



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY FORCES COMMAND
1777 HARDEE AVENUE SW
FORT McPHERSON, GEORGIA 30330-1062

DEC 10 2001

AFPI-SO (385)

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Safety Policy for the Tactical Use of Portable Space Heaters

1. References:

a. Technical Manual 10-4500-200-13 (w/changes 1-19), 30 Nov 94, subject: Heaters Space: Radiant Type Portable.

b. Technical Manual 9-4520-257-12&P, 17 Sep 92, subject: Operators and Units Maintenance Manual Heater, Space, Radiant, Large (H-45) (Type I, Solid Fuel) (NSN 4520-01-354-1191) (Type II, Liquid Fuel) (4520-01-329-3451).

c. Army Regulation 600-55, 31 Dec 93, subject: Motor Vehicle and Equipment Operator Selection, Training, Testing and Licensing.

d. Ground Precautionary Message (GPM), 031700Z Apr 97, subject: GPM-SSCOM-97-01, (Operational): Fuel Fired Space Heaters.

e. Memorandum, MCHB-DC-OFS, 16 Oct 96, subject: Health Hazard Assessment, Portable Kerosene Heaters.

f. Forces Command Regulation 385-1, 31 Mar 98, subject: Forces Command Safety Program.

g. Army Regulation 420-90, 10 Sep 97, subject: Fire and Emergency Services

2. Purpose: To establish Forces Command (FORSCOM) policy for the use of portable space heaters in field training and operations.

3. Background:

a. Commercial portable heating devices in field training and operations pose both a fire hazard and a serious inhalation hazard. If not properly vented, effluents from the combustion of fuels can create an environment where, over time, low concentrations of poisonous gases can cause death.

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b. Authorized Heaters: The US Army Soldier Biological and Chemical Command (SBCCOM) has developed a family of space heaters authorized for use by Army units.

(1) Enclosure 1 provides current information regarding Family of Space Heaters (FOSH) performance specifications, use, and cost data. This information can also be accessed through the Internet at the SBCCOM web site <http://www.sbccom.army.mil/products/field/index.htm>. These SBCCOM heaters are required for use, because they are the safest means of providing heat in field operations.

(2) Enclosure 2 list Commercial Off the Shelf (COT) heaters approved by the Surgeon General, the US Army Test and Evaluation Command and SBCCOM, and will be updated as FORSCOM DCSLOG becomes aware of alternative/ additional COT products.

4. Policy:

a. Units must possess the required shelter, power, and heaters to sustain operations in the field environment. To achieve this, heaters can be purchased as allowances, as described in the Common Table of Allowances, which allows commanders to purchase what is needed to meet their operational requirements. The FOSH items are class 2B (durable, expendable items).

b. Units will only use authorized portable space heaters.

c. Units will not use nonstandard or locally purchased heaters in lieu of available type classified Army equipment, except as indicated below.

d. Acquisition of nonstandard heaters is justifiable only in mission-critical circumstances. In those cases, units will obtain equipment meeting the requirements of a national standards organization, such as Underwriter's Laboratories, American National Standards Institute, the International Standards Organization, or the National Fire Protection Association. Personal (individually-owned) heaters are not authorized for use in Army operations.

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5. Responsibilities:

a. Commanders will approve and publish written Standing Operating Procedures, which embody the principles of this policy. Commanders will resource the purchase of required heaters and safety equipment using OPTEMPO funds.

b. The first General Officer in the units' chain of command will approve the purchase and or use of nonstandard heaters.

c. For nonstandard heaters, the requesting unit or activity will prepare and coordinate a risk assessment with local installation safety, logistics, and fire protection personnel prior to approval request. The approved risk assessment will be briefed to all personnel using nonstandard heaters. Approved risk assessments will be reviewed quarterly or when intended use, for which specific approval was granted, changes. Leaders will continually evaluate risk potential and control measures to determine their effectiveness.

6. Usage:

a. Only heaters with a ventilation system compatible with the shielded tent vent stack or similar openings designed for such use will be used in areas where personnel sleep. Heaters will be equipped with emergency fuel shut-off, erected on a firm and level fireproof base, and be located in a marked clear area free of clothing or combustible material. Other fuel burning devices, such as stoves and lanterns, will not be used to heat sleep facilities.

b. In areas where soldiers are awake and performing duties in support of operations, such as Tactical Operations Centers, maintenance tents, Administrative Logistics Operations Center, etc., nonstandard heaters may be used when authorized under the requirements of paragraph 5. Commanders will ensure adequate control measures are in place and enforced to minimize the risks associated with using unvented fuel heaters in these operational environments.

c. The use of heaters where no ventilation is provided, such as unvented Kerosene Heaters, is not desirable. However, these heaters may be considered for use and authorized by the approval authority where such use will not create an environment where soldiers are exposed to unnecessary risk. The use of such heaters is prohibited in enclosed facilities, such as Container Express vans, military vans, and buildings unless adequate ventilation is available.

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d. Electric heaters will only be used where provisions are taken to prevent fires by keeping the area around the heater clear of combustibles, providing readily accessible fire extinguishers appropriate for fighting electrical fires, and only operating the device as outlined by the manufacturer.

e. A fire watch will be on duty in areas where electric, solid, or liquid fueled heaters are used. The fire watch will be briefed on watch procedures, fire fighting with appropriate extinguishing agent, and early recognition of carbon monoxide poisoning. Heaters will not be operated when unattended. While not standard Army issue items, the use of carbon monoxide detectors or other similar devices may be used in conjunction with fire watch personnel as a hazard control measure option. In no case will these devices be used in lieu of fire watch personnel as the primary hazard control measure.

f. Where applicable, fuel tanks will be located outside of tents, shelters, and facilities.

g. Personnel will be licensed in accordance with reference 1c. These individuals will demonstrate proficiency in setup and operation of portable space heaters.

h. Heaters will be fueled, used, and maintained in accordance with manufacturers' instructions or applicable Technical Manual. Only authorized and appropriate fuels will be used. Prior to heater use, an inspection by the responsible unit fire or safety representative will be performed. Unapproved heater modifications will not be authorized. Heaters will only be used for the purpose recommended by the manufacturer.

i. Fuel will only be transported in approved Department of Transportation containers.

j. Only authorized heaters will be used to heat vehicles. When vehicle heaters are used, hatches/windows will remain partially opened to allow circulation and to prevent carbon monoxide poisoning.

7. Expiration: This policy will expire two years from the date of this memorandum, at which time this guidance will be incorporated into the next revision of reference 1.f.

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8. For additional information, please contact Mr. Mike Bledsoe, FORSCOM Safety Director, DSN 637-5597 or COMM 404-464-5597.

Encl



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APPROVED TENT HEATERS (4)

TENT SHELTER	OPTIMUM HEATER	BTU/ WEIGHT (lbs)	COST	REMARKS
5 MAN SOLDIER CREW TENT (80-100 SQ.FT)	SPACE HEATER SMALL (SHS) (2) NSN 4520-01-478-9027	12K/19	\$400.00	LIQUID FUEL
10 MAN ARTIC TENT (100-200 SQ.FT)	SPACE HEATER ARCTIC (SHA) NSN 4520-01-444-2375	25K/35	\$700.00	LIQUID FUEL USES TEF (1)
TOCS, TEMPER TENTS	SPACE HEATER CONVECTIVE (SHC) (3) NSN 4520-01-431-8927	35K/ 67	\$6000-7000	LIQUID FUEL
GENERAL PURPOSE SMALL, MEDIUM, LARGE TEMPER TENTS, TOCS	HEATER, SPACE, RADIANT (H-45) NSN 4520-01-329-3451	45K/ 65	\$530.00	LIQUID FUEL USES TEF (1)

NOTES:

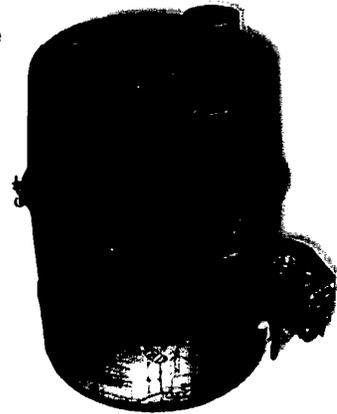
- 1) TEF: THERMOELECTRIC FAN, NSN 4520-01-457-2790, \$500. - CIRCULATES HEATED AIR IN TENT & REDUCES FUEL USAGE
- 2) THE SHS IS NOT CURRENTLY IN THE SUPPLY SYSTEM BUT CAN BE PURCHASED COMMERCIALY FROM INTERNATIONAL THERMAL RESEARCH, PHONE NUMBER 604-278-1272, PRICE: \$326 (FOR 100 OR MORE) - \$450 (SINGLE ORDER) PLUS SHIPMENT. WILL BE IN THE SUPPLY SYSTEM WINTER 01 @ \$350.00
- 3) AVAILABLE SUMMER 01
- 4) Web Site for more information: [HTTP://WWW.SBCCOM.ARMY.MIL/PRODUCTS/FIELD/INDEX.HTM](http://WWW.SBCCOM.ARMY.MIL/PRODUCTS/FIELD/INDEX.HTM)

Family of Space Heaters: H-45 Space Heater

Overview:

The H-45 Space Heater is a 45K BTU heater that is designed to provide heat for the General Purpose (Small, Medium and Large) and TEMPER tents. The H-45 heater replaces the antiquated M-41 heater which has severe operational deficiencies and poses a serious safety hazard in the field. The H-45 heater operates without the use of electrical power and can burn all types of liquid fuel (DF-2, DF-1, DF-A, JP-5, JP-8, JP-4, and gasoline) and solid fuel (wood and coal). It utilizes the new vaporizing R-tube burner technology which overcomes the major combustion and safety problems that have existed over the past 50 years in the nonpowered heater industry. These problems include poor smokey combustion of diesel fuel and the hazardous exposure of a pool of raw fuel during operation. The new vaporizing R-tube burner technology eliminates these deficiencies while still maintaining simplicity, ruggedness, and low cost.

The NSN for the H-45 heater is 4520-01-329-3451. The cost is \$500.



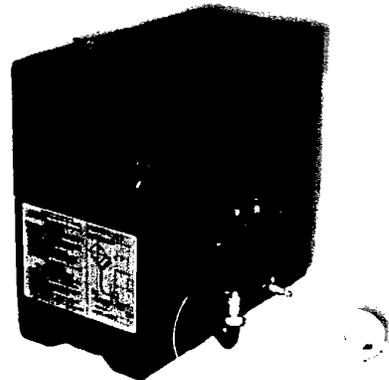
Description:

The H-45 heater measures 18" diameter x 24" high and weighs 65 lbs, including all accessories (stack, flue cap, gravity feed adapter, hoses, etc). The H-45 Heater is operational in temperatures ranging from -60° F to 60° F, and can be stored in temperatures ranging from -60° F to 160° F.

Space Heater Arctic (SHA)

Overview:

The Space Heater Arctic (SHA) is a 25K BTU heater that is designed to provide heat for the 10-man arctic tent and other tentage with floor areas between 100 and 200 square feet. The SHA replaces the current Yukon heater which has severe operational deficiencies and poses a serious safety hazard in the field. The SHA operates without the use of electrical power and can burn all types of liquid fuel (DF-2, DF-1, DF-A, JP-5, JP-8) and solid fuel (wood and coal). The SHA utilizes the new vaporizing S-tube burner technology which overcomes the major combustion and safety problems that have existed over the past 50 years in the nonpowered heater industry. These problems include poor smoky combustion of diesel fuel and the hazardous exposure of a pool of raw fuel during operation. The new vaporizing S-tube burner technology eliminates these deficiencies while still maintaining simplicity, ruggedness, and low cost. The NSN for the SHA is 4520-01-444-2375.



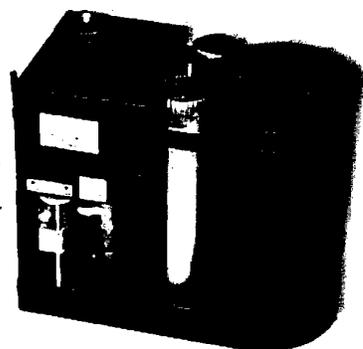
Description:

The SHA measures 16" H x 9" W x 16" L and weighs 35 lbs, including all accessories. These accessories are comprised of the stack, flue cap, gravity feed adapter, and hoses. All accessory components, including the pre-assembled, telescoping stove pipe, can be stored within the heater making it highly mobile and easy to assemble. The SHA is operational in temperatures ranging from -60° F to 60° F, and can be stored in temperatures ranging from -60° F to 160° F.

Space Heater Small (SHS)

Overview:

The Space Heater Small (SHS) is a 12K BTU heater that is designed to provide heat for the Soldier Crew Tent (5-man tent) and other tentage with floor area between 80 and 100 square feet. The SHS will satisfy a heating requirement for small military tentage in which there is currently no existing heater that can meet this requirement. The SHS operates without the use of electrical power and can burn all types of liquid fuel (DF-2, DF-1, DF-A, JP-5, JP-8). The SHS utilizes the new vaporizing S-tube burner technology which overcomes the major combustion and safety problems that have existed over the past 50 years in the nonpowered heater industry. These problems include poor smoky combustion of diesel fuel and the hazardous exposure of a pool of raw fuel during operation. The new vaporizing S-tube burner technology eliminates these deficiencies while still maintaining simplicity, ruggedness, and low cost.



Description:

The SHS measures 13.7" H x 8.5" W x 16" L and weighs 19 lbs, including all accessories. The integral fuel tank design eliminates the need for hoses, gravity feed adapter, fuel can and fuel can stand. The SHS is operational in temperatures ranging from -60° F to 60° F, and can be stored in temperatures ranging from -60° F to 160° F.

Space Heater Convective (SHC)

Overview:

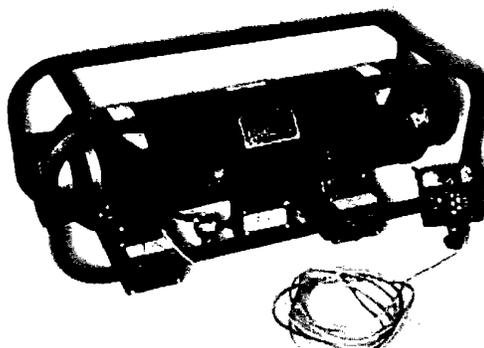
The Space Heater Convective (SHC) is a 35K BTU thermoelectric heater that provides forced hot air circulation in military tentage without the need for an external power supply. This eliminates the need for a field generator. The SHC's intended applications include the Modular Command Post System, TOCs, and other tents housing expensive electronics equipment. The SHC is the first of its kind to successfully integrate thermoelectrics and combustion into a fieldable heater prototype that delivers clean, breathable heat to military tentage and shelters.

The heater provides a 60% increase in combustion efficiency over currently fielded nonpowered heaters and provides much cleaner combustion of diesel fuel, translating to significantly reduced fuel costs and maintenance requirements. These modules convert waste heat into electrical energy, which is used to power the blowers, pumps, ignition system, safety system, and control devices required in the operation of the heater.

The NSN for the SHC is 4520-01-431-8927.

Description:

The SHC is 17"H x 14"W x 39"L and weighs 67 pounds. It is operational from -40° F to 60° F, and can be stored from -60° F to 160° F. The heater can be operated either inside or outside the tent and has the capability to burn multiple liquid fuels (DF-2, DF-1, DF-A, JP-5, & JP-8). The heater starts simply using a single switch, and operation is completely automatic due to built in diagnostics, safety and temperature controls. The thermoelectric heater generates its own electrical power (approximately 100 watts) through the use of thermoelectric modules located in the combustion chamber.



Thermoelectric Fan (TEF)

Overview:

Standard military tent heaters operate inside a tent without the use of external electrical power and transfer heat by means of radiation and natural convection. The heat rises to the top leaving the floor and extremities of the tent cold. This translates into poor habitability conditions and excessive fuel consumption. The Thermoelectric Fan (TEF) operates with all standard military tent heaters to circulate heated air, improve habitability conditions and significantly reduce fuel usage while generating its own electrical power.

The NSN for this item is 4520-01-457-2790.

Description:

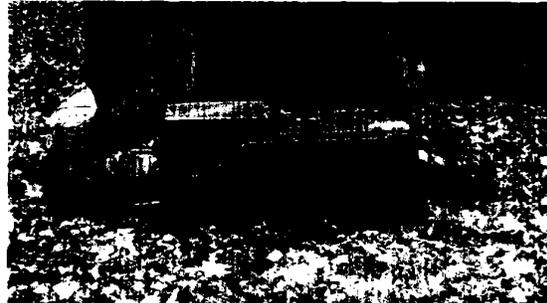
The TEF is a silent, compact, rugged fan unit (14" in diameter and 10" high) that is placed on top of any military tent heater. A built-in thermoelectric module converts heat from the top surface of the heater into electricity to power a 450 CFM fan. The fan moves heated air to the bottom and corners of the tent, providing more even heat distribution throughout the entire shelter. Improved heat distribution delivers more comfortable living/working conditions, improved health and morale, and significant fuel savings for soldiers in the field.

Testing indicates that the TEF can provide an increase of over 20°F at the floor level of the tent. This allows the soldier to operate their heaters at much lower firing rates, saving a significant amount of fuel and increasing comfort levels in the tent. Tests show that up to 50% fuel savings can be achieved. For extreme cold weather conditions this translates into a cost savings of about \$450 per season in a 10-Man Arctic Tent and \$2,800 per season in a General Purpose Medium (GPM) tent equipped with two heaters and two TEFs.

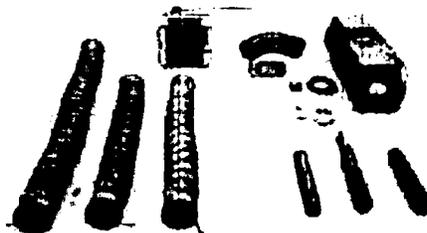


Commercial Off the Shelf (COT)

Dantherm Heating System



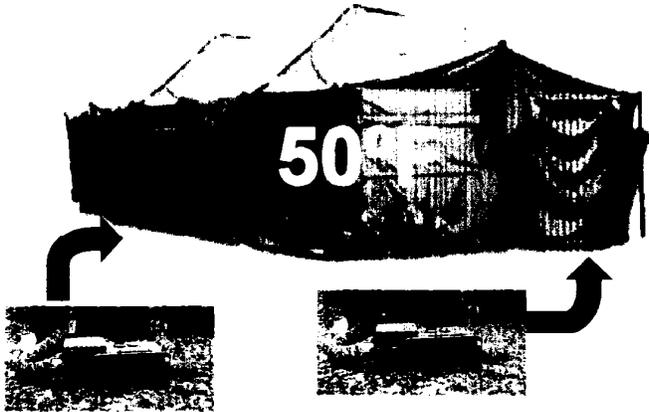
- **Manufactured by: Dantherm Environmental Air Management of Denmark**
- **Produces Portable Warm Air Heaters**
- **Tested unit was 220V 50Hz without a carbon monoxide monitor, but can be produced in a 120V 60Hz variant w/CO2 monitor.**
 - **Heat Output – 68,000 BTUH**
 - **Fuel – JP8 or Diesel**
 - **Weight – 170 lbs.**
 - **Air Flow – 500 cfm**
 - **Low Temperature Operation -25°F**
 - **Noise Level - <50 db(A)**
 - **Safety Features – CO Monitor**
 - **Ducts (supply, return & distribution)**
- **Costs TBD by SBCCOM contract or DLA price schedule.**
- **Supportability**
 - **Unit supplied with spare parts (igniter, fuel & oil filters, combustion gaskets, tools)**
 - **European variant already in use with NATO forces including US forces.**



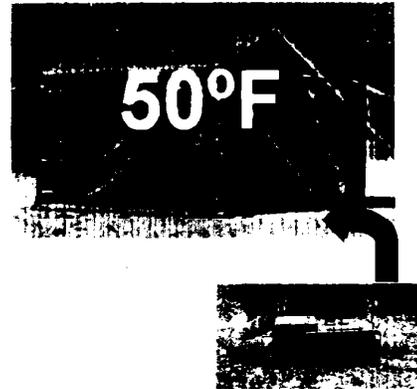
- **Operational Capability**

- **To heat a tent to an interior temperature of 50°F when the outside temperature is 0°F**

To heat MGPTS or GP medium



To heat MGPTS or GP small or MCPS



- **Technical Assessment Completed**

- **Safety Release**

- **Evaluation & Documentation Completed**
- **Surgeon General Approval Received - 1 Oct**
- **Approved Documentation - 12 Oct**

- **ATEC Approval**

- **Written approval received - 9 Oct**
- **Establish Contract**