

INCH-POUND

MIL-DTL-32235/1A
15 September 2010
SUPERSEDING
MIL-DTL-32235/1
12 February 2007
W/Change 01 29 April 2011

DETAIL SPECIFICATION SHEET

HEATER MODULE, TYPE I: HEATER, ASSEMBLY REQUIRED

This specification is approved for use by all
Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-32235.

CLASSIFICATION

Heater modules are of the following styles:

- Style A - Three sub-units plus Boil-In-Bag (BIB) module
- Style B - Four sub-units

REQUIREMENTS

I. Heater module.

The Type I heater module shall consist of a heater module box containing three or four heating trays, activation fluid units, heaters, polymeric food trays or Institutional Size Pouches (ISP) and the activation mechanism/pull tab. Sub-assemblies are allowed. When applicable, there shall also be a Boil-In-Bag (BIB) module. The components and sub-units, except the heaters, and the BIB module (when applicable) shall be assembled and placed in the heater module box and the activation mechanism/pull tab shall be connected to the three or four activation fluid units. A barrier pouch containing the heaters shall be placed on top of the other components in the heater module box.

AMSC N/A

FSC 8970

A. Heater.

The heater shall be constructed of materials that, when activated by a fluid, shall initiate and propagate an exothermic reaction suitable for use with food. This reaction shall generate adequate heat to heat the food to a safe food serving temperature. No toxic gas, liquid or solid by-products are desirable. If toxic by-products are produced, they shall be of the least severity and smallest amount possible while allowing for adequate heating and ensuring operator and consumer safety. When low hydrogen generating heater is used, it shall generate less than 30 liters of hydrogen in 60 minutes. The heater material shall be evenly distributed and completely sealed within the scrim matrix of the heater to minimize the release of materials, and facilitate direct in-place activation of the heater materials. The heating rate shall be optimized to minimize the time required to heat the food, yet not cause excessive foaming or uncontrolled release of reaction by-products. The heater and barrier material shall not melt, deform or degrade during heating. The heater is activated by the addition of a fluid that shall fully activate the heater material. The non-woven porous polymeric scrim shall be sealed and sized to accommodate proper fit and function of the heater module. Each heater (heater elements in a matrix) shall be correctly and legibly labeled in accordance with MIL-DTL-32235.

Comment [C1]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

Three or four heaters shall be packaged in a barrier pouch constructed from laminated material, with one lamina a minimum of 0.00035 inch thick aluminum foil. The pouch shall be heat sealed on all four edges. A tear nick, notch or serrations shall be provided to facilitate opening of the filled and sealed pouch. The barrier pouch shall have maximum outer dimensions of 11 by 15 inches. Each pouch with heaters shall be correctly and legibly labeled in accordance with MIL-DTL-32235.

B. Activation fluid unit.

The unit consisting of the pouch containing the activation fluid shall be made of material equivalent to Class 1 of MIL-PRF-131. Alternate activation fluid pouch materials and design shall be permitted with approval from Natick Soldier Research, Development and Engineering Center. The pouch shall be manufactured in accordance with the dimensions and design shown in Figure 1. Tolerances for the pouch dimensions shall be $\pm 1/8$ inches. Sufficient length for the center strip and careful assembly is critical to ensuring that the pouch is not inadvertently torn open during assembly and subsequent transport and storage. The solid lines shown at 1 inch off center at the base of the strip are cut lines. The 1 inch center strip section of the pouch shall be constructed with additional material for reinforcement. The center section of the pouch shall be scored (laser or mechanical) to provide easy tear properties without degrading the strength and barrier properties of the pouch. The pouch shall be filled with 1.5 percent saline (water and sodium chloride) solution, or as specified by the heater manufacturer with approval from Natick Soldier Research, Development and Engineering Center. The volume of fluid in the pouch, when combined with the heater, shall be adequate to initiate and propagate the exothermic reaction. Each activation fluid unit shall be correctly and legibly labeled in accordance with MIL-DTL-32235.

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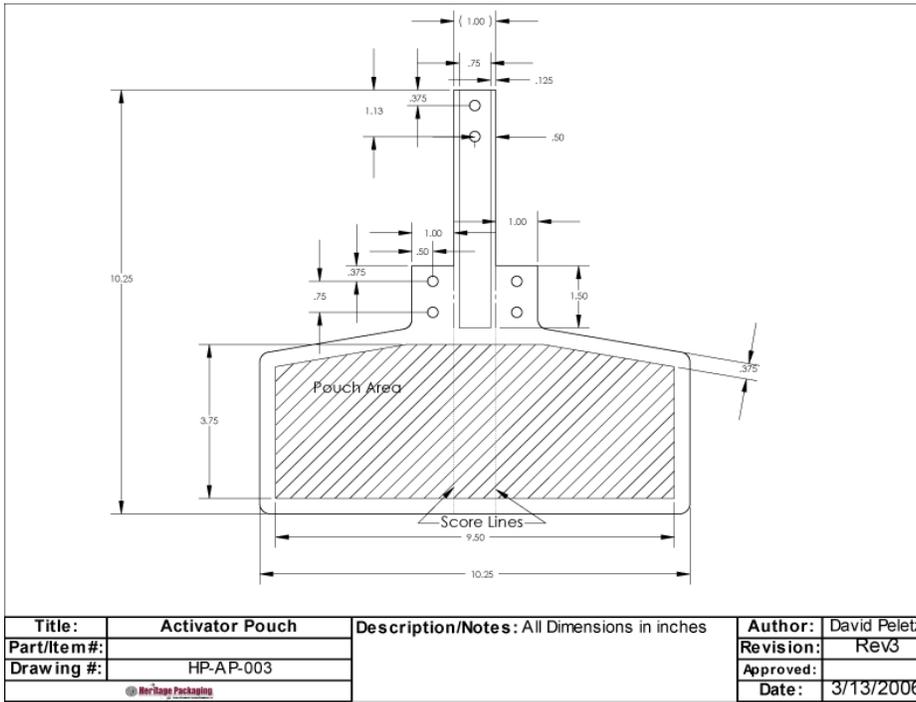


FIGURE 1. Activation fluid unit

C. Heating tray.

The heating tray shall be molded from 0.090 inch high density polyethylene. Injection molded and thermoformed designs have performed adequately; other acceptable processes and materials are allowed. The heating tray shall consist of two compartments. The smaller compartment serves as a retaining reservoir for the activator fluid unit and includes two buttons to which the two short tabs of the activation fluid unit pouch are secured.

A fold-over flap shall be included on the heating tray to retain and protect the activation fluid unit. A slot shall be cut into the cover to allow the center strip of the activation fluid unit pouch to slide through, which later is attached to an activation mechanism/pull tab.

The larger compartment shall be configured to hold the heater, one polymeric food tray or ISP, and accommodate the activation fluid. The compartment shall be configured with a raised and rounded edge that supports the polymeric food tray securely above the heater.

Dimensions of the heating tray shall be as specified in Figure 2. The tolerance for the angle measurements shall be ± 1 degree. The tolerance for the linear measurements shall be $\pm 1/8$ inch.

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Upon completion of the heater module assembly, the three or four center strips of the activation fluid units securely connect to a pull tab. At the time of use, the operator of the heater module pulls the pull tab to tear the activation fluid unit pouches which open and release the saline solution and activate the heaters.

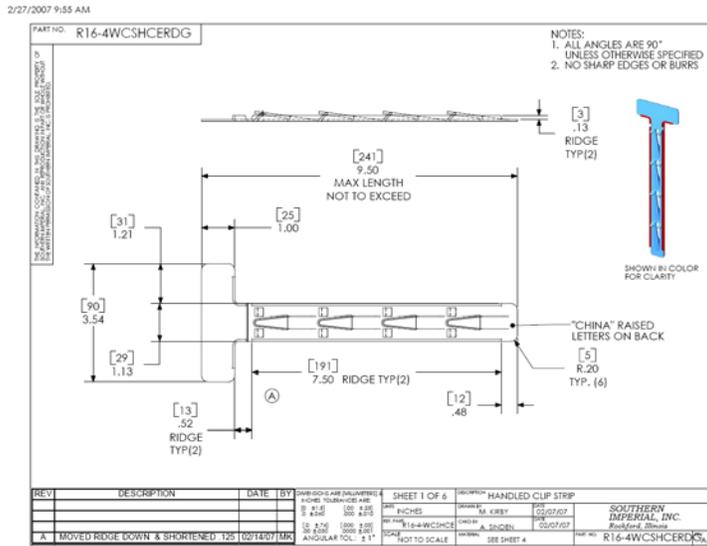


FIGURE 3. Pull tab, Rear loading design

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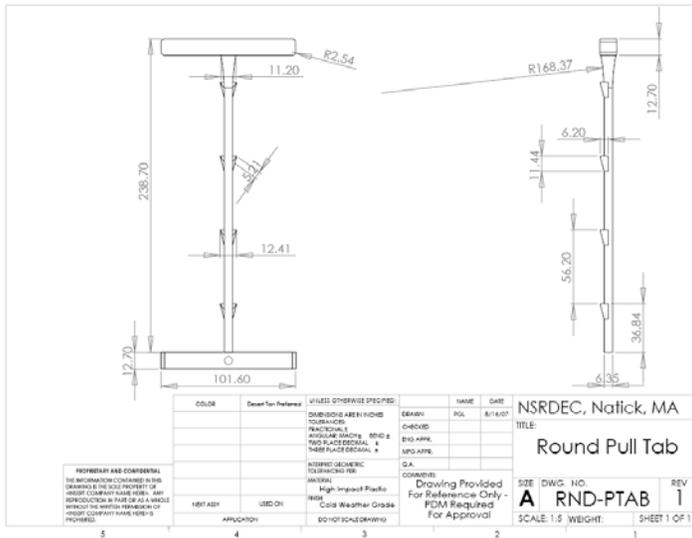


FIGURE 4. Pull tab, Center loading design

E. Assembly of heater module.

The components or sub-units shall be assembled. The Type I heater module shall consist of a box containing three sub-units and a BIB module or four sub-units, with activation mechanism/pull tab, and a barrier pouch containing three or four heaters. The sub-unit shall consist of the heating tray, the activation fluid unit, and the polymeric food tray. Sub-assemblies of components may be used. The three or four sub-units shall be stacked and the activation mechanism/pull tab shall be connected to the three or four activation fluid unit pull strips. The sub-units shall be placed into the heater module box. The entrée polymeric food tray shall be on the bottom and the dessert polymeric food tray shall be on the top. When there is a BIB module, it shall be placed on top of the three sub-units.

A corrugated fiberboard pad measuring approximately 10-3/4 by 16-1/4 inches shall be placed on the top of the fourth tray sub-unit or the BIB module. The barrier pouch containing the heaters shall then be placed on the fiberboard pad inside the heater module box. The heater module box shall be closed and instructions sheets applied. Design and dimensions of the heater module box shall be as specified in Figure 5. Each heater module shall be correctly and legibly labeled in accordance with MIL-DTL-32235.

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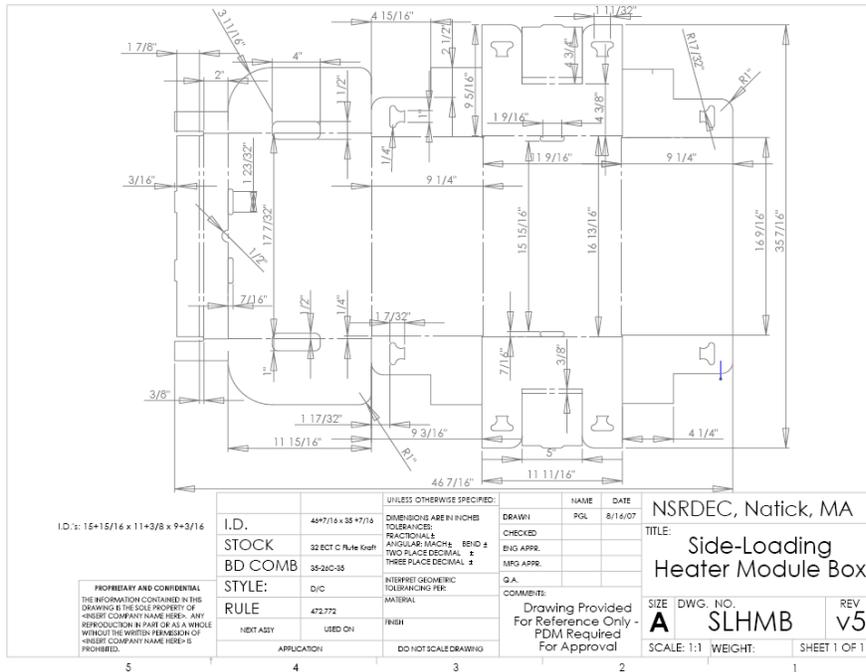


FIGURE 5. Heater module box

EXAMINATION AND TESTS

A. Type I heater module examination. In addition to the heater module examination specified in MIL-DTL-32235, the finished product shall be examined for conformance to the requirements specified in this specification sheet. The Type I heater module shall be examined for the defects listed in Table I.

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TABLE I. Type I heater module defects 1/ 2/ 3/ 4/ 5/ 6/ 7/

Category		Defect
<u>Major</u>	<u>Minor</u>	
101		Heater module not type or not style specified.
102		Heater does not contain materials that will initiate and propagate an exothermic reaction.
103		Heater causes excessive foaming or uncontrolled release of reaction by-products.
104		Three or four heaters, as applicable, not packaged in a barrier pouch.
105		Center strip of activation fluid units not reinforced.
	201	Packaged heaters not located in top area of the heater module box.
	202	The corrugated fiberboard pad on top of the fourth sub-unit or BIB module missing.
	203	Tear nick, notch or serrations on heater barrier pouch missing or does not facilitate opening.
106		Score lines on activation fluid units missing or damaged.
107		Fold-over flap on heating tray to retain the activation fluid unit missing or damaged.
108		Heating tray design or dimensions incorrect.
109		Activation mechanism/pull tab missing or damaged.
	204	Activation fluid unit center strip not attached to activation mechanism/pull tab.
	205	Activation mechanism/pull tab not assembled properly.
	206	Polymeric trays or ISPs or BIB, if applicable, of food not placed in module in correct order.
	207	Low hydrogen generating heater generates more than 30 liters in 60 minutes.

Comment [C2]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

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- 1/ Heater material construction shall be verified by Certificate of Conformance (CoC).
- 2/ Use of MIL-PRF-131 material for the activation fluid unit shall be verified by CoC.
- 3/ The activation fluid solution shall be identified and verified by CoC.
- 4/ The use of 0.090 inch high density polyethylene for the heating tray shall be verified by CoC.
- 5/ The pull tab material shall be verified by CoC.
- 6/ The pull tab pull strength shall be verified by CoC.
- 7/ The low hydrogen generating heater shall be verified by CoC.

Comment [C3]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

B. Test methods.

1. Single heater capacity test.

The objective of the heating capacity test is to verify that a single heater increases the temperature of the water in the polymeric tray by 85°F (from 40°F to 125°F) in 30 minutes or less. In this test, one sub-unit (polymeric tray of water in the heating tray with the heater and the activation fluid unit) is tested. The following procedures are recommended:

- Pre-condition 96 oz. water-filled test tray to 35°F to 40°F.
- Align matching bi-metallic (copper-constantan) pegs of C-10 Locking Connector to bi-metallic holes in C-9 Locking Receptacle. Thread C-10 Locking Receptacle and C-9 together until seated.
- Connect Thermocouple wire installed on Locking Receptacle to data acquisition or computer terminal calibrated to the copper-constantan thermocouple.
- Assemble heater and food tray within the heating tray. Add activation fluid or use activator pouch to activate heater.
- The test shall be conducted at an ambient temperature of 72°F ± 2°F in an explosion-proof exhaust fume hood or sufficiently ventilated environment, away from open flame or potential ignition sources.
- Place sub-unit into a representative heater module box with a 10-3/4 by 16-1/4 inch corrugated insert placed over the tray (weather grade corrugated or plastic materials may be used for repeated testing). Activate the sub-unit.
- Record temperature for at least 30 minutes at 1 minute intervals or more frequently.

II. Notes.

A. Part identifiers and sources of supply.

1. Heater. The heater is available from:

Truetech Inc.
680 Elton Ave.
Riverhead, NY 11901-2585
(631) 727-8600

2. Heater barrier pouch. The barrier pouch material is available from:

Winter-Wolff International
131 Jericho Turnpike
Jericho, NY 11753
(516) 997-3300

3. Activation fluid unit. The activator pouch is identified as Part # HP-AP-003. The material CADPACK N for the construction of the activation fluid unit pouch is available from:

Cadillac Products
5800 Crooks Road
Troy, Michigan 48098-2830
(248) 813-8200

The filled and sealed activation fluid units are available from:

Heritage Packaging
625 Fishers Run
Victor, NY 14564
(585) 742-3310

4. Heating tray. The heating tray is available from:

Transform Plastics
45 Prince St.
Danvers, MA 01923
(978) 777-1440

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Ecomass Technologies
4101 Parkstone Heights Drive
Austin, TX 78746-7482
(512) 306-0020

5. Pull tab. The pull tab is identified as Part # R16-4-WCSHCE-4. The pull tab is available from:

Southern Imperial
1400 Eddy Avenue
P.O. Box 2308
Rockford, IL 61103
(800) 747-4665 x203

6. Thermocoupled polymeric trays. Filled thermocoupled polymeric trays or instructions on how to construct them are available from:

US Army Research, Development and Engineering Command
Natick Soldier Research, Development and Engineering Center
RDNS-CEG
15 Kansas Street
Natick, MA 01760-5056
(508) 233-4939

7. Assembly and instruction sheets. The following assembly and operating instruction sheets are attached:

FIGURE 6. Type I Heater Assembly, for Heater with Hydrogen Generating Warning

FIGURE 7. Type I Heater Assembly, for Heater with No Hydrogen Generation Warning

FIGURE 7. Type I Heater Assembly, for Heater with Low Hydrogen Generation Warning

FIGURE 8. Type I Heater Assembly with Eggs, for Heater with Hydrogen Generating Warning

FIGURE 9. Type I Heater Assembly with Eggs, for Heater with No Hydrogen Generation Warning

FIGURE 9. Type I Heater Assembly with Eggs, for Heater with Low Hydrogen Generation Warning

FIGURE 10. Type I Operating Instructions, for Heater with Hydrogen Generating Warning

FIGURE 11. Type I Operating Instructions, for Heater with No Hydrogen Generation Warning

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FIGURE 11. Type I Operating Instructions, for Heater with Low Hydrogen Generation Warning

FIGURE 12. Type I with Eggs Operating Instructions, for Heater with Hydrogen Generating Warning

FIGURE 13. Type I with Eggs Operating Instructions, for Heater with No Hydrogen Generation Warning

FIGURE 13. Type I with Eggs Operating Instructions, for Heater with Low Hydrogen Generation Warning

FIGURE 14. Assembly Instructions for Type I Heater Module

FIGURE 15. Assembly Instructions for Type I Heater Module with Eggs

Comment [C4]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

Assembly and instruction sheets in color are available electronically from:

US Army Research, Development and Engineering Command
Natick Soldier Research, Development and Engineering Center
RDNS-CEG
15 Kansas Street
Natick, MA 01760-5056
(508) 233-6252

B. References.

MIL-PRF-131 - Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable

(Copies of these documents are available from <https://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Ave, Building 4D, Philadelphia, PA 19111-5094.)

C. Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

UGR-E Type I Heater Assembly Instructions

<p>The fluid activated heaters have been hermetically sealed in a barrier pouch for shipping. A heater must be inserted into each heating tray prior to activation.</p> <p>Refer to enclosed UGR-E Operational Instruction Card for directions on use.</p>	<p>CAUTION</p> <p>Use Only In A Well Ventilated Environment, as Magnesium-Based Heaters Produce Hydrogen (0.3 Cubic Meters or 12 Cubic Feet) - Per UGR-E</p> <p>Hot water leakage and steam can burn and cause injury.</p>	<p>Spent heaters are nontoxic and nonhazardous. All waste materials may be disposed of as general municipal waste.</p>
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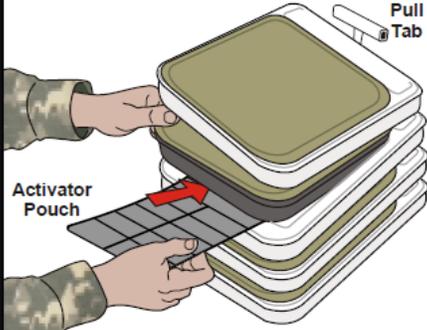
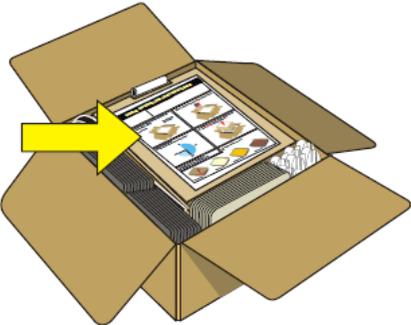
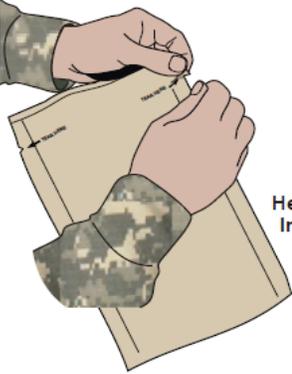
<p>1 Tear heater bag(s) open at notch and remove heaters.</p>  <p style="text-align: right;">4 Heaters Inside</p>	<p>2 While keeping the trays stacked together in the carton, carefully insert a heater under each food tray by raising each food tray just enough to slide a heater under each of the food trays. USE CAUTION: Do Not pull the pull tab.</p>  <p style="text-align: right;">Pull Tab</p> <p style="text-align: left;">Activator Pouch</p>
<p>3 Close the Heater Module Cover without pulling or disturbing the pull-tab.</p> 	<p>4 Refer to Operating Instruction Sheet attached to Heater Module Cover for use.</p>  <p style="text-align: right; font-size: small;">Rev 03-31-10</p>

FIGURE 6. Type I Heater Assembly, for Heater with Hydrogen Generating Warning

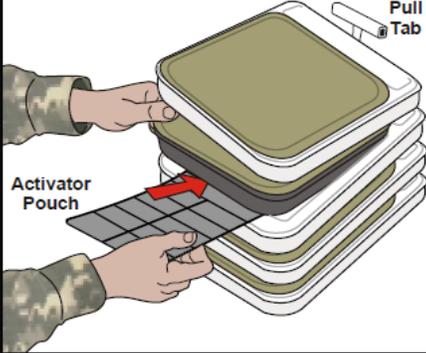
UGR-E Type I Heater Assembly Instructions

<p>The fluid activated heaters have been hermetically sealed in a barrier pouch for shipping. A heater must be inserted into each heating tray prior to activation.</p> <p>Refer to enclosed UGR-E Operational Instruction Card for directions on use.</p>	<p>CAUTION</p> <p>1. Heater activation solution causes moderate skin and eye irritation. Avoid contact with eyes, skin, and clothes.</p> <p>2. Hot water leakage and steam can burn and cause injury.</p>	<p>Spent heaters are nontoxic and nonhazardous. All waste materials may be disposed of as general municipal waste.</p>
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1 Tear heater bag(s) open at notch and remove heaters.



2 While keeping the trays stacked together in the carton, carefully insert a heater under each food tray by raising each food tray just enough to slide a heater under each of the food trays. **USE CAUTION: Do Not pull the pull tab.**



3 Close the Heater Module Cover without pulling or disturbing the pull-tab.



4 Refer to Operating Instruction Sheet attached to Heater Module Cover for use.



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FIGURE 7. Type I Heater Assembly, for Heater with No Hydrogen Generation Warning

Comment [p5]: Natick case ES11-053, change 01, 29 Apr 11. Delete figure & replace with new figure 7

UGR-E Type I Heater Assembly Instructions

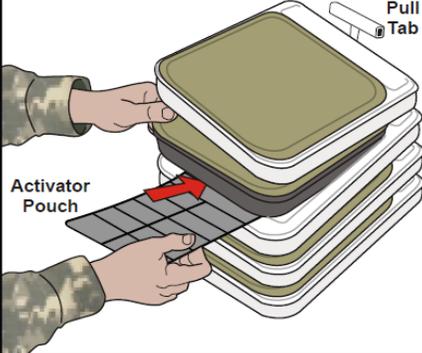
<p>The fluid activated heaters have been hermetically sealed in a barrier pouch for shipping. A heater must be inserted into each heating tray prior to activation.</p> <p>Refer to enclosed UGR-E Operational Instruction Card for directions on use.</p>	<p style="background-color: black; color: white; margin: 0;">CAUTION</p> <p style="color: red; margin: 5px 0;">Hot water leakage and steam can burn and cause injury.</p>	<p>Spent heaters are nontoxic and nonhazardous. All waste materials may be disposed of as general municipal waste.</p>
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1 Tear heater bag(s) open at notch and remove heaters.



4 Heaters Inside

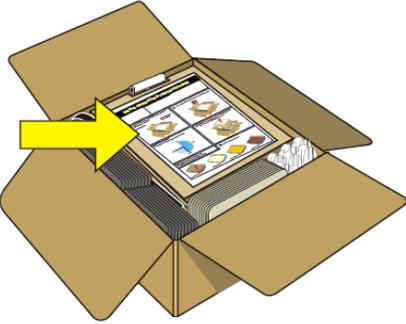
2 While keeping the trays stacked together in the carton, carefully insert a heater under each food tray by raising each food tray just enough to slide a heater under each of the food trays. **USE CAUTION: Do Not pull the pull tab.**



3 Close the Heater Module Cover without pulling or disturbing the pull-tab.



4 Refer to Operating Instruction Sheet attached to Heater Module Cover for use.



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FIGURE 7. Type I Heater Assembly, for Heater with Low Hydrogen Generation

Warning

Comment [C6]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

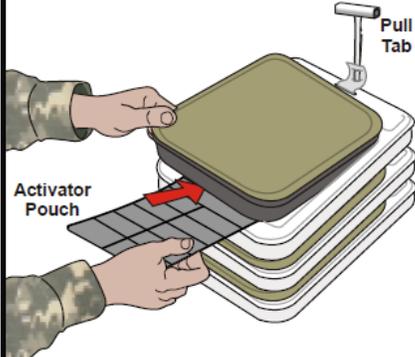
UGR-E Type I w/ Eggs Heater Assembly Instructions

<p>The fluid activated heaters have been hermetically sealed in a barrier pouch for shipping. A heater must be inserted into each heating tray prior to activation.</p> <p>Refer to enclosed UGR-E Operational Instruction Card for directions on use.</p>	<p>CAUTION</p> <p style="color: red;">Use Only In A Well Ventilated Environment, as Magnesium-Based Heaters Produce Hydrogen (0.3 Cubic Meters or 12 Cubic Feet) - Per UGR-E</p> <p style="color: red;">Hot water leakage and steam can burn and cause injury.</p>	<p>Spent heaters are nontoxic and nonhazardous. All waste materials may be disposed of as general municipal waste.</p>
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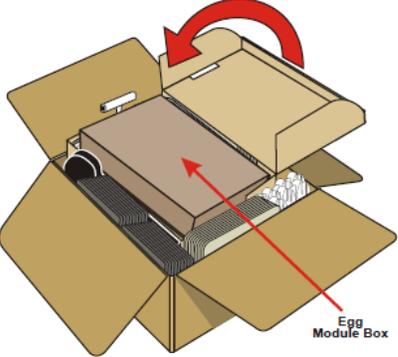
1 Tear heater bag(s) open at notch and remove heaters.



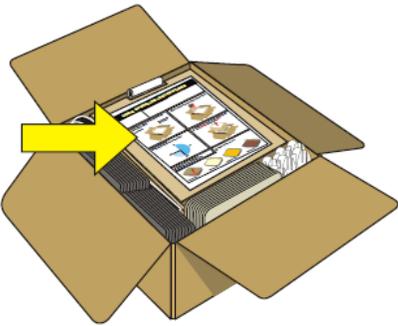
2 While keeping the trays stacked together in the carton, carefully insert a heater under each food tray by raising each food tray just enough to slide a heater under each of the food trays. **USE CAUTION: Do Not pull the pull tab.**



3 Close the Heater Module Cover without pulling or disturbing the pull-tab.



4 Refer to Operating Instruction Sheet attached to Heater Module Cover for use.



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FIGURE 8. Type I Heater Assembly with Eggs, for Heater with Hydrogen Generating Warning

UGR-E Type I w/ Eggs Heater Assembly Instructions

The fluid activated heaters have been hermetically sealed in a barrier pouch for shipping. A heater must be inserted into each heating tray prior to activation.

Refer to enclosed UGR-E Operational Instruction Card for directions on use.

CAUTION

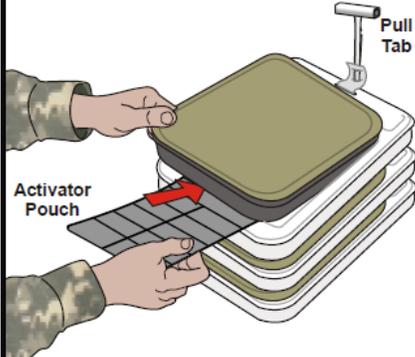
1. Heater activation solution causes moderate skin and eye irritation. Avoid contact with eyes, skin, and clothes.
2. Hot water leakage and steam can burn and cause injury.

Spent heaters are nontoxic and nonhazardous. All waste materials may be disposed of as general municipal waste.

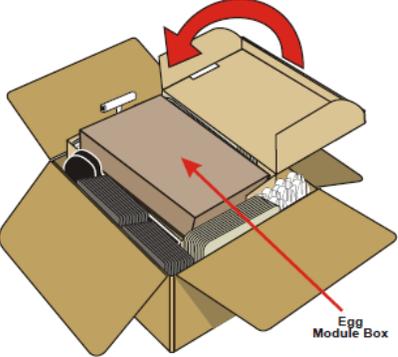
1 Tear heater bag(s) open at notch and remove heaters.



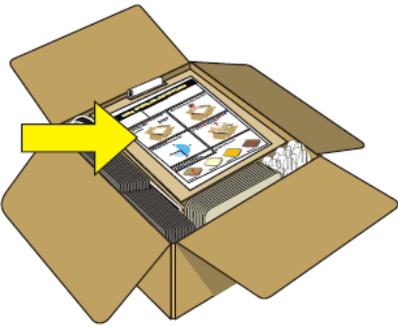
2 While keeping the trays stacked together in the carton, carefully insert a heater under each food tray by raising each food tray just enough to slide a heater under each of the food trays. **USE CAUTION: Do Not pull the pull tab.**



3 Close the Heater Module Cover without pulling or disturbing the pull-tab.



4 Refer to Operating Instruction Sheet attached to Heater Module Cover for use.



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FIGURE 9. Type I Heater Assembly with Eggs, for Heater with No Hydrogen Generation Warning

Comment [p7]: Natick case ES11-053, change 01, 29 Apr 11. Delete figure & replace with new figure 9

UGR-E Type I w/ Eggs Heater Assembly Instructions

The fluid activated heaters have been hermetically sealed in a barrier pouch for shipping. A heater must be inserted into each heating tray prior to activation.

Refer to enclosed UGR-E Operational Instruction Card for directions on use.

CAUTION

Hot water leakage and steam can burn and cause injury.

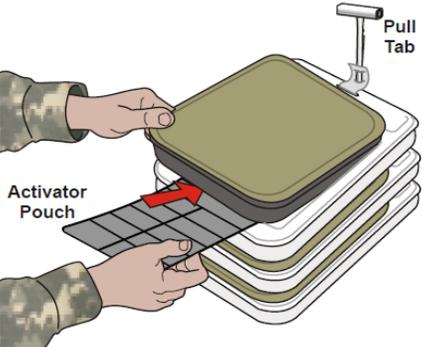
Spent heaters are nontoxic and nonhazardous. All waste materials may be disposed of as general municipal waste.

1 Tear heater bag(s) open at notch and remove heaters.

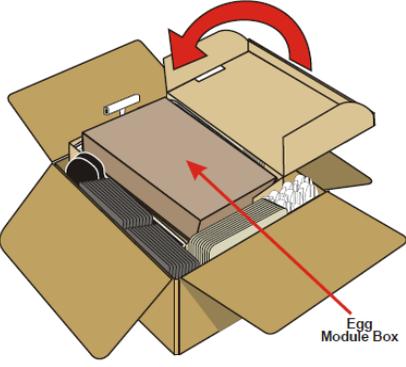


3 Heaters Inside

2 While keeping the trays stacked together in the carton, carefully insert a heater under each food tray by raising each food tray just enough to slide a heater under each of the food trays. **USE CAUTION: Do Not pull the pull tab.**

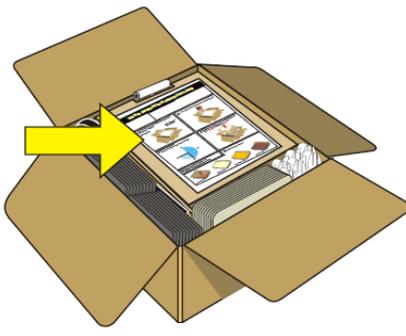


3 Close the Heater Module Cover without pulling or disturbing the pull-tab.



Egg Module Box

4 Refer to Operating Instruction Sheet attached to Heater Module Cover for use.



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FIGURE 9. Type I Heater Assembly with Eggs, for Heater with Low Hydrogen Generation Warning

Comment [C8]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

ACTIVATOR TAB

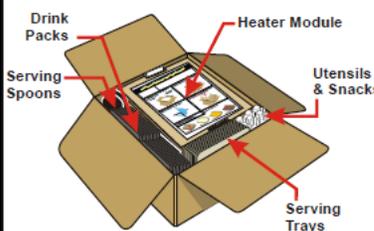
UGR-E TYPE I Operating Instructions

This **KITCHEN IN A CARTON™** consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

WARNING

1. Vapors released by activated heater contain hydrogen, a flammable gas. Do not place an open flame within 10 feet of the unit while heating.
2. Do not use inside a vehicle or shelter, as vapors released by activated heater can displace oxygen.
3. Hot water leakage & steam can burn and cause injury.
4. Discard heating tray after use. Do not drink any water remaining in the heating tray or use it in food items.
5. Do not consume food contaminated by heating products.
6. Dispose of all food waste and soiled utensils and do not retain any food as leftovers.

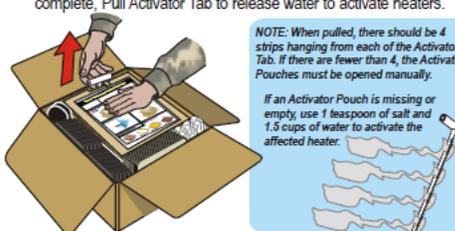
1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.



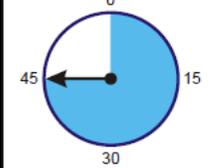
2 STOP: DO NOT PULL TAB! Complete Heater Assembly as directed on Heater Assembly Instructions. After assembly is complete, Pull Activator Tab to release water to activate heaters.

NOTE: When pulled, there should be 4 strips hanging from each of the Activator Tab. If there are fewer than 4, the Activator Pouches must be opened manually.

If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.



3 WAIT 45 minutes. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.)

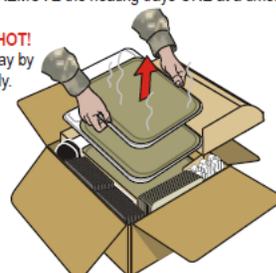


4 Open lid of Heater Module.

CAUTION: Contents will be **HOT!** Lift self-heating tray by side edges only.



5 Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time.



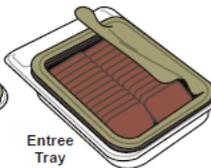
6 Remove food lids by cutting U-shape about one inch from outside edge, and serve. Once opened, do not keep tray items as leftovers.

FOOD SAFETY NOTICE: Use new safety knife provided to prevent food contamination. Food service gloves and antibacterial wipes are also included.


Dessert Tray


Starch Tray


Vegetable Tray


Entree Tray

KEEP COVER CLOSED WHEN HEATING

Rev 03-31-10

FIGURE 10. Type I Operating Instructions, for Heater with Hydrogen Generating Warning

ACTIVATOR TAB

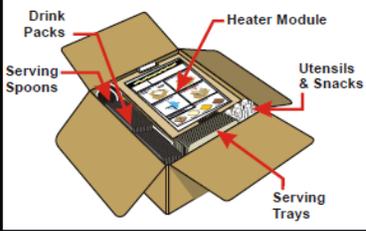
UGR-E TYPE I Operating Instructions

This **KITCHEN IN A CARTON™** consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

WARNING

1. Heater activation solution causes moderate skin and eye irritation. Avoid contact with eyes, skin, and clothes.
2. Hot water leakage & steam can burn and cause injury.
3. Discard heating tray after use. Do not drink any water remaining in the heating tray or use it in food items.
4. Do not consume food contaminated by heating products.
5. Dispose of all food waste and soiled utensils and do not retain any food as leftovers.

1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.

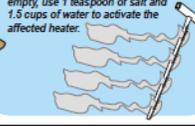


2 STOP: DO NOT PULL TAB! Complete Heater Assembly as directed on Heater Assembly Instructions. After assembly is complete, Pull Activator Tab to release water to activate heaters.

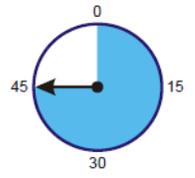


NOTE: When pulled, there should be 4 strips hanging from each of the Activator Tab. If there are fewer than 4, the Activator Pouches must be opened manually.

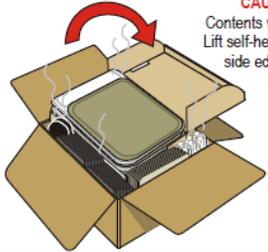
If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.



3 WAIT 45 minutes. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.)

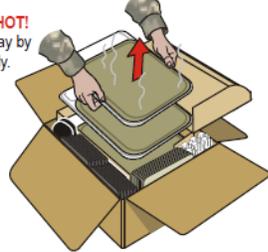


4 Open lid of Heater Module.



CAUTION: Contents will be HOT! Lift self-heating tray by side edges only.

5 Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time.



6 Remove food lids by cutting U-shape about one inch from outside edge, and serve. Once opened, do not keep tray items as leftovers.

FOOD SAFETY NOTICE: Use new safety knife provided to prevent food contamination. Food service gloves and antibacterial wipes are also included.


Dessert Tray


Starch Tray


Vegetable Tray


Entree Tray

KEEP COVER CLOSED WHEN HEATING

Rev 03-31-10

FIGURE 11. Type I Operating Instructions, for Heater with No Hydrogen Generation

Warning

Comment [p9]: Natick case ES11-053, change 01, 29 Apr 11. Delete figure & replace with new figure 11

ACTIVATOR TAB

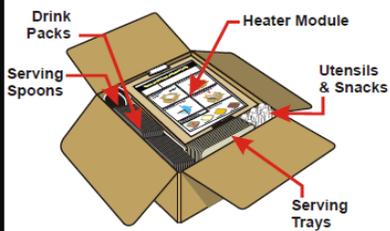
UGR-E TYPE I Operating Instructions

This **KITCHEN IN A CARTON™** consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

WARNING

1. Hot water leakage & steam can burn and cause injury.
2. Discard heating tray after use. Do not drink any water remaining in the heating tray or use it in food items.
3. Do not consume food contaminated by heating products.
4. Dispose of all food waste and soiled utensils and do not retain any food as leftovers.

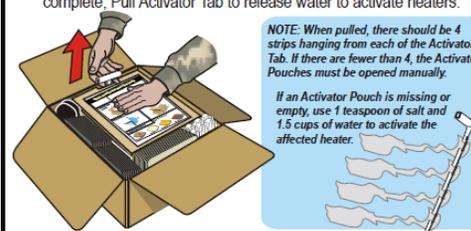
1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.



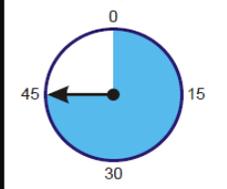
2 **STOP: DO NOT PULL TAB!** Complete Heater Assembly as directed on Heater Assembly Instructions. After assembly is complete, Pull Activator Tab to release water to activate heaters.

NOTE: When pulled, there should be 4 strips hanging from each of the Activator Tab. If there are fewer than 4, the Activator Pouches must be opened manually.

If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.



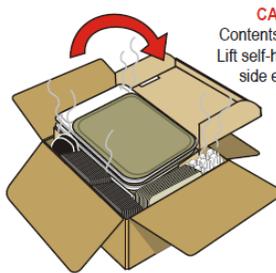
3 WAIT 45 minutes. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.)



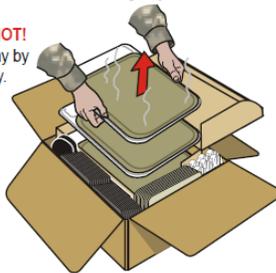
4 Open lid of Heater Module.

CAUTION:

Contents will be **HOT!**
Lift self-heating tray by side edges only.



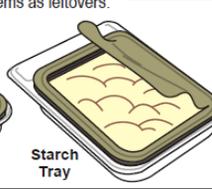
5 Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time.



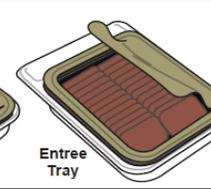
6 Remove food lids by cutting U-shape about one inch from outside edge, and serve. Once opened, do not keep tray items as leftovers.

FOOD SAFETY NOTICE: Use new safety knife provided to prevent food contamination. Food service gloves and antibacterial wipes are also included.


Dessert Tray


Starch Tray


Vegetable Tray


Entree Tray

KEEP COVER CLOSED WHEN HEATING

Rev 05-11-10

FIGURE 11. Type I Operating Instructions, for Heater with Low Hydrogen Generation

Warning

Comment [C10]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

ACTIVATOR TAB

UGR-E TYPE I w/ Eggs Operating Instructions

This KITCHEN IN A CARTON™ consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

WARNING

1. Vapors released by activated heater contain hydrogen, a flammable gas. Do not place an open flame within 10 feet of the unit while heating.
2. Do not use inside a vehicle or shelter, as vapors released by activated heater can displace oxygen.
3. Hot water leakage & steam can burn and cause injury.
4. Discard heating tray after use. Do not drink any water remaining in the heating tray or use it in food items.
5. Do not consume food contaminated by heating products.
6. Dispose of all food waste and soiled utensils and do not retain any food as leftovers.

1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.

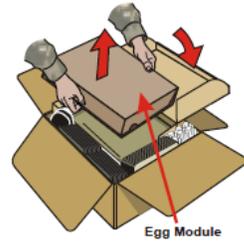
2 STOP: DO NOT PULL TAB! Complete Heater Assembly as directed on Heater Assembly Instructions. After assembly is complete, Pull Activator Tab to release water to activate heaters.

NOTE: When pulled, there should be 3 strips hanging from each of the Activator Tab. If there are fewer than 3, the Activator Pouches must be opened manually.

If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.

3 Open Heater Module Cover and remove Egg Module. Close Heater Module Cover. Follow the instructions inside the Egg Module to prepare the eggs.

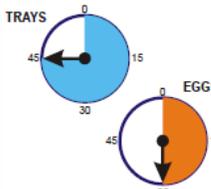
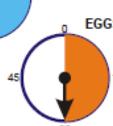


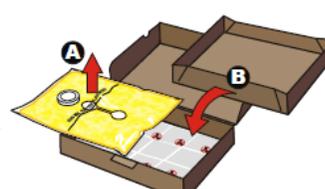


4 WAIT 45 minutes for bottom 3 trays. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.) WAIT 30 minutes for eggs.

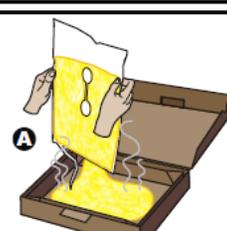
5 Open lid of Heater Module. REMOVE Egg Module. Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time. CAUTION: Contents will be HOT! Lift self-heating tray by side edges only.

6 A. REMOVE Egg Mix Pouch from Egg Module. CAUTION: Pouch is hot!
B. REMOVE Overwrap from Serving Tray and place Tray on top of Heater inside box.



7 A. CUT bottom of Egg Mix Pouch and empty into Serving Tray. CAUTION: contents are hot. Fluff eggs before serving.
B. Remove food lids by cutting U-shape about one inch from outside edge, and serve. Once opened, do not keep tray items as leftovers.




FOOD SAFETY NOTICE:

Use new safety knife provided to prevent food contamination. Food service gloves and antibacterial wipes are also included.

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FIGURE 12. Type I with Eggs Operating Instructions, for Heater with Hydrogen Generating Warning

ACTIVATOR TAB

UGR-E TYPE I w/ Eggs Operating Instructions

This **KITCHEN IN A CARTON™** consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

WARNING

1. Heater activation solution causes moderate skin and eye irritation. Avoid contact with eyes, skin, and clothes.
2. Hot water leakage & steam can burn and cause injury.
3. Discard heating tray after use. Do not drink any water remaining in the heating tray or use it in food items.
4. Do not consume food contaminated by heating products.
5. Dispose of all food waste and soiled utensils and do not retain any food as leftovers.

1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.

2 STOP: DO NOT PULL TAB! Complete Heater Assembly as directed on Heater Assembly Instructions. After assembly is complete, Pull Activator Tab to release water to activate heaters.

NOTE: When pulled, there should be 3 strips hanging from each of the Activator Tab. If there are fewer than 3, the Activator Pouches must be opened manually.
If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.

3 Open Heater Module Cover and remove Egg Module. Close Heater Module Cover. Follow the instructions inside the Egg Module to prepare the eggs.

4 WAIT 45 minutes for bottom 3 trays. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.) WAIT 30 minutes for eggs.

5 Open lid of Heater Module. REMOVE Egg Module. Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time. CAUTION: Contents will be HOT! Lift self-heating tray by side edges only.

6 A. REMOVE Egg Mix Pouch from Egg Module. CAUTION: Pouch is hot!
B. REMOVE Overwrap from Serving Tray and place Tray on top of Heater inside box.

7 A. CUT bottom of Egg Mix Pouch and empty into Serving Tray. CAUTION: contents are hot. Fluff eggs before serving.
B. Remove food lids by cutting U-shape about one inch from outside edge, and serve. Once opened, do not keep tray items as leftovers.

FOOD SAFETY NOTICE:
Use new safety knife provided to prevent food contamination. Food service gloves and antibacterial wipes are also included.

Rev 03-31-10

FIGURE 13. Type I with Eggs Operating Instructions, for Heater with No Hydrogen Generation Warning

Comment [p11]: Natick case ES11-053, change 01, 29 Apr 11. Delete figure & replace with new figure 13

ACTIVATOR TAB

UGR-E TYPE I w/ Eggs Operating Instructions

This **KITCHEN IN A CARTON™** consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

WARNING

1. Hot water leakage & steam can burn and cause injury.
2. Discard heating tray after use. Do not drink any water remaining in the heating tray or use it in food items.
3. Do not consume food contaminated by heating products.
4. Dispose of all food waste and soiled utensils and do not retain any food as leftovers.

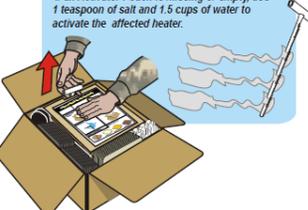
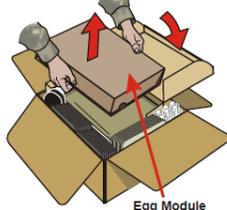
1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.

2 STOP: DO NOT PULL TAB! Complete Heater Assembly as directed on Heater Assembly Instructions. After assembly is complete, Pull Activator Tab to release water to activate heaters.

NOTE: When pulled, there should be 3 strips hanging from each of the Activator Tab. If there are fewer than 3, the Activator Pouches must be opened manually.

If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.

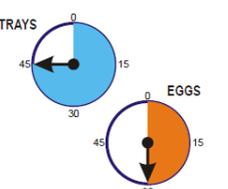
3 Open Heater Module Cover and remove Egg Module. Close Heater Module Cover. Follow the instructions inside the Egg Module to prepare the eggs.

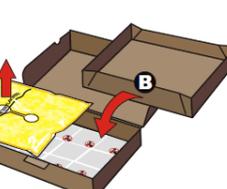




4 WAIT 45 minutes for bottom 3 trays. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.) WAIT 30 minutes for eggs.

5 Open lid of Heater Module. REMOVE Egg Module. Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time. CAUTION: Contents will be HOT! Lift self-heating tray by side edges only.

6 A. REMOVE Egg Mix Pouch from Egg Module. CAUTION: Pouch is hot!
B. REMOVE Overwrap from Serving Tray and place Tray on top of Heater inside box.





7 A. CUT bottom of Egg Mix Pouch and empty into Serving Tray. CAUTION: contents are hot. Fluff eggs before serving.

B. Remove food lids by cutting U-shape about one inch from outside edge, and serve. Once opened, do not keep tray items as leftovers.




FOOD SAFETY NOTICE:
Use new safety knife provided to prevent food contamination. Food service gloves and antibacterial wipes are also included.

Rev 05-11-10

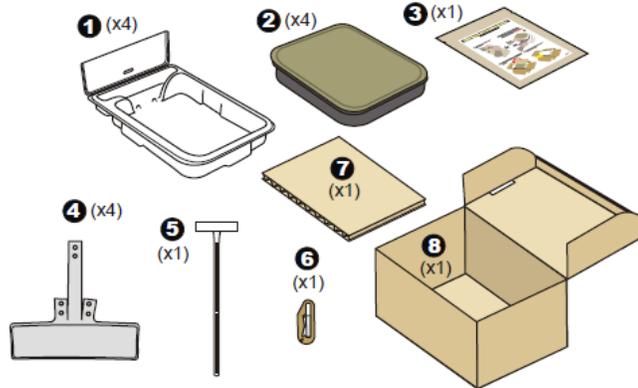
FIGURE 13. Type I with Eggs Operating Instructions, for Heater with Low Hydrogen Generation Warning

Comment [C12]: Natick case ES11-053, change 01, 29 Apr 11, to cite low hydrogen generating heater.

Assembly Instructions for Heater Module Type I

COMPONENTS:

- (1) Heating Tray (quantity 4)
- (2) Polymeric Food Tray (quantity 4)
- (3) Heaters w/ Instructions (quantity 1)
- (4) Activation Fluid Unit (quantity 4)
- (5) Pull Tab (quantity 1)
- (6) Sterile Knife (quantity 1)
- (7) Corrugated Insert (quantity 1)
- (8) Heater Module Box (quantity 1)



1 A. FOLD BACK center tab of Activation Fluid Unit to separate from two small tabs.
 B. ATTACH Activation Fluid Units to Heating Trays by pressing holes of short tabs into stubs on tray.
 C. FOLD short tabs to insert second hole on same stub.
 D. INSERT center tab through slit in Tray cover.
 E. CLOSE COVER.

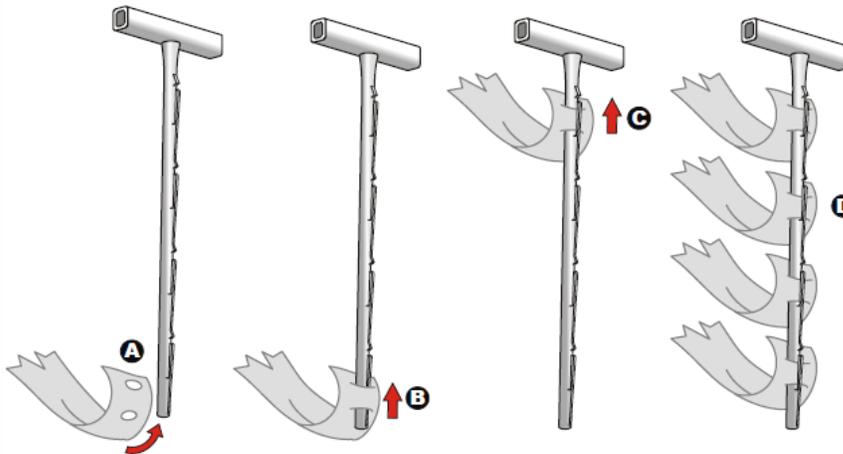
2 INSERT Polymeric Food Trays. Edge of Food Tray holds down Heating Tray cover.
 STACK Trays. The Entrée should be on the bottom and Dessert should be on the top.
 CHECK that Food Trays are holding down Heating Tray covers.
 CHECK all Activation Fluid Units are securely attached to Heating Trays.

PAGE 1 of 2

FIGURE 14. Assembly Instructions for Type I Heater Module

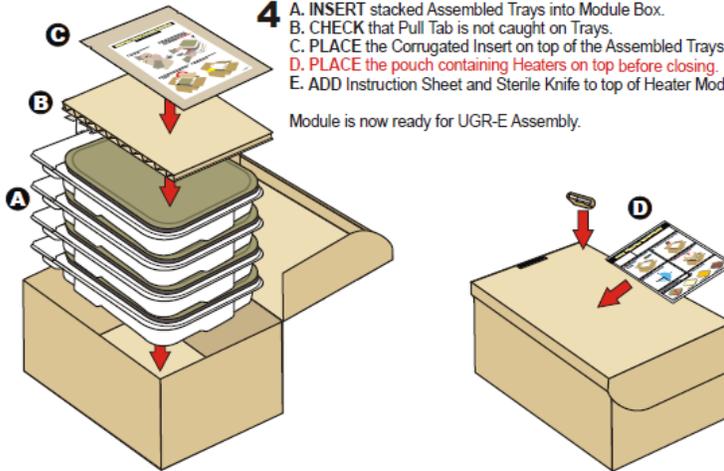
Assembly Instructions for Heater Module Type I (Cont'd)

- 3** ATTACH Pull Tab to the four Activation Fluid Unit center tabs:
- A. START with top tooth of Pull Tab and top Tray. (Pull Tab teeth point away from the Heating Trays)
 - B. SLIDE the center tab onto the Pull Tab.
 - C. MOVE the tab to the highest empty tooth.
 - D. REPEAT for the remaining three center tabs.



- 4** A. INSERT stacked Assembled Trays into Module Box.
 B. CHECK that Pull Tab is not caught on Trays.
 C. PLACE the Corrugated Insert on top of the Assembled Trays.
 D. PLACE the pouch containing Heaters on top before closing.
 E. ADD Instruction Sheet and Sterile Knife to top of Heater Module.

Module is now ready for UGR-E Assembly.



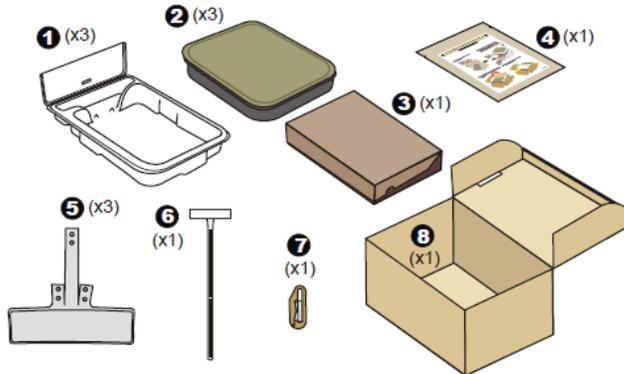
REV 04-02-10
 PAGE 2 of 2

FIGURE 14. Assembly Instructions for Type I Heater Module – Continued

Assembly Instructions for Heater Module Type I w/ Eggs

COMPONENTS:

- (1) Heating Tray (quantity 3)
- (2) Polymeric Food Tray (quantity 3)
- (3) Egg Module Box (quantity 1)
- (4) Heaters w/ Instructions (quantity 1)
- (5) Activation Fluid Unit (quantity 3)
- (6) Pull Tab (quantity 1)
- (7) Sterile Knife (quantity 1)
- (8) Heater Module Box (quantity 1)



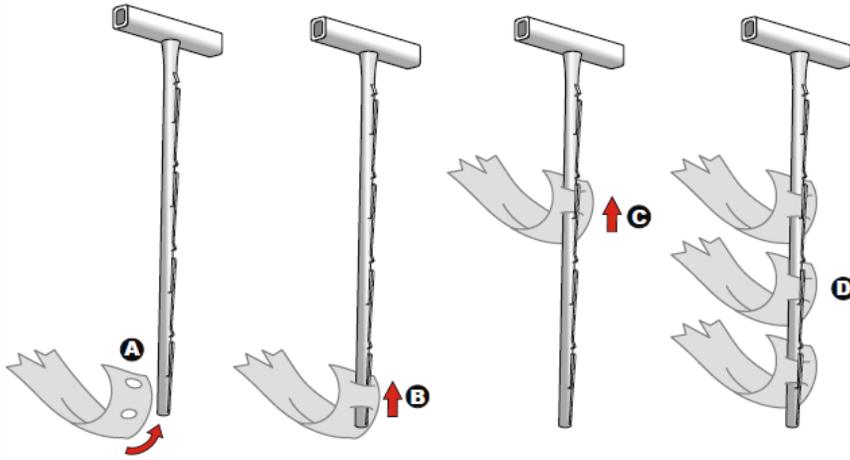
1 A. FOLD BACK center tab of Activation Fluid Unit to separate from two small tabs.
 B. ATTACH Activation Fluid Units to Heating Trays by pressing holes of short tabs into stubs on tray.
 C. FOLD short tabs to insert second hole on same stub.
 D. INSERT center tab through slit in Tray cover.
 E. CLOSE COVER.

2 INSERT Polymeric Food Trays. Edge of Food Tray holds down Heating Tray cover.
 STACK Trays. The Entrée should be on the bottom and Egg Module Box should be on the top.
 CHECK that Food Trays are holding down Heating Tray covers.
 CHECK all Activation Fluid Units are securely attached to Heating Trays.

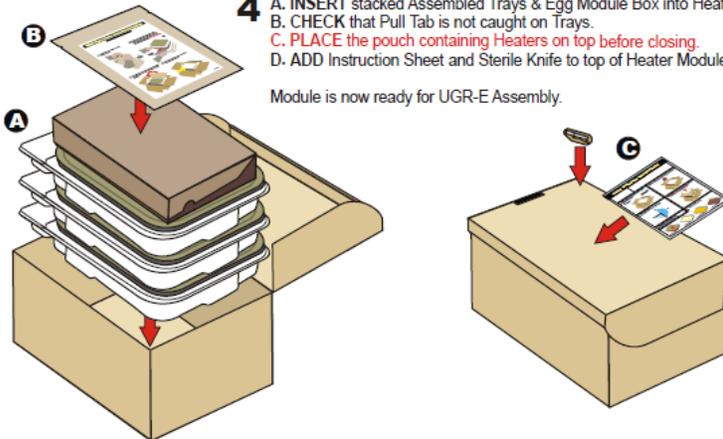
FIGURE 15. Assembly Instructions for Type I Heater Module with Eggs

Assembly Instructions for Heater Module Type I w/Eggs (Cont'd)

- 3** ATTACH Pull Tab to the three Activation Fluid Unit center tabs:
- A. START with top tooth of Pull Tab and top Tray. (Pull Tab teeth point away from the Heating Trays)
 - B. SLIDE the center tab onto the Pull Tab.
 - C. MOVE the tab to the second highest empty tooth.
 - D. REPEAT for two bottom tabs.



- 4** A. INSERT stacked Assembled Trays & Egg Module Box into Heater Module Box.
 B. CHECK that Pull Tab is not caught on Trays.
 C. PLACE the pouch containing Heaters on top before closing.
 D. ADD Instruction Sheet and Sterile Knife to top of Heater Module.
- Module is now ready for UGR-E Assembly.



REV 03-31-10
 PAGE 2 of 2

FIGURE 15. Assembly Instructions for Type I Heater Module with Eggs –Continued

MIL-DTL-32235/1A

Custodians:

Army – GL
Navy – SA
Air Force – 35

Preparing activity:

Army – GL
(Project 8970-2010-002)

Review Activities:

Army – MD, QM
Navy – MC
DLA – SS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <https://assist.daps.dla.mil>.

MIL-DTL-32235/1A

For DLA Troop Support - Subsistence Website Posting

RDNS-CFF

29 April 2011

TO: DLA Troop Support DSCP-FTSA

SUBJECT: ES11-053, Improved Citation of Low Hydrogen Generating Heater Modules, Document Changes to: MIL-DTL-32235/1A, Heater Module, Type I: Heater, Assembly Required; MIL-DTL-32235/2, Heater Module, Type II: Heater, Assembled; and MIL-DTL-32235/3, Heater Module, Boil-In-Bag (BIB) Module

1. Flameless heaters are used in the UGR-ETM to heat food in polymeric trays, institutional size pouches (ISP) and boil-in-bags (BIB). The heaters, when activated by addition of an activation fluid, initiate an exothermic reaction and generate heat. The current chemical composition releases significant amounts of hydrogen gas. The hydrogen gas will compete with oxygen in an enclosed environment and is combustible. New compositions that will provide adequate heating, produce substantially less hydrogen, and be safer have been perfected. Initially, the term “no hydrogen generating” heaters was considered, but “low hydrogen generating” heaters is a more appropriate definition. The re-formulated low hydrogen generating heater releases up to 30 liters of hydrogen in 60 minutes, which, although it is a lot less hydrogen than that released by the original heater (up to 330 liters of hydrogen in 60 minutes), is not at a zero level.

2. Since all heaters being used in the heater modules meet the performance requirements cited in MIL-DTL-32235A, the distinction between them is based on the reduced hydrogen generation of the newer designs. This will be addressed by developing slightly different operating instructions without the warnings concerning the risks of hydrogen. Contractual requirements for the shipment of heaters to assemblers should require the citation of the correct formulation.

3. Another topic of discussion of consideration was citing specific sub-assemblies of components for the Type I and Type II heaters. There is already a statement in Para I. of Specification Sheets 1 and 2 that cites “Sub-assemblies are allowed.” The decision is to not develop requirements for specific sub-assemblies, but to allow manufacturers and assemblers to determine the optimum method for producing and assembling these modules.

4. And it was determined that the rehydration water pouch in the Boil-In-Bag (BIB) Module should be slightly larger to accommodate the required volume of water; the pouch dimensions have been increased.

5. Natick submits the following changes to subject documents for all current, pending and future procurements until the documents are formally amended or revised:

MIL-DTL-32235/1A

29 Apr 11

SUBJECT: ES11-053, Improved Citation of Low Hydrogen Generating Heater Modules, Document Changes to: MIL-DTL-32235/1A, Heater Module, Type I: Heater, Assembly Required; MIL-DTL-32235/2, Heater Module, Type II: Heater, Assembled; and MIL-DTL-32235/3, Heater Module, Boil-In-Bag (BIB) Module

6. Change 01 to MIL-DTL-32235/1A, Heater Module, Type I: Heater, Assembly Required:

a. Para I, A Heater, first paragraph, after sentence 4, insert: “When low hydrogen generating heater is used, it shall generate less than 30 liters of hydrogen in 60 minutes.”

b. Table I.

i. After title, add “7”.

ii. Add “207 Low hydrogen generating heater generates more than 30 liters in 60 minutes.”

iii. At end of table, add “7/ The low hydrogen generating heater shall be verified by CoC.”

c. Para II, A, 7. Delete current references to figures 7, 9, 11, and 13 and insert:

FIGURE 7. Type I Heater Assembly, for Heater with Low Hydrogen Generation

Warning

FIGURE 9. Type I Heater Assembly with Eggs, for Heater with Low Hydrogen

Generation Warning

FIGURE 11. Type I Operating Instructions, for Heater with Low Hydrogen Generation

Warning

FIGURE 13. Type I with Eggs Operating Instructions, for Heater with Low Hydrogen

Generation Warning

d. Figures. Delete current figures 7, 9, 11 and 13 and replace with attached figures.

7. Change 01 to MIL-DTL-32235/2, Heater Module, Type II: Heater, Assembled:

a. Para I, A Heater, first paragraph, after sentence 4, insert: “When low hydrogen generating heater is used, it shall generate less than 30 liters of hydrogen in 60 minutes.”

b. Table I.

i. After title, add “7”.

ii. Add “207 Low hydrogen generating heater generates more than 30 liters in 60 minutes.”

iii. At end of table, add “7/ The low hydrogen generating heater shall be verified by CoC.”

29 Apr 11

SUBJECT: ES11-053, Improved Citation of Low Hydrogen Generating Heater Modules, Document Changes to: MIL-DTL-32235/1A, Heater Module, Type I: Heater, Assembly Required; MIL-DTL-32235/2, Heater Module, Type II: Heater, Assembled; and MIL-DTL-32235/3, Heater Module, Boil-In-Bag (BIB) Module

c. Para II, A, 8. Delete current references to figures 7 and 9 and insert:

FIGURE 7. Type I Operating Instructions, for Heater with Low Hydrogen Generation Warning

FIGURE 9. Type II with Eggs Operating Instructions, for Heater with Low Hydrogen Generation Warning

d. Figures. Delete current figures 7 and 9 and replace with attached figures.

8. Change 01 to MIL-DTL-32235/3, Heater Module, Boil-In-Bag (BIB) Module:

a. Para I, A Heater, first paragraph, after sentence 4, insert: “When low hydrogen generating heater is used, it shall generate less than 30 liters of hydrogen in 60 minutes.”

b. Para I, D. Delete “9-1/2 by 14 inches” and substitute “11 by 14 inches”.

c. Table I.

i. After title, add “3”.

ii. Add “207 Low hydrogen generating heater generates more than 30 liters in 60 minutes.”

iii. At end of table, add “3/ The low hydrogen generating heater shall be verified by CoC.”

d. Para II, A,5. Delete current reference to figure 2 and insert:

FIGURE 2. BIB Module Operating Instructions, for Heater with Low Hydrogen Generation Warning

e. Figures. Delete current figure 2 and replace with attached figure.

9. Attached are Change 01 to MIL-DTL-32235/1A, Change 01 to MIL-DTL-32235/2, and Change 01 to MIL-DTL-32235/3, dated 29 April 2011, with changes highlighted.