MM parts examined.

I would like to thank Errol Brown, John Davis, Dennis Smith and Matt Holland of Lorcin Engineering for their helpful assistance in the study of this topic.

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