

# An Army Marches on its Stomach

ELECTROTHERMAL, A BIBBY SCIENTIFIC COMPANY

In your next pub quiz when you're asked who first proclaimed that: "An army marches on its stomach", you have the choice of three answers: Napoleon Bonaparte, Frederick the Great of Prussia, or if you want to impress, Claudius Galen, chief physician to the Roman army. Yet whilst this proverb's origin is debatable, its truth is self-evident and timeless; without bodily sustenance, a military unit cannot function efficiently.

Times may have changed, but the human body has changed remarkably little. The body's mechanisms of energy production are complex, but it is an irrefutable fact that we require food and water for energy. Water is especially essential as our liver needs water to metabolise glycogen into useable energy and water is a primary driving force of energy production inside the cells, so that even the slightest loss of water makes us feel lethargic.

Experiments conducted on athletes have demonstrated the potentially catastrophic effects of dehydration. Roughly speaking, for every 1% of bodyweight lost through dehydration, there's a corresponding 5% drop in performance. If dehydration reaches 4-5% of bodyweight, performance drops by 20-30% and a fluid loss of 9-12% can be fatal. Simply put, dehydration results in immediate fatigue and this can be the difference between success and failure in warfare.

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## SUSTENANCE ON THE MOVE FOR LAND, AIR AND SEA OPERATIONS

Electrothermal have long recognised the importance of maintaining both the fluid and nutritional intakes of military personnel at optimum levels, and our range of RAK Water and Ration Heaters is designed to meet the exacting demands of modern mechanised forces worldwide. Our RAK Water and Ration Heaters provide potable hot water and heat MREs on demand, to give a hot meal and drink for personnel whether under combat conditions, on patrol, or back at base. They are rugged, manufactured to withstand the most harsh environments and can be installed in armoured vehicles, patrol boats and helicopters. Our current range of RAK Water



RAK15-2 HEATER WATER & RATION

and Ration Heaters includes the:

- RAK 15, which operates off 15 amps and is designed for installation in tanks and trucks
- RAK 30 which draws 30 amps to heat faster and is designed for the Marines and Special Forces
- RAK 110 which runs off 110V at 400Hz for use within helicopters, such as Air Sea Rescue.

A "Chiller Crockpot" will soon be available which cools as well as heats, but more about this later.

## APPROVED SUPPLIERS FOR THE US, UK AND MANY OTHER ARMIES

Electrothermal were originally awarded a contract to design and manufacture 10,000 RAK15/30 units for supply to the US Army. We now have 20,000+ combat-tested units in the field all over the world, which have been installed into support and front-line vehicles such as the Abrams M1A1, Bradley's LAV, M109 Paladin, MLR's, M113's, Foxhound, Ocelot, Scorpion, Jackal, and Warthog.

In addition, all the British Army MAN trucks in the support vehicle fleet are equipped with our RAK15/30 units, and most of the others are too, i.e. Warthog, Mastiff and Jackal, along with the Foxhound armoured patrol vehicle. They have proved

especially beneficial in the recent war in Afghanistan, as having the RAK units installed in the cab ensures that vehicles stay on the move and are consequently less vulnerable to attacks from insurgent groups.

### KEEPING MORALE HIGH

The RAK15/30 is at the optimal size to fit into the cramped quarters of a tank and provide hot meals and drinks for its five person crew, heating 2 pints of water and 5 MRE's (Meals Ready to Eat) simultaneously. When used for water only, the RAK15/30 can heat up to one gallon of potable water for drinks, washing or medical purposes. Depending on the power rating, the RAK unit does this in just 20 minutes under normal ambient conditions- it does of course work in extreme climates too, but may take longer to heat the contents if the prevailing temperature is bitterly cold. When switched off with the cover closed and locked, the thermally insulated unit keeps its contents piping hot for between four and six hours.

It is fair to say that our RAK Water and Ration Heaters have gained many satisfied customers over the years, and are so integral to troops' morale that they are affectionately referred to as the "Morale Booster" or "Crock Pot" within the UK and US military respectively.

### MEETS MILITARY SPECIFICATIONS

RAK15/30 units are designed to withstand the rigours of modern conflict and have been comprehensively tested to meet military standard specification MIL-PRF-44466D, including MIL-STD-461: Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment and MIL-STD-810: Environmental Test Methods and Engineering Guidelines. They are also certified for food heating, meeting NSN ANSI 4-2007.

The RAK15/30 connects with standard military connectors to the auxiliary power supply of 24 volts DC in armoured and soft-skinned vehicles. The RAK15 has a low power uptake and only pulls 15 amps of power. With a built-in intelligent sensor, the unit automatically switches off if the battery power is getting low and drops to 22 volts; there is a similar over-voltage protection feature in the event of a sudden power surge to over 39 volts.



RAK15 IN USE



CHILLER CROCKPOT

The outside of the RAK15/30 unit remains cool-to-touch to ensure safe transit should the product be mounted on the back door of a vehicle, or be located in an exposed position. The cool-to-touch feature also gives the unit a very low thermal signature, which is critically important for maintaining discretion during military operations.

Constructed from a robust stainless steel outer casing, the unit is sealed to be water-tight, so that any steam is retained within its interior. It has both low and high temperature settings and has its own built-in control, so that a separate control unit is no longer necessary. The choice of heating ranges is either 66 to 71°C (on LO setting), or 82 to 88°C (on HI setting).

The RAK's quality and reliability are renowned, since of more than 20,000 units supplied to date, less than 0.05% of them have been returned under warranty.

### THE FORTHCOMING "CHILLER CROCKPOT"

Electrothermal will soon be able to offer a "Chiller Crockpot" with all the benefits of the RAK15/30 coupled with the additional benefit of cooling. We're keeping its details under wraps until its launch in 2012, but it will likely be in huge demand when it does hit the market.

Please let us know if you'd like to be amongst the first to trial it on your vehicles by contacting David Overfield at [david.overfield@electrothermal.com](mailto:david.overfield@electrothermal.com) and Jed Karim on [jed.karim@techneusa.com](mailto:jed.karim@techneusa.com), or contacting us through our website [www.electrothermal.com](http://www.electrothermal.com) ■