

INCH-POUND

MIL-DTL-32235/2
15 September 2010
W/Change 01 29 April 2011

DETAIL SPECIFICATION SHEET

HEATER MODULE, TYPE II: HEATER, ASSEMBLED

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 a Boil-In-Bag (BIB) module
- Style B - Four sub-units

REQUIREMENTS

I. Heater module.

The Type II 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 mechanisms/pull tabs. Sub-assemblies are allowed. When applicable, there shall also be a Boil-In-Bag (BIB) module. The components and sub-units shall be assembled and the activation mechanisms/pull tabs shall be connected to the three or four activation fluid units and to the three or four heaters. The sub-units and the BIB module (when applicable) shall be placed into the heater module box.

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

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

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.

The heater shall be placed in the bottom of the heating tray, covered and hermetically sealed in place with a layer of barrier material to the bottom of the tray with a peelable seal. The barrier material shall be scored (laser or mechanical) and shall be attached to a pull strip to enable activation.

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 designs 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.

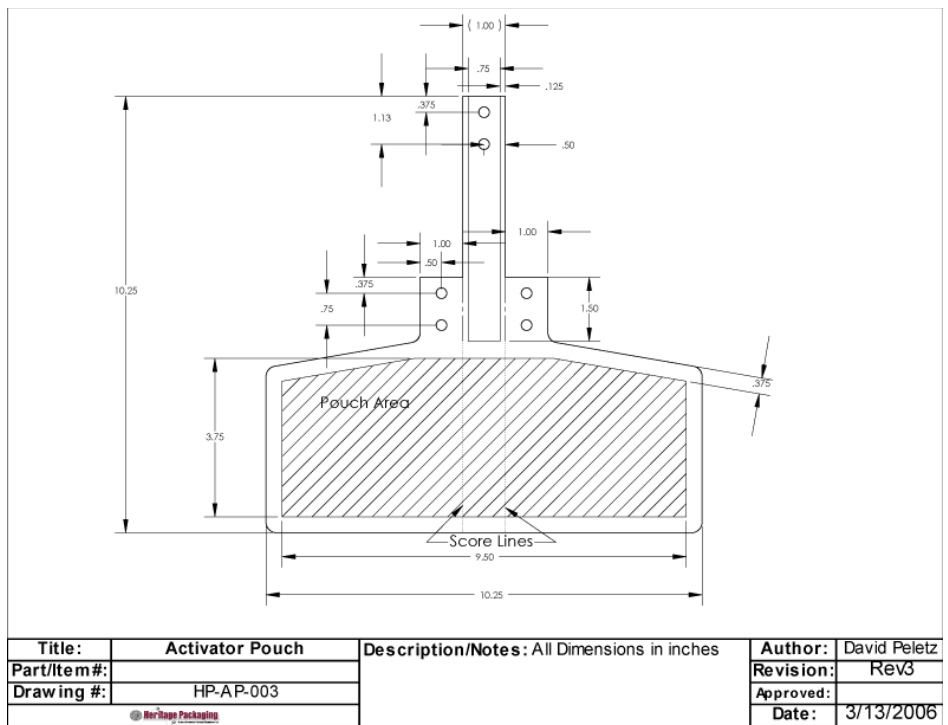


FIGURE 1. Activation fluid unit

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 activation 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.

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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.

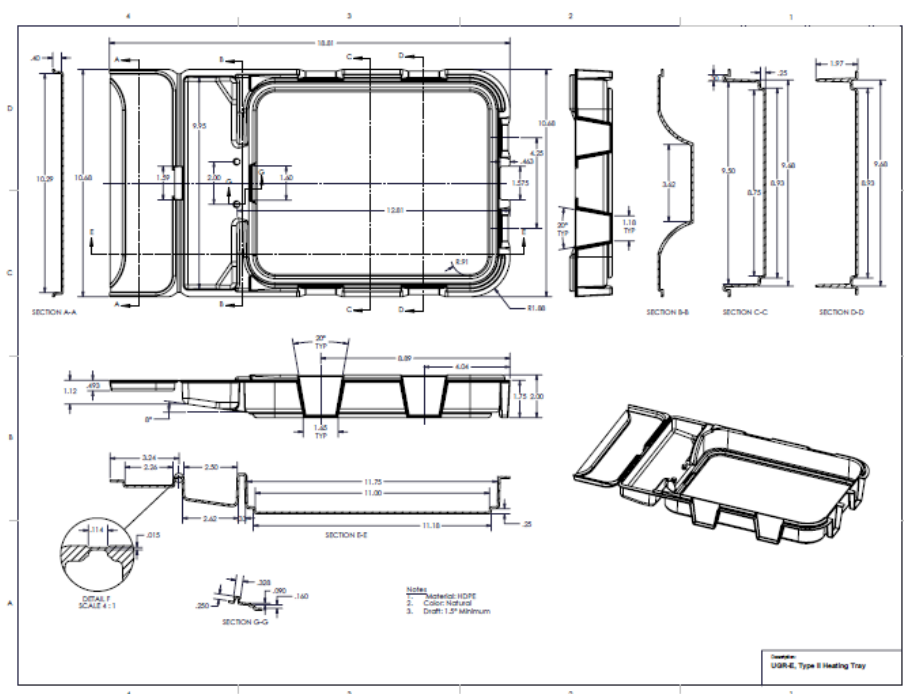


FIGURE 2. Heating tray

D. Pull tabs.

The pull tabs shall be constructed of a blend of low to medium density polyethylene or equivalent material and shall provide high strength characteristics under a wide range of environmental conditions. The material shall withstand temperatures ranging from -20°F to 160°F without fracture or failure. Dimensions of the pull tabs shall be as specified in Figures 3 or 4.

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The pull tabs shall be configured with loading stations to support the three or four tray two-step activation method intended for the heater module. Each station shall be configured to retain the assembled activator strip and withstand a minimum pull force of 75 pounds. For a tab configured like the R16-4WCSHCERDG tab (Figure 3), the center strip of the activation fluid unit shall be inserted through the back opening of the tooth and each of the two holes on the extending end of the activator tab are pressed onto this tooth until the edge of the strip is secured under both retaining teeth. For a tab configured like the RND-PT tab (Figure 4), the end of the center strip of the activating fluid unit shall be folded between the retaining holes and the tab inserted through the retaining station(s). The second pull tab shall be assembled to the heater pull strips in a similar configuration.

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

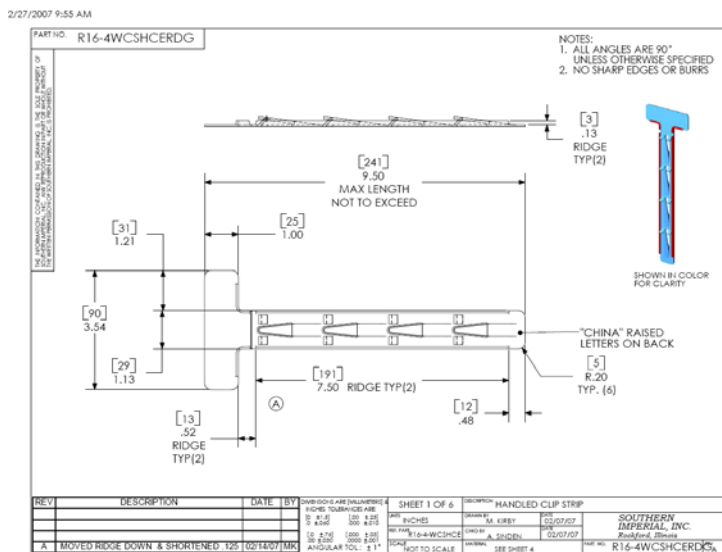


FIGURE 3. Pull tab, Rear loading design

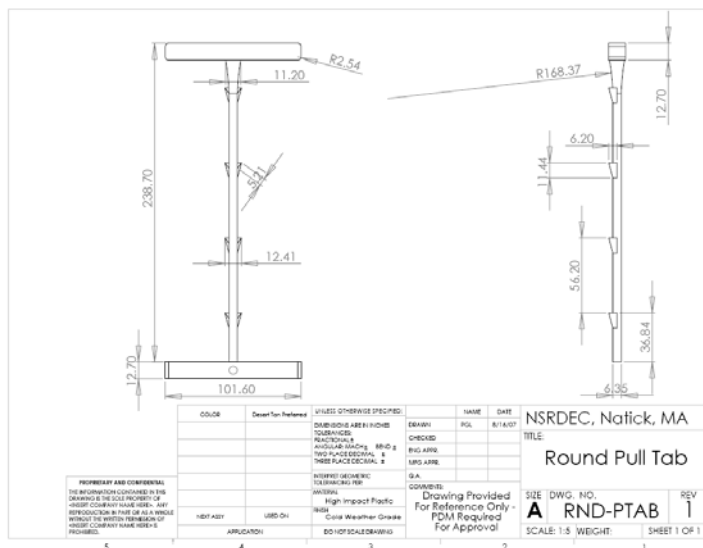


FIGURE 4. Pull tab, Center loading design

E. Assembly of heater module.

The components or sub-units shall be assembled. The Type II heater module shall consist of a box containing three sub-units and a BIB module or four sub-units, with activation mechanisms/pull tabs. The sub-unit shall consist of the heating tray with sealed-in heater, the activation fluid unit and the polymeric food tray or (ISP). Sub-assemblies of components may be used. The three or four sub-units shall be stacked and one activation mechanism/pull tab shall be connected to the three or four activation fluid unit center strips and the other activation mechanism/pull tab shall be connected to the three or four heater pull strips. The sub-units and the BIB module (when applicable) 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.

Corrugated fiberboard pads or cushioning shall be packed as necessary to fill excess headspace. The heater module box shall be closed and instruction 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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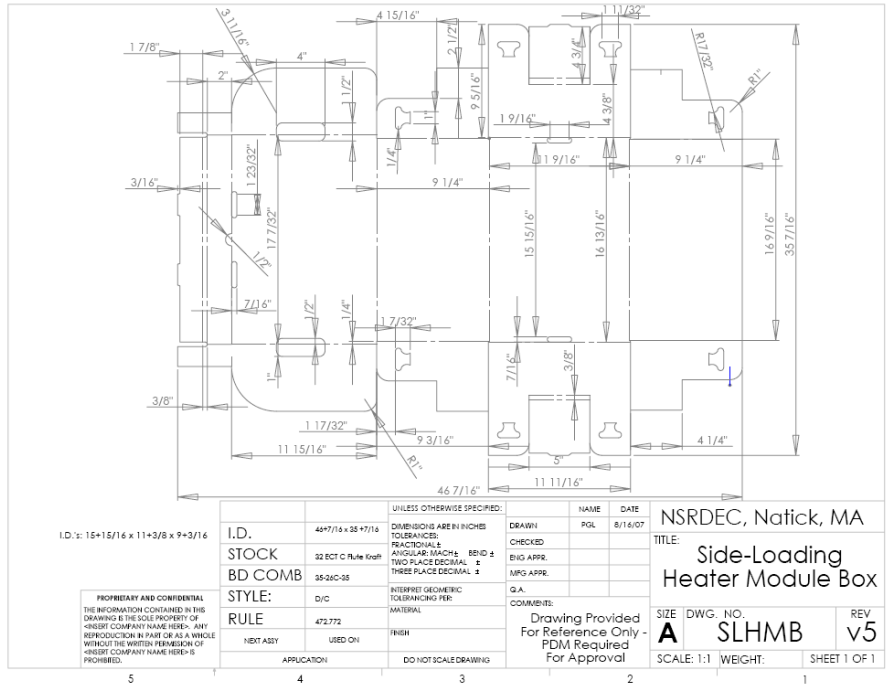


FIGURE 5. Heater module box

EXAMINATION AND TESTS:

A. Type II 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 II heater module shall be examined for the defects listed in Table I.

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

Category		Defect
Major	Minor	
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		Heater not hermetically sealed in tray with barrier material.
105		Center strip of activation fluid units not reinforced.
106		Score lines on activation fluid units missing or damaged.
	201	Score line on heater barrier material not provided.
	202	Heater barrier material not connected to pull strip.
	203	Heater pull strip not attached to activation mechanism/pull tab.
107		Activation mechanism/pull tab missing or damaged.
	204	Activation fluid unit pull strip not attached to activation mechanism/pull tab.
	205	Activation mechanism/pull tab not assembled properly.
108		Fold-over flap on heating tray to retain the activation fluid unit missing or damaged.
109		Heating tray design or dimensions not correct.
	206	Polymeric trays or ISPs or BIB, if applicable, of food not placed in module in correct order.
110		Excess headspace in module allowing movement of components.

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.

1/ Heater material construction shall be verified by Certificate of Conformance (CoC).

2/ Material in accordance with MIL-PRF-131 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 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. Heating Tray with Heater. The heater sealed into a heating tray is available from:

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

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

FIGURE 6. Type II Operating Instructions, for Heater with Hydrogen Generating Warning

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

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

FIGURE 8. Type II with Eggs Operating Instructions, for Heater with Hydrogen Generating Warning

FIGURE 9. Type II with Eggs Operating Instructions, for Heater with No Hydrogen Generation Warning

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

FIGURE 10. Assembly Instructions for Type II Heater Module

FIGURE 11. 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.

TAB 2

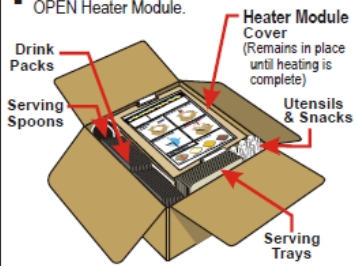
UGR-E TYPE II Operating Instructions

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.

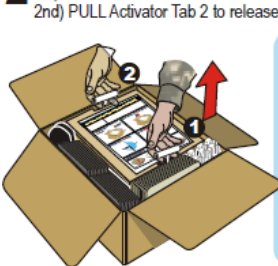
WARNING

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.

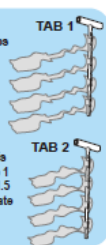


2 1st) PULL Activator Tab 1 to release heaters.
2nd) PULL Activator Tab 2 to release water to activate heaters.

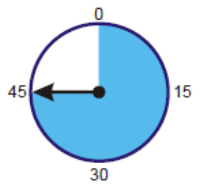


NOTE: When pulled, there should be 4 strips hanging from each of the Pull Tabs. If there are fewer than 4, the Activator Pouches or Heaters must be opened manually.

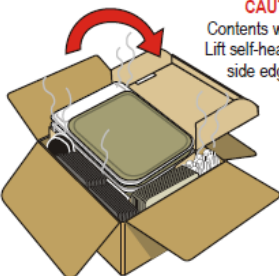
If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.



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

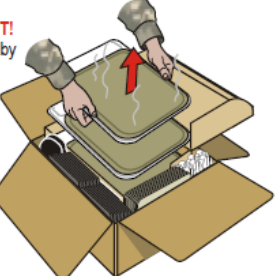


4 Open lid of Heater Module.



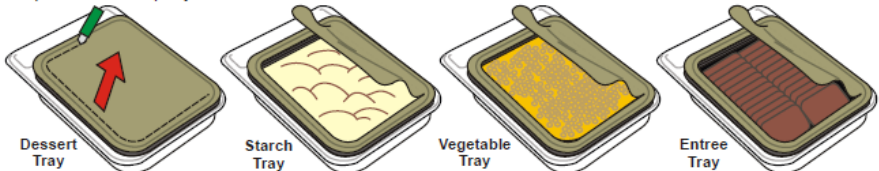
CAUTION:
Contents will be HOT!
Lift self-heating tray by side edges only.

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.



TAB 1

Rev 03-31-10

FIGURE 6. Type II Operating Instructions, for Heater with Hydrogen Generating Warning

TAB 2

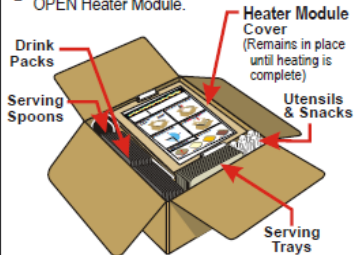
UGR-E TYPE II Operating Instructions

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.

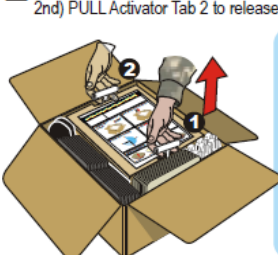
WARNING

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.

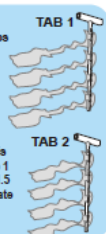


2 1st) PULL Activator Tab 1 to release heaters. 2nd) PULL Activator Tab 2 to release water to activate heaters.

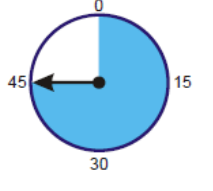


NOTE: When pulled, there should be 4 strips hanging from each of the Pull Tabs. If there are fewer than 4, the Activator Pouches or Heaters must be opened manually.

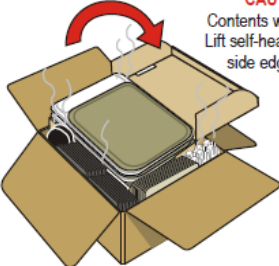
If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.



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



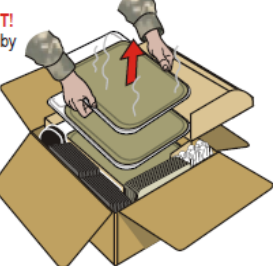
4 Open lid of Heater Module.



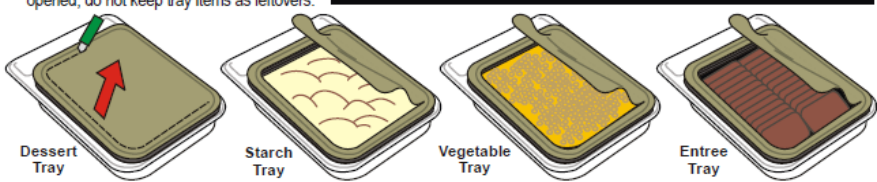
CAUTION:

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.

Rev 03-31-10

TAB 1

FIGURE 7. Type II Operating Instructions, 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

TAB 2

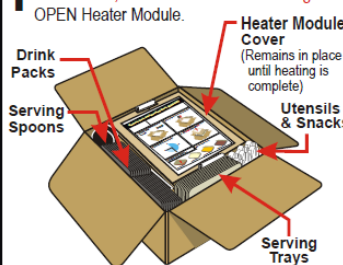
UGR-E TYPE II Operating Instructions

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.

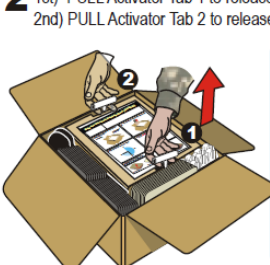
WARNING

<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.
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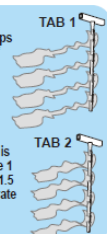
1 IF FROZEN, allow to thaw before heating. OPEN Heater Module.



2 1st) PULL Activator Tab 1 to release heaters.
2nd) PULL Activator Tab 2 to release water to activate heaters.

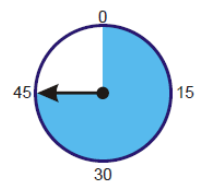


NOTE: When pulled, there should be 4 strips hanging from each of the Pull Tabs. If there are fewer than 4, the Activator Pouches or Heaters must be opened manually.

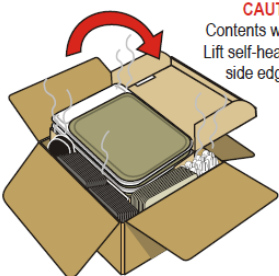


If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.

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

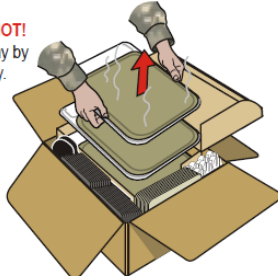


4 Open lid of Heater Module.




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

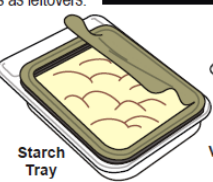
5 Keeping food in the self-heating trays. REMOVE the heating trays ONE at a time.




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.



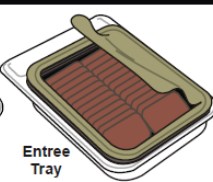
Dessert Tray



Starch Tray



Vegetable Tray



Entree Tray

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

TAB 1

Rev 05-11-10

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

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

↑ **TAB 2**

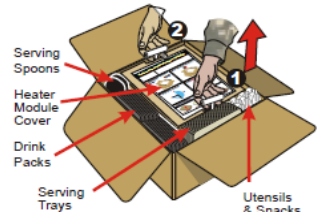
UGR-E TYPE II w/ Eggs Operating Instructions

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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.

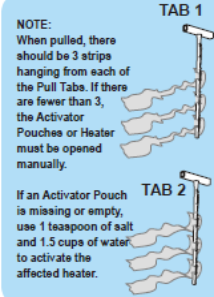
1 IF FROZEN, allow to thaw before heating.
 1st) PULL Activator Tab 1 all the way out of box to release heaters.
 2nd) PULL Activator Tab 2 all the way out of box to release water to activate heaters.



Serving Spoons
Heater Module Cover
Drink Packs
Serving Trays
Utensils & Snacks

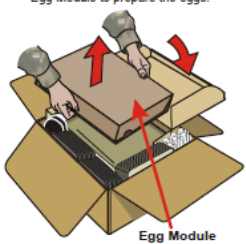
NOTE:
 When pulled, there should be 3 strips hanging from each of the Pull Tabs. If there are fewer than 3, the Activator Pouches or Heater must be opened manually.

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



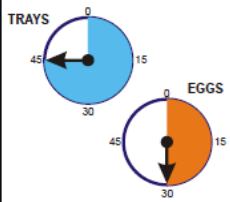
TAB 1
TAB 2

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




Egg Module

3 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.

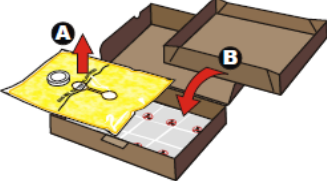


TRAYS
EGGS

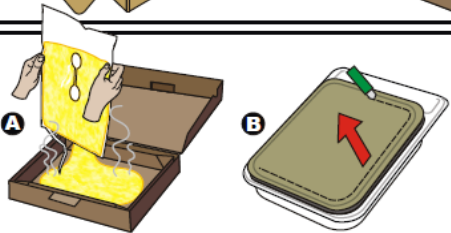
4 Open lid of Heater Module. Remove Egg Module. Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time.
CAUTION: Contents will be HOT!
 Lift self-heating tray by side edges only.



5 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.



6 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.



A B

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

↓ **TAB 1**

Rev 03-31-10

FIGURE 8. Type II with Eggs Operating Instructions, for Heater with Hydrogen Generating Warning

TAB 2

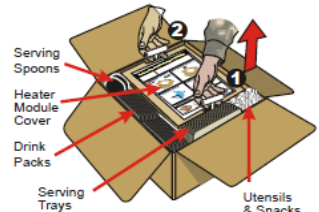
UGR-E TYPE II w/ Eggs Operating Instructions

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.
 1st) PULL Activator Tab 1 all the way out of box to release heaters.
 2nd) PULL Activator Tab 2 all the way out of box to release water to activate heaters.

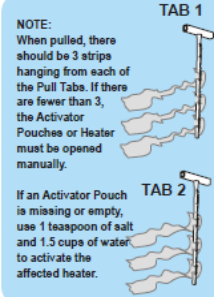


Serving Spoons
Heater Module Cover
Drink Packs
Serving Trays
Utensils & Snacks

NOTE:

When pulled, there should be 3 strips hanging from each of the Pull Tabs. If there are fewer than 3, the Activator Pouches or Heater must be opened manually.

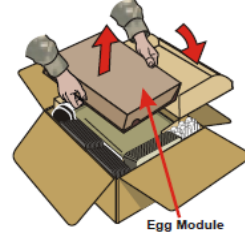
If an Activator Pouch is missing or empty, use 1 teaspoon of salt and 1.5 cups of water to activate the affected heater.



TAB 1

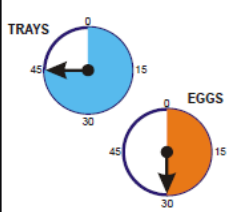
TAB 2

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



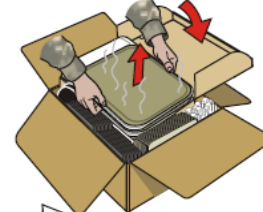
Egg Module

3 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.

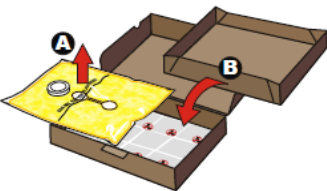


TRAYS
EGGS

4 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.

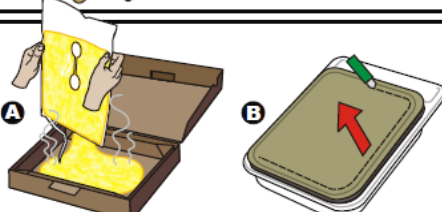


5 A. REMOVE Egg Mix Pouch from Egg Module. **CAUTION: Pouch is hot!**
 B. REMOVE Overwrap from Serving Tray and place Tray on top of Heater inside box.



A B

6 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.



A B

FOOD SAFETY NOTICE:

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

TAB 1

Rev 03-31-10

FIGURE 9. Type II with Eggs Operating Instructions, 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

TAB 2

UGR-E TYPE II w/ Eggs Operating Instructions

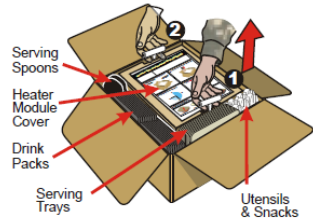
This **KITCHEN IN A CARTON™** consists of a self-heating meal unit, additional menu components, and serving accessories to provide one complete meal for 18 Soldiers. The UGR-E has built-in, safe, fluid activated chemical heaters that provide a hot meal in 45 minutes.

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.

- 1st) PULL Activator Tab 1 all the way out of box to release heaters.
- 2nd) PULL Activator Tab 2 all the way out of box to release water to activate heaters.



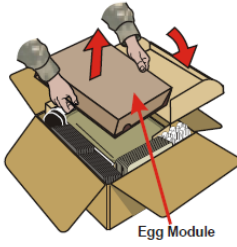
NOTE: When pulled, there should be 3 strips hanging from each of the Pull Tabs. If there are fewer than 3, the Activator Pouches or Heater must be opened manually.

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

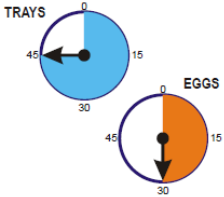
TAB 1

TAB 2

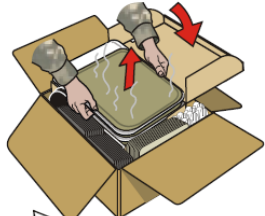
2 Open Heater Module Cover and remove Egg Module. Close Heater Module Cover. Follow the instructions inside the Egg Module to prepare the eggs.



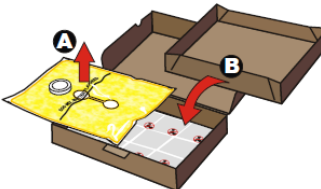
3 WAIT 45 minutes for bottom 3 trays. (Serving trays, drink packs, serving spoons, utensils and snacks may be removed while waiting.) WAIT 30 minutes for eggs.



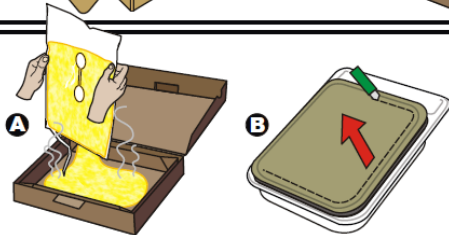
4 Open lid of Heater Module. Remove Egg Module. Keeping food in the self-heating trays, REMOVE the heating trays ONE at a time. CAUTION: Contents will be HOT! Lift self-heating tray by side edges only.



5 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.



- 6** 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.

TAB 1

Rev 05-11-10

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

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

Assembly Instructions for Heater Module Type II

COMPONENTS:

- (1) Heating Tray (quantity 4)
- (2) Polymeric Food Tray (quantity 4)
- (3) Activation Fluid Unit (quantity 4)
- (4) Pull Tab (quantity 2)
- (5) Sterile Knife (quantity 1)
- (6) Corrugated Insert (quantity as needed)
- (7) Heater Module Box (quantity 1)

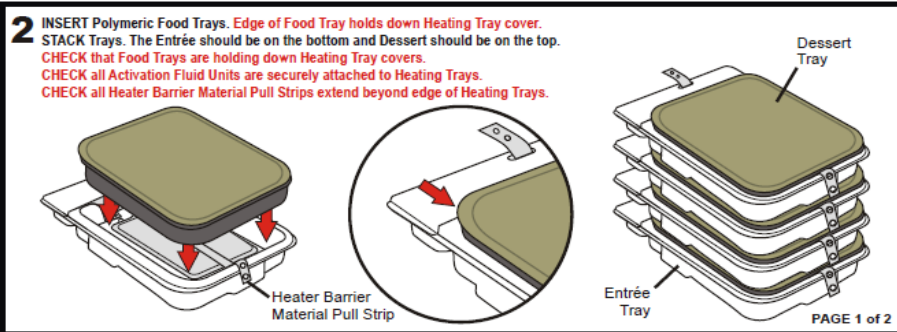
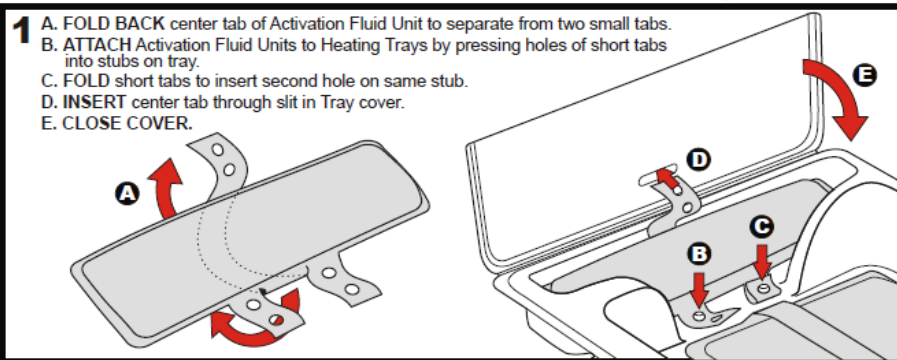
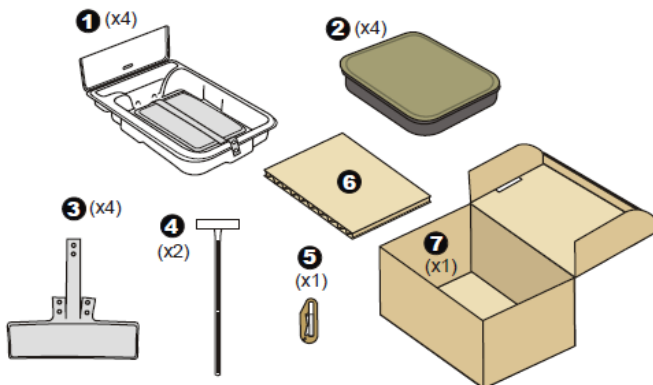
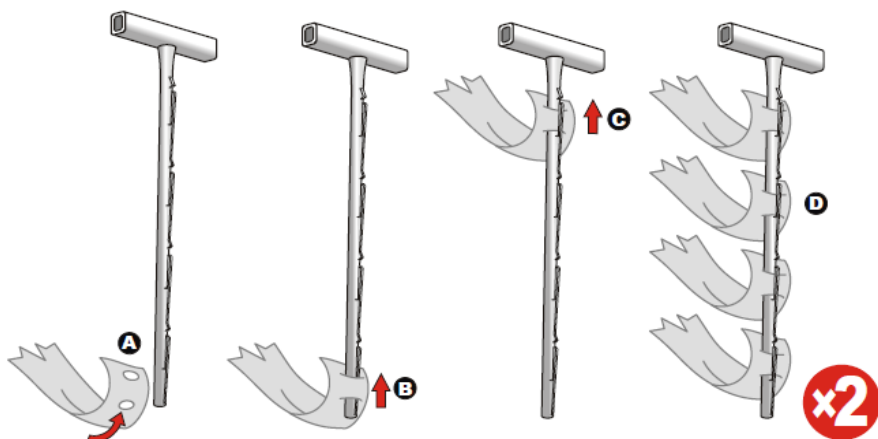


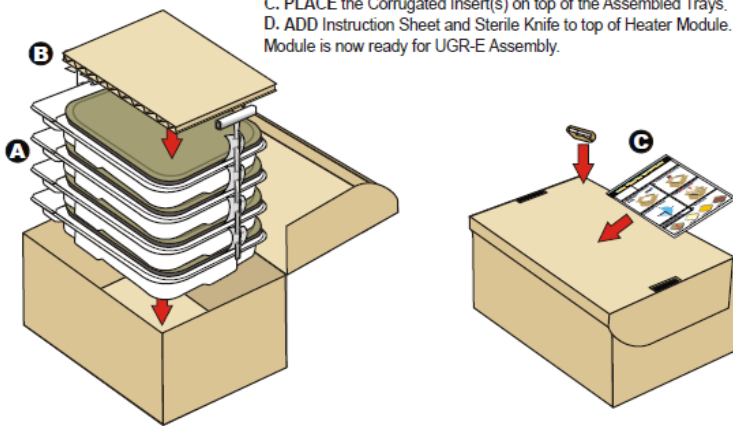
FIGURE 10. Assembly Instructions for Type II Heater Module

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

- 3 ATTACH Pull Tabs (Pull Tab teeth point away from Heating Trays):**
- A. START with top tooth of Pull Tab & Activation Fluid Unit Tab & top Tray.
 - B. SLIDE the center tab onto the Pull Tab.
 - C. MOVE the tab to the highest empty tooth.
 - D. REPEAT for bottom three center tabs.
 - E. REPEAT Steps A thru D for Second Pull Tab with Heater Barrier Material Pull Strips.



- 4**
- A. INSERT stacked Assembled Trays into Module Box.
 - B. CHECK that Pull Tab is not caught on Trays.
 - C. PLACE the Corrugated Insert(s) on top of the Assembled Trays.
 - D. ADD Instruction Sheet and Sterile Knife to top of Heater Module.
- Module is now ready for UGR-E Assembly.



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PAGE 2 of 2

FIGURE 10. Assembly Instructions for Type II Heater Module – Continued

Assembly Instructions for Heater Module Type II w/ Eggs

COMPONENTS:

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

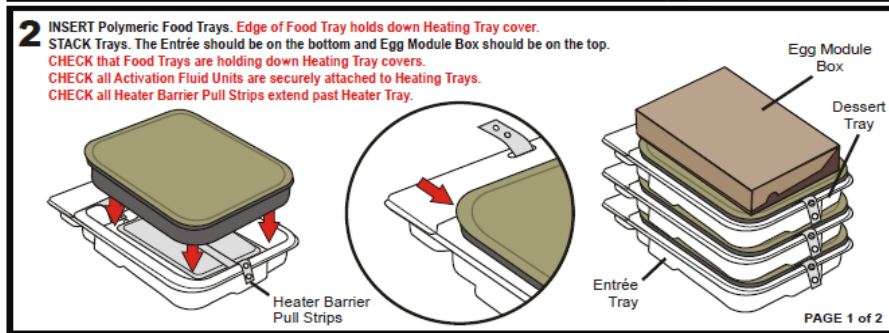
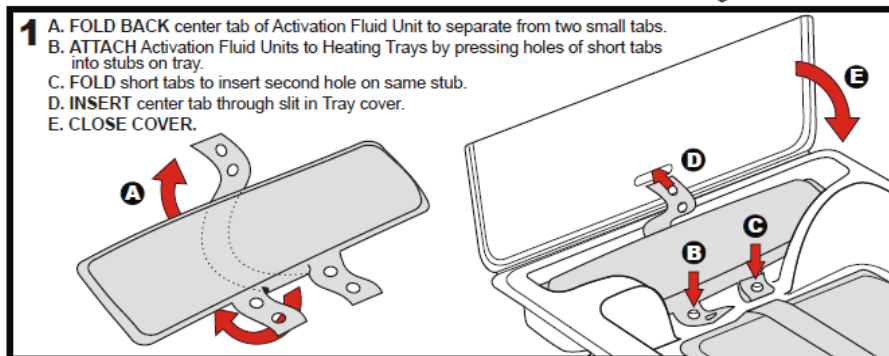
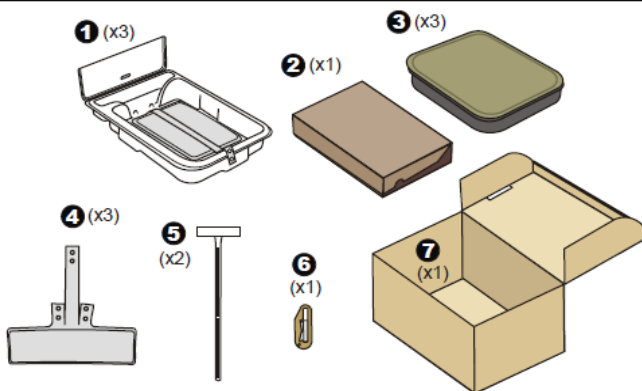
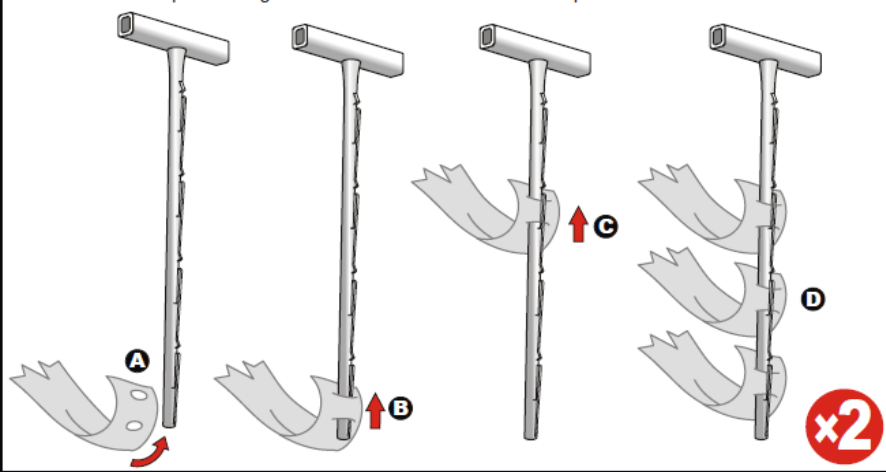


FIGURE 11. Assembly Instructions for Type II Heater Module with Eggs

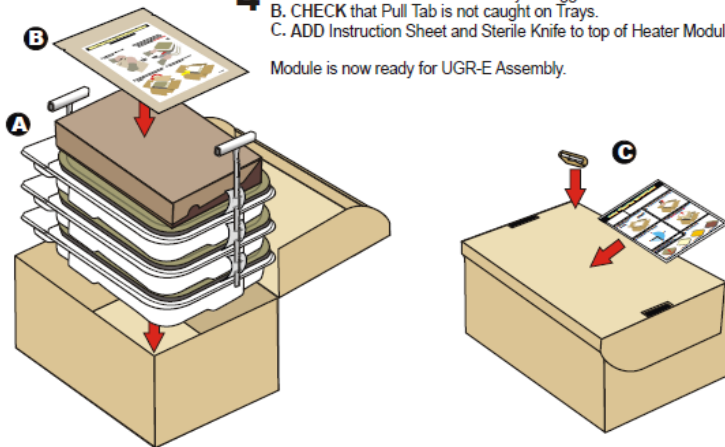
Assembly Instructions for Heater Module Type II w/ Eggs (Cont'd)

- 3** ATTACH Pull Tabs (Pull Tab teeth point away from the Heating Trays):
- A. START with first Pull Tab and Activation Fluid Unit and top Tray.
 - 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.
 - E. REPEAT Steps 3B through 3D for Heater Barrier Material Pull Strips and second Pull Tab.



- 4** A. INSERT stacked Assembled Trays & Egg Module Box into Heater Module Box.
 B. CHECK that Pull Tab is not caught on Trays.
 C. ADD Instruction Sheet and Sterile Knife to top of Heater Module.

Module is now ready for UGR-E Assembly.



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 PAGE 2 of 2

FIGURE 11. Assembly Instructions for Type II Heater Module with Eggs – Continued

MIL-DTL-32235/2

Custodians:

Army – GL
Navy – SA
Air Force – 35

Preparing activity:

Army – GL
(Project 8970-2010-003)

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-32235/2

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:

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.