

Unconventional solutions in homemade firearms – caliber 15 mm pistol with an electrical initiation system

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Abstract

The subject of examination at the Forensic Laboratory of the Provincial Police Headquarters in Poznań, as described in this report, was a homemade cal. 15mm pistol, the construction of which exhibited features of an unusual combination of mechanical and electrical components.

Keywords: homemade pistol, electrical initiation, production of firearms.

Introduction

The rapid development of technology and the increasing availability of a wide variety of components mean that weapons and ballistics experts will increasingly often examine devices which differ from the traditional designs used in firearms. In such cases, it is of paramount importance not only to gain a thorough understanding of the construction of the item under examination, but above all to determine its functional characteristics, with a view to helping answer the fundamental question, namely: whether the object submitted for examination possesses the characteristics of a firearm, thereby fulfilling the statutory criteria for such a weapon (the Act on weapons and ammunition, 2024, Article 7(1)).

Case study

Resembling a pistol in appearance, the item submitted for examination had a metal barrel with a bore diameter of 15 mm, mounted in a frame, and a breech block, both of which came from a Chinese-made air pistol (Fig. 1). These components were



Fig. 1. A homemade cal. 15 mm pistol

subjected to simple mechanical modifications leading to their adaptation for mounting a barrel and an electric propellant and initiation system. At the rear end of the barrel of the pistol under examination, there was a contoured elbow fitted with a screw cap, positioned at a 90° angle relative to the axis of the barrel bore, in which the initiation element was installed. The entire construction was assembled using a material with a silicone-like

texture. Such an assembly of the construction made it impossible to dismantle the pistol under examination, so that, consequently, a full assessment of the design solutions employed required the use of X-ray analysis (Fig. 2). An analysis of the design in question indicated



Fig. 2. A homemade cal. 15 mm pistol – an X-ray image

that the components used in its construction had not been chosen at random; their structural features suggested that they had originally formed part of a technical device, the nature of which was initially unknown. Further examinations and analyses of the device's construction revealed that these components were modified parts used in pyrotechnic seatbelt tensioners, i.e. structural components which are commonly associated with the automotive industry rather than with parts used in the manufacture of firearms. The grip of the pistol contained a functional power source (a battery), while at the trigger guard, where the trigger should have been, a so-called monostable button had been fitted to act as a trigger mechanism for an electric impulse, the purpose of which was to initiate the shot. The electrical cables, which were routed out of the frame and terminated with plugs, enabled the power supply system to be connected to the initiation element housed in the cartridge of the pyrotechnic seatbelt tensioner. A spherical steel projectile, 12.6 mm in diameter and weighing 8.33 g, was lodged in the barrel of the pistol and additionally wrapped in a piece of foil serving as a so-called 'wadding' used, amongst other things, in black-powder firearms. In addition, a deposit was found inside the barrel of the pistol, some of which was collected and treated with Griess reagent. The chemical examination did not reveal the presence of nitrite compounds in the collected deposit.

Performance test

As it was not possible to categorise the pistol under examination unequivocally on the basis of its established design features alone, it was necessary to carry out a test to determine whether the item in question was capable of firing a projectile. For safety reasons, technical performance testing was carried out using a test rig that allowed shots to be fired remotely. The test pistol was loaded in the same way as it had been when it was handed over for examination. The

bullet described earlier, wrapped in a scrap of foil, was loaded into the barrel of the pistol. As it was necessary to initiate the shot remotely, the initiation system was connected to an external power source without closing the electrical circuit. A current was then applied to the circuit at a voltage corresponding to that of the battery used in the construction described. The test produced a positive result. A shot was fired, causing a projectile to be fired from the barrel of the pistol in question, which struck a target situated more than two metres from the muzzle. Following the test, it was found that the pyrotechnic component used in the pistol's construction, which originated from seatbelt tensioners, was not suitable for reuse; therefore, firing another shot would require replacing it with a new, unfired one and reloading the projectile.

Conclusions

In conclusion, it must be stated that the case described illustrates that unconventional design solutions, utilising components from other objects, may result in the manufacture of devices that meet the legal definition of a firearm. The assessment of such constructions requires a comprehensive approach involving an analysis of their design and intended mode of operation, as well as the conduct of well-planned and controlled performance tests. It should be borne in mind that, in practice, when examining homemade constructions, the expert is often only able to carry out a single performance test, as was the case here.

Source of the figures: the author

Legal acts:

The Act of 21 May 1999 on weapons and ammunition (Journal of Laws of 2024, item 485, as amended).