

futuretech

 **Product Group 3**
Mobile Catering Systems

ISO 9001
Certified
Quality Assurance System
No. FM 12810

 **AQAP 110**

3.2.1 TFK 250

Tactical Field Kitchen



What is every army's most important weapon?

Experienced commanders all over the world are aware that a properly motivated soldier is the most important "weapon" in a modern army. The right food ensures this kind of motivation and mission readiness and thus the morale of all the troops. For that a hot, tasty meal every day plays a decisive role in the past. Boost the morale of your troops with Kärcher's newly developed TFK 250 tactical field kitchen. It has been designed for use under "Air Land Battle 2000" conditions and ensures fast and efficient troop catering with plenty of variety.

Kärcher, the mobile catering systems' specialist, designs, tests and produces highly advanced kitchen equipment for mobile applications with the armed forces, civil defence and disaster control organizations as well as charity aid organizations.



Give your soldiers the best available: Kärcher's TFK 250.

The tactical field kitchen for the coming decades was developed together with the German army over a period of more than 5 years.

The Kärcher TFK 250 came out of the extremely tough evaluation trials.

Never before were such strict standards set for a mobile kitchen. And never before were the stringent specifications for kitchen technology, vehicle technology, logistics, ease of maintenance and environmental protection so perfectly converted into practice.

Why are the world's military cooks so enthusiastic about Kärcher's new diesel burner?

Diesel burners are undoubtedly the safest for field kitchen. The heart of every field kitchen, it burns completely odourless and without taste. The burner can be fuelled by diesel, heating oil, kerosene or paraffin and produces a 1400°C (2550°F) flame. The independent burner is made completely of corrosion-proof materials and can also be used as a separate unit outside the field kitchen.

■ Each TFK 250 is equipped with 4 independent burner compartments with 4 self-sufficient burners.

An easy-to-use single, knob control enables burner output to be infinitely varied between 8 and 18 kW (net).

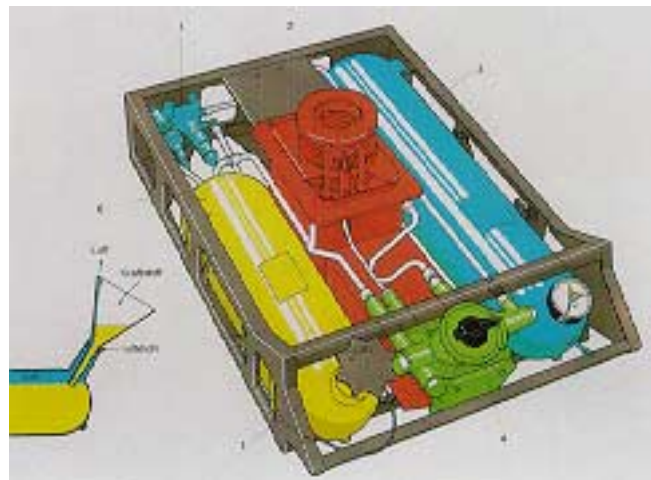
The burner can operate for up to 8 hours without a refill. The air pressure required for independent operation can be produced by a foot or hand pump or the tractor vehicle's tyre inflation system.

■ An emergency furnace enables solid fuels, i.e. wood, coal, peat etc., to be burnt

■ Efficient gas burners are also available as options.



The burner has a fuel tank with a capacity of 4.8 litres (5 US qts) and is connected via the safety unit to a 6.9-litre (0.24 cu.ft) air tank. The pressure reducing valve integrated in the safety unit is set to 5 bar (72.5 psi). This means the burner output remains constant regardless of the pressure in the air tank. After a preheat phase lasting about 2.5 min., i.e. the pressure in the air tank drops about 2.5 bar (36 psi), and a transition phase lasting approx. 1 minute, the burner's output can be infinitely varied between a minimum of 8 kW and a maximum of 18 kW. The CO₂ content in the flue gas reaches a maximum of 10% very quickly. The flue gas temperature remains steady at about 150°C (300°F). In practice, the tank is filled once daily with fuel and is then ready for breakfast, lunch and the evening meal (24-hour operation for 250 soldiers). The specially designed fuel tank filler funnel helps avoid overfilling and fuel spillage.



Why are chefs, nutritional experts and logistics commanders so proud of the new TFK 250?

Chief cooking instructors in the Bundeswehr made the following comparison: "The new Bundeswehr Kärcher TFK 250 is as good in its own right as the Leopard II is among the world's combat tanks".

Decisive benefits:

■ All boiling, frying and baking pans are designed in accordance with the GASTRONORM container system to DIN 66075.

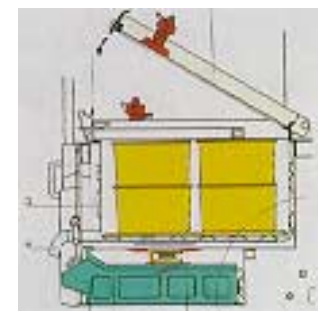
■ The most modern techniques can be used, i.e. from biological cooking to pressure roasting.

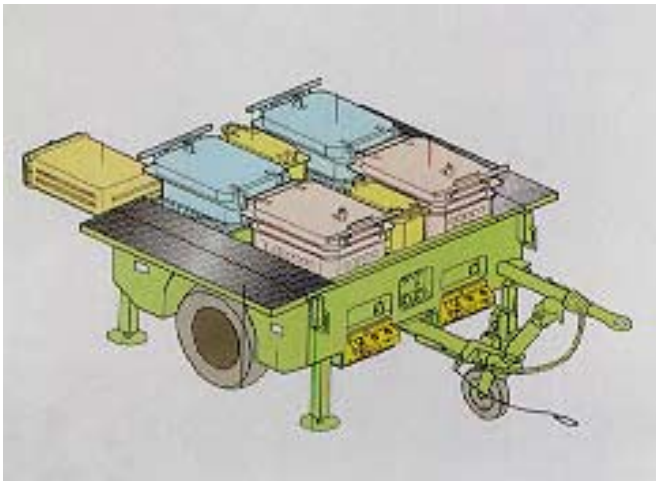
■ Compact construction means optimum mobility for front-line and support troops: For transport in difficult terrain, by road, rail or ship, as a suspended load on the Chinook helicopter and as an external load for the front-line units of the RAF on the Harrier VSTOL aircraft.

■ Pressure boiling pan, pressure fryer, hot-water boiler, oven and

all lids are made of drawn stainless steel (18 % Cr, 10% Ni) with smooth-contoured corners (small drawing radii) to make them very easy to clean.

■ The pressure boiling pan, frying/baking centres and teamaker are independent systems which can be removed from the kitchen block as complete assemblies with the tools provided.





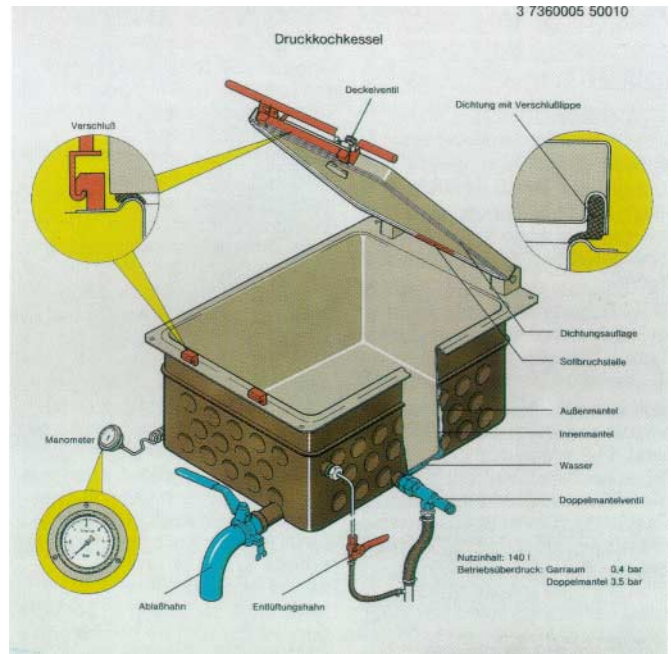
Double-walled pressure boiling pan

■ The two 150-litre (40 US gal), double-walled GASTRONORM pressure boiling pans permit "biological" cooking (vitamins, nutrients and minerals are not overcooked) at up to 0.4 bar (5.8 psi) for maximum nutritional effect. Fuel savings of 70% are possible because cooking times are up to 70% shorter (irrespective of altitude).

■ The evacuated jacket is filled with only a small amount of water and guarantees that food does not burn or stick during fast and uniform heating. The easily used evacuating valve prevents the boiling pan being destroyed by operating errors. As cooking times are fast (e.g. rice in 30-40 minutes, vegetables in 10-25 minutes, potatoes in 25-30 minutes), there is no need for the inconvenience of cooking while on the move.

■ The food can be left in the double-walled pans for a rapid change in location. Their special construction means that temperature drops at a rate of only 1°C (1.8°F) per hour (bacteria cannot survive) and is still more than 80°C (176°F) after 20 hours.

■ The pressure cooking system (biological cooking) uses the principle of evaporating a small quantity of water in a sealed pan. The steam valve remains open until only steam emerges from the valve. There are then only very small amounts of oxygen in the boiling pan which could enter into a harmful combination with the food being cooked. Apart from the nutritional benefits, colour and taste are fully preserved.



The low-pressure range up to max. 0.4 bar (5.8 psi) and approx. 110°C (230°F) was selected after thorough analysis of research work carried out all over the world. The temperature range required for pressure cooking at pressures higher than 0.7 bar (10.15 psi) is more likely to have a negative effect on various types of vegetables.

■ The pressure boiling pans have a 1° slope towards the

drain cock. The 150-litre (40 US gal) pans feature a drain channel and a newly developed, 40 mm I. D. drain cock for rapid emptying.

The use of perforated GASTRONORM cooking inserts ensures fast distribution while retaining vitamins. Food is taken from the pressure boiling pan and put directly into the new "Thermoports", insulated food containers, for quick transportation to the troops.



About what are cooks everywhere so enthusiastic?

Combination frying/ baking centre

■ The frying/baking centre is located at the rear of the field kitchen trailer. It comprises 2 frying pans, each with a capacity of 53 litres (14 US gal), and 2 ovens.

■ Two combination pressure frying pans, each with a capacity of 53 litres (14 US gal) (2 GN 1/1 - 150 mm (6 in) deep).

■ A patented heating system ensures uniform distribution of heat. The entire cooking surface reaches 230°C ± 30°C (446°F ± 54 °F) in 20 minutes. Fast and uniform temperature distribution is achieved by the evacuated heating tubes. This enables pieces of frying meat and roasts to be cooked evenly.

Integrated baking centres

The GN 2\1 integrated ovens are suitable for baking bread and cakes, roasting poultry and other meats as well as preparing vegetables and rice. Two levels are heated with only one burner. This achieves energy savings of up to 70%. The burner enables the temperature in the oven to be infinitely varied up to 300°C (572°F). The two baking levels (slide-in shelves) enable bread to be baked evenly on 1\1 baking sheets. The oven door is designed to permit baking and roasting with or without circulating air. The baking temperature is shown on the control panel. The floor of the oven is a sandwich construction to prevent distortion at high temperatures. Arabic bread, European coarse bread or French baguette or any other



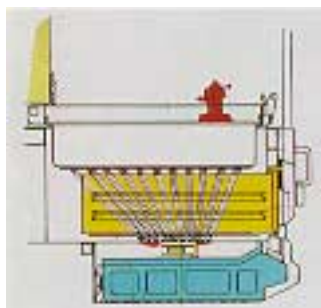
Large roasts can be pressurecooked within a very short time to obtain meat which is juicy inside and crisp outside. The heat retained by the 10 mm (0.4 in) thick compensating base enables juicy steaks to be cooked.

Kärcher's demonstration cook was impressed by the variety of dishes the international military cooks prepared in the pressure frying pan. GIB RAF cooks fried "scampi in beer batter", Spanish army cooks made "Paella", the Luxembourg army chef made "whale steaks" during NATO's "Avalanche Express" manoeuvre in northern Norway. Malaysian cooks made "Satay" and Algerian cooks produced "Cous-Cous". The new pressure frying pans simplify roasting, pressure frying and deep frying.

kind of bread can be baked to perfection. Pizzas can be cooked on 8 GN 1\1 baking sheets just as successfully as mutton or beef roasts. The RAF cooks made their pies and the US army cooks conjured up tasty ham dishes from the field kitchen. Large pieces of ham are cooked for about 30 minutes in the boiling pan until they are tender. They are then put in the oven for about 20 minutes to roast.

Safety is priority number one!

The lids of pressure boiling pan and pressure frying pan are equipped with a safety valve which opens at a gauge pressure of 0.4 bar (5.8 psi). Should the valve become blocked with food, every lid has a safety gasket which is designed to blow at 0.8 bar (11.6 psi). Operating errors cannot, therefore, result in dangerous situations. The pressure lids are sprung to enable them to be left open in any position between 10° and 40° or 70°. The safety valves blow in the direction of the roof/ flue area so as not to inconvenience other cooks working at the field kitchen.



Hot water boiler and teamaker

When the field kitchen is in operation a constant supply of hot water is needed for cleaning vegetables, washing mess gear, making gravy or tea. The water in the 28-litre (7.4 US gal) tank is heated to at least 75°C (167°F) by the burner's hot exhaust air. Hot water is thus available at all times. The tank is equipped with a tap. The specially designed pressure relief valve prevents spillages during high-speed off-road journeys.



Attachable work tables

Cooks always like to work within easy reach of the boiling and frying pans.

The two integrated work tables are each 1900 mm (75 in) long and 300 mm (12 in) wide and enable food to be prepared directly next to the boiling and frying pans. Quick-action catches lock the work tables in position. They have proven particularly useful in the field since they create an integrated working area. Soiling is greatly reduced.

■ Food can be issued to two lines at either side of the work tables.



Do you know the rapidity tactical field kitchen?

Two cooks can prepare a complete meal for 250 soldiers in only two hours. In an emergency it is possible to supply at least 500 people with simple dishes in the same time.

The pressure cooking, frying and baking capacity is more than 600 litres (approx. 160 US gal):

| | |
|-------------------------|-------------------|
| 2 Pressure boiling pans | each 150 L=300 L |
| 2 Pressure frying pans | each 53 L = 106 L |
| 2 Ovens | each 78 L = 156 L |
| 2 Teamakers | each 28 L = 56L |

What impresses budget directors and repair officers most about the Kärcher TFK 250?

■ Meticulous attention was paid to "life-cycle costs" in the development of the TFK 250.

■ The construction and materials used are rated for a service life of more than 30 years.

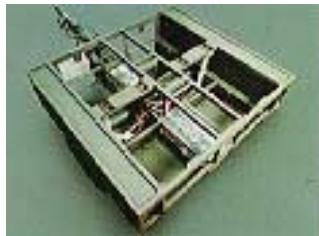
■ The construction permits the left and right boiling pans, frying and baking centres to be exchanged. All assemblies can be removed for repair in the field without the need for special tools.

■ Full interchangeability means that spare parts inventories can be kept extremely low.

■ In addition to stainless steel, aluminized and galvanized sheet steel are used for added protection against corrosion.

■ Axle: The 3500 kg swinging arm axle features torsion bar suspension to guarantee optimum handling on and off the road. The axle construction is rated for off-road journeys with full boiling and frying pans. The use of special off-road shock absorbers improves all-terrain capabilities. The axle is fully integrated in the kitchen frame for maximum protection when travelling through rocky terrain.





Kitchen construction

■ The TFK 250 consists of a self-supporting, torsional rigid tubular steel frame for heavy-duty military off-road applications. All body panels are bolted and, therefore, simple to replace. The entire kitchen is of modular construction with easily replaceable assemblies, i. e. pressure boiling pan, pressure frying pan, oven and hot-water boiler (see pages 2, 3, 4 and 5).

■ Sturdy, dustproof burner doors matched to the sledge shape of the kitchen mean that it is possible to travel over rocky ground. The floors of the burner compartments are specially protected by sandwich plates. ■ The fully enclosed floor panel enables the kitchen to travel through soft, deep snow, marshy ground and sand. The kitchen's sledge shape means that it glides over soft ground.



Disc-type supports/jacks
The four lateral stowage compartments accommodate cranked supports with ball-jointed base plates for quickly levelling the kitchen on site. A precision box level helps ensure that the kitchen is exactly horizontal. The disc-type supports serve as integrated jacks for tyre changes. Each support is rated for a maximum load of 2000 kg. There are three settings and rack-and-pinion crank mechanisms for rapid and accurate positioning of the kitchen.

Insulating materials
All the insulating materials used are free from asbestos (aluminium silicate). All insulated spaces are hermetically sealed from each other. The jacketed flue, all other working surfaces and kitchen equipment are thermally insulated.

Towbar and towing coupling
Towbar height is infinitely variable between 550 mm and 1050 mm (22 and 41 in) (dual Hirth gearing, can be hitched to all standard and military tractors suitable for trailer load of more than 2.5 t). Towing coupling easily changed from NATO towbar eye to DIN towbar eye for civil trucks.

Support wheel
Swivelling support wheel for easy manoeuvrability. Crank also swivels.

Box level
The box level mounted to the towbar enables the boiling and frying pans to be accurately levelled for uniform distribution of cooking fat in the pans.



Brake system
Automatic overrunning brake and automatic back-up lock. Simplex expanding lever drum brakes are installed (300 mm/ 12 in dia. with asbestos-free linings). The breakaway brake is applied automatically in the event of the field kitchen becoming accidentally detached from the tractor.

Electrical equipment
The electrical equipment conforms to the German road traffic act. Power supply is via the tractor. It is standardized for the NATO 24V supply. The kitchen may also be connected to a civil vehicle with a 12 V power supply. Apart from the heavy-duty military three-compartment lamps, a licence plate lamp, side and rear reflectors and clearance lamps are also included. There is a 12-pin plug for the NATO 24V power supply and a 7-pin plug for 12 V civil vehicles, with 3 m connecting cable.

Integrated weather protection
The TFK 250 has been optimized for instant readiness (Air Land Battle 2000). The integrated, semi-automatic weather protection enables the kitchen to be made ready for operation within a few minutes. The swing-up weatherproof roof offers protection against the sun, wind, rain, snow and storms. It has a total area of 17m² (183 sq. ft) and protects the kitchen, food and the cooks. The button-in, cotton fat-absorbing fleece can be washed in the boiling pan. It absorbs rising vapour and fat and

thus prevents condensed impurities dripping onto the operating personnel or the food (hygiene requirement of German army).

Total weather protection/kitchen tent

Only the integrated weather roof is opened up under normal field conditions. A two-part all-round tent is available for operation in difficult climatic conditions (snowfall, storm etc.). Cooks often set up the kitchen next to the tractor and attach part of the all-round tent to it so that they can work undisturbed. The all-round tent can be completely sealed in very severe conditions.

Transport by rail/air

The TFK 250 is suitable for transportation by rail and remains fully operational during the journey. The field kitchen has been successfully tested as an external load on the RAF's "Harrier" VSTOL aircraft, the US navy's "Chinook" and the German army's "CH 53" helicopters. Its suitability as a stowed load was proven in the Transall and Hercules transports as well as the Chinook and CH 53 helicopters. The fully equipped field kitchen was dropped by parachute. It completely satisfied all service requirements and supplied troops in the farthest flung corners of the earth with good warm meals.





Seminars - Training - Instruction

The target-group oriented training and instruction system has already been tried and tested throughout the world. The program covers the new techniques (pressure cooking, pressure frying) in accordance with the catering concepts of the armed forces (e. g. A, B and T ration with the US armed forces or fresh catering with the Bundeswehr). Training takes place at the armed force's own catering schools, under field conditions (manoeuvres) and at the Kärcher catering school in Winnenden near Stuttgart. In addition to Kärcher's internationally experienced chefs, there are experts who provide training in equipment maintenance, repairs and logistics. Full seminar and training documentation is available, e.g. operator's manuals, sets of transparencies, functional charts and video films.

Specialized accessories for the world's cooks

An extensive range of accessories is available to suit specific catering and logistics concepts.

- Standard accessories for cooking equipment. Tools for chassis. Tools for burner.
 - Special accessories for cooks (e.g. Cous-Cous Set for Algeria, T-Ration Set for US Marine Corps etc.).
 - Special tools for special applications.
- Please specify your requirements so that we can offer the most appropriate equipment to suit your catering and logistics concept.



Thermoport (insulated)

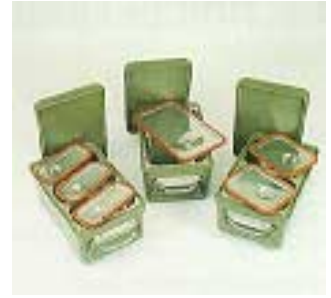
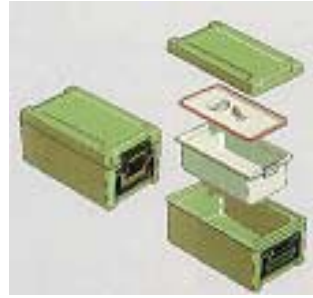
GASTRONORM food containers

Hot tasty meals are extremely important to every soldier. A new generation of GASTRONORM food carrying systems has been developed to ensure that this requirement is also met on the front line. The Thermoport for GN 1/1, 2x1/2, 3x1/3 makes efficient distribution of food to troops possible, from a patrol (8 -15 men) up to a battalion (400-600 men).

It was found in the Norway test at -30°C (-22°F) that the insulation is so effective that food temperature drops only 1°C (1.8°F) in 1 hour. The meal remains hot overnight (important: above 80°C/176°F).



The GASTRONORM GN 1/1, 1/2, 1/3 containers are available with watertight plug-type lids and special valves. They ensure that the food stays in the GASTRONORM containers even during journeys in very difficult terrain.



Kärcher, the mobile catering systems' specialist, offers a full line of field kitchens:

Container kitchen

Container kitchens which cater for 500, 1000 or 1500 people are supplied to suit specific catering and logistics concepts.

Completely mobile kitchen units with and without NBC defence facilities.



MFK 500 modular field kitchen

If you are looking for a competitively priced field kitchen of modular construction for civil defence, disaster control organizations or catering for your soldiers, ask for the MFK 500 brochure.



Technical Data:

| | |
|---------------------------------|-----------|
| TFK 250 | 1.622-140 |
| TFK 250 BW NSN 7360-12-310-7359 | 1.622-120 |

Dimensions and weights:

| | | |
|--------------------------------------|-----------------|--------------|
| Kerb weight: | approx. 2050 kg | 4520 lb |
| Payload: | approx. 450 kg | 992 lb |
| Permissible gross weight: | 2500 kg | 5512 lb |
| Permissible towbar load: | 50-125 kg | 110-275.6 lb |
| Overall length: | 4170 mm | 164.2 in. |
| Overall width: | 2160 mm | 85 in. |
| Overall height: | approx. 2620 mm | 103 in. |
| Height of work surface, empty: | 960 mm | 37.8 in. |
| Height of work surface, loaded: | 950 mm | 37.4 in. |
| Length of work surface: | 1900 mm | 74.8 in. |
| Width of work surface, w/out tables: | 2100 mm | 82.7 in. |
| Ground clearance: | 320 mm | 12.6 in. |
| Overhang angle, front: | approx. 22° | |
| Overhang angle, rear: | approx. 20° | |
| Track: | 1920 mm | 75.6 in. |

Chassis with frame:

| | |
|---|------------------------|
| 3.5 t torsion-bar axle | |
| Overrunning brake with automatic back-up lock | |
| Towbar height, adjustable | 550-1050 mm 22-41.3 in |
| Retractable support wheel | |
| Handbrake with breakaway cable | |
| Asbestos-free brake linings | 2 |
| Tyres, 7.50-R15 16PR | 2 |
| Disc wheels, 6.5-15 Super | 4 |
| Disc-type support with coarse and fine adjustments, 200 mm dia. | 4 |
| Stowage compartment, approx. 50l | 4 |
| Fire extinguisher box (fire extinguisher max. 12 kg) | 1 |
| NATO towbar eye, standard fitment | 1 |
| DIN towbar eye, | on request |
| Paint finish | on request |



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Please contact us for further information:



Protection Systems



Cleaning and Environmental Protection Systems



Mobile Catering Systems



Water Purification

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