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REGULATORY AND LEGAL PROVISION OF THE USE OF THE UNLOADING SYSTEMS OF ARMORED VESTS AND PLATE CARRIERS IN THE SYSTEM OF THE MINISTRY OF INTERNAL AFFAIRS OF UKRAINE

The actual state of use by law enforcement officers of such means of individual armor protection as bulletproof vests and plate carriers , as well as additional equipment systems used by police officers under the legal regime of martial law, is considered. Aspects of the legal definition and regulation of the operation of bulletproof vests, plate carriers, as well as additional equipment were studied. An analysis of individual models of personal protective equipment was carried out. The results of the study confirmed the importance of optimized placement of equipment to ensure comfort and functionality. Based on the research, recommendations for improving the legal framework were formulated and areas for further research were determined.

Keywords: *equipment, police, martial law, bulletproof vests, plate carriers, operation.*

Statement of the problem. Since the beginning of the full-scale invasion of the russian federation into Ukraine, the National Police of Ukraine has been on the front line in the confrontation with the aggressor. Together with other defence forces, the police have been provided with new equipment that meets the requirements of martial law, but which they had not previously used, to ensure that they can effectively perform their tasks. According to media reports, the US alone provided more than 75.000 military-style bulletproof vests and helmets as the first echelon of aid [1]. Analyzing the experience of police participation in military operations in 2022–2023, it is worth admitting that the police faced challenges and threats for which, unfortunately, it was not prepared. Such a situation naturally required adaptation to current challenges, revision and modernization of methods and means of police work in wartime conditions. In accordance with the decrees of the Ministry of Internal Affairs and the National Police of Ukraine, police officers were provided with additional, new types of equipment and weapons [2]. It should be admitted that the main normative acts regulating the wearing and operation of equipment, namely Resolution of the Cabinet of Ministers of Ukraine dated 30.09.2015 no. 823 "On police uniforms", order of the Ministry of Internal Affairs of Ukraine dated 19.08.2017 no. 718 "On approval of the Rules wearing uniforms of policemen", the order of the Ministry of Internal Affairs of Ukraine dated 04.06.2020 no. 432 "On the approval of norms of appropriateness of uniforms of policemen", do not consider the ergonomic aspect of a policeman's equipment [3, 4, 5].

Most of the police had no experience with the new equipment, so it was necessary not only to learn how to use it, but also to understand how to optimally place it for effective use. Lack of proper training and clear guidance for new equipment naturally leads to situations where new capabilities are not used correctly, not fully or at all. In the absence of standards and recommendations for the placement of equipment, police officers place it based on their own experience or the experience of colleagues acquired during the service, or information from the Internet or other sources.

It is worth noting that the new types of equipment and gear that have appeared in large numbers in Ukraine since 24 February 2022 do not meet any standards for the proper equipment issued to law enforcement officers. The regulatory framework of the Ministry of Internal Affairs system does not contain provisions on the operation, issuance and write-off of relevant military models supplied to Ukraine, including as humanitarian aid, or purchased by volunteers.

Such a situation requires the development and implementation of a single standard for the training and use of new equipment by police officers.

Analysis of recent research and publications. The issue of use of equipment by police officers is being considered by domestic scholars. O. S. Marchenko's article "Personal protective equipment: types and classification" focuses on the problems associated with personal protection and the effective use of various types of equipment. However, the important issue of placing equipment on the bulletproof vest was not taken into account and considered within the framework of the article. The author concentrated on the classification and review of various tools and measures of personal protection, without resorting to the analysis of issues related to the optimal location or use of specific equipment on a bulletproof vest [6].

In the training manual "Special equipment of the National Police of Ukraine" (chapter 2.3 "Means of personal protection") authors Y. V. Hnusov, V. A. Svitlichnyi, Y. M. Onyshchenko paid some attention to the purpose of bulletproof vests, their use against specific types of weapons , the materials from which they are made, as well as the advantages and disadvantages of using these personal protective equipment. However, the aspect regarding the possibilities and consequences of placing additional items on the bulletproof vests is not sufficiently covered. The problem of the effect of such placement on the effectiveness of protection or on the overall functionality of bulletproof vests was not considered at all. The possible negative consequences of the incorrect location or use of additional items on the bulletproof vests, which may lead to a violation of its protective properties or create additional risks for the user during the performance of official duties, are also not mentioned [7].

Questions related to problems related to police equipment are constantly considered at the department of tactical and special physical training of Faculty no. 3 of the Kharkiv National University of Internal Affairs. Relevant works are constantly published in professional publications and conference proceedings, which is a confirmation of the high quality and relevance of research in the field of police equipment. However, it is worth noting that the work in this area was carried out without taking into account the threats of martial law and the dangers of hostilities. In most publications, the authors consider only the use of existing sets of equipment and their operation in accordance with the current legal framework. A comprehensive study on this subject has not been conducted.

The purpose of the article is to analyze the state of use of unloading systems of bulletproof vests and plate carriers.

The research objectives are as follows.

1. Development and definition of the concepts "bulletproof vests" and "plate carrier".
2. Determination of the current state of use of bulletproof vests and plate carriers .
3. Forming a recommendation on the implementation of the results to the legal framework of the Ministry of Internal Affairs.

Summary of the main material. For the purpose of correct use of the administrative-legal method of regulation and qualitative presentation of the material, correct use of terms and further research, we worked out the concepts of "bulletproof vests" and " plate carrier ".

According to State Standards of Ukraine 8782:2018, *a bulletproof vest* is a means of personal protection of a person in the form of a vest, which provides protection of the human torso from the action of cold and/or firearms, fragments of projectiles, mines or hand grenades and consists of materials capable of detaining the means of attack and dissipating its energy [8].

Plate carrier (or Plate Carrier) is a case for armor plates with unloading systems and mounting systems of any manufacturer and configuration [9]. It is worth noting that this concept is not considered at all in the regulatory framework of the Ministry of Internal Affairs.

Analyzing the given definitions, one should pay attention to the following.

Defining the concept of "bulletproof vests", State Standards of Ukraine indicates the properties of the final product – protection against means of attack. However, neither in the definition nor in the specification, except for armor plates (armor plates), other important properties of the product are not mentioned: material, method of fastening, shape, requirements for the material.

Regarding the concept of "plate carrier" (or Plate Carrier) the problem is even greater, because this product is not considered at all.

So, let's note that manufacturers of equipment, in particular bulletproof vests and plate carriers, are guided mainly not by the requirements of the legal framework, but by the experience of manufacturers of military equipment and the principles of the market economy. Thus, domestic manufacturers of equipment – Velmet, NVP "Temp-3000", LLC "Materials Science" (MATE ™), – that fulfill state orders and supply elements of equipment to law enforcement agencies, directly use imported materials and technologies and focus

on international experience. They note this on their official websites [10, 11, 12]. Therefore, the relevant issue is significant, contains a lot of information for analysis and requires state and legislative regulation, in particular, the introduction of responsibility.

The lack of state regulation on this issue leads to serious consequences. Thus, since the beginning of the full-scale invasion, the mass media have constantly published reports about the supply of low-quality personal protective equipment to units of the security and defense forces of Ukraine [13, 14, 15]. First of all, they complain about the target element – the armor plate, but the use of low-quality threads or ordinary (civilian) fabrics causes the same result – the death or maiming of the defenders.

Thus, it is worth emphasizing the urgent need to outline and standardize the requirements for bulletproof vests and plate carriers. For this, you should refer to the existing standards of attachment and unloading systems of equipment.

Molle equipment attachment system (Modular Lightweight Load-carrying Equipment) in many countries became the new standard instead of the previous system ALICE (All-purpose Lightweight Individual Carrying Equipment) [16]. Molle provides a uniform standard of sizes and configurations for police equipment. To date, the use of any of these systems is not legally established.

The problem related to the placement of additional items on a bulletproof vests or a plate carrier remains insufficiently researched in scientific and educational sources and is not fixed in the legal framework of the Ministry of Internal Affairs. So far, no studies have been carried out regarding the possible consequences of such an arrangement, therefore no specific guidelines or recommendations have been developed aimed at the optimal placement of additional items for greater efficiency in the performance of official duties by police officers.

Such uncertainty about the use of bulletproof vests and plate carriers creates a significant gap in understanding and approaches to the most effective and safe use of this type of equipment. The lack of scientific research in this area makes it difficult to develop recommendations and standards that would facilitate the adaptation of this type of equipment to the specific conditions of the execution of tasks by law enforcement officers in various situations under martial law.

In the process of research, we formed and used a comprehensive approach to evaluating the effectiveness of various models of bulletproof vests and plate carriers. Attention was focused and taken into account not only the internal geometry and design of the equipment, but also such external factors as movement restrictions, the possibility of additional placement of equipment and convenience for police officers during the performance of official duties.

During the research, we worked out the technical and mathematical characteristics of individual equipment samples. Table 1 shows the dimensions and mathematical calculations for each model of bulletproof vests and plate carrier . Dimensions are measured in centimeters, including the width and height of each protective device. On the basis of these data, mathematical calculations were made, including the sum of the entire plane, which can be used to place additional equipment on each of the models.

Table 1 – Determination of the plane of individual types of plate carriers

Model	*S* front plate, cm ^{2}	*S* of the right side plate, cm ^{2}	*S* of the left side plate, cm ^{2}	The sum of effective *S* = (2×side) + front, cm ^{2}
Model no. 1	28×28 = 784	25×17 = 425	25×17 = 425	1634
Model no. 2	24×28 = 627	25×14 = 350	25×14 = 350	1327
Model no. 3 (tyr-lw112as-4)	29×22 = 638	38×13 = 494	38×13 = 494	1626
Model no. 4	18×26 = 468	16×22 = 352	16×22 = 352	1172
Model no. 5 Plate carrier 5.11	30×27 = 810	12×17 = 204	12×17 = 204	1218
Model no. 6	25×29 = 725	15×25 = 375	15×25 = 375	1475
Average indicators	~753	~366	~ 366	~1358

We have developed only those models of plate carriers that we have recognized as high-quality. Materials and overall dimensions, as well as other characteristics of products, are taken into account. Note that we rely only on our own experience and the experience of our colleagues.

For the same reasons, in particular due to the lack of regulatory requirements for bulletproof vests and plate carriers, most models do not have names, serial numbers, etc. and, as a result, it is not possible to identify the product. The quality and reliability is evaluated only by the fact or from the experience of use.

In view of the obtained results, it is worth emphasizing the importance of a careful approach to the selection of protective equipment, since their parameters and plane determine the possibility of placement and comfort of using additional equipment. This makes it possible to optimize space and increase the efficiency of law enforcement officers in various conditions.

When placing additional equipment, it is necessary to remember that each item of equipment has its own volume and geometric structure, which occupies a certain plane. This is an important factor, as incorrect positioning, excessive loading or skewing can cause undesirable consequences for the health and safety of the law enforcement officer.

Poor fit can lead to serious problems with your muscles, back, posture and overall health. Thus, the uneven distribution of weight on a bulletproof vests or plate carrier creates excessive pressure on a certain part of the body, which can cause pain, discomfort and cause potential damage to muscles or joints.

Thus, it is important to ensure a reasonable and uniform placement of equipment on different areas of the body, taking into account the convenience of movement and optimization of the work of the police officer. Optimal distribution of weight and volume on a bulletproof vest or plate carrier helps to provide comfortable conditions for a law enforcement officer during the performance of official duties and to preserve his physical health as much as possible.

Any equipment (bulletproof vests or plate carrier) has a mathematical plane. However, not all of the plane can be effectively used by police officers to place equipment. Yes, unloading planes, such as on the back, are available for use, but not accessible directly to the law enforcement officer.

The research conducted by us forms clear, formally and materially defined limits of application, and also provides a practical opportunity to use the obtained research results: they must be introduced into the legal framework of the Ministry of Internal Affairs.

We consider it necessary to carry out a thorough revision of the order of the Ministry of Internal Affairs "On the approval of the Rules for wearing police uniforms" dated August 19, 2017 no. 718 and add relevant sections on modern means of personal protection (bulletproof vests, helmets, etc.), as well as elements of equipment to them. In the same way, some changes should be made to the order of the Ministry of Internal Affairs of Ukraine "On approving the norms of appropriateness of police uniforms" dated June 4, 2020 no. 434: to separate and describe the sets of equipment according to the services and units that operate them. We consider the identified questions to be promising directions for further scientific activity.

Conclusions

Summarizing the research and analysis of the obtained results, it is worth noting the urgent need for normative consolidation and delineation of requirements for bulletproof vests and plate carriers with the aim of qualitatively placing equipment on police protective equipment. This requires finding new approaches and placement strategies to maximize the use of available space without increasing the risk to police officers.

Taking into account the size and weight of additional equipment provides a solution to the issue of its optimal location. Since this equipment includes various objects and equipment of different shapes and sizes, its placement must be carefully considered to ensure comfort and safety. Improper, improper, inconvenient location negatively affects the mobility, ergonomics and general functionality of the police officer.

Taking into account the area that is available for the efficient placement of additional items and equipment is an important aspect in creating a balance between safety and functionality. It is necessary to carefully consider not only the area, but also the dimensions of the equipment itself, in order to ensure optimal placement, which will not overload the protective equipment and will not limit the movements of the police officer.

Thus, the placement of equipment on the protective means and additional parts of the policeman's body is an important aspect of ensuring the safety and efficiency of the performance of his official duties. The study showed that the optimized location of the equipment makes it possible to use the available space to the

maximum, providing comfort and the necessary functionality. Standardized mounting systems, such as Molle, are proving important in creating a uniform standard of sizes and configurations for gear that provides versatility and ease of use. Therefore, optimizing the placement of equipment is a key aspect for ensuring optimal working conditions for police officers in various conditions and situations of official activity.

The conducted research determines clear criteria for the use of equipment by police officers and forms recommendations for the implementation of the obtained theoretical studies into the regulatory and legal framework of the system of the Ministry of Internal Affairs of Ukraine.

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НОРМАТИВНО-ПРАВОВЕ ЗАБЕЗПЕЧЕННЯ ВИКОРИСТАННЯ РОЗВАНТАЖУВАЛЬНИХ СИСТЕМ БРОНЕЖИЛЕТІВ І ПЛИТОНОСОК У СИСТЕМІ МВС УКРАЇНИ

Розглянуто фактичний стан використання правоохоронцями таких засобів індивідуального бронезахисту, як бронежилети та плитоноски, а також додаткових систем екіпірування, котрі застосовуються поліцейськими в умовах дії правового режиму воєнного стану. Нові види екіпірування та спорядження, які масово з'явилися в Україні після 24 лютого 2022 р., не відповідають жодним нормам належності екіпірування, що видається правоохоронцям. У нормативній базі системи МВС не закріплено положень щодо експлуатації, видачі та списання відповідних військових зразків, поставлених в Україну, зокрема і як гуманітарна допомога, чи закуплених волонтерами.

Досліджено аспекти нормативного визначення та регулювання експлуатації бронежилетів і плитоносок (Plate Carrier), а також існуючий порядок і стан закріплення в нормативно-правовій базі відповідних видів засобів індивідуального захисту та розвантажувальних систем до них. Розглянуто питання розміщення додаткового екіпірування на бронежилетах і плитоносках, визначено й опрацьовано системи кріплень додаткового екіпірування, а також надано відповідні рекомендації щодо закріплення їх у нормативно-правовій базі Міністерства внутрішніх справ.

Під час дослідження також було проведено огляд ринку й аналіз окремих моделей бронежилетів, плитоносок і додаткового екіпірування. Це дало змогу визначити найбільш ефективні й оптимальні засоби захисту, що відповідають вимогам умов дії правового режиму воєнного стану. Результати дослідження підтвердили важливість оптимізованого розташування екіпірування для забезпечення комфорту та функціональності під час виконання службових обов'язків поліцейськими в умовах воєнного конфлікту чи інших небезпечних ситуацій. Стандартизовані системи кріплення, такі як Molle, виявляються важливими для створення єдиного стандарту розмірів і конфігурацій для спорядження, що забезпечує універсальність і зручність у використанні. Отже, оптимізація розміщення екіпірування становить ключовий аспект забезпечення оптимальних умов роботи поліцейських у різних умовах і ситуаціях службової діяльності.

Ключові слова: *екіпірування, поліція, воєнний стан, бронежилети, плитоноски, експлуатація.*

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