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A NEW METHOD OF TESTING FIRE-RESCUE EQUIPMENT HAS BEEN DEVELOPED

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Annotation
This article presents comparative results of tests of fire-rescue and other equipment by existing methods and on a new machine developed at the Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan with a view to their further implementation into practice.

Keywords: fire-rescue gears and equipment, bench, periodical test, weight, cargo, fire count.

Nowadays, about 7-8 million fires occur in the world every year, and as a result of these fires, 85-90 thousand people die, and property damage amounts to billions of US dollars. These indicators are growing from year to year. The analysis of injuries to personnel of fire and rescue units and statistical data in this direction show that accidents occur most often due to the use of fire-technical tools and special fire trucks, during firefighting or during exercises. Such cases mainly occur due to poor-quality tests of fire-technical weapons and special units of fire trucks.

In addition, it should be noted that unpleasant situations arise in fire and rescue units due to non-compliance with labor protection requirements when testing or working with fire-technical equipment. The above shortcomings are mainly caused by the lack of periodic testing of fire-fighting equipment, as well as due to improper testing or inattention of the personnel responsible for this event.

According to the regulatory documents, the procedure for periodic inspection and use of fire-rescue equipment and other equipment before putting them on combat calculation is established.

Military personnel in the fire and rescue service system face many difficulties during their direct service. They are looking for ways to overcome the difficulties that arise by applying their theoretical knowledge in practice. The acquired knowledge and skills form the savior's skills during the service. In emergency situations, whether it is a fire or an accident of a man-made nature, first of all, rescuers are required to save people, as well as to preserve material values, while observing safety regulations, while putting a lot of work and effort into their elimination. The reduction of injuries of rescuers is achieved primarily due to high-quality periodic inspections of fire-rescue and other equipment. The Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan has created a modern device for testing fire and rescue equipment called UIS-500 (universal testing machine-500). The test setup is convenient and characterized by minimizing human factor interference, as well as a clear indication of test results. The installation was created for the purpose of testing the following fire-rescue equipment:

Figure 1.
Life belt test

Figure 2.
Ladder-stick test

Lifeguard belt. The strength of each life belt is checked once a year. To do this, weights of the same weight are added to the half-ring of the life belt within 5 minutes and brought up to a maximum of 350 kg of cargo. Then the 350 kg load is held for 5 minutes. After removing the load, the belt is visually checked. The belt is left on the combat calculation if no defects are found on the belt (the tape is torn, the half-ring or the badge is bent or torn off). If the above shortcomings are detected after testing, the belt is written off (Fig-1).

A rescue carbine. The rescue carbine is tested once a year with a weight load of 350 kg. To do this, a load weighing 350 kg is hung on a closed carbine and held for 5 minutes. After removing the load, there should be no damage or defects on the carbine. Under the action of a spring, the lock should enter and exit freely without difficulty. The carbine is written off if it does not meet these requirements.

Rescue rope. The strength of the rescue rope is tested once every 6 months. To check the rescue rope, it is suspended along the entire length and a weight is suspended from one end of the rescue rope 350 kg. The cargo is kept for 5 minutes. After removing the load, there should be no damage to the rescue rope, and its residual length should not exceed 5% of its original length.

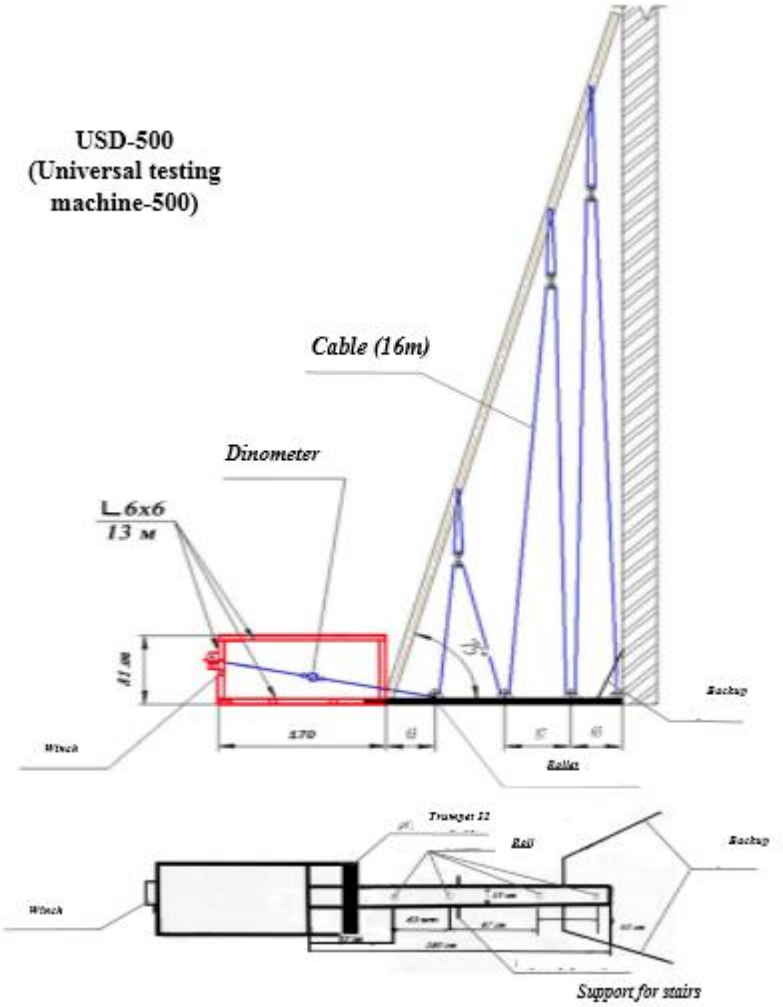
Sleeve delays. Testing of sleeve delays is carried out once a year. For testing, the sleeve delay is suspended using a hook on a flat surface (crossbar, window sill, etc.) and a load weighing 200 kg is suspended for 5 minutes. After removing the load, the hook should not have deformations, and the tape should not have breaks and other damages.

Manual ladders. Manual ladders should be tested once a year and after each repair. Before using ladders in competitions, certificates on their tests are provided. It is forbidden to use fire manual ladders that have the appearance of malfunctions and damages or have not passed the tests.

Three-wheeled retractable ladder. The ladder is fixed in a firm position, extends to full height and leans against the wall at an angle of 75° (2.8 m from the wall and up to the ladder shoes) relative to the horizontal plane. In this case, a load weighing 100 kg is suspended on each step of the ladder for 2 minutes. The cable must hold 200 kg of cargo without deformations.

The ladder extended after the test should not be damaged, its knees should be extended and lowered without obstacles.

General view of the test facility



Main parts of UIS-500: 1) base; 2) winch; 3) steel cable; 4) pallet; 5) rollers; 6) dynamometer.

The assault ladder. The ladder is suspended by the tip of the hook on the windowsill. Two loads of 80 kg are suspended on the second and third steps. (total 160 kg) for 2 minutes. After the test, there should be no cracks and residual deformation on the hook on the working ladder.

Wooden staircase. During the test, the ladder is installed on solid ground and leans against the wall at an angle of 75 degrees relative to the horizontal. A load weighing 120 kg is suspended on the middle step for 2 minutes. The wooden ladder, after removing the load, should not be damaged and should fit easily and tightly. To test manual ladders, instead of hanging the load, a dynamometer can be used (as shown in Figure 2).

In conclusion, we can say that the created modern testing facility UIS-500 (universal testing machine-500) is convenient and minimizes human intervention, and also features a clear fixation of the results of testing fire-rescue equipment. Therefore, we believe that the introduction of this test facility into practice will give its positive results.

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