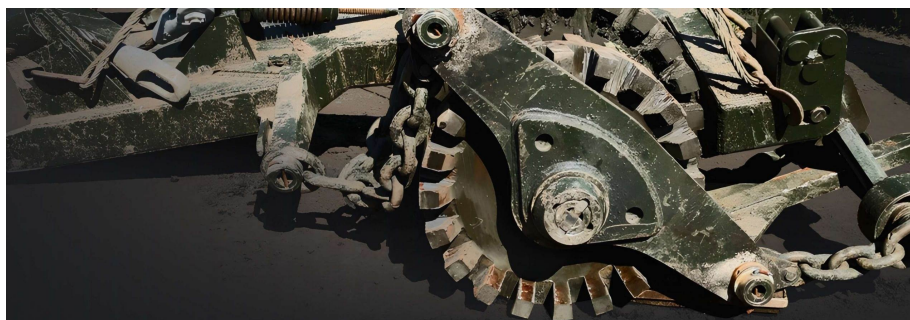


## Liga.net: Iron Defence. How Metinvest's Mine Trawls Help to Protect Ukrainian Army Vehicle Crews

In a series of articles, the publication LIGA.net explores Metinvest's range of products designed to protect soldiers and equipment on the frontline. One key area is the Group's involvement in demining operations. This piece examines how mine trawls – special devices mounted on tanks or other military vehicles to safely neutralise mines – are produced and how they function.



The full-scale war has made Ukraine the most heavily mined country in the world. According to the Ministry of Economy of Ukraine, as of the end of 2024, 138,500 square metres of the country's territory were potentially contaminated with explosive ordnance. Demining is a challenge that demands significant financial resources, effort and specialised equipment.

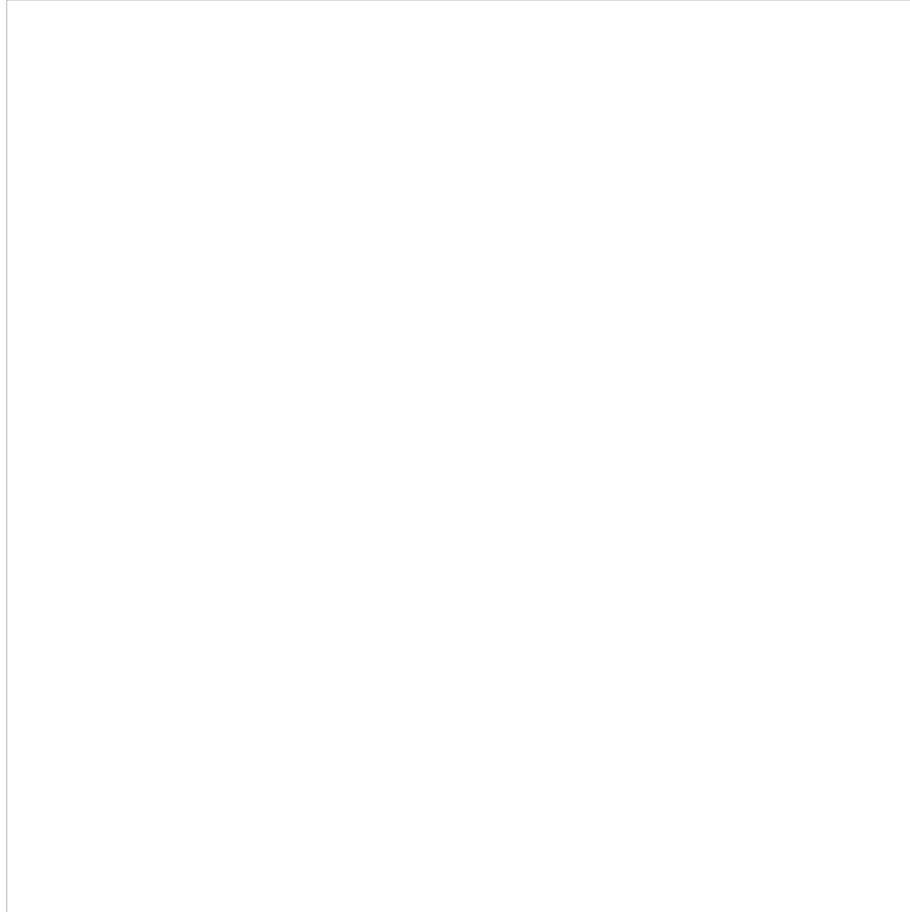
### The purpose of mine trawls

Three different types of demining are being carried out simultaneously in Ukraine

- **Humanitarian**  
Planned clearance of liberated territories
- **Operational**  
Neutralisation of an explosive object found, for example, in a settlement
- **Military**  
When the military clears a mined area for an offensive or other military operation

Metinvest Group has been assisting Ukraine's defence forces with the third type of demining through its Steel Front initiative. In the summer of 2023, the Group's specialists launched the production of mine trawls: specialised structures mounted on tanks to neutralise anti-tank and anti-personnel mines.

Mine trawls consist of heavy metal wheels attached to a steel base: canopies attached to the front of a vehicle. As the vehicle advances, the trawl presses down on the ground ahead. If any mines are present, the trawl triggers them with the pressure of its own weight, causing them to detonate beneath it rather than under the main vehicle. This protects both the crew and the equipment from damage.



A set of trawls manufactured by Metinvest looks like large metal rollers that rotate while moving, weighing up to 6.5 tonnes in total. In military practice, there are also other designs of mine-clearing equipment, such as those resembling a plough that clears a path. The main purpose of all these devices is to ensure safe passage through hazardous areas.

Rinat Akhmetov, shareholder of Metinvest Group, stated: “These explosive traps have become one of the most serious threats to our armed forces. That is why Metinvest has taken on the responsibility for producing mine trawls that protect the lives of our defenders and preserve equipment. The trawls have already proven their effectiveness on the front line, absorbing blasts instead of tanks. We will continue doing everything possible to bring our victory closer.”

## Improving a Soviet-era design

Metinvest’s mine trawls were developed in response to a request from the Ukrainian military. They are an important element of counter-offensive operations. The design is based on the Soviet KMT-7 roller mine trawls, which Metinvest’s specialists used as a prototype while making design improvements.

Oleksandr Myronenko, chief operating officer of Metinvest, stated: “The KMT-7 is a fairly successful prototype of a mine trawl, which is why it was chosen as a model for improvement. Metinvest, in cooperation with the military, made adjustments to simplify its use on the front line while simultaneously increasing its efficiency. Specifically, the system for detaching the trawl from a combat vehicle was upgraded: the trawls are equipped with a mechanical discharge system, a process that can optionally be automated.”

Metinvest’s engineers also took into account the fact that certain combat vehicles lack the necessary mounts for trawl installation. To solve this, universal adapters are included with the trawls for these types of combat vehicles, enabling quick and secure attachment even on tanks not originally equipped to carry them.

To enable prompt repairs after field use, the Group has also begun producing spare parts for its mine trawls. These repair kits include replacement wheels – three per trawl – since they endure the greatest stress and damage during demining operations.

### Trawl parameters

Weight of one set of rollers	6.5 tonnes
Size	3.77 x 3.44 m

To date, Metinvest's specialists have produced more than 30 trawls, all of which have been sent to the front line. Although each trawl costs around UAH2.5 million, they are provided free of charge. The Group manufactures up to five trawls per month. According to Myronenko, this figure meets the current demand of the Ukrainian army. The chief operating officer noted: "If demand from the army increases, the volume can be increased, although this would require a government order."

Metinvest's mine-clearing trawls have successfully passed all tests required by the Ministry of Defence. They are dispatched directly to the front line due to urgent demand. The first recipients in 2023 were brigades of the National Guard and the Ground Forces.



At the time, Andriy Belyaev, commander of the Khortytsia 23rd Separate Public Order Protection Brigade of the National Guard of Ukraine, noted that the trawls not only protect tank crews but also clear a path for infantry. The availability of such equipment is critically important in wartime.

## History of the development and improvement of mine-clearing trawls

Intensive development and refinement of mine-clearing trawls took place in the 1960s. The Soviet design bureau SKB-200 played a particularly active role in this work, creating a series of trawls under the general name "Ural". These trawls were intended to replace the outdated KMT-4M and KMT-5M models and were adapted for use with newer tanks such as the T-54, T-55, T-62 and T-64.

Because these new tanks had different dimensions and characteristics, the design of the trawls underwent major changes. In particular, the roller diameter was reduced, enabling more effective neutralisation of new mine types. Additionally, the control system was improved, boosting overall reliability.

One key development was the KMT-6 trawl, which featured a pneumatic control system and was able to clear minefields containing anti-personnel mines. Another significant achievement was the creation of the KMT-7 trawl, which became the Soviet army's primary demining tool thanks to its enhanced roller design and higher efficiency.

After the dissolution of the Soviet Union, production and use of the KMT-7 trawl continued in various CIS countries, where it proved reliable and effective. However, as new mine types appeared, further improvements became necessary.

Later innovations in mine-clearing trawls focused on increasing versatility and simplifying operation. This led to the development of the "Ural-3" trawl, which featured a modular design that enable quick replacement of working components.



Modern mine-clearing trawls produced by Metinvest continue to build on the principle of modularity. This approach enables rapid adaptation to specific combat tasks, which is particularly crucial in an environment where mine threats are constantly evolving.

## Support for sappers

Alongside producing mine-clearing trawls, Metinvest also contributes to another key aspect of mine action: training sappers who conduct humanitarian demining in de-occupied territories. The Group has been actively involved in this field since autumn 2023.

In the Chernihiv region, Metinvest has partnered in constructing a Mine Action Centre for the State Special Transport Service. The Group invested UAH9.5 million in the project, which covered the construction of a permanent administrative building. Upon opening, the centre aimed to train over 3,000 specialists in humanitarian demining of areas contaminated with explosive ordnance following active hostilities.

The Mine Action Centre certifies mine action operators, inspects demined sites, and raises public awareness about the risks associated with explosive hazards.

Yuriy Ryzhenkov, CEO of Metinvest, stated: “Thousands of hectares of land – including residential areas, fields and industrial sites – are contaminated with explosive ordnance. Establishing the Mine Action Centre in Chernihiv, with the involvement of Metinvest Group, is a crucial step towards systematically addressing this issue at the national level.”

Beyond its investment in the Chernihiv centre, Metinvest also supported improvements to living conditions for sappers at another training facility in southeastern Ukraine.

“Training highly qualified sappers is critically important for Ukraine. Without their work, it would be impossible to restore peaceful life in de-occupied territories or enable our Armed Forces to advance further. That is why Metinvest Group has backed the initiative to equip a training centre for sappers,” added Oleksandr Myronenko.

According to a sapper and instructor known by the callsign Agronom, Metinvest’s support was swift: within a week of finalising details, the Group funded the purchase of essential materials and equipment.

Agronom stated: “The need for highly qualified sappers grows every day. The occupiers have left behind a vast number of explosive devices, both in de-occupied areas and directly on the front line. Therefore, training new specialists in demining is critically important for ensuring safety and rebuilding Ukraine.”