TM 10-8340-203-13

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

# TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL AND DIRECT SUPPORT

MAINTENANCE MANUAL

TENTAGE FOR HAWK MISSILE SYSTEM

TENT, RANGE ONLY RADAR, CW ACQUISITION

RADAR AND CW ILLUMINATOR RADAR

FSN 8340-823-6965

TENT, PULSE ACQUISITION RADAR, FRONT

FSN 8340-753-6259

TENT, PULSE ACQUISITION RADAR, AFT

FSN 8340-753-6260

TENT, MAINTENANCE, MISSILE TEST SHOP

FSN 8340-753-6255

TENT, HIGH POWER ILLUMINATOR, FRONT

FSN 8340-985-7432

TENT, HIGH POWER ILLUMINATOR, AFT

FSN 8340-985-7431

COVER, HAWK MISSILE

FSN 8340-064-5050

HEADQUARTERS, DEPARTMENT OF THE ARMY

This copy is a reprint which includes current pages from Changes 1 and 2.

NOVEMBER 1970

# WARNING

To preclude damage to the tents and other major system equipment, dismantle the tents if winds are expected as high as 52 mph or higher.

CHANGE NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 18 May 1987

Operator, Organizational and Direct Support Maintenance Manual
Tentage for Hawk Missile System

TENT, RANGE ONLY RADAR, CW ACQUISITION
RADAR AND CW ILLUMINATOR RADAR, FSN 8340-823-6965

TENT, PULSE ACQUISITION RADAR, FRONT, FSN 8340-753-6259

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COVER, HAWK MISSILE, FSN 8340-064-5050

TM 10-8340-203-13, 27 November 1970 is changed as follows:

Page 1-1, paragraph 1-4 is superseded as follows:

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, U.S. Army Troop Support Command, ATTN : AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished to you.

Page 3-2. Table 3-1 is superseded as follows:

Page 4-2. Table 4-1 is superseded as follows:

**By order of the Secretary of the Army:**

**JOHN A. WICKHAM, JR.**
***General, United States Army***
***Chief of Staff***

**Official:**

**R. L. DILWORTH**
***Brigadier General, United States Army***
***The Adjutant General***

DISTRIBUTION:
To be distributed in accordance with DA Form 12-25A, Operator, Unit, and Direct Support and General Support Maintenance Requirements for Tentage for HAWK Missile Equipment, Frame Type.

item name and any additional description of the item required.

*d. Unit of Measure (U/M).* A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based e.g., ft, ea, pr, etc.

*e. Quantity Authorized (Items Troop Installed or Authorized Only).* This column indicates the-quantity of the item authorized to be used with the equipment.

## Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

| (1) SMR Code | (2) Federal Stock Number | (3) Description<br>Ref No. & Mfr Code<br>Usable on code | (4) Unit of Meas | (5) Qty Auth |
|---|---|---|---|---|
| | 7520-559-9618 | CASE, MANUAL | EA | 1 |

Page 1-1. Place page 1-1 after page iv.

**By Order of the Secretary of the Army:**

CREIGHTON *W. ABRAMS*
*General, United States Army*
*Chief of Staff*

**Official:**

**VERNE L. BOWERS**
Major General, *United States Army,*
*The Adjutant General.*

Distribution
To be distributed in accordance with DA Form 12-32, (qty rqr block No.537) 0rganizational maintenance requirements for Hawk Missle System.

Table 4-1. Organizational Preventive Maintenance Checks and Services

NOTE : Within designated interval, these checks are to be performed in the order listed.

Monthly

| Item No. | Interval M | Item to be inspected | Procedure: Check for and have repaired, replaced, cleaned, or adjusted as necessary<br>Perform all operator PMCS first |
|---|---|---|---|
| 1 | ● | Missile cover (Hawk nose section) | Inspect the polyester cloth for rips, holes, and deterioration. Check pull handles for tears and insecure mounting. Inspect the slide fastener flap and the exhaust opening flap for insecure mounting and damaged hook-and-pile closures. |
| 2 | ● | Missile cover ( Hawk wing section) | Inspect the polyester cloth, spacer cloth, and slide fastener covers for rips, holes, and deterioration. Check pull handles for insecure mounting and tears. Check rubber straps for breaks, cuts, and deterioration. |

Change
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 24 AprIL 1973

# Operator, Organizational and Direct Support Maintenance Manual Tentage for Hawk Missile System

**TENT, RANGE ONLY RADAR, CW ACQUISITION RADAR AND CW ILLUMINATOR RADAR**
**FSN 8340-823-6965**
**TENT, PULSE ACQUISTION RADAR, FRONT**
**FSN 8340-753-6259**
**TENT, PULSE ACQUISITION RADAR AFT**
**FSN 8340-753-0280**
**TENT, MAINTENANCE MISSILE TEST SHOP**
**FSN 8340-782-8288**
**TENT, HlGH POWER ILLUMINATOR FRONT**
**FSN 8340-988-7422**
**TENT, HIGH POWER ILLUMINATOR AFT**
**FSN 8340-985-7431**
**COVER, HAWK MISSILE**
**FSN 8340484-5050**

**TM 10-8240-203-13, 27 November 1970 is changed as follows:**

**Page 1-1. Place page I-1 after page C-2.**

**Page C1. Appendix C is superseded as follows:**

## APPENDIX C
## BASIC ISSUE ITEM LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED

## Section I. INTRODUCTION

### C-1. Scope

This appendix lists basic issue items items troop installed or authorized which accompany the tentage and are required by the crew/operator for operation; installation or operator's maintenance.

### C-2. General

this basic issue items, items troop installed or authorized list is divided into the following sections:

a. Basic Issue Items List — *Section II.* Not applicable

b. *Items Troop Installed or Authorized List — Section III.* A list in alphabetical sequence of items which at the discretion of the unit commander may accompany the end item, but are NOT subject to be turned in with the end item.

### C-3. Explanation of Columns

The following provide an explanation of columns in the tabular list of Basic Issue Items List, Section II, and Items Troop Installed or Authorized, Section III.

a *Source, Maintenance, and Recoverability Code(s) (SMR):* Not applicable.

*b. Federal Stock Number. This* column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. *Description This* column indicates the Federal

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE : Within the designated interval, these checks are to be performed in the order listed.

B-Before A-After

| Item No. | Interval B | Interval A | Item to be inspected | Procedures: Check for and have repaired or adjusted as necessary | Equipment Is Not Ready/ Available If: |
|---|---|---|---|---|---|
| 1 | ● | ● | Tent body | Inspect canvas for tears, rips, holes, cuts. broken stitches and deterioration. Check that slide fasteners are sewn properly to canvas and operate freely. | Canvas does not fit, is not in good usable condition, or hardware is not functional. |
| 2 | ● | ● | Guy, ground tab, and adjusting lines | Check that lines are in serviceable condition and properly utilized. Loosen guy lines during rain. | Lines are missing or broken. |
| 3 | ● | ● | Windows | Inspect for torn blackout curtains and broken or missing windows and rope stiffeners. | Items are missing or torn. |
| 4 | ● | ● | Hardware | Check that nuts, screws, washers, snap and turnlock fasteners, grommets, tent slips, and tent pins are present and free of burrs and bends. | Items are missing, bent, or broken. |
| 5 | ● | ● | Tapes | Check that tie tapes, tabs, and drawstrings are available and in serviceable condition. | |
| 6 | ● | ● | Support components | Inspect frames, elbows, and spin-dles for bent, cracked, broken, or insecure mounting. | Components are broken or missing. |
| 7 | ● | ● | Covers and carrying cases | Inspect for rips, tears, cuts, holes, and broken or missing stitches. Check for missing or defective hardware. | |

TECHNICAL MANUAL

No. 10-8340-203-13

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 27 *November 1970*

OPERATOR, ORGANIZATIONAL AND
DIRECT SUPPORT MAINTENANCE MANUAL

# TENTAGE FOR HAWK MISSILE SYSTEM

**Tent, Range Only Radar, CW Acquisition Radar and CW Illuminator Radar**
**FSN** 8340-823-6965

**Tent, Pulse Acquisition Radar, Front**
**FSN** 8340-753-6259

**Tent, Pulse Acquisition Radar, Aft**
**FSN** 8340-753-6260

**Tent, Maintenance, Missile Test Shop**
**FSN** 8340-753-6255

**Tent, High Power I Illuminator, Front**
**FSN** 8340-985-7432

**Tent, High Power I Illuminator, Aft**
**FSN** 8340-985-7431

**Cover, Hawk Missile**
**FSN** 8340-064-5050

*** This manual supersedes TM 10-8340-203-10, 15 January 1963 and TM 10-8340-203-23, 31 July 1964, including all changes.**

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# CHAPTER 1

# INTRODUCTION

## Section I. GENERAL

### 1-1. Scope

This manual contains instructions for the use of operator, organizational, and direct support personnel responsible for the emplacement and maintenance of the Hawk missile system tentage and missile cover as allocated by the maintenance allocation chart. It provides information on erection and striking, preventive maintenance checks and services of the tents, accessories, and components.

### 1-2. Forms and Records

DA forms and procedures used for equipment maintenance will be only those prescribed by TM 38-750.

### 1-3. Equipment Serviceability Criteria (E SC)

No ESC's are applicable to these tents.

### 1-4. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded to Commanding General, U. S. Army Mobility Equipment Command, ATTN : AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

### 1-5. Destruction of Army Materiel to Prevent Enemy Use

For destruction of Army materiel to prevent its capture by the enemy, refer to TM 750-244-3.

### 1-6. Administrative Storage

For administrative storage of the tents, refer to TM 740-90-1.

## Section II. DESCRIPTION AND DATA

### 1-7. Description

**a.** ***Tents.*** The tents covered in this manual are frame-type, light-weight, flexible shelters for use by maintenance personnel while performing maintenance on the missile equipment. The basic tent fabric is Army shade No. 107, wind-resistant, olive green. 35-inch wide cotton sateen cloth. The tent frame, except for the high power illuminator tents, is made of aluminum alloy pipe supports connected by elbows and tees. The frames for the high power illuminator tents, fore and aft, are made of fiber glass tubing, elbows. and tees.

***b. Missile Cover.*** The Hawk missile cover is a form-fitting, polyester-coated cloth and is equipped with slide fasteners and straps for securing it to the missile. The missile cover is placed on the missile when it is in transit and while it is on the launcher.

### 1-8. Tabulated Data

**a.** ***Tentage.***

***(1) Fabric.***

***(a)*** Sateen cotton.

***(b)*** Polyester fiber.

(2) ***Frame assembly.***

***(a)*** Aluminum alloy.

***(b)*** Pipe

(c) Fiber glass tubing.

(3) ***Tent pins.***

***(a)*** Steel

(b) 12 inches long.

***b. Missile Cover.***

***(1) Fabric.***

***(a)*** Polyester coated.

***(b)*** Trilock olefin.

(2) ***Measurements.*** Same as portion of missile covered.

# CHAPTER 2

# OPERATING INSTRUCTIONS

## Section I. SERVICE UPON RECEIPT OF MATERIEL

### 2-1. Inspecting and Servicing the New Equipment

*a. Unpacking.*

*(1)* ***Frame supports.***

*(a)* Remove the frame assembly bundle and untie the cords securing the supports.

*(b)* Remove the drawstring hardware bag containing the frame assembly hardware, such as bolts, washers, nuts, and retaining rings.

(c) Remove the bag containing the tent pins.

*(d)* Remove cushioning material which protects the support spindles.

(2) ***Tent.*** Remove the folded tent measuring about *4*- by 8-feet, untie the ropes securing the tent, and unfold.

*b. Inspection.*

*(1)* ***Frame supports.***

*(a)* Inspect the frame supports and bagged hardware for missing components.

*(b)* Inspect for defective material or workmanship such as bends or sharp nicks.

*(2) Tent.*

*(a)* Inspect the fabric for holes, cuts, or tears.

(b) Check for loose grommets and snap fasteners; make sure slide fasteners are not dam aged and function properly.

(c) Check guy lines, footstops, ground line adjusting lines, and adjusting brackets for defects.

c. *Servicing.* Refer to the preventive maintenance chart, paragraph *3-4*, and service the equipment.

*d. Before Installation Assembly.* To facilitate future tent erections, use figure 2-1 as a guide and proceed as follows.

(1) *Missile test shop maintenance tent.*

*(a)* Insert the inner top support through the tent sleeve located at the top front of the tent.

*(b)* Store the hexagon-head bolts, used to attach the inner top support to the trailer, in the electrical equipment cabinet storage compartment.

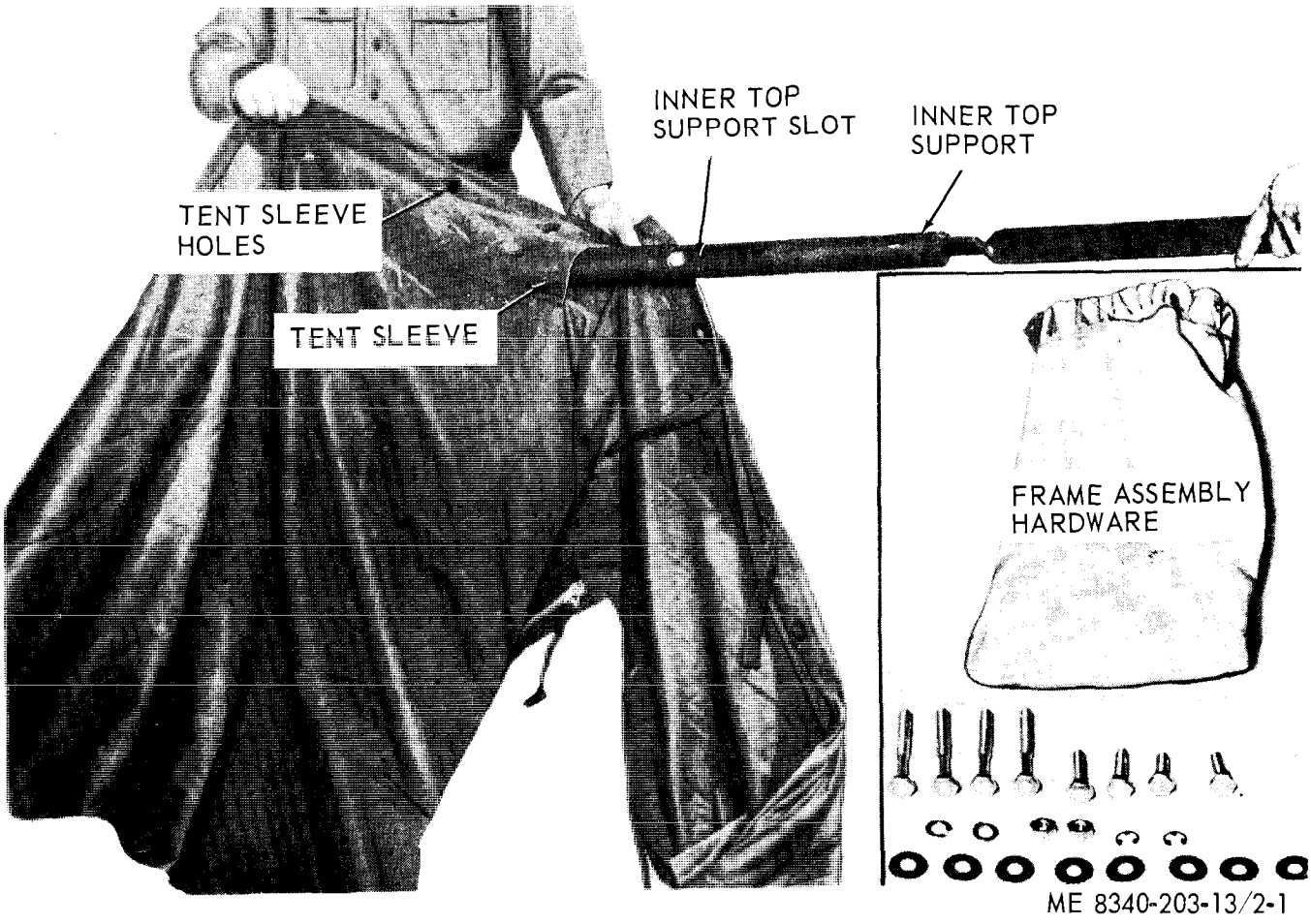



*Figure 2-1. Inserting inner top support through tent sleeve.*

***(2) CW acquisition radar and CW illuminator radar range only radar tent, pulse acquisition radar front and aft tents, and high power illuminator front and aft tents.***

***(a)*** **Insert the inner top support through the tent sleeve located at the top front of the tent.**

***(b)*** **Aline the holes in the tent sleeve with appropriate holes or slots in the inner top support.**

**(c) Obtain the necessary number of hexagon-head bolts from the drawstring hardware bag. Insert each bolt through the alined holes or slots, and screw the bolts into place. The inner top support holes or slots are designed to capture the bolts.**

**NOTE**

**Retaining rings are provided with certain tents for use in holding the bolts to the inner top support.**

### 2-2. Inspecting and Servicing the Used Equipment

**Used equipment requires the same inspection and service prescribed for new equipment (para 2-1) with the exception of the instructions presented in para 2-1 *d.* In addition, check tent and supports for signs of excessive wear. Check especially for missing parts.**

## Section II. RANGE ONLY RADAR, CW ACQUISITION RADAR AND CW ILLUMINATOR RADAR TENT

### 2-3. Installation

***a. General.*** **The range only radar trailer, the CW acquisition radar trailer, and the CW illuminator radar trailer utilize the same tent and frame supports (fig 2-2 and 2-3). After leveling the radar trailer, erect the tent as described below.**

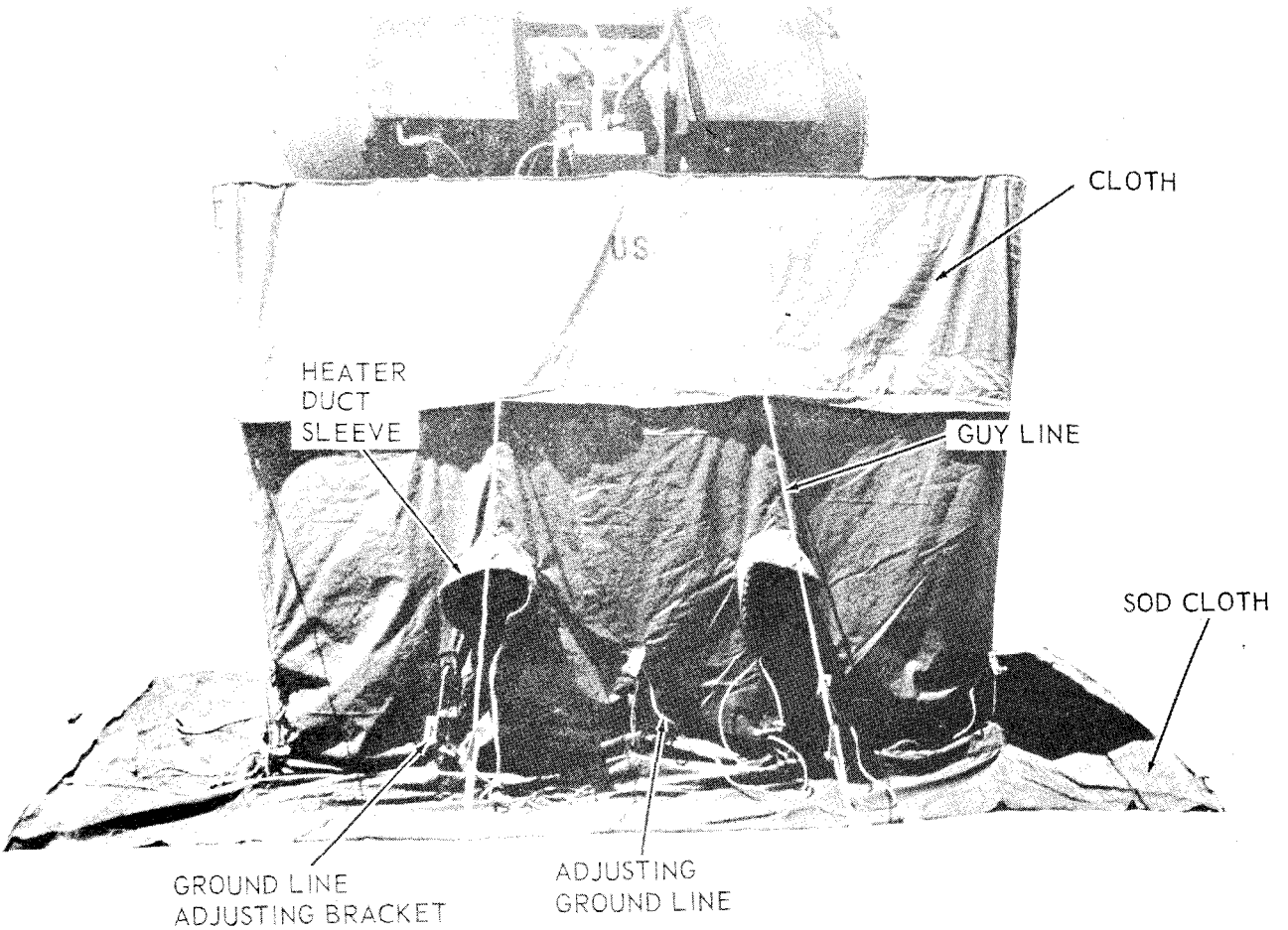



*Figure 2-2. Range only radar, C W acquisition radar and CW illuminator radar tent (sheet 1 of 2).*

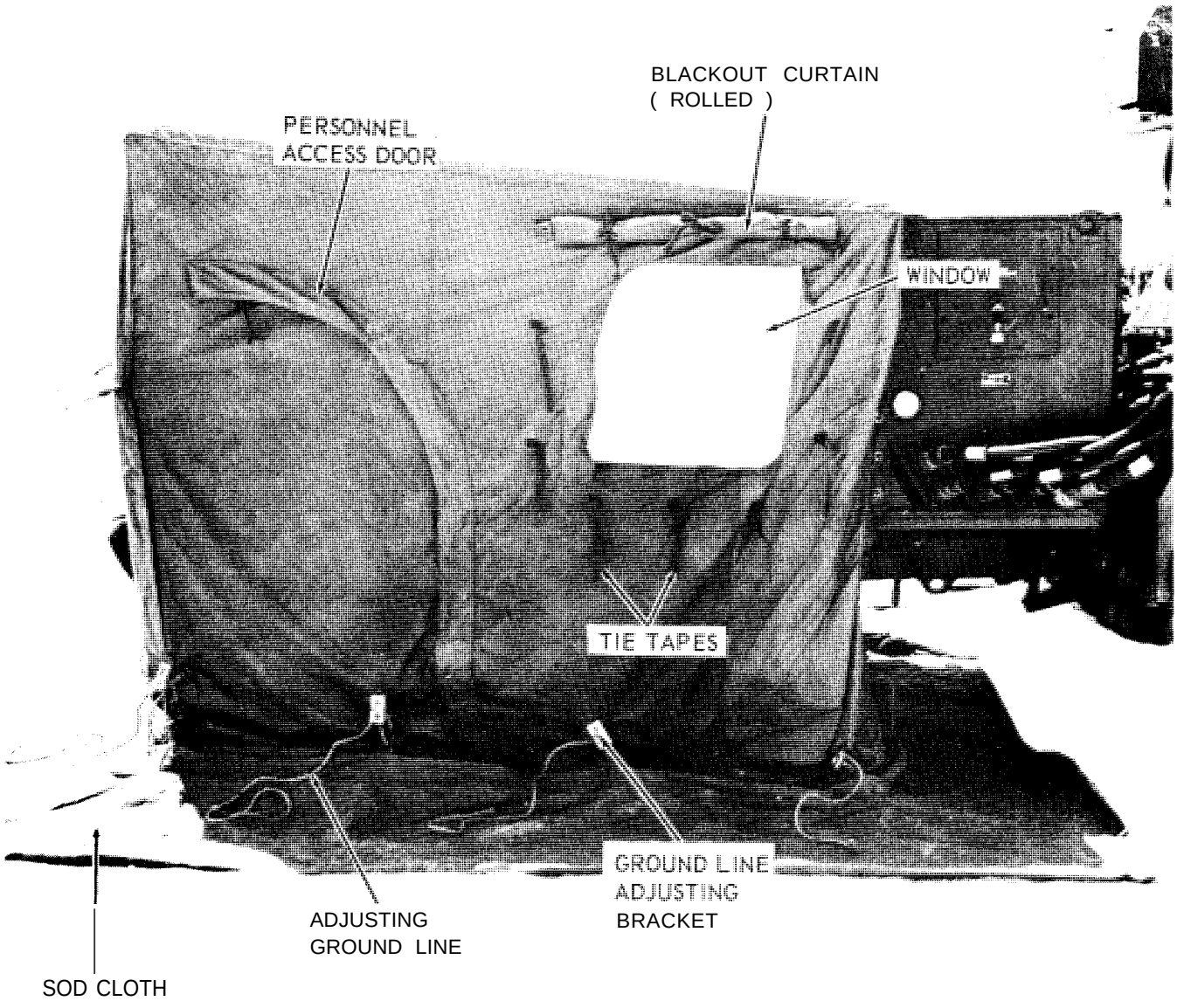



*Figure2-2. Range only radar, acquisition radar and CW illuminator radar tent (sheet 2 of 2).*

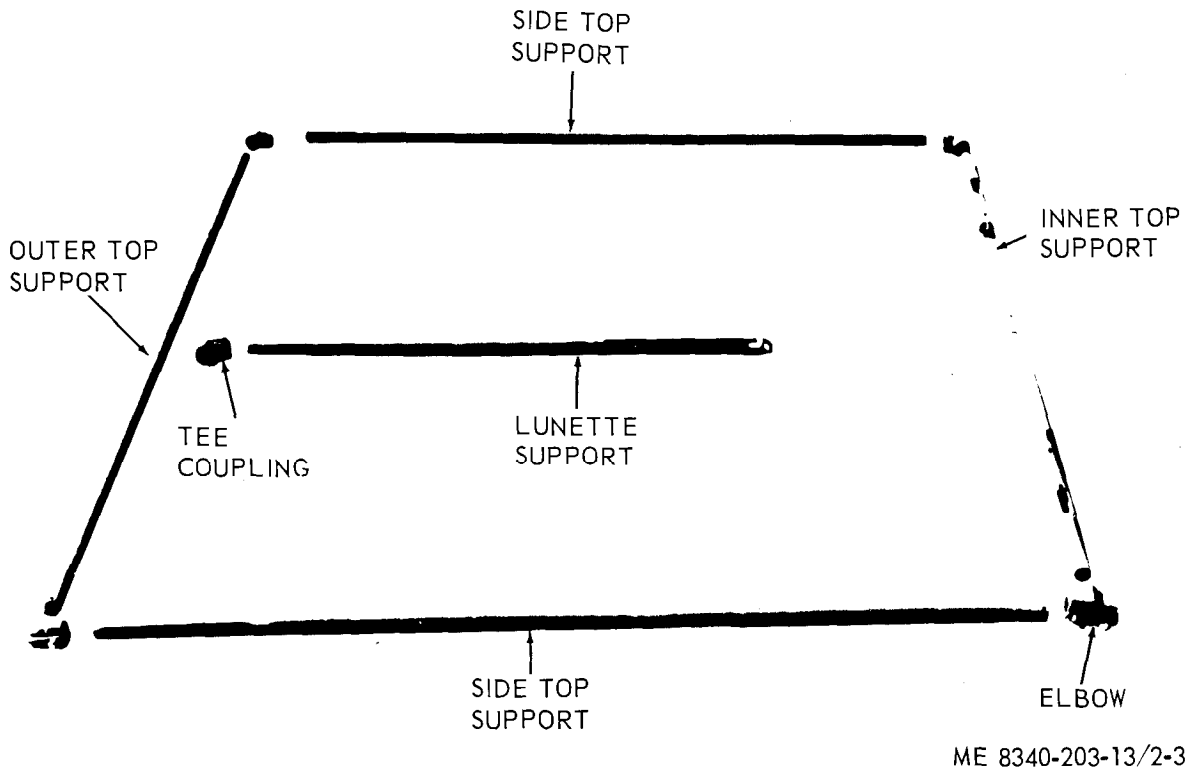



*Figure 2-3. Range only radar, C W acquisition radar and CW illuminator radar tent frame supports.*

***b. Attaching Frame to Radar Set Group Cabinet.***

*(1)* Remove the protective cover (fig. *2-4),* unroll the tent, arid remove the supports (fig. *2-3 );* do not remove the inner top supports (fig. 2-3) from the sleeve (fig. 2-4) of the tent.

**WARNING**

**To prevent injury to personnel working on or near the antenna, set the SAFE-OPERATE switch to the SAFE position.**

**(2)** Place and bolt the inner top support on the top of the radar set group cabinet (fig. **2-5) so** that the tent, with the adjusting ground lines on the outside, hangs in front of the radar set group cabinet as shown in figure 2-6. (Install the outer bolts first; then slide and adjust the inner top support for alinement of the center bolts (fig. **2-5).** Tighten all bolts securely. Make sure the radar set group cabinet cover is closed). Make sure that the slotted portion of the inner top support is downward (facing the top of the trailer) and acceptance holes on top of the trailer are clean and free of paint, sand, mud, and other foreign matter.

(3) Fold the tent back onto the top of the radar set group cabinet as shown in figure 2-7.

(4) Insert the side top supports into the inner top support elbows, and tighten the elbow screws (fig. 2-7).

(5) Install the tee coupling and elbows on the outer top support. Insert the free ends of the side top supports into the outer top support elbows as shown in figure 2-8 and tighten the other outer top support elbow screw.

**NOTE**

**The shorter screws are used to fasten elbows to inner top supports; the longer screws are used to fasten side top supports to elbows. These screws must be removed from the elbows when alining elbow holes with the groove on inner top supports.**

**(6) Insert the round end of the lunette support into the outer top support tee coupling (fig. 2-9), and tighten the tee coupling screws.**

**(7) Insert the bar (or flat) end of the lunette support into the opening of the lunette bracket (fig. 2-1 O), engaging the slot in the lunette support to the pin of the lunette bracket. Slide the lunette down and forward until it is seated on the pin.**

**(8) Tighten all screws in the frame.**

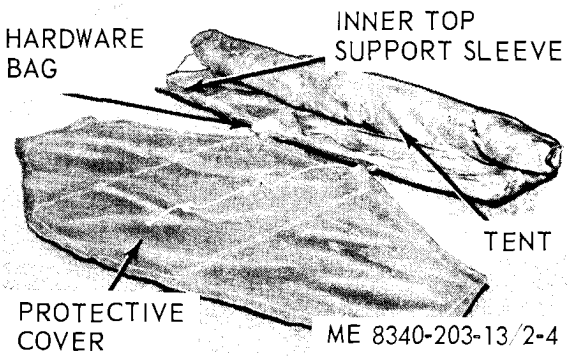



*Figure 2-4. Tent and protective cover.*

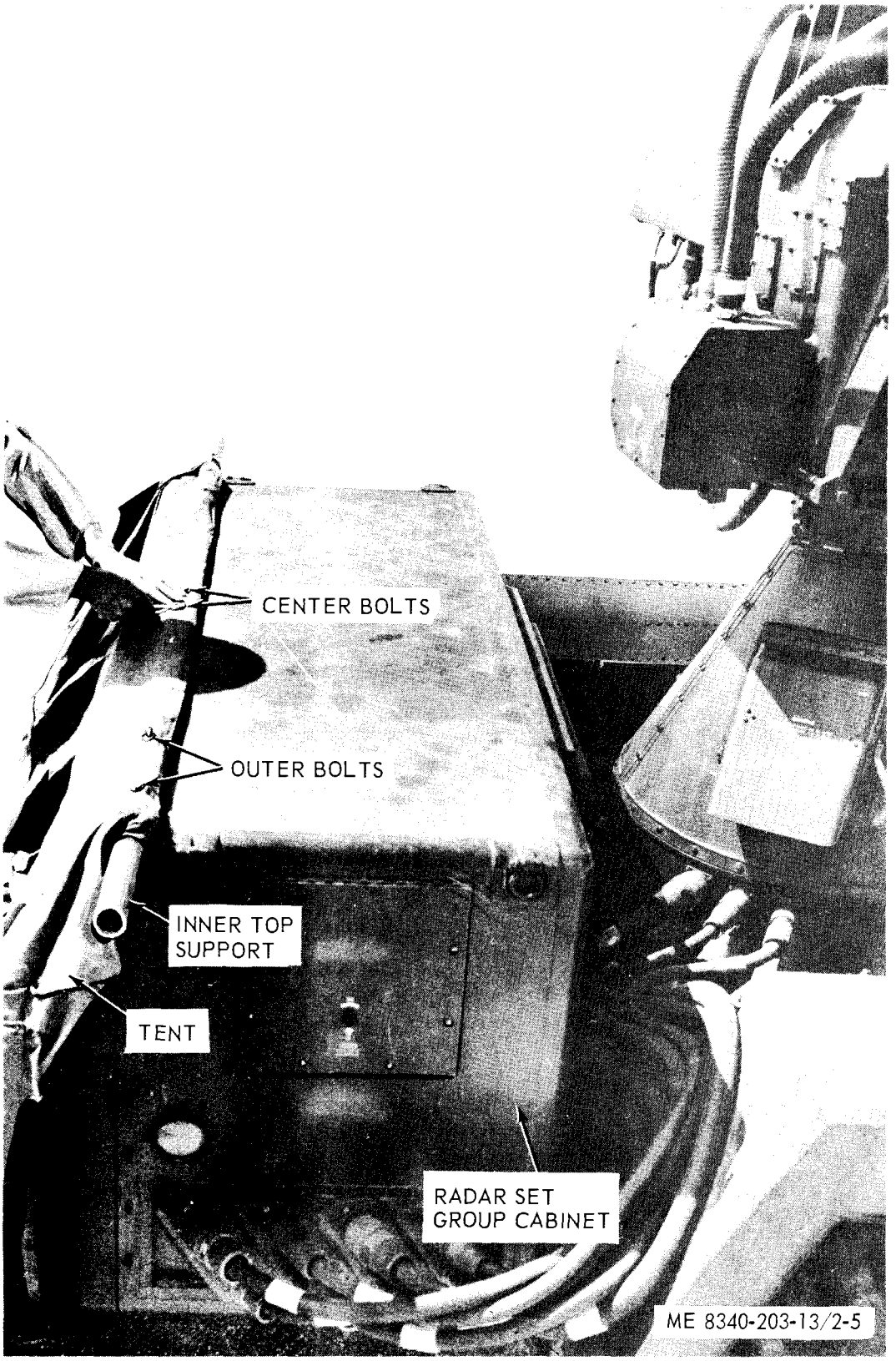



*Figure 2-5. Bolting inner top support to radar set group cabinet.*

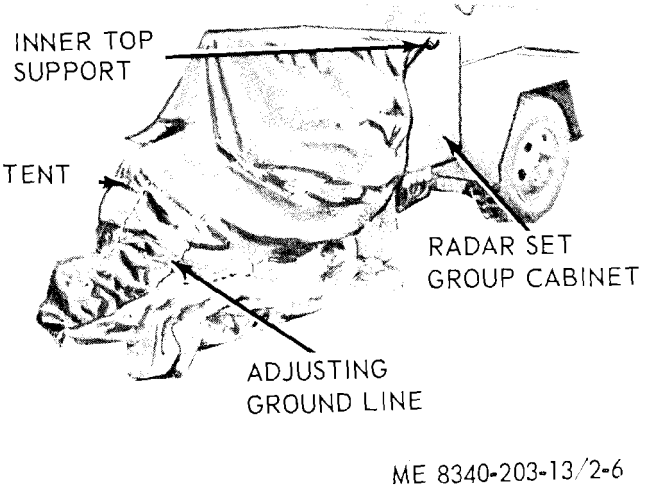



*Figure 2-6. Tent hanging in front of radar set group cabinet.*

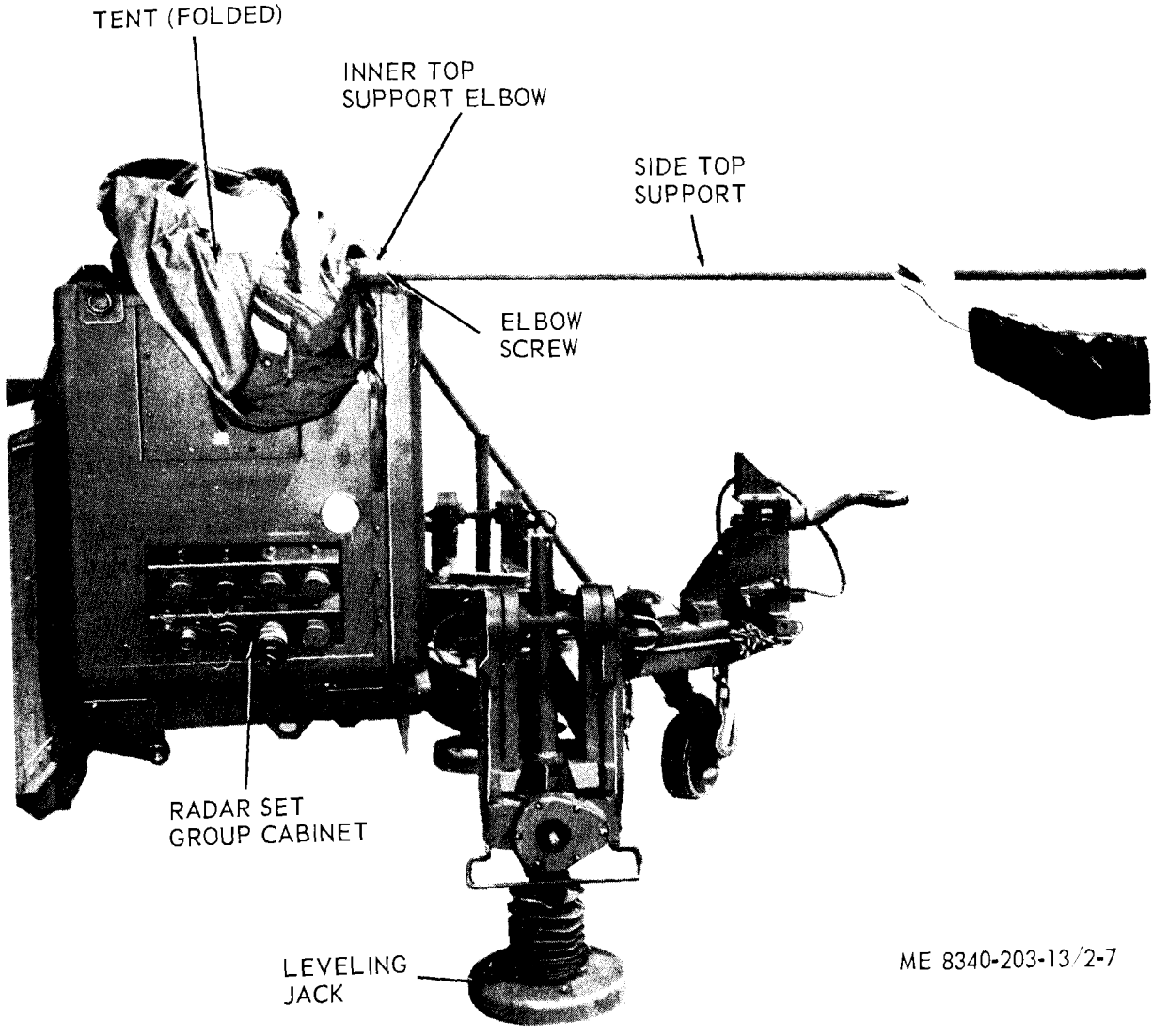



*Figure 2-7. Inserting side supports into inner top support elbows.*

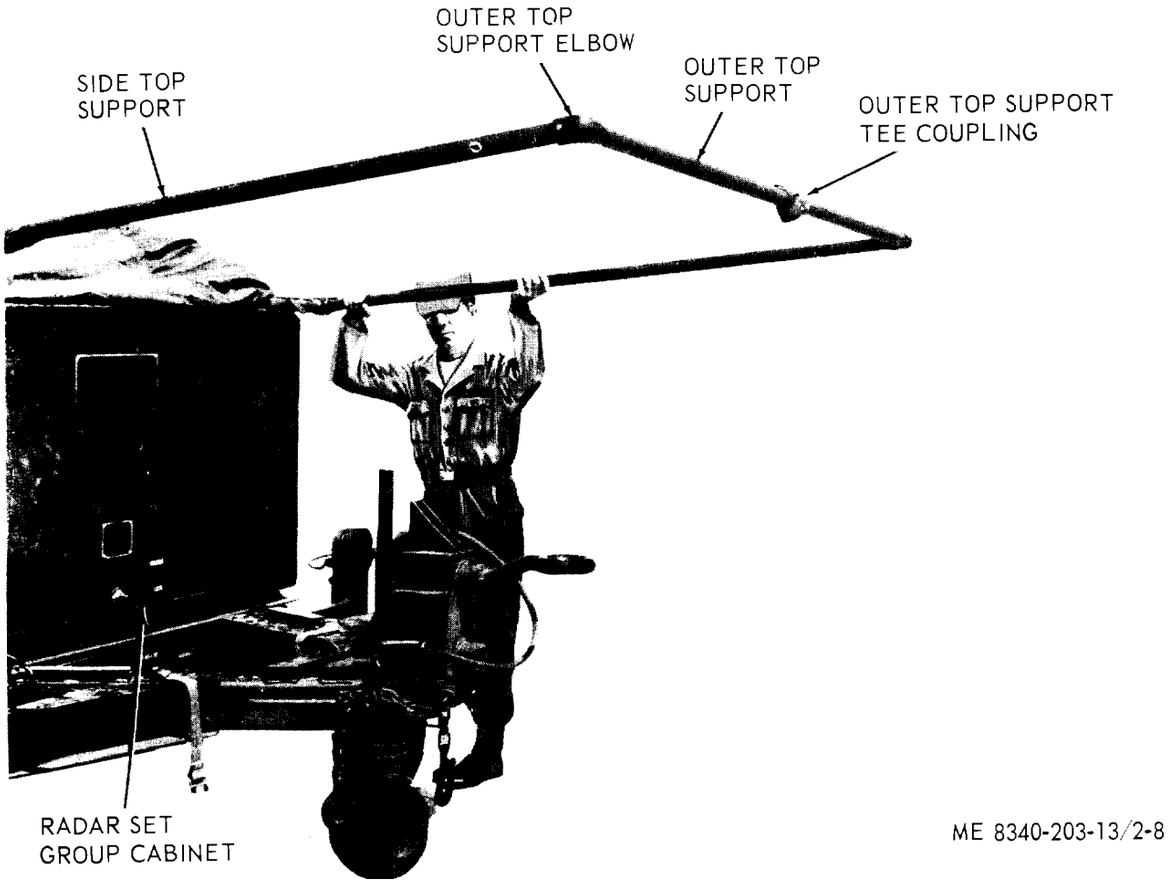



*Figure 2-8. Inserting side top supports into outer top support elbows.*

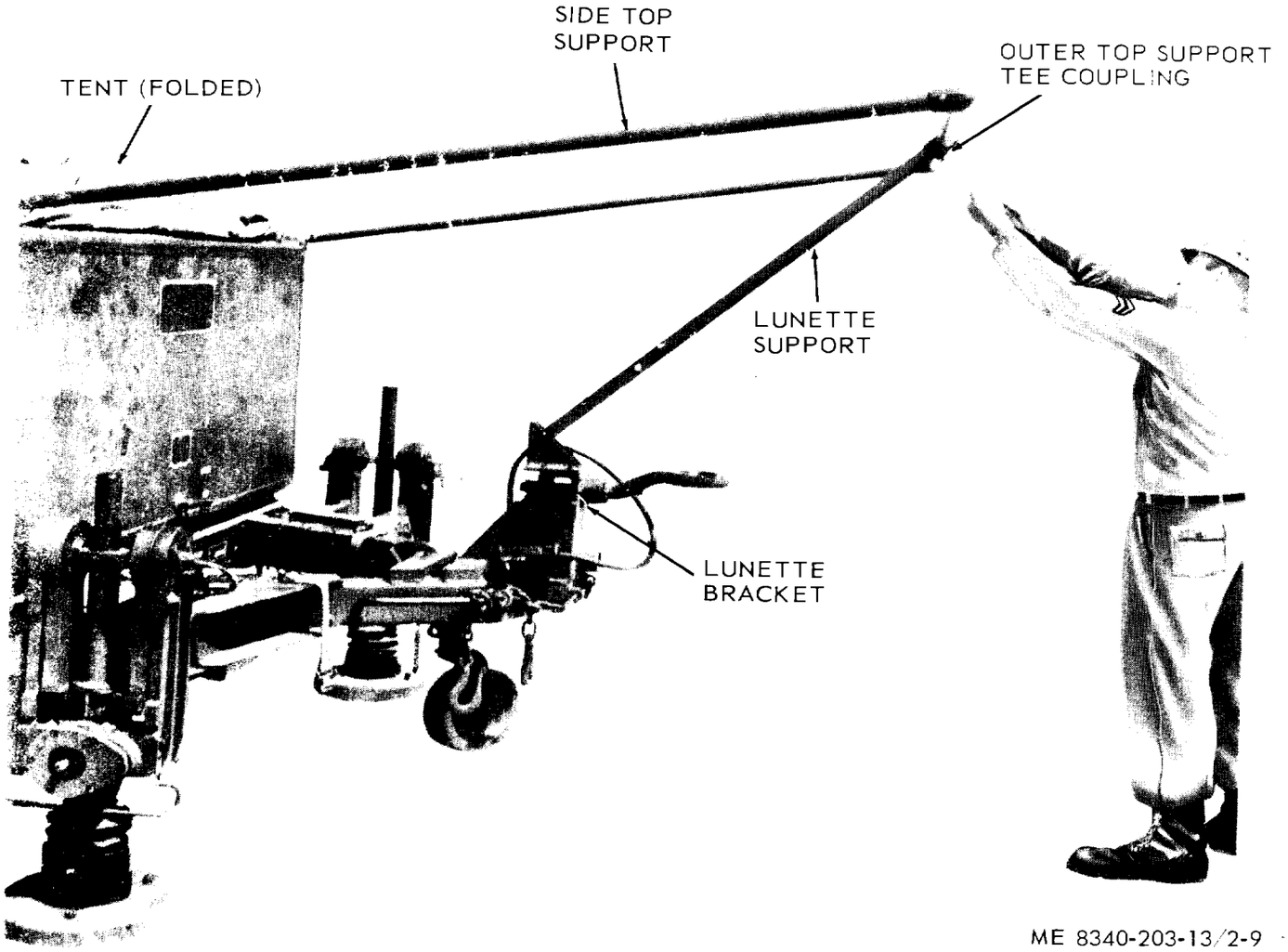



*Figure 2-9. Inserting lunette support into outer top support tee coupling*

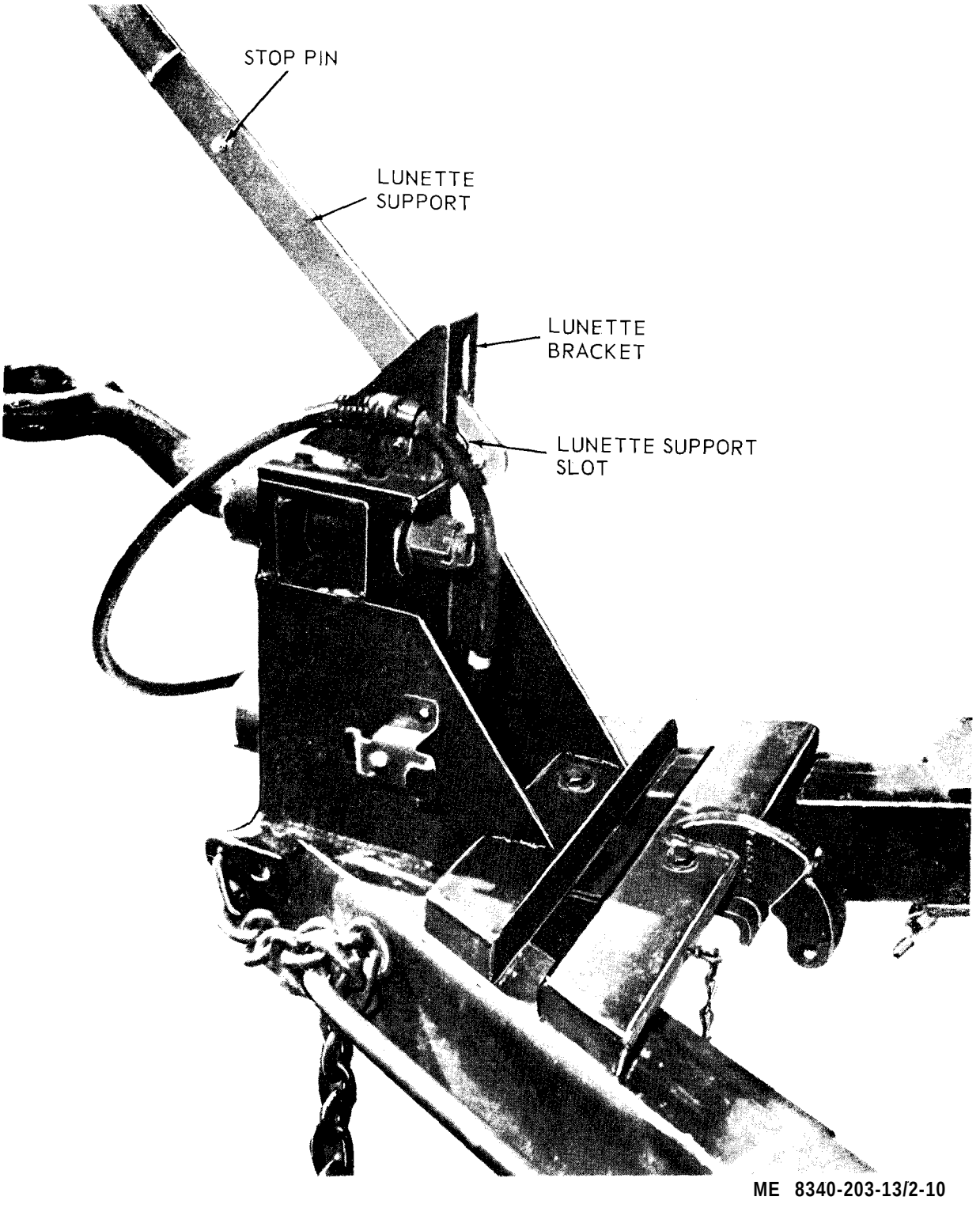



*Figure 2-10. Inserting lunette support into bracket opening.*

*c. Attaching Tent to Frame.*

NOTE

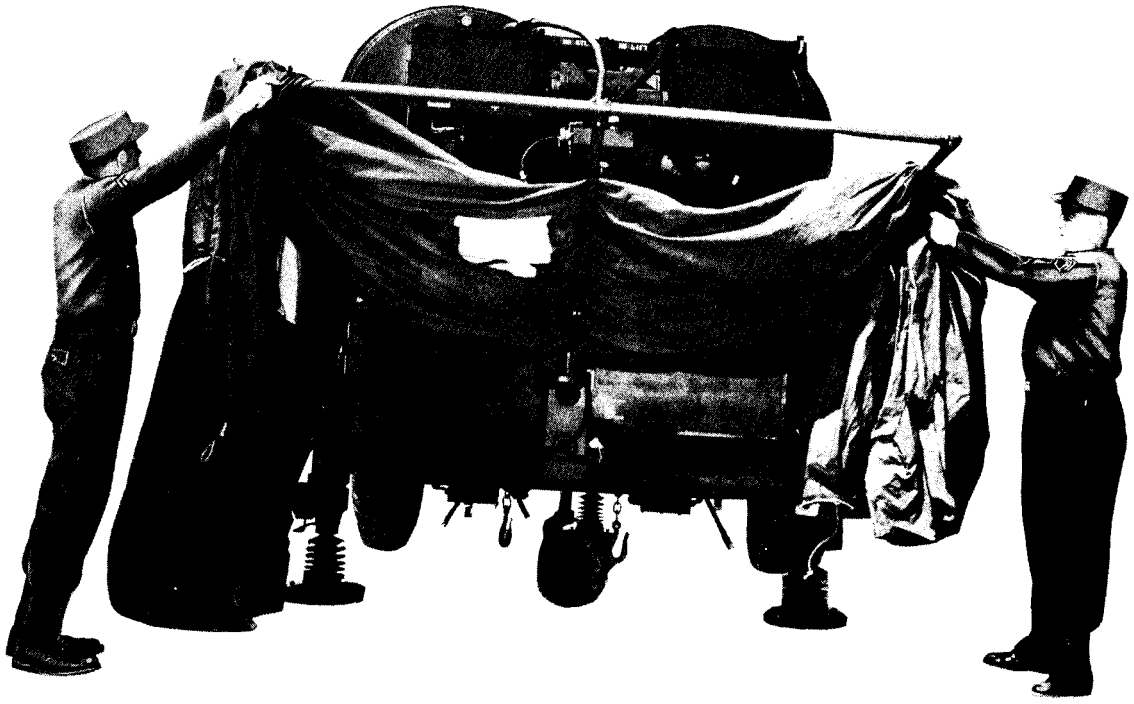
**Because of access door limitations, any large or heavy pieces of test equipment used in performing tests or checks on the radar equipment should be moved inside the ten t area before covering the frame with the tent.**

**( 1 ) Pull the tent over the frame (fig. 2-11) and secure it to the frame with the tiedown tabs (fig. 2-12) located along the inside top edges of the tent.**

**(2) Starting at the bottom grommet and working upward, attach the tent sidewalls to the sides of the radar set group cabinet with the provided turnlock fasteners. Use attached tie tapes to insure firm sealing of the two top grommets (fig. 2-13).**

**(3) Attach the short wall beneath the radar set group cabinet with the provided turnlock fasteners (fig. 2-14).**

**(4) Attach the short wall to the sidewall of the tent by means of the slide fastener.**



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*Figure 2-11. Pulling tent over frame.*

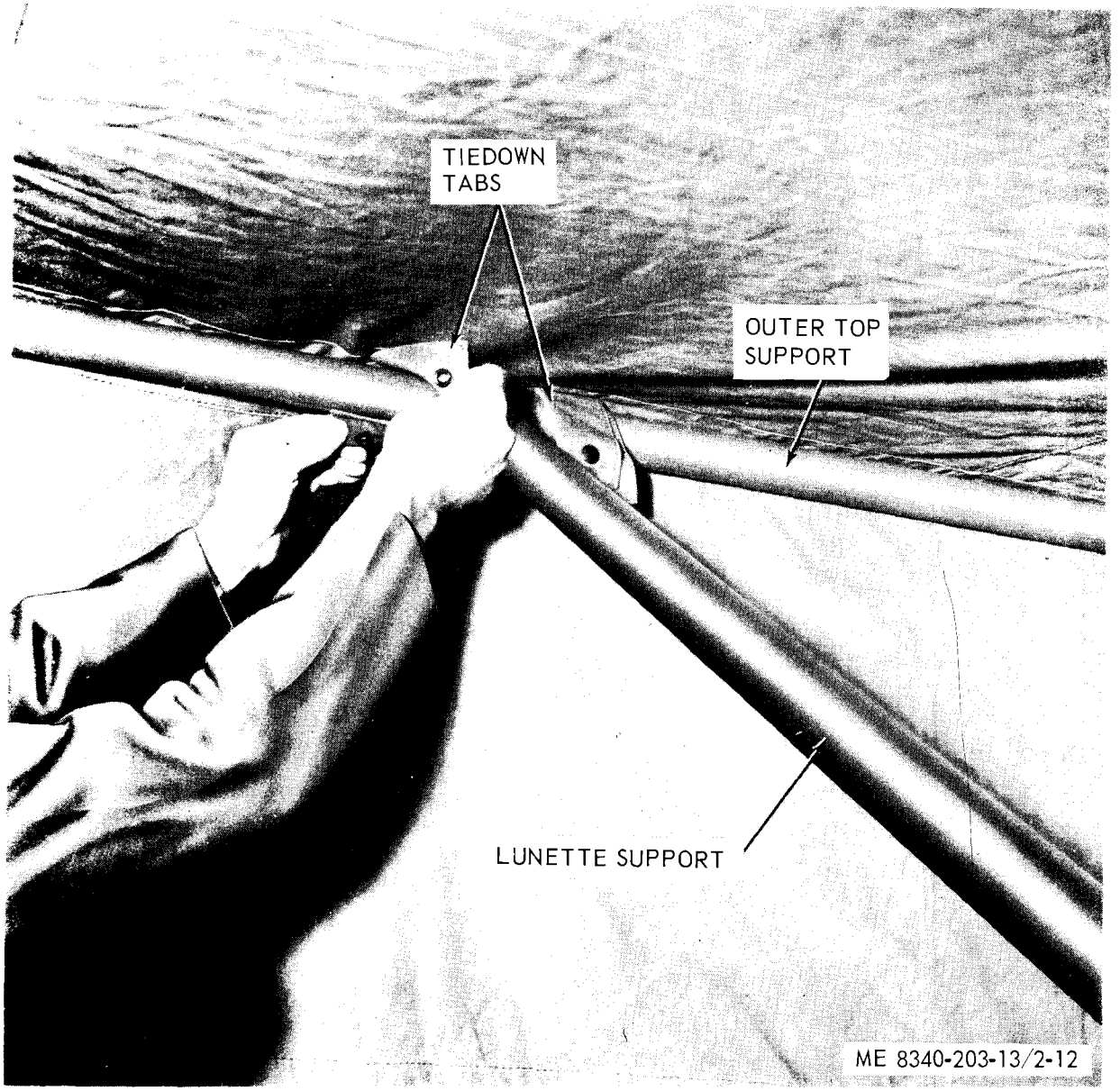



*Figure 2-12. Securing tent to frame with tiedown tabs.*

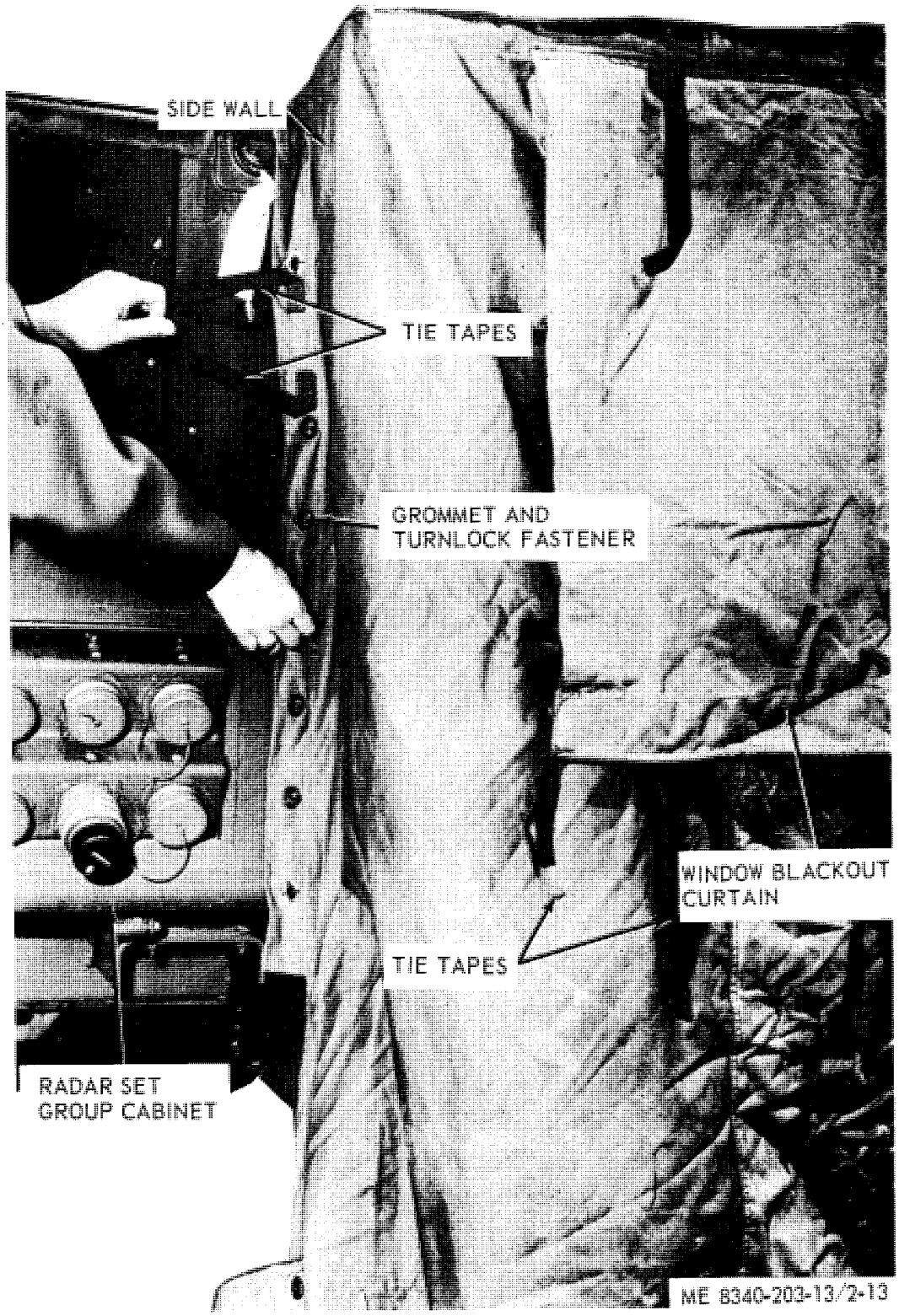



*Figure 2-13. Attaching sidewalls to radar set group cabinet.*

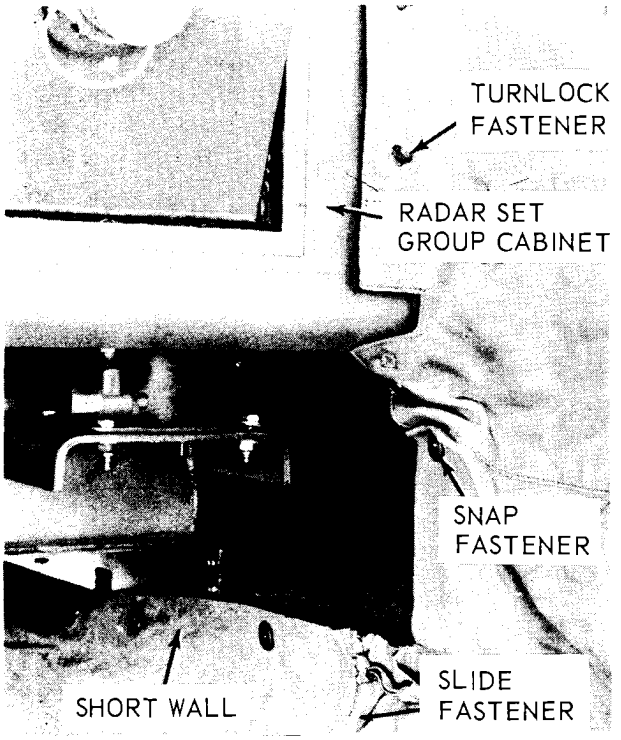



*Figure 2-14. Attaching short wall beneath radar set group cabinet.*

d. Anchoring ***the Tent.***

(1) Fold the sod cloth back against the tent. Aline the pins with the footstop tiedown ropes, and drive the pins into the ground, making sure the footstops are directly under the frame outer supports (fig. 2-15).

( 2 ) Secure the footstop tiedown ropes to the pins.

(3) Install guy lines (fig. 2-1 6), if furnished.

(4) Adjust the wall height to suit existing ground conditions by tightening the adjusting tab line. Secure the line by hitching it through a slot in the plywood tab line adjusting bracket (fig. 2-1 7).

(5) Pull the sod cloth out and over the pins, and weigh the cloth with rocks, dirt, sand bags, or other available material.

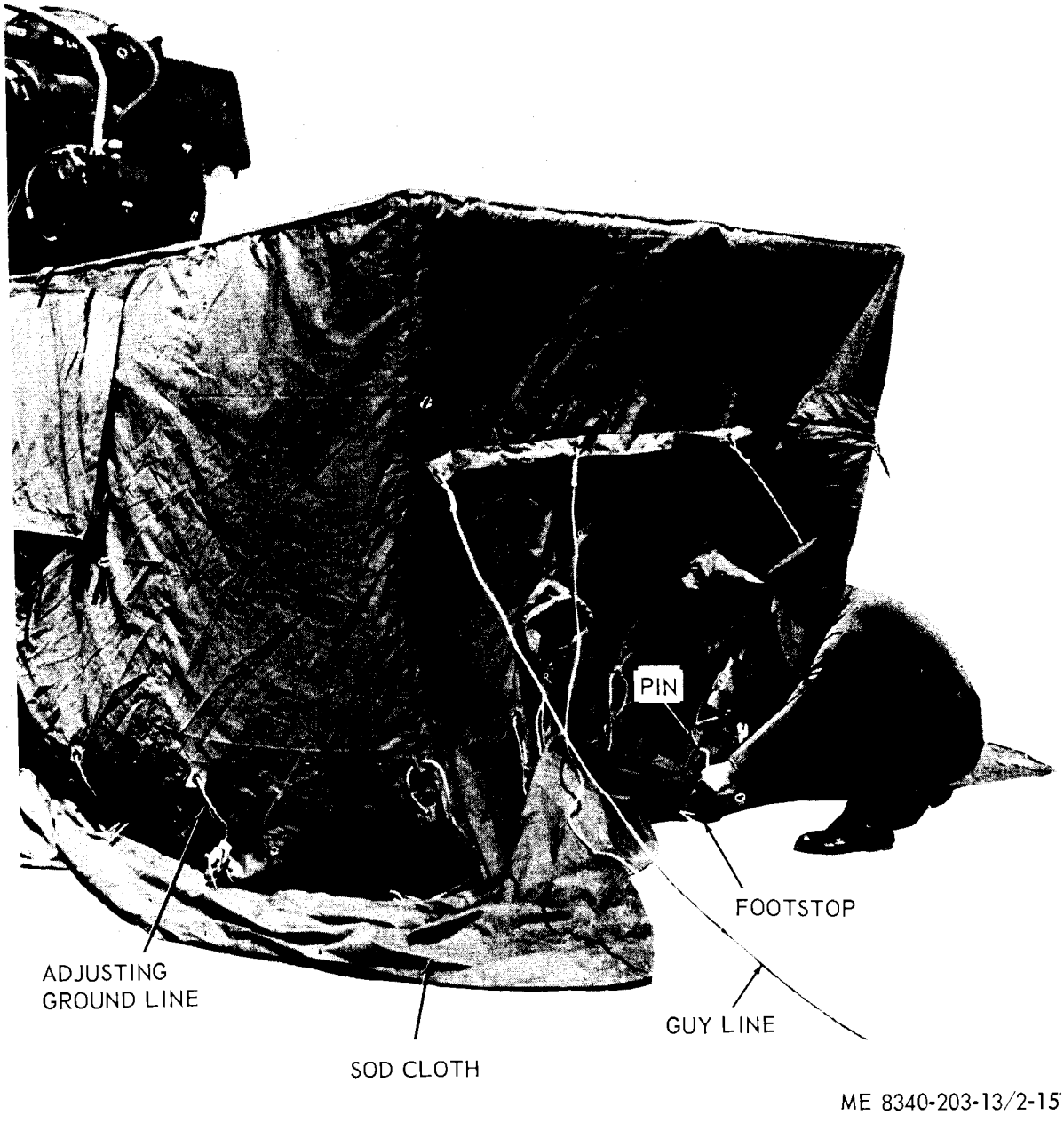



*Figure 2-15. Alining* **and** *driving footstop pins.*

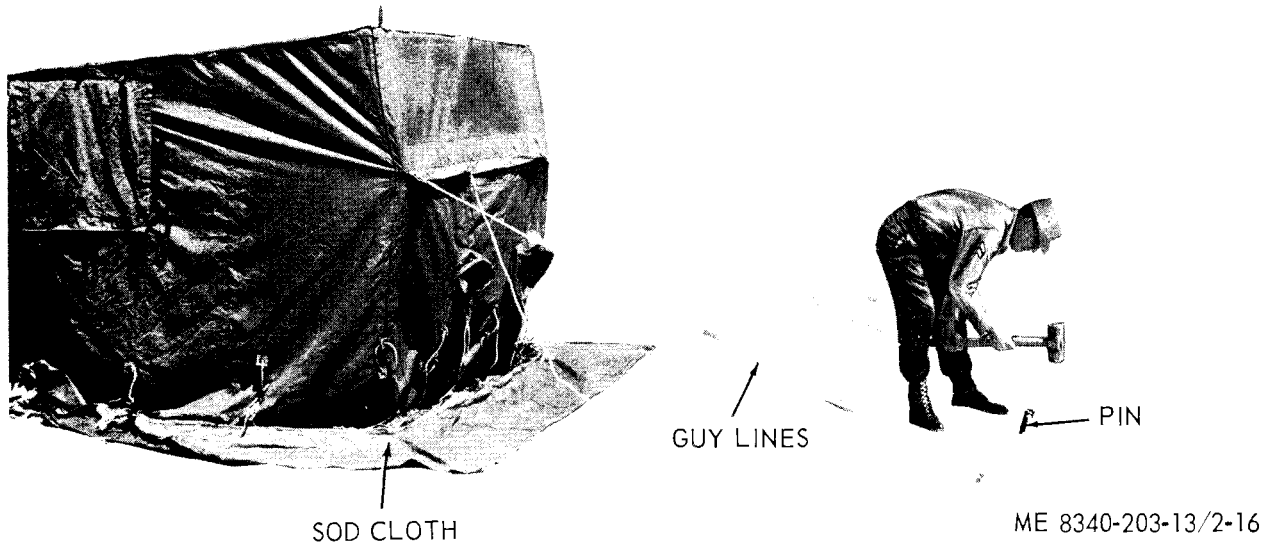



*Figure 2-16. Installing guy lines.*




*Figure 2-17. Adjusting ground lines.*

*e. Trenching Around the Tent.* **After the tent is erected, dig a trench to prevent water from entering the inside tent area. Proceed as follows:**

**(1) Dig around the trailer and tent by cutting 3 to 5 inches straight down, dust outside the trailer and tent area; do not dig in a V-shape. Slope the side away from the tent inward toward the straight line.**

**(2) Slope the trench enough so that the water will flow freely toward the outlet and not back up.**

(3) Dig an outlet ditch at the lowest point in the area and connect it to the trench dug around the tent.

(4) If it is possible that water may flow in from higher ground, dig a ditch to divert the water before it can reach the tent.

### *2-4.* Stow Position

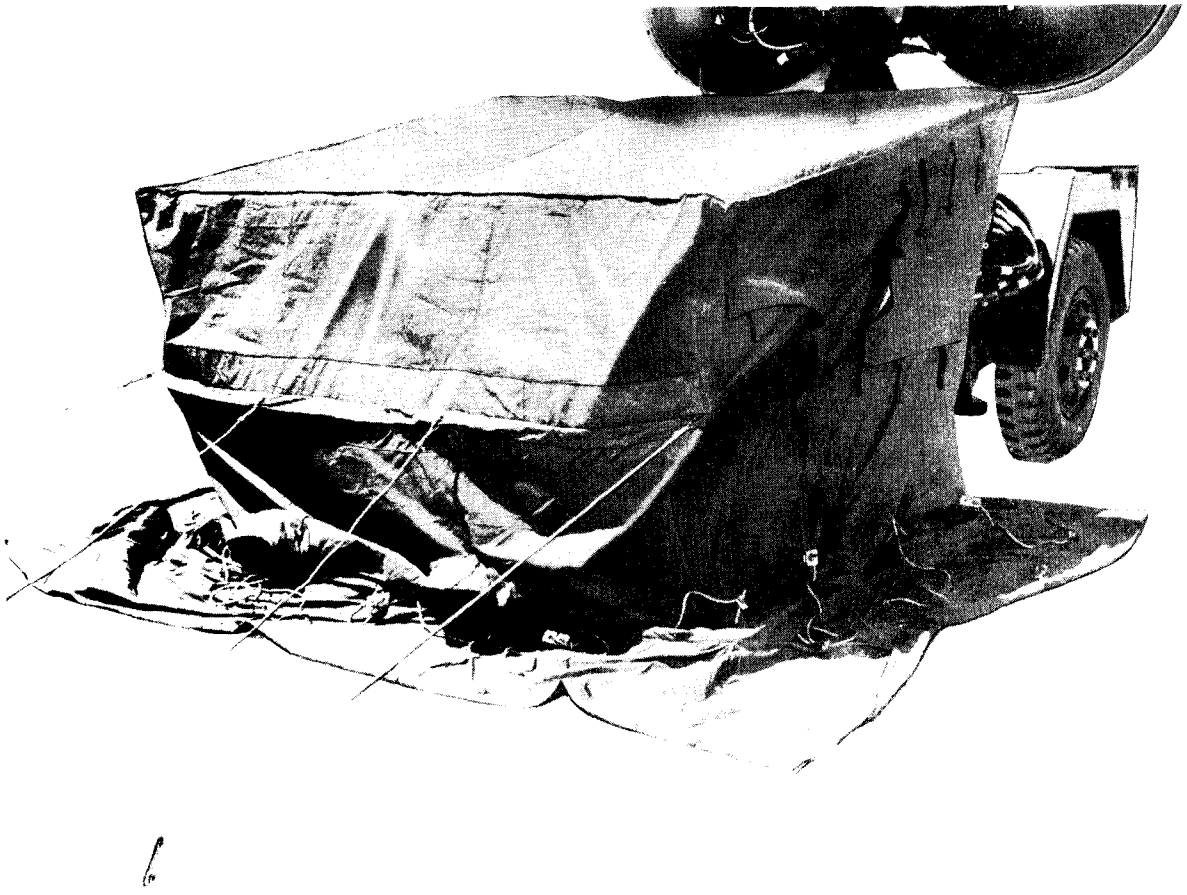
The C W acquisition and C W illuminator range only radar tent is placed in the stow position (fig. 2-18) when the radar is operating or when maintenance is not being performed. To place the tent in stow position, proceed as follows:

a. Loosen the screws, in the outer top support tee coupling (para 2-3 b (6)) and the inner top support elbows.

*b.* Pull the lunette support back and up until it has cleared the lunette bracket pin (para 2-3 b(7)).

c. Allow the lunette support to slide downward through the slot in the lunette bracket until restrained by the stop pin (fig. 2-10) as shown in figure 2-19.

*d.* Tighten the screws in the outer top support tee coupling and the inner top support elbows.



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**Figure 2-18.** ***Stow position.***

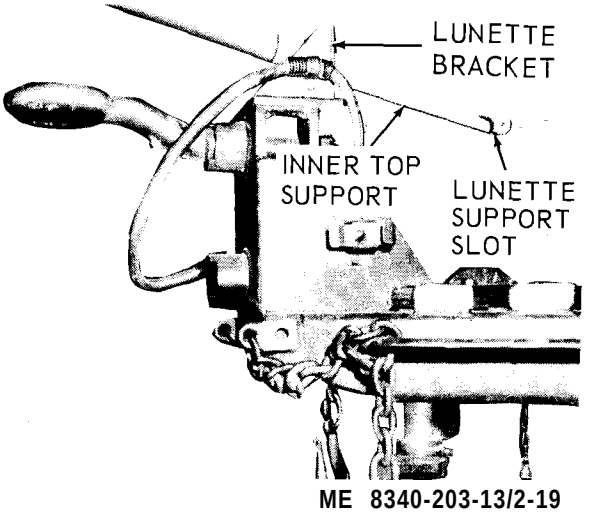



*Figure 2-19. Lunette support in stow position.*

## 2-5. Dismantling for Movement

***a. Striking the Tent.***

***(1)*** Close the radar set group cabinet cover.

(2) Remove the material used to weight down the sod cloth.

(3) Fold the sod cloth back against the tent, release the footstop tiedown ropes (and guy lines, if furnished ) from the pins and remove the pins from the ground.

(4) Release the slide fastener and turn lock fasteners and remove the sidewalls from the sides of the radar set group cabinet.

**CAUTION**

**Pull the tent back evenly to prevent damage to the grommets at the turnlock fasteners.**

(5) Release the tiedown straps located along the inside top edges of the tent and remove the tent from the supports.

(6) Place the tent on top of the radar set groups cabinet as shown in figure 2-7.

*(7)* Loosen the outer top support tee coupling screws.

*(8)* Remove the lunette support from the lunette bracket and outer top support tee coupling.

(9) Remove the outer and inner top support elbow screws.

(10 ) Remove the side top supports.

(11 ) Replace the outer and inner top support elbow screws.

**NOTE**

**Allow the outer and inner top support elbows** to **remain attached to the supports.**

***(12 )*** Pull the tent from the top of the radar set group cabinet and allow it to hang down in front of the radar set group cabinet as shown in figure 2-6.

( 13) Loosen the six bolts and washers which secure the inner top support to the radar set group cabinet, and remove the tent.

**NOTE**

Do not remove the inner top support from the sleeve of the tent.

***b. Packing.***

*(1)* Spread the tent on the ground so that the outside is against the ground, and close all slide fasteners.

(2) Fold the tent sides inward into the tent top .

(3) Roll the tent from the front toward the inner top support. With each roll, insert a section of the framework until the entire framework is rolled within the tent separately. Insert the drawstring hardware bag.

(4) Wrap the tent with the protective cover and secure it with the provided ropes (fig. 2-4).

## 2-6. Reinstallation After Movement

Reinstallation procedures are identical to installation procedures. Refer to paragraph 2-3 and 2-4 and erect the tent.

# Section III. PULSE ACQUISITION RADAR TENTS

## 2-7. Installation (Front Tent)

**WARNING**

To prevent injury to personnel working on or near the antenna, set the SAFE-OPERATE switch to the SAFE position.

***a. General.*** After leveling the radar trailer, erect the tent (fig. 2-20 and 2-21 ) as described below.

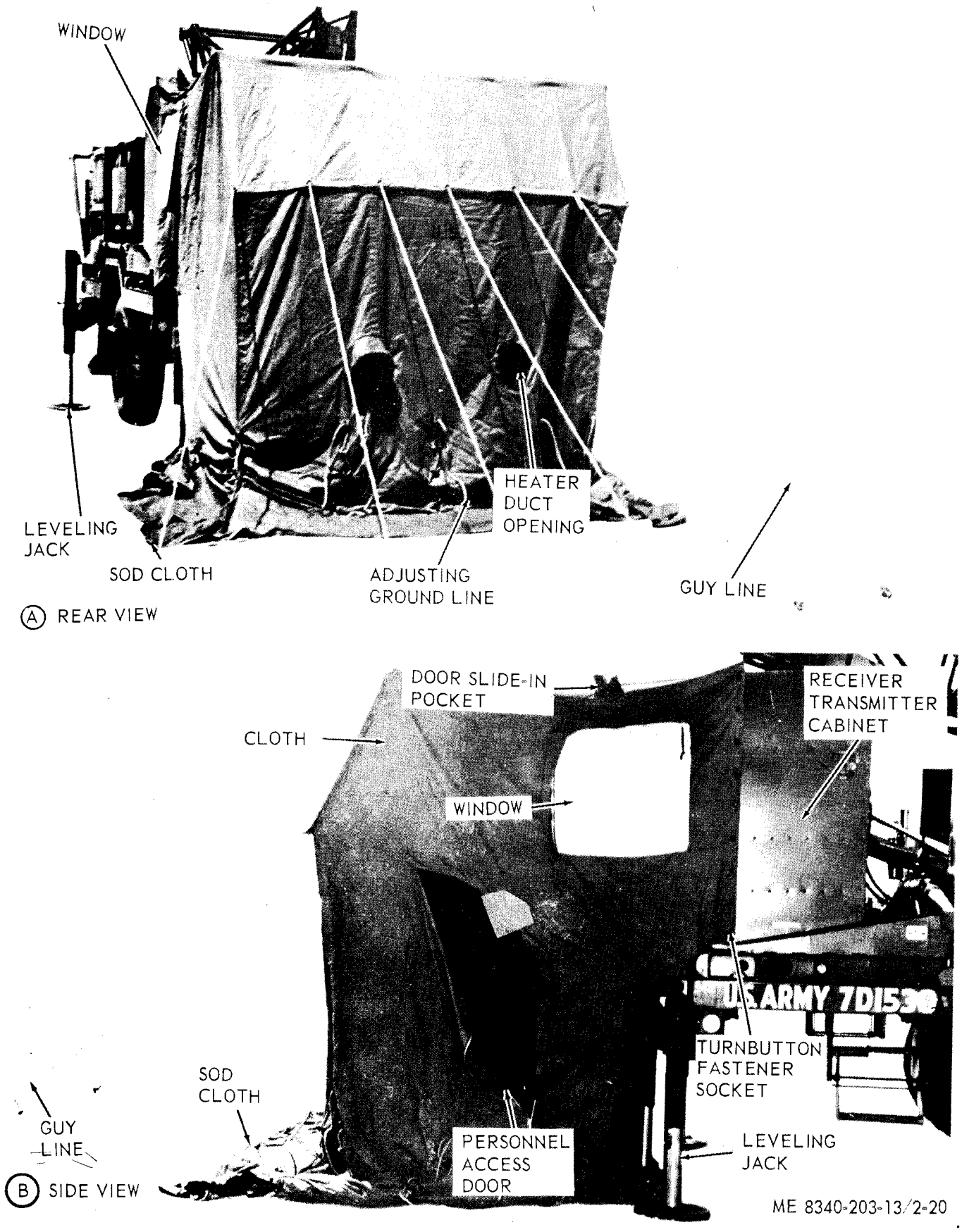



*Figure 2-20. Pulse acquisition radar front tent.*

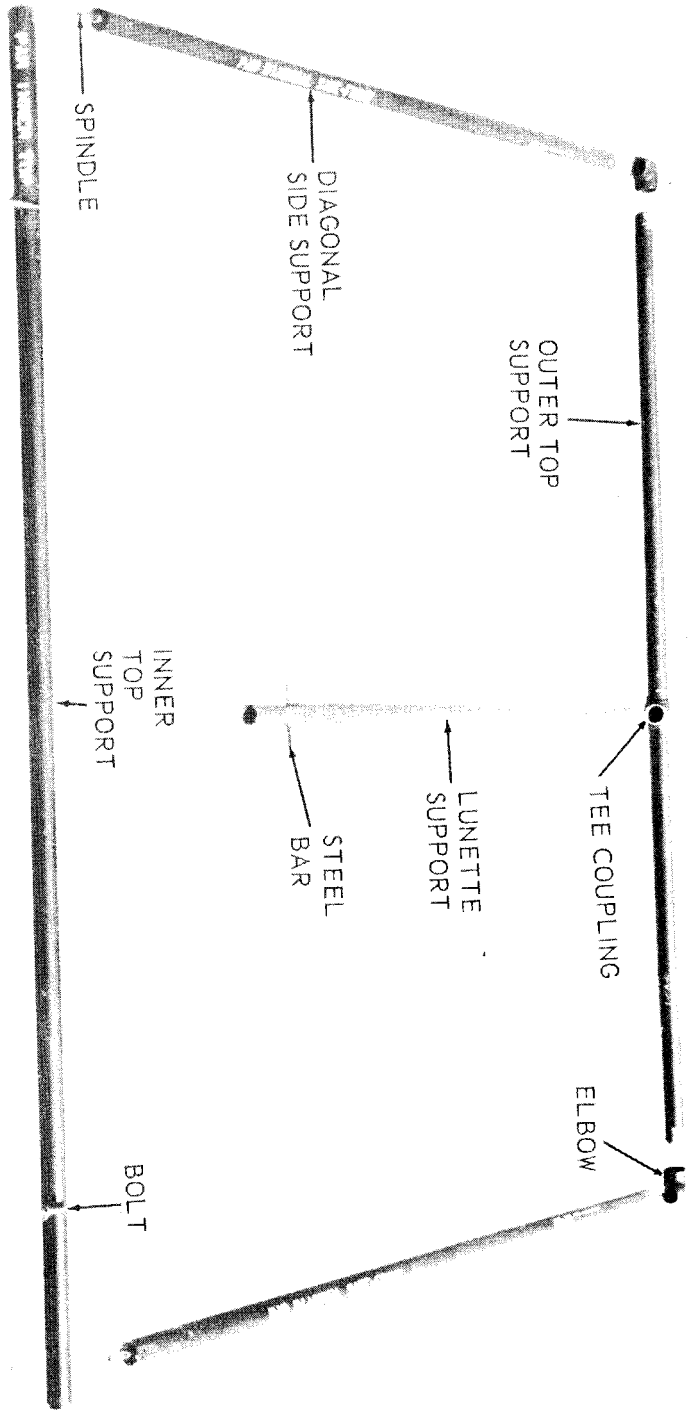



*Figure 2-21. Pulse acquisition radar front tent frame supports.*

***b. Attaching Frame and Tent to Radar.***

***(1)*** Remove the protective cover, unroll the tent and remove the supports, taking care not to remove the inner top support from the tent sleeve (para ***2-1d).***

***(2)*** Remove the bolts installed in the receiver-transmitter cabinet top and store them in the eyebolt storage bracket located behind the radar set group cabinet.

**NOTE**

**Make sure the receiver-transmitter cabinet covers are closed.**

***(3)*** Place and bolt the inner top support on top of the receiver-transmitter cabinet so that the tent, with the adjusting ground lines on the outside, is hanging in front of the radar set group cabinet as shown in figure 2-22.

(4) Attach the outer top support to the tent using the tiedown tabs provided on the inner side of the tent (fig. 2-12).

(5) Working inside the tent, insert the lunette support into the outer top support tee coupling (fig. 2-23).

(6) With one man holding the lunette support in vertical position, insert the spindle of a diagonal side support through the tent grommet and into the hole on each end of the front U-channel (inset, fig. 2-23).

(7) Insert the free ends of the diagonal side supports into the outer top support elbows (fig. 2-23).

(8) Insert the free end of the lunette support into the hole in the lunette until the stop pin rests on the lunette (fig. 2-24).

(9) Tighten all screws.

( 10) Attach the short wall to the pallet, using the snap fasteners (fig. 2-25).

(11 ) Attach the short wall around **each A-**frame channel, using the slide fasteners **(fig. 2-26).**

**(12** ) Tighten the tape drawstrings on leveling jack hole openings.

(13) Attach the sidewalls to the receiver-transmitter cabinet, using the turnlock fasteners (fig. 2-23).

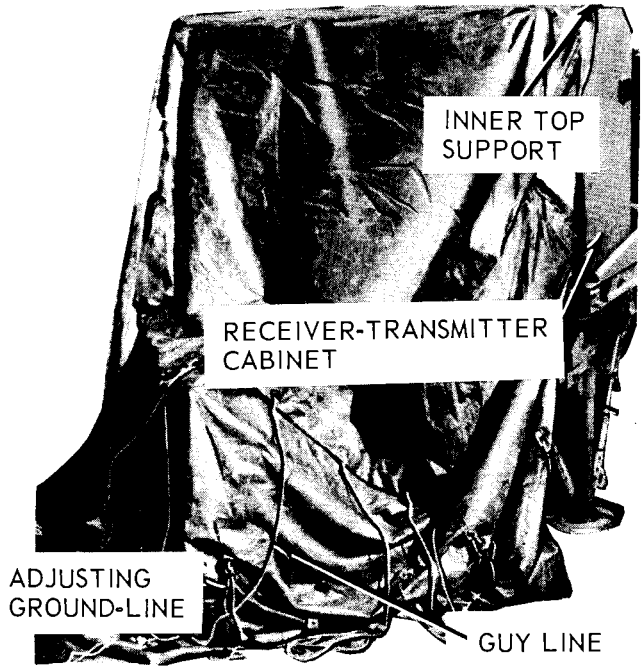



*Figure 2-22. Tent hanging in front of radar set group cabinet.*

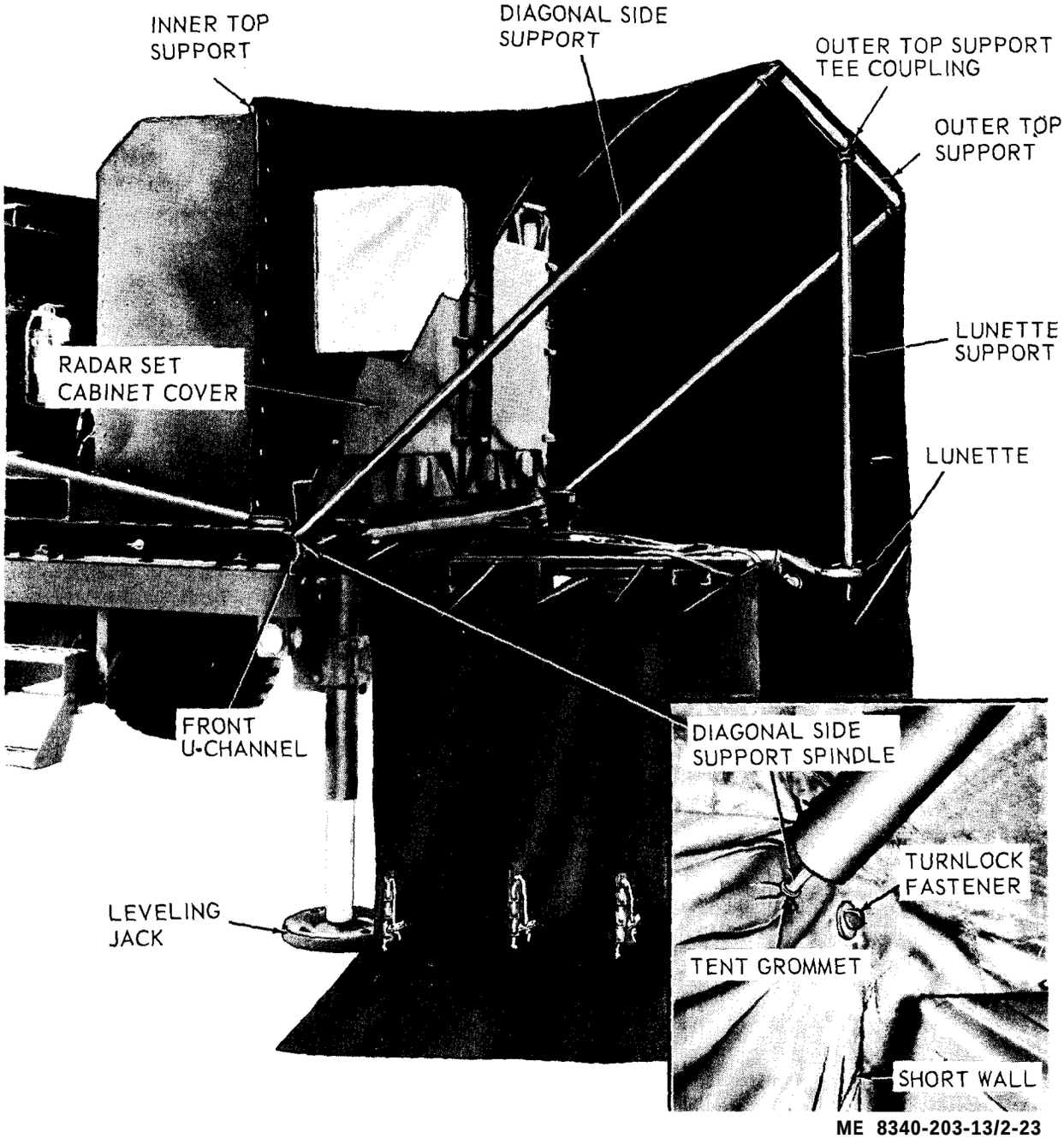



*Figure* 2-23. ***Inserting diagonal side support spindle through tent grommet and into front U-channel***

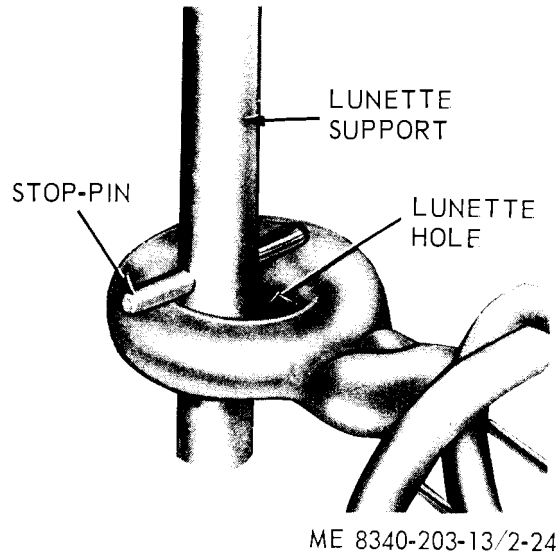



*Figure 2-24. Inserting free end of lunette support into lunette hole.*

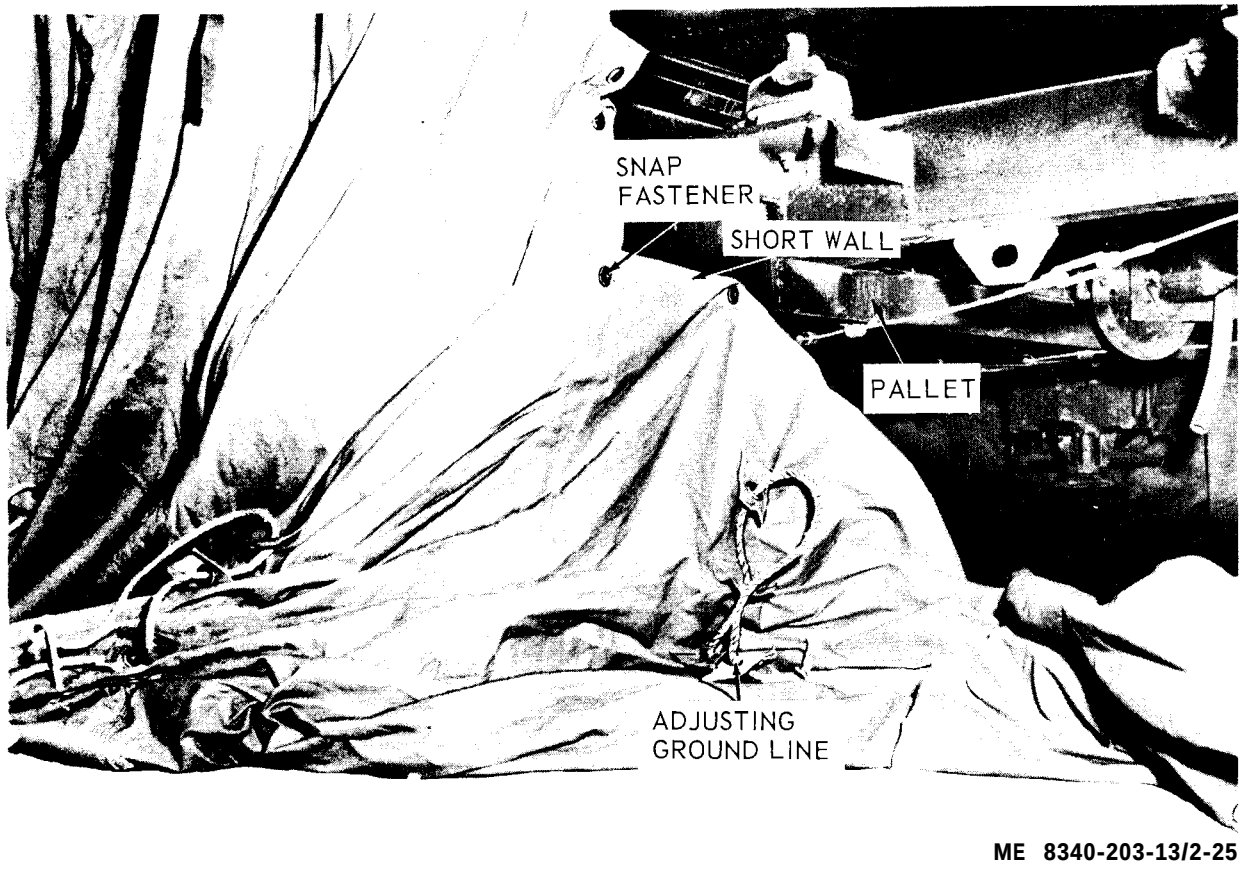



*Figure 2-25. Attaching short wall to pallet.*

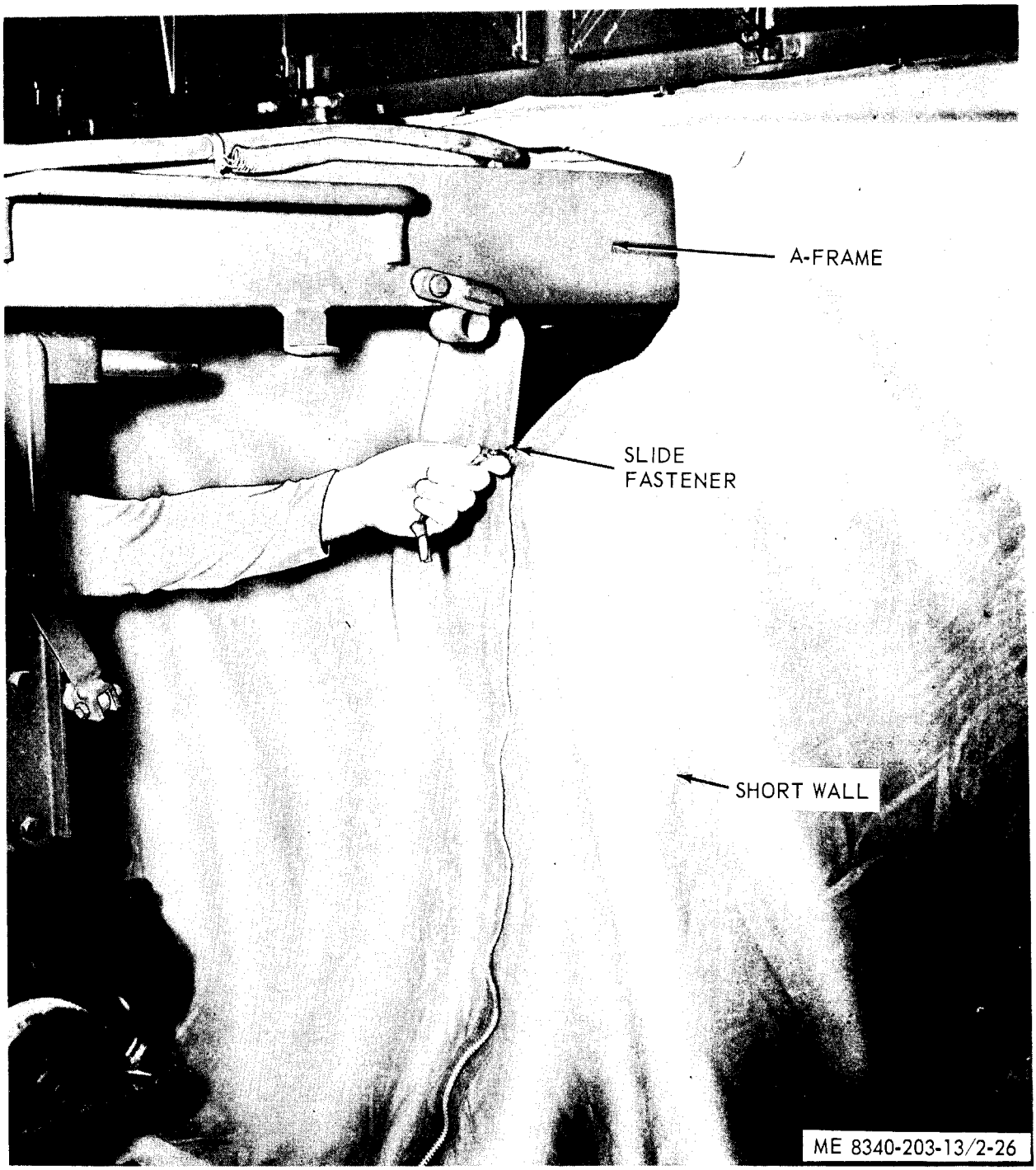



*Figure 2-26. Attaching short wall around A-frame.*

*c. Staking the Tent. See* **paragraph 2-3** *d.*

*d. Trenching the Tent. See* **paragraph 2-3 e**

## 2-8 Installation (Aft Tent)

**WARNING**
**To prevent injury to personnel working on or near the antenna, set the SAFE-OPERATE switch to the SAFE position.**

*a. General.* **After leveling the radar trailer, erect the aft tent (fig. 2-27 and 2-28) as described below.**

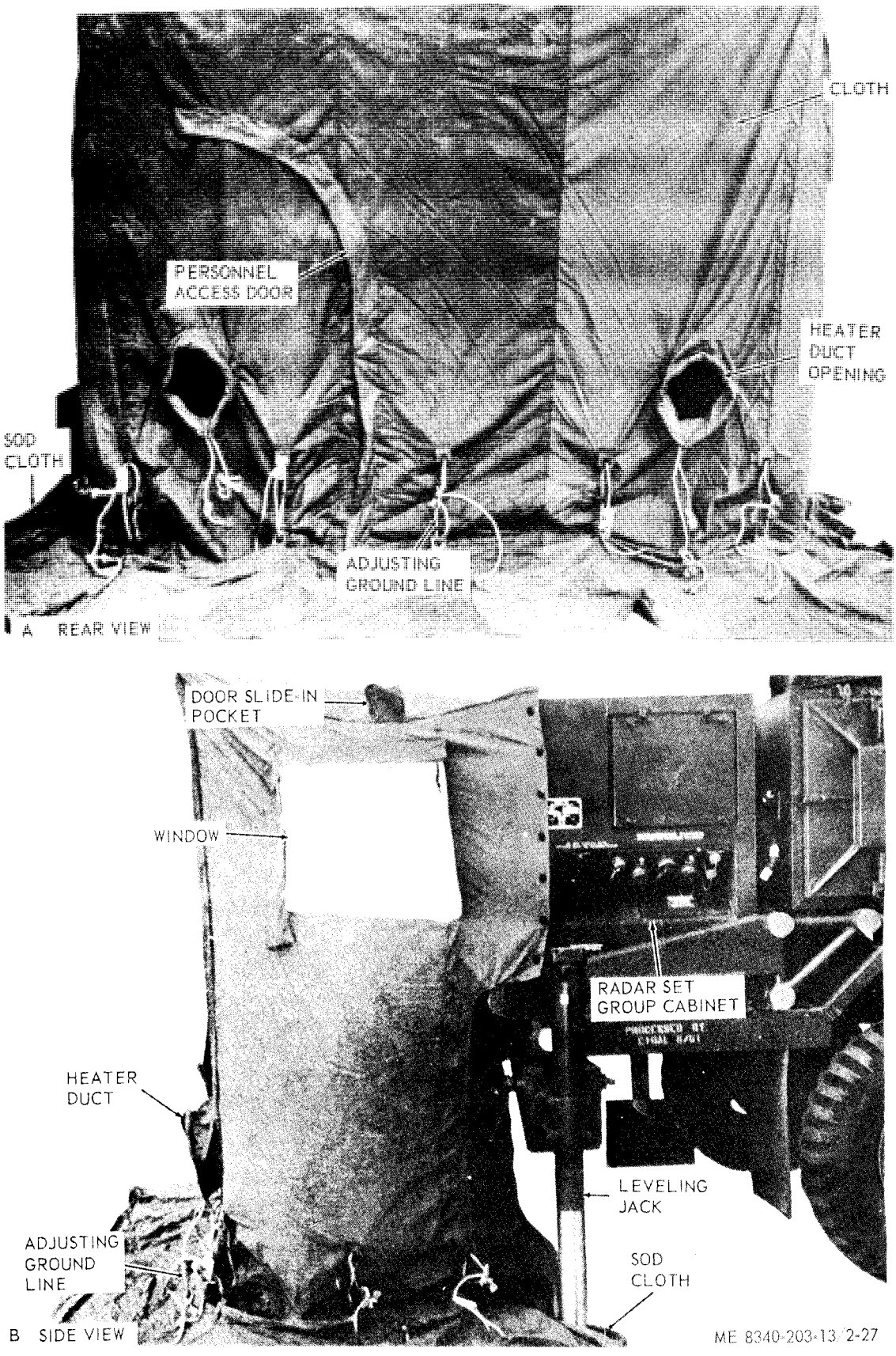



*Figure 2-27. Pulse acquisition radar aft tent.*

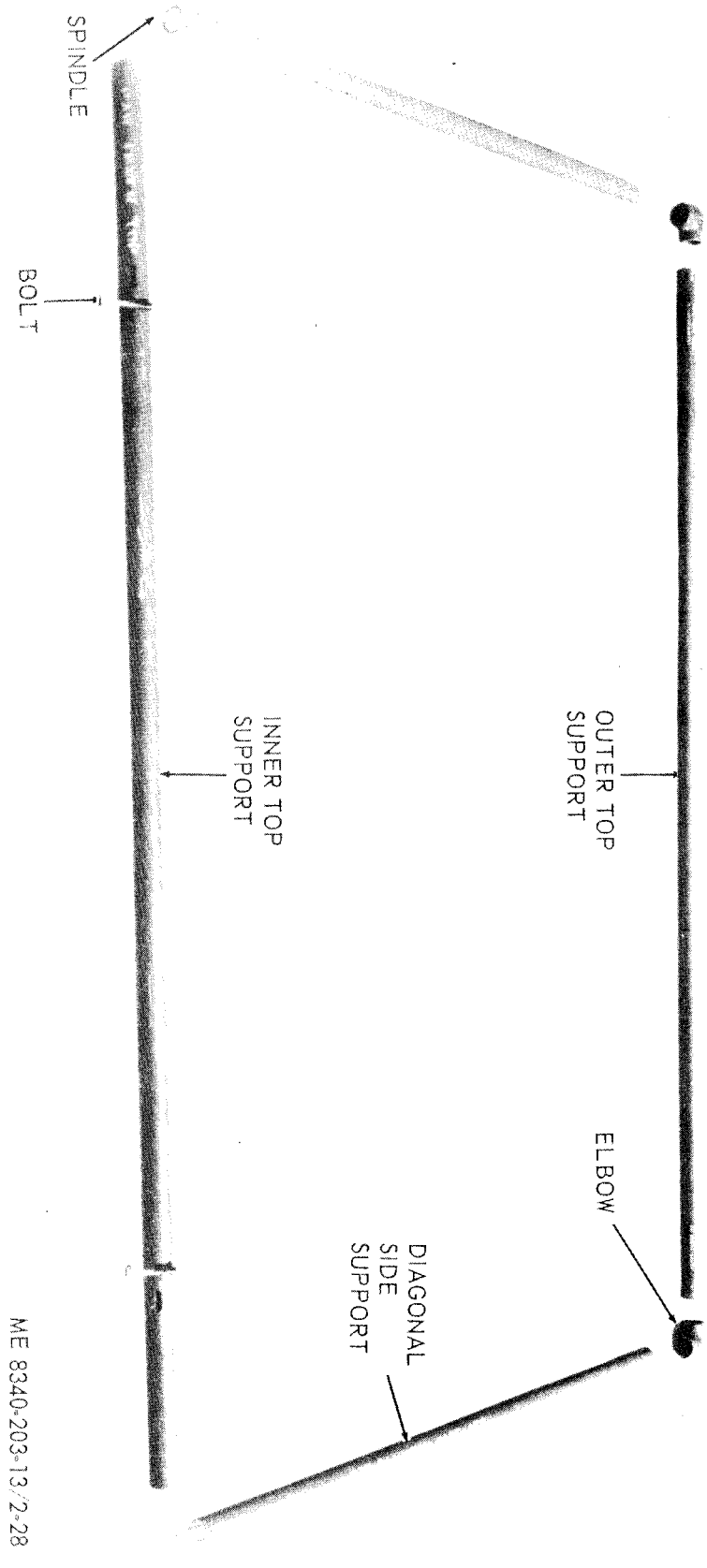



*Figure 2-28. Pulse acquisition radar aft tent frame supports.*

*b. Attaching Frame and Tent to Radar.*

(1) Remove the protective cover, unroll the tent, and remove the supports, taking care not to remove the inner top support from the sleeve of the tent (para 2-1 *d*).

NOTE

Make sure the receiver-transmitter cabinet *cover* is closed.

(2) Place and bolt the inner top support on the top of the radar set group cabinet so that the tent, with the adjusting ground lines on the outside, is hanging in front of the receiver-transmitter cabinet as shown in figure 2-29.

(3) Attach the outer top support to the tent using the tiedown tabs provided on the inner side of the tent (fig. 2-30).

(4) Working under the tent, insert the diagonal side supports into the outer top support elbows (fig. 2-30) and tighten the elbow screws.

(5) Raise each diagonal side support and insert the spindle through the grommet and into the hole on each end of the rear U-channel of the pallet (fig. 2-23).

(6) Working from outside the tent, attach the short wall to the pallet using the turnlock fasteners.

NOTE

Close blackout curtains before closing turnlock fasteners.

(7) Attach the sidewalls to the radar set group cabinet, using the turnlock fasteners located at the side of the cabinet.

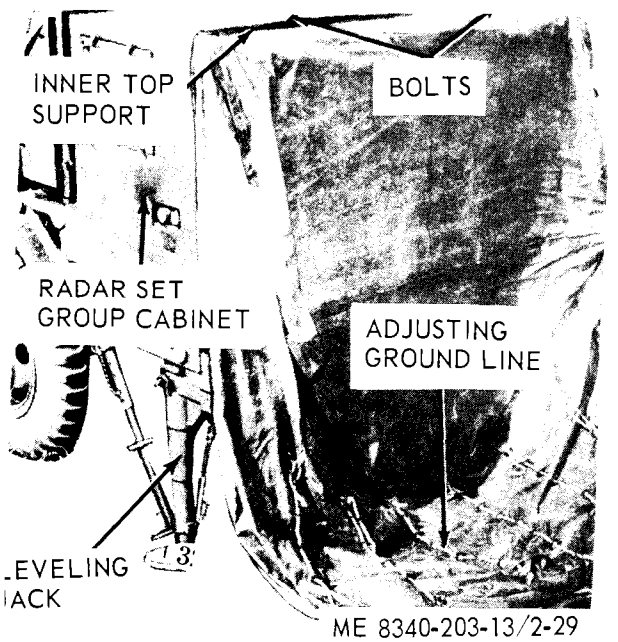



***Figure 2-29. Tent hanging in front of receiver-transmitter cabinet.***

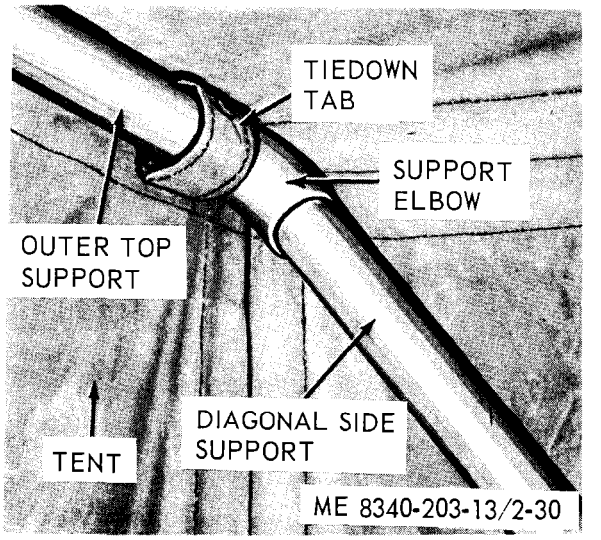



***Figure 2-30. Attaching tiedown tabs and inserting diagonal side supports into outer top support elbows.***

*c. Staking the Tent.* See paragraph 2-3 *d*.

*d. Trenching the Tent.* See paragraph 2-3 *e*.

## 2-9. Dismantling for Movement (Front Tent)

WARNING

To prevent injury to personnel working on or near the antenna, set the SAFE-OPERATE switch to the SAFE position.

*a. Striking the Tent.*

NOTE

Make sure the receiver-transmitter cabinet door is closed.

(1) Remove the materials used to weight down the sod cloth.

(2) Fold the sod cloth back against the tent, release the footstop tiedown ropes from the pins, and remove the pins from the ground.

(3) Release the guy lines from their pins, and remove the pins from the ground.

(4) Release the slide fasteners which secure the short wall around the A-frame channels.

(5) Loosen the leveling jack hole cover drawstrings and remove the tent from around the leveling jacks.

(6) Release the snap fasteners which secure the short wall to the pallet.

(7) Release the turnlock fasteners securing the sidewalls to the radar set group cabinet.

(8) Loosen the outer top support tee coupling screw and remove the lunette support from the hole in the lunette and from the outer top support tee coupling.

(9) Remove the outer top support elbow screws and remove the diagonal side supports from

the front U-channel and from the outer top support elbow.

(10) Replace the outer top support elbow screws.

**NOTE**

Allow the outer top support elbows to remain attached to the support.

(11) Release the tiedown tabs and remove the outer top support from the tent.

(12) Remove the two bolts and washers securing the inner top support to the top of the radar set group cabinet, and remove the tent from the radar.

(13) Replace the installed bolts which were stored in the eyebolt storage bracket (para 2-7 *b* (2). Store the inner top support bolts in the eyebolt storage bracket.

*b. Packing.* Refer to paragraph 2-5 *b* and pack the tent.

## 2-10. Dismantling for Movement (Aft Tent)

WARNING

To prevent injury to personnel working on or near the antenna, set the SAFE-OPERATE switch to the SAFE position.

*a. Striking the Tent.*

NOTE

Make sure the radar set group cabinet cover is closed.

(1) Remove the materials used to weight down the sod cloth.

(2) Fold the sod cloth back against the tent, release the footstop tiedown ropes from the pins, and remove the pins from the ground.

(3) Release the turn lock fasteners securing the short wall to the pallet.

(4) Release the turnlock fasteners securing the sidewalls to the receiver-transmitter cabinet.

(5) Loosen the screws in the outer top support elbows.

(6) Remove each diagonal side support from the rear U-channel on the pallet and from the outer top support elbow.

(7) Release the tiedown straps and remove the outer top support from the tent.

(8) Remove the two bolts and washers securing the inner top support to the top of the receiver-transmitter cabinet, and remove the cabinet from the tent.

*b. Packing.* Refer to paragraph 2-5 *b* and pack the tent.

## 2-11. Reinstallation After Movement

*a. Pulse Acquisition Radar Front Tent.* Reinstallation procedures are identical to installation procedures. Refer to paragraph 2-7 and erect the front tent.

*b. Pulse Acquisition Radar Aft Tent.* Reinstallation procedures are identical to installation procedures. Refer to paragraph 2-8 and erect the aft tent.

# Section IV. MISSILE TEST SHOP MAINTENANCE TENT

## 2-12. Installation

*a. General.* After leveling the test shop trailer, erect the missile test shop tent (fig. 2-31 and 2-32) as described below.

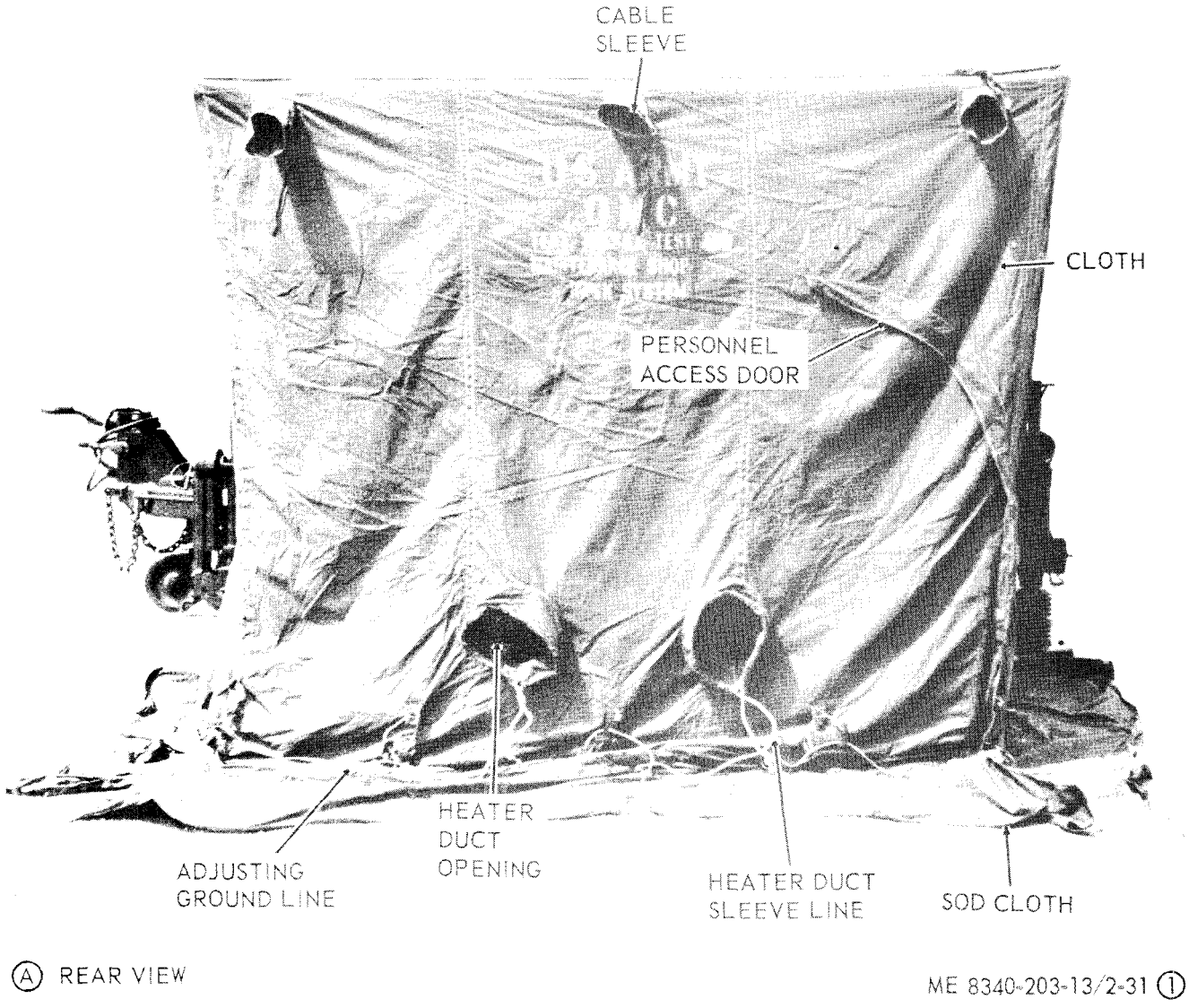



***Figure 2-31. Missile test shop maintenance tent (sheet 1 of 2).***

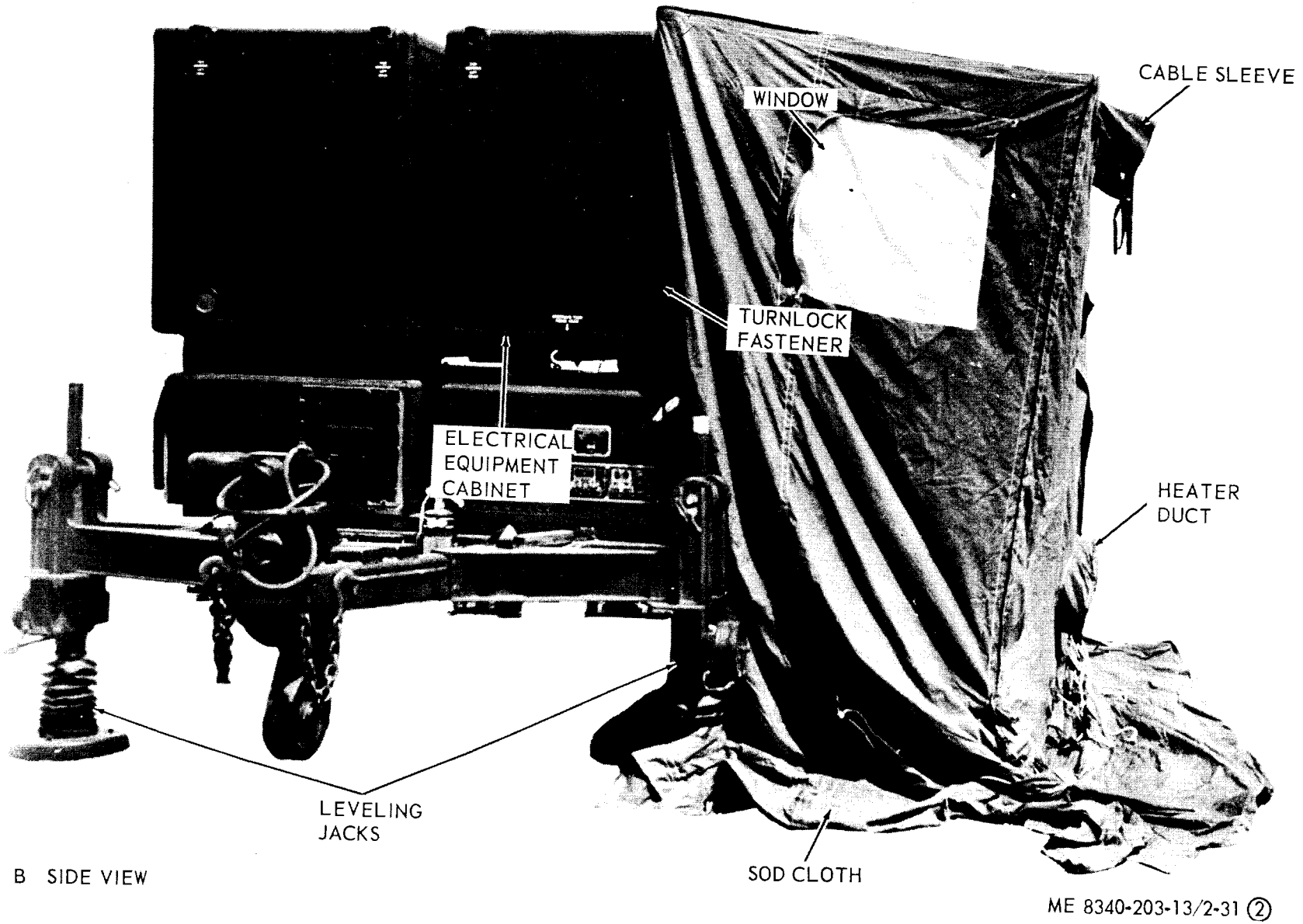



*Figure 2-31. Missile test shop maintenance tent (sheet 2 of 2).*

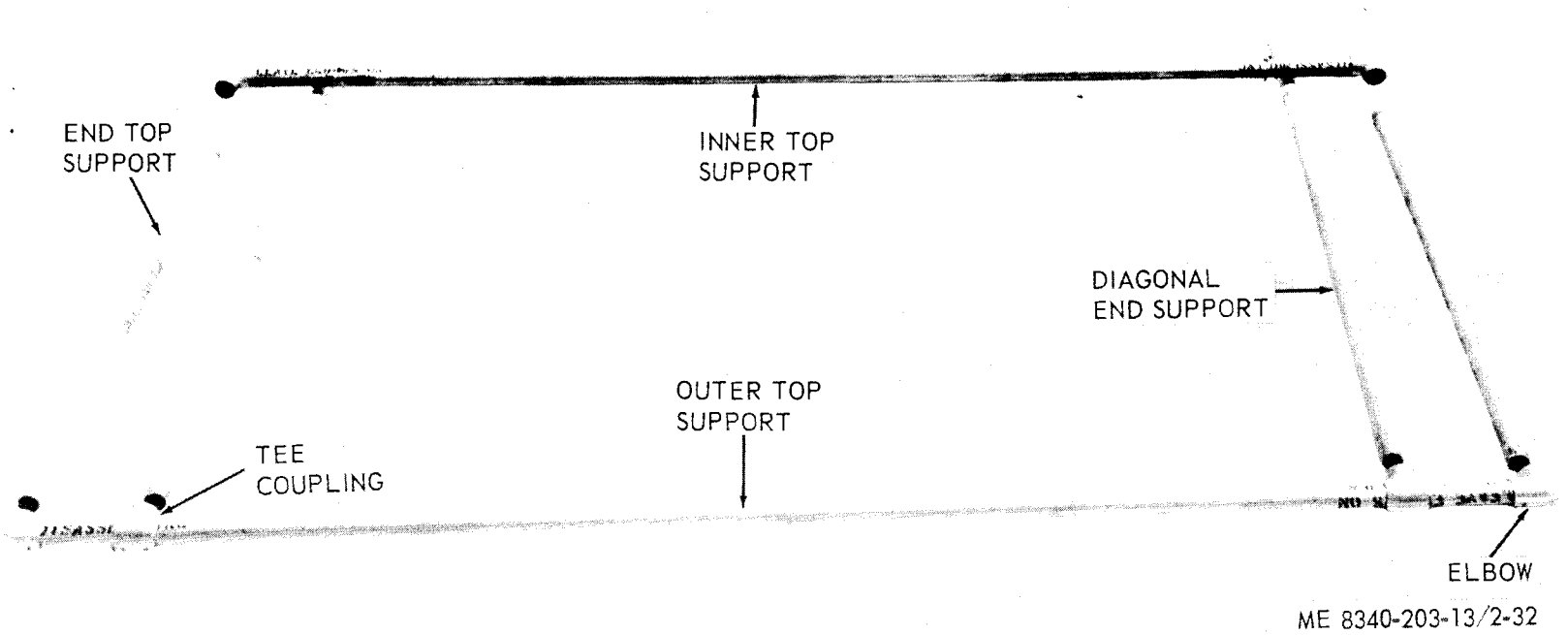



*Figure 2-32. Missile test shop maintenance tent frame supports.*

*b. Attaching Frame to Missile Test Shop Maintenance Cabinet.*

(1) Remove the protective cover, unroll the tent, and remove the supports, taking care not to remove the inner top support from the tent sleeve (para 2-1 *d*).

(2) Remove the hexagon-head bolts from the electrical cabinet storage compartment and bolt the inner top support to the top of the electrical equipment cabinet so that the tent, with the ground-line adjusting lines on the outside is hanging in front of the electrical equipment cabinet as shown in figure 2-33.

(3) Fold the tent back onto the top of the electrical equipment cabinet as shown in figure 2-33.

(4) Insert the end top supports into the inner top support elbows (fig. 2-35).

(5) Insert the free ends of the end top supports into the outer top support elbows (fig. 2-35).

(6) Insert the diagonal end supports into the support brackets (fig. 2-36).

(7) Slide the outer top support tee couplings to the necessary points and insert the free ends of the diagonal end supports into the outer top support tee couplings (fig. 2-37).

(8) Tighten all screws in the frame.

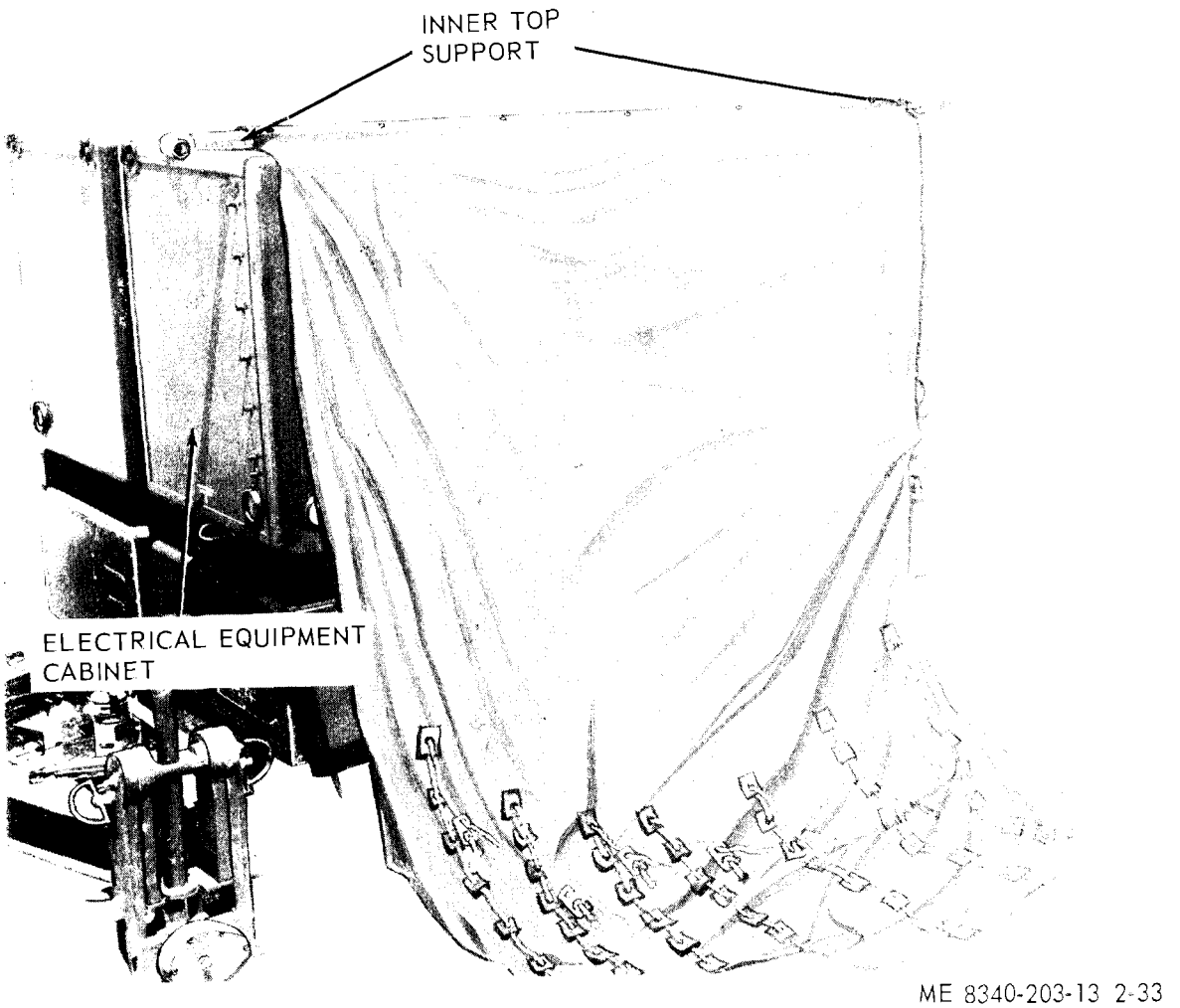



*Figure 2-33. Tent hanging in front of electrical equipment cabinet.*

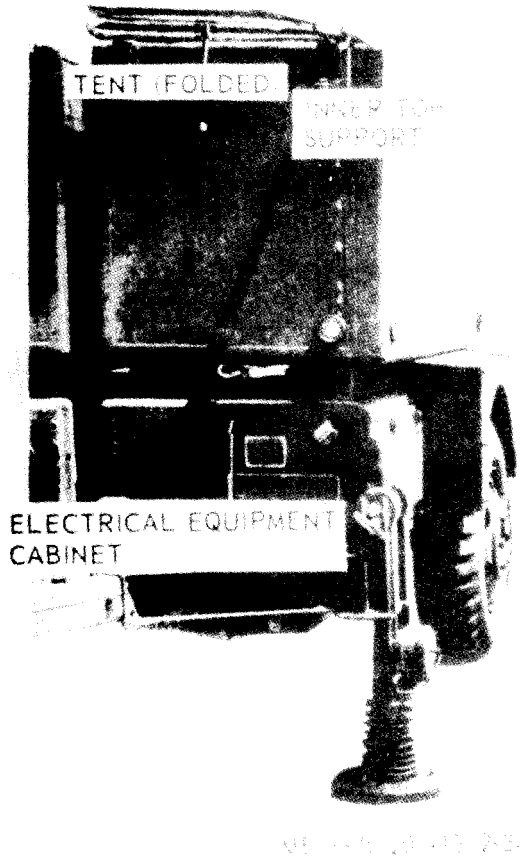



***Figure 2-34. Tent folded back on top of electrical equipment cabinet.***

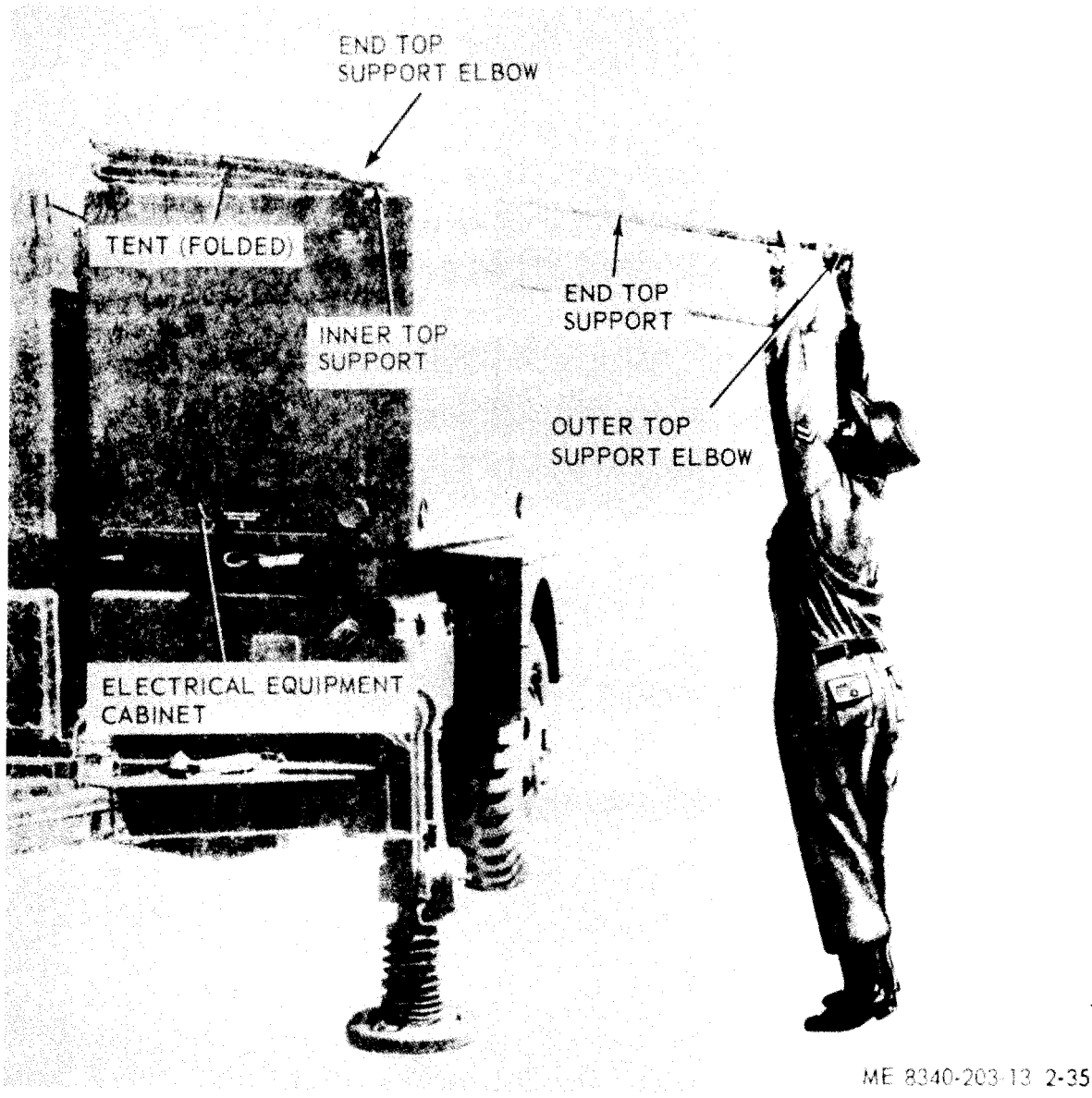



***Figure 2-35. Inserting free end of end top support into outer top support elbow.***

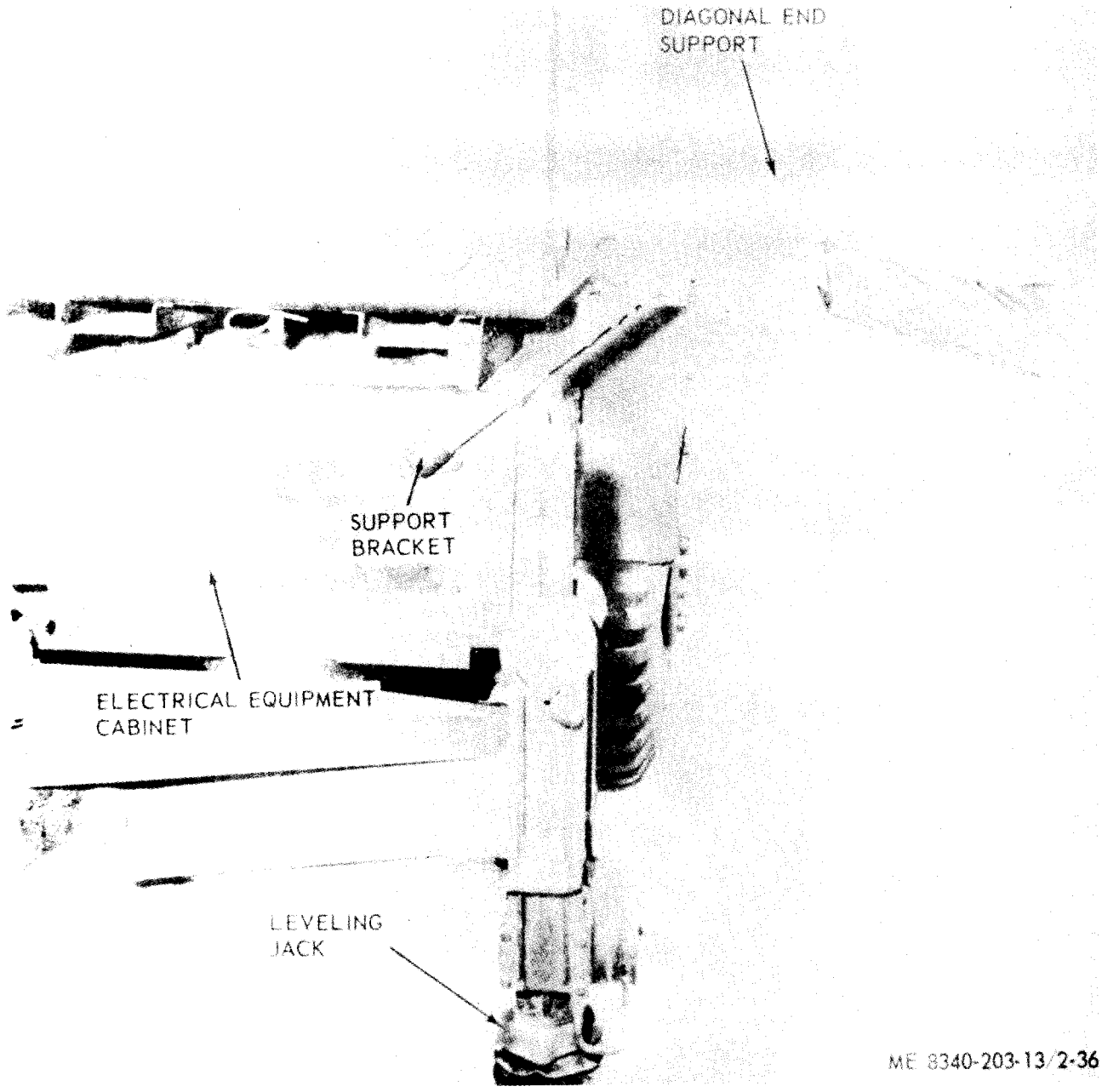



*Figure 2-36. Inserting diagonal end support into support bracket.*

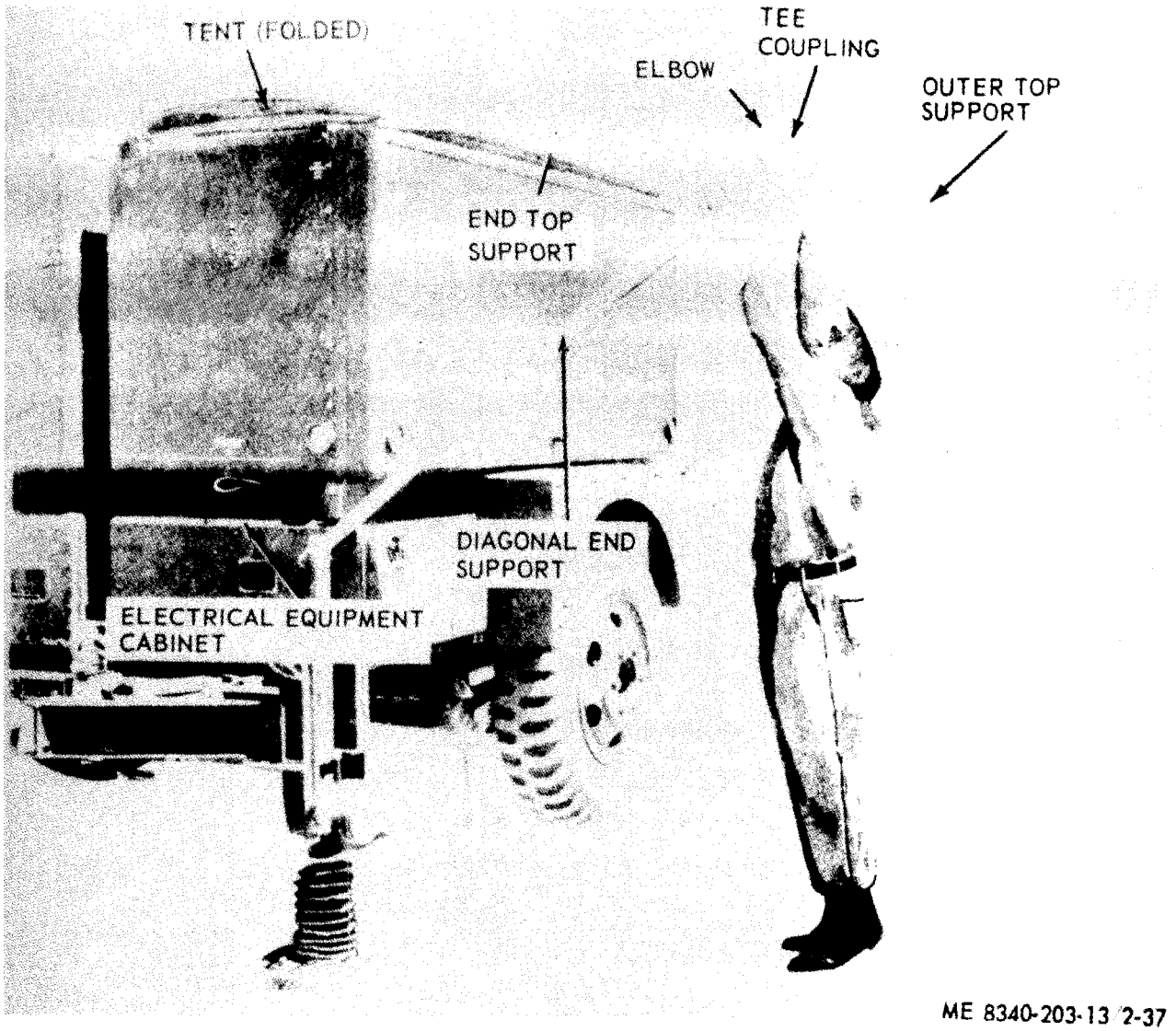



***Figure 2-37. Inserting free ends of diagonal end support tee couplings.***

*c. Attaching Tent to Frame.*

(1) Pull the tent over the frame and secure it to the frame with the tiedown straps located on the inside top edges of the tent (fig. 2-30).

(2) Working inside, attach the short wall of the tent to the electrical equipment cabinet, using the provided turnlock fasteners (fig. 2-38 and 2-39).

(3) Working outside, attach the sidewalls of the tent to the electrical equipment cabinet, using the provided turnlock fasteners located at the side of the cabinet.

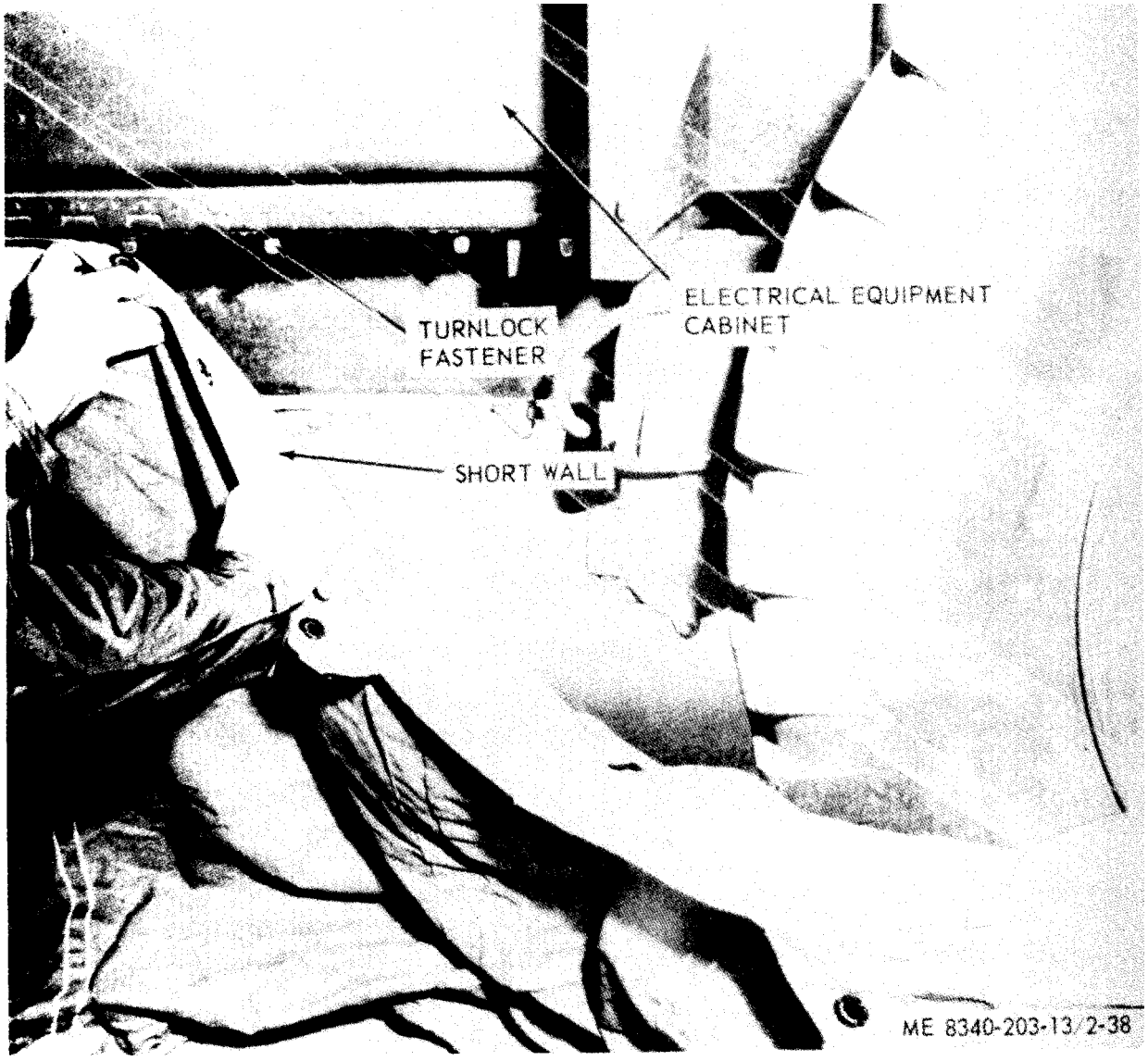



*Figure 2-38. Attaching short wall to electrical equipment cabinet.*

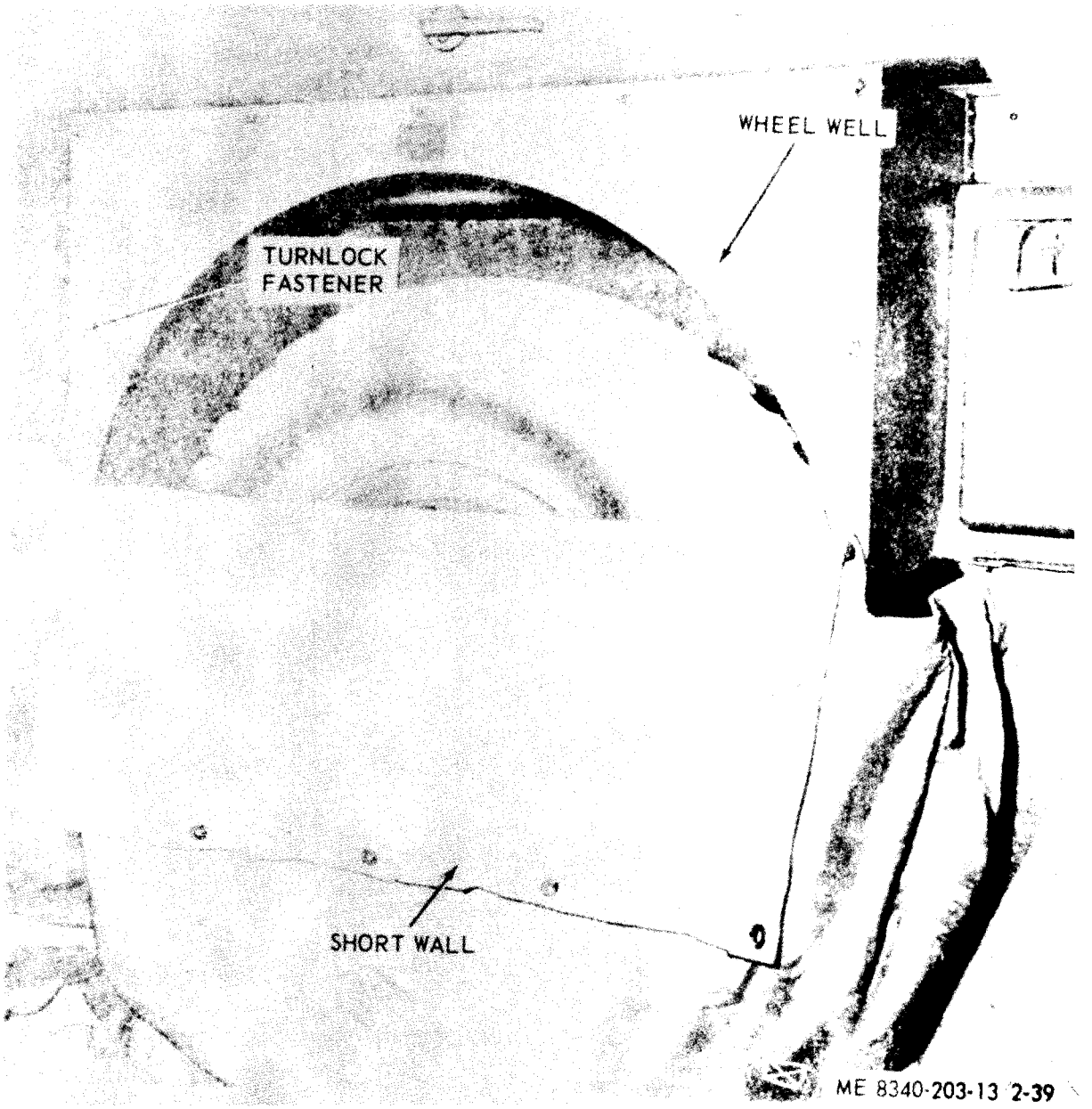



*Figure 2-39. Attaching short wall to electrical equipment cabinet wheel well.*

*d. Anchoring the Tent.*

(1) Fold the sod cloth back against the tent, aline the pins around the tent with the footstop tiedown ropes and drive the pins into the ground. Be sure the outer footstops are directly under the frame outer supports and the footstops at the front of the tent are directly under the front of the electrical equipment cabinet (fig. 2-15).

(2) Secure the footstop tiedown ropes to the pins.

(3) Install guy lines (fig. 2-16), if furnished.

(4) Adjust the adjusting tab lines to suit existing ground conditions by pulling either end of the rope to the necessary point. Secure the rope by hitching it through a slot in the ground-line adjusting bracket (fig. 2-17).

(5) Pull the sod cloth out and over the pins and weight the cloth with rocks, dirt, snow, sandbags, or other available material.

(6) Reinstall all necessary cables utilizing the cable sleeves (fig. 2-31) as necessary; tighten cable sock drawstrings after inserting the cables.

*e. Trenching around the Tent.* See paragraph 2-3 e.

## 2-13. Dismantling for Movement

**NOTE**

To facilitate dismantling the tent, remove all cables necessary and close the electrical equipment cabinet cover.

*a. Striking the Tent.*

(1) Remove the material used to weight down the sod cloth.

(2) Fold the sod cloth back against the tent, release the footstop tiedown ropes from the pins, and remove the pins from the ground.

(3) Release theturnlock fasteners and remove the short wall from beneath the electrical equipment cabinet.

(4) Release theturnlock fasteners and remove the sidewalls from the sides of the electrical equipment cabinet.

(5) Remove the tent from the frame and place it on top of the electrical equipment cabinet as shown in figure 2-34.

(6) Loosen all elbow screws necessary and remove end top supports.

(7) Loosen the-outer top support tee couplings a n dremove the outer top support.

NOTE

Allow the outer top support elbows and tee couplings and inner top support elbows to remain attached to the supports.

(8) Remove diagonal end supports from the support brackets.

(9) Pull the tent from the top of the electrical equipment cabinet and allow it to hang down in front as shown in figure 2-33.

(10) Remove the six bolts and washers which secure the inner top support to the electrical equipment cabinet.

(11) Remove the tent and store the bolts in the electrical equipment cabinet storage compartment.

NOTE

Do not remove the inner top support from the sleeve of the tent.

*b. Packing.* Refer to paragraph 2-5 *b* and pack the tent.

### 2-14. Reinstallation after Movement

Reinstallation procedures are identical to installation procedures Refer to paragraph 2-12 and erect the missile test shop tent.

## Section V. HIGH POWER ILLUMINATOR TENTS

### 2-15. Installation (Front Tent)

*a. General.* After leveling the radar trailer, erect the front tent (fig. 2-40) as described below.

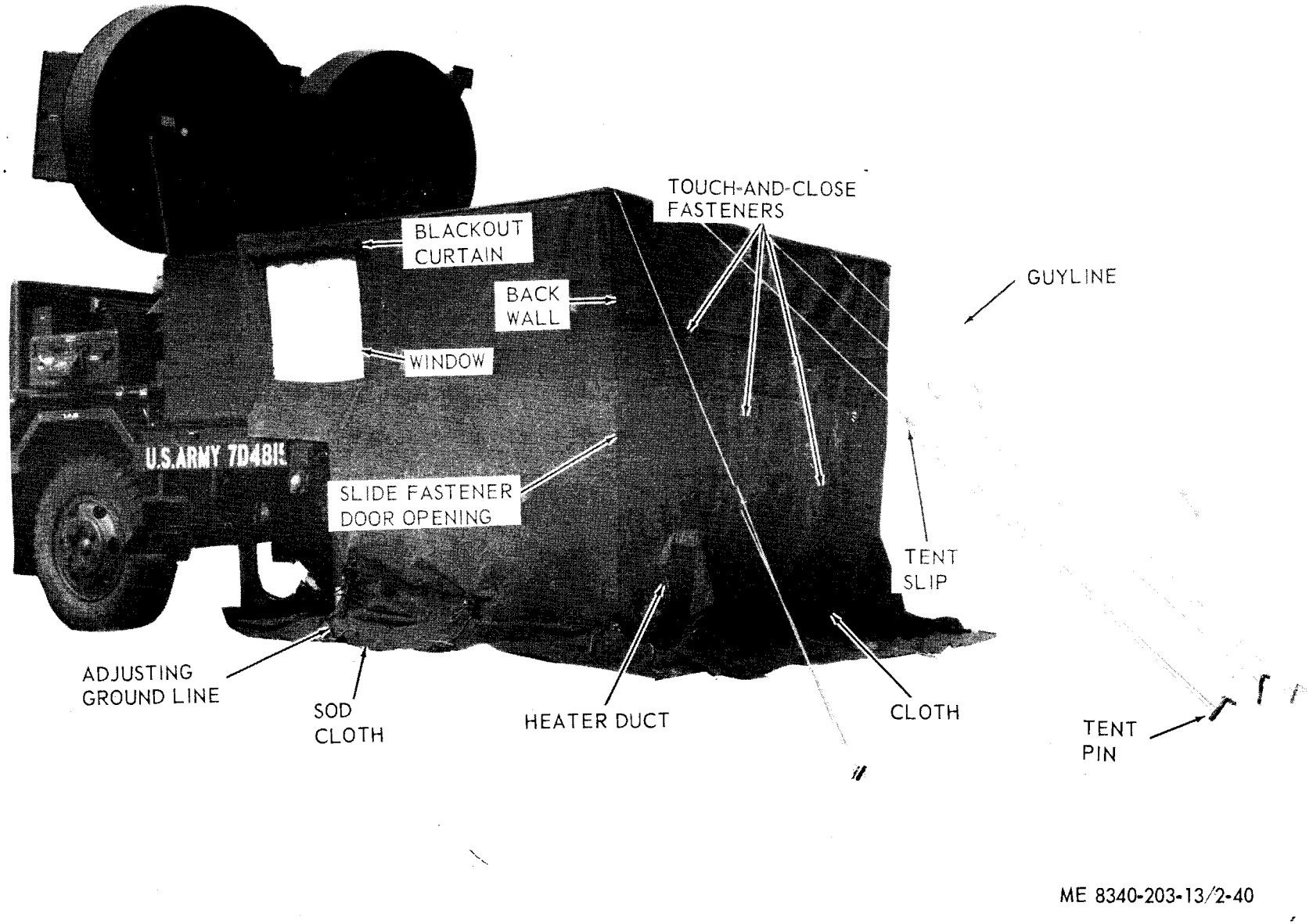



*Figure 2-40. High power illuminator front tent.*

*b. Attaching Frame and Tent to Console.*

(1) Remove the tent and support components from the carrying case and place the folded tent on the console roof with the rope hem (inside up) ready for capture at the inner top support location (fig. 2-41).

NOTE

Check the threaded inserts in the console roof and remove any foreign matter before attaching the inner top support.

(2) Place the inner top support on the console roof and over the tent, capturing the rope hem (fig. 2.42).

(3) Aline and fasten down the inner top support with five each, 1½ inch machine screws (fig. 2-42).

(4) Assemble the remaining supports (fig. 2-43). Tie the side top supports to the outer top support using polyester cord (fig. 2-43).

(5) Adjust the height of the corner supports so that the roof will be horizontal. To raise or lower the corner supports, line up the holes of the adapter and support at the desired height, and insert the bar pin (fig. 2-43) through both holes.

(6) Unfold the tent and drape it over the frame (fig. 2-44). The metal cover should be removed from the console door before raising the door. Working inside the tent, raise the console door and attach the tent wall to the console by placing the eyelet tabs (fig. 2-45) over the turnlock fasteners and adjust the fasteners.

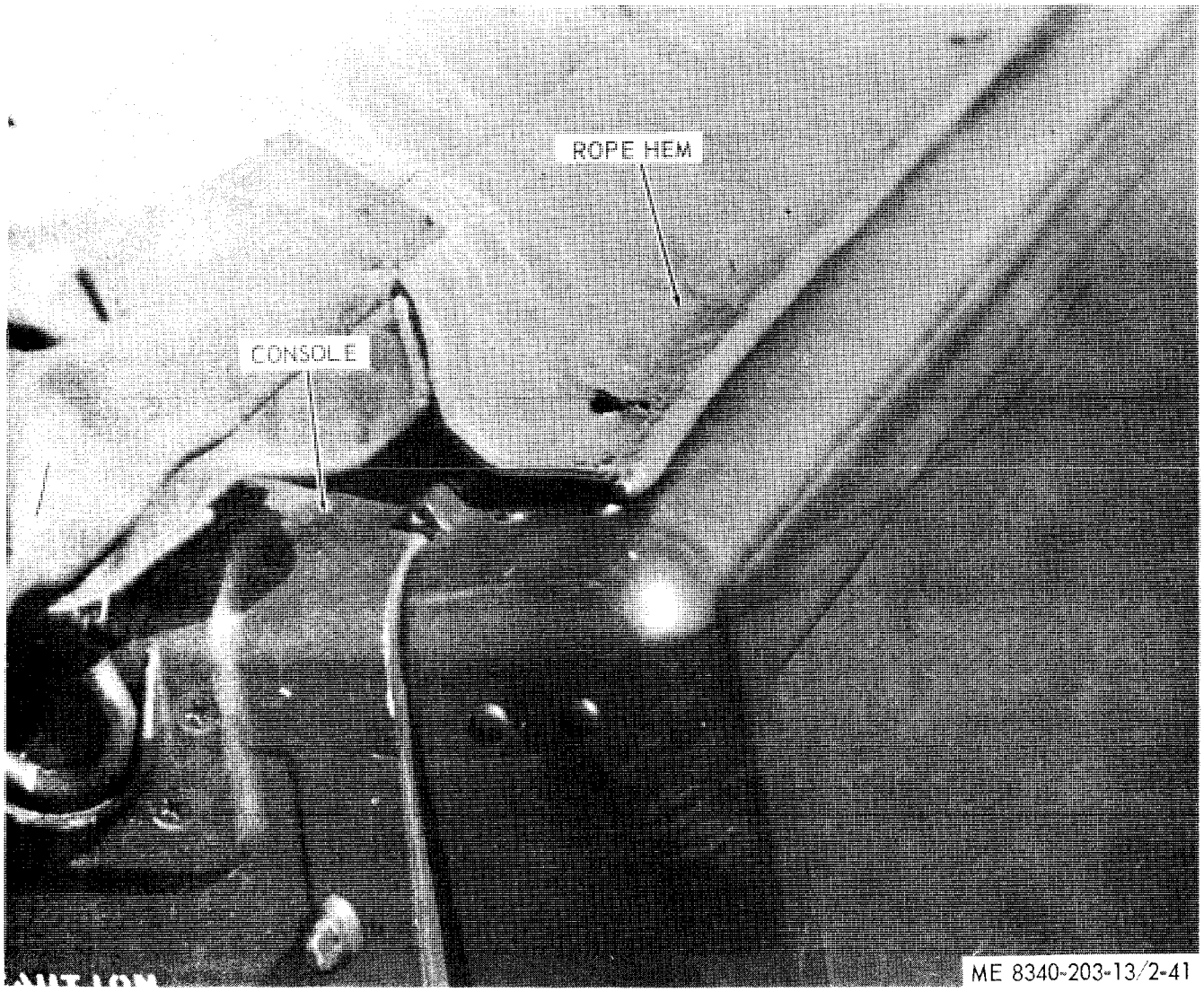



***Figure 2-41. Rope hem section of tent placed on console roof.***

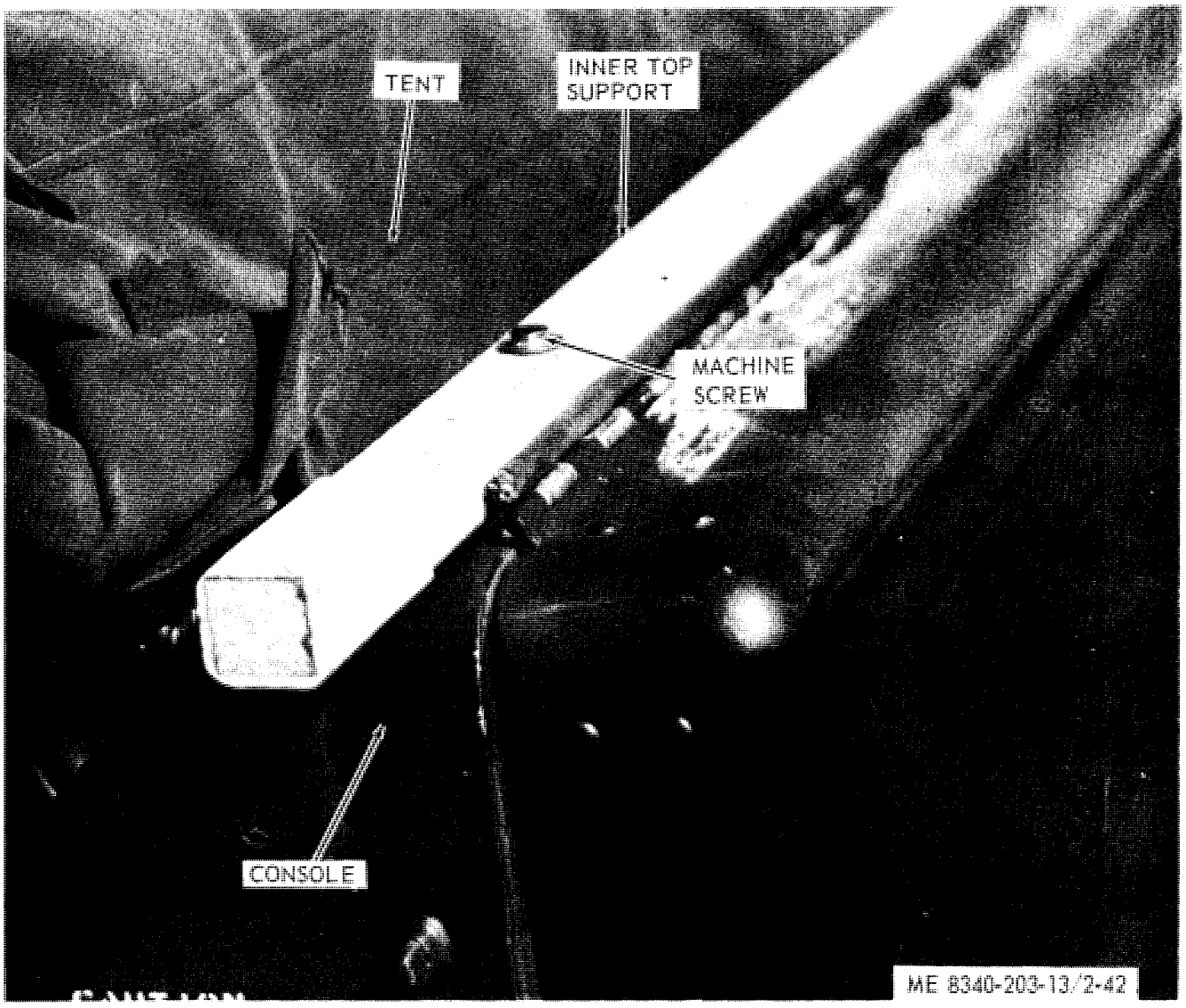



*Figure 2-42. Inner top support installed on console roof.*

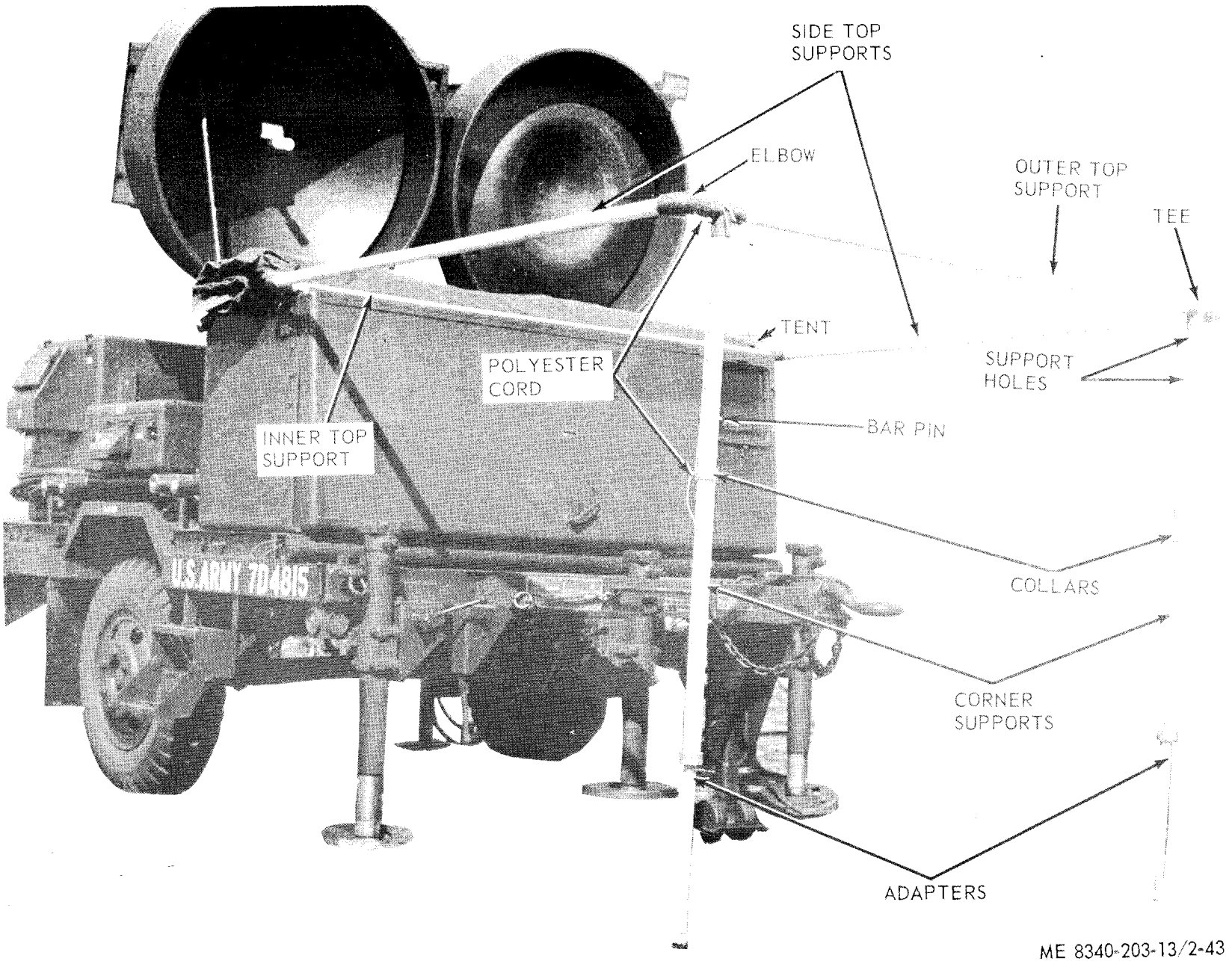



*Figure 2-43. Front tent frame erected.*

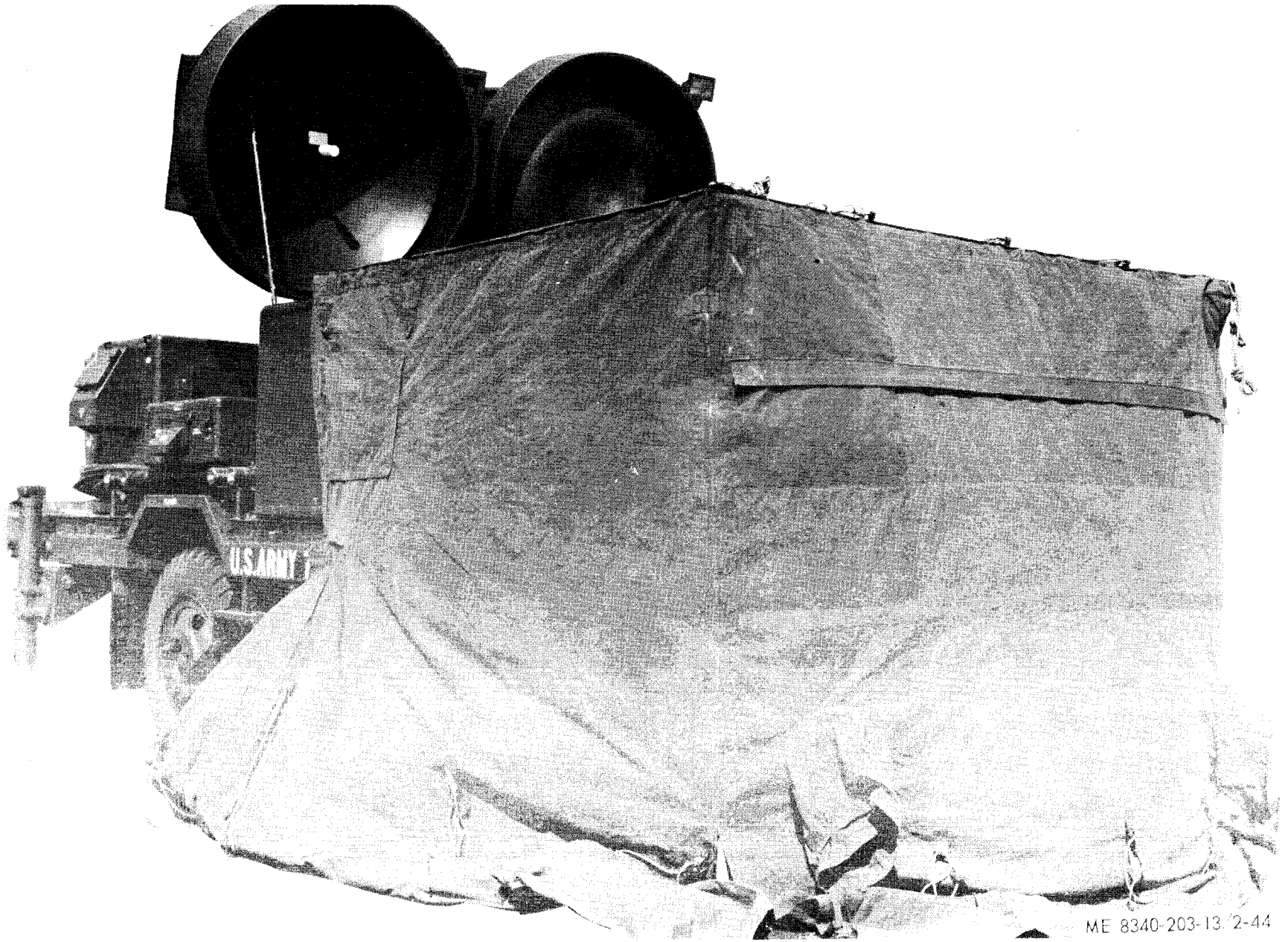



*Figure 2-44. Tent unfolded and draped over frame.*

*Figure 2-45. Tent wall attached to console.*

*c. Staking the Tent.*

(1) Fold the sod cloth back against the tent. Aline the 12-inch tent pins with the footstop tiedown ropes and drive the pins into the ground. Make sure the footstops are directly under the frame outer support.

(2) Secure the footstop tiedown ropes to the pins.

(3) Install guy lines (fig. 2-40), using 16-inch tent pins at appropriate locations. Pull the lines taut by adjusting the tent slips.

(4) Adjust the adjusting ground lines to suit existing ground conditions by pulling the free end of the adjusting line through the rope eye and securing with a knot.

(5) Pull the sod cloth out and over the footstop pins, and weight the cloth with rocks, dirt, sandbags, or other available material.

*d. Reefing the Back Wall.* When the high powered illuminator is to be operated below the horizontal, the roof is lowered and additional wall height adjustment is made by setting the corner supports (fig. 2-43) to the shortest position *( b* (5) above) and reefing the back wall. To reef the back wall, mate the strips of touch-and-close fasteners (fig. 2-40) provided for this purpose.

*e. Trenching the Tent.* See paragraph 2-3 e.

## 2-16. Dismantling for Movement (Front Tent)

*a. Striking the Tent.* To strike the tent, reverse the procedures described in paragraph 2-15.

*b. Packing.*

(1) Spread the tent on the ground so that the outside is against the ground, and close all fasteners.

(2) Fold the tent sides inward onto the tent top.

(3) Roll the tent from the front toward the inner top support.

(4) Place the folded tent and support components in the carrying case and secure the case with the securing strap and buckles.

## 2-17. Reinstallation After Movement

Reinstallation procedures are the same as installation procedures. Refer to paragraph 2-15 and erect the front tent.

## 2-18. Installation (Aft Tent)

*a. General.* After leveling the radar trailer, erect the aft tent (fig. 2-46) as described below.

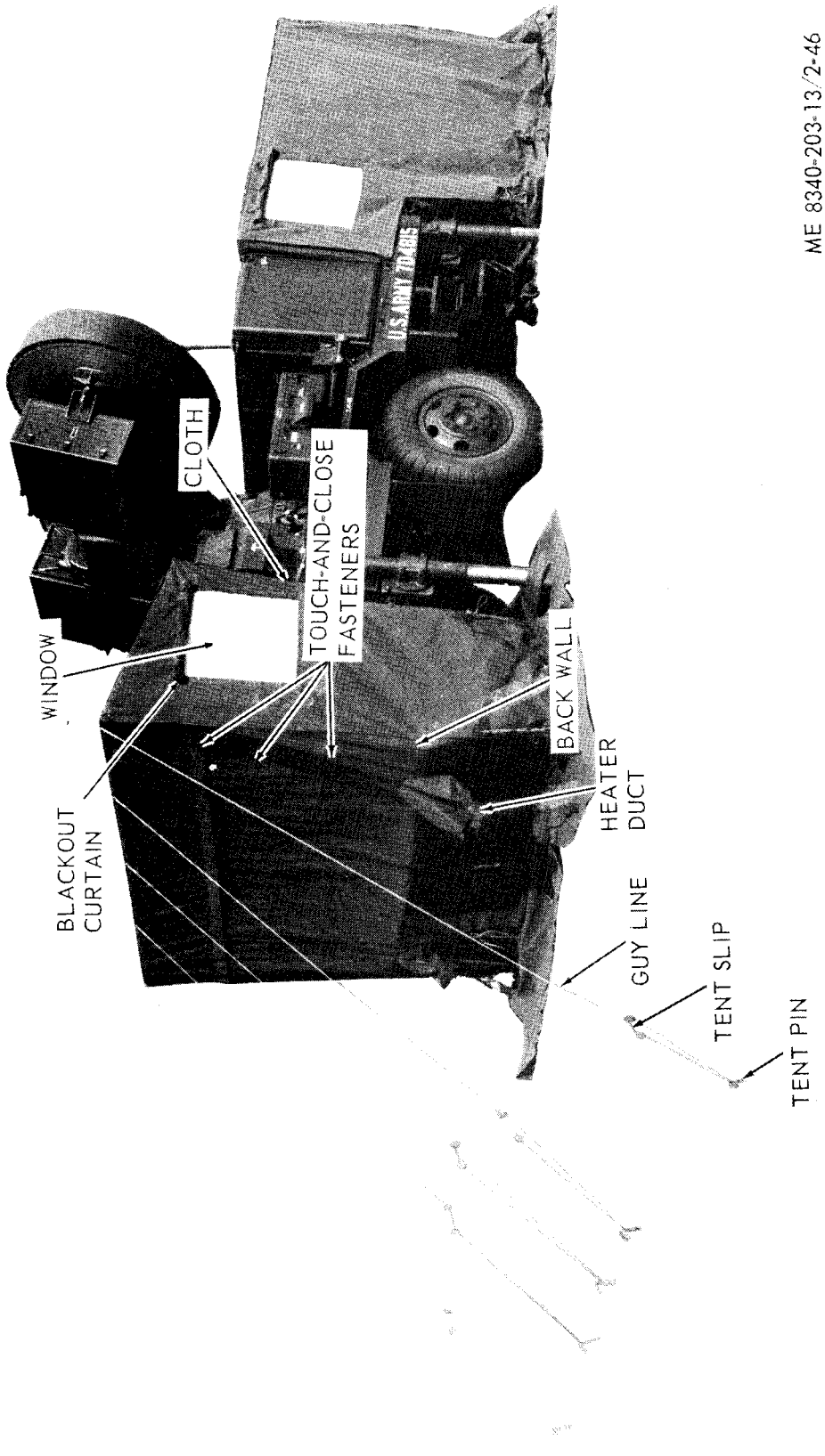



*Figure 2-46. High power illuminator aft tent.*

*b. Attaching Frame and Tent to Console.*

(1) Remove the tent and support components from the carrying case and place the folded tent on the console roof with the rope hem (inside up) ready for capture at the inner top support location (fig. 2-41).

NOTE

Check the threaded inserts in the console roof and remove any foreign matter before attaching the inner top support.

(2) Place the inner top support on the console roof and over the tent, capturing the rope hem (fig. 2-42).

(3) Aline and fasten down the inner top support with five each, 1½-inch machine screws (fig. 2-42).

(4) Assemble the remaining supports (fig. 2-47). Tie the side top supports to the outer top support using polyester cord (fig. 2-47).

(5) Adjust the corner supports to their maximum height. To raise or lower the corner supports, line up the holes of the adapter and support at the desired height, and insert the bar pin (fig. 2-47) through both holes.

(6) Unfold the tent and drape it over the frame. Working inside the tent, attach the tent wall to the console by placing the eyelet tabs (fig. 2-48) over the turnlock fasteners and adjusting the fasteners.

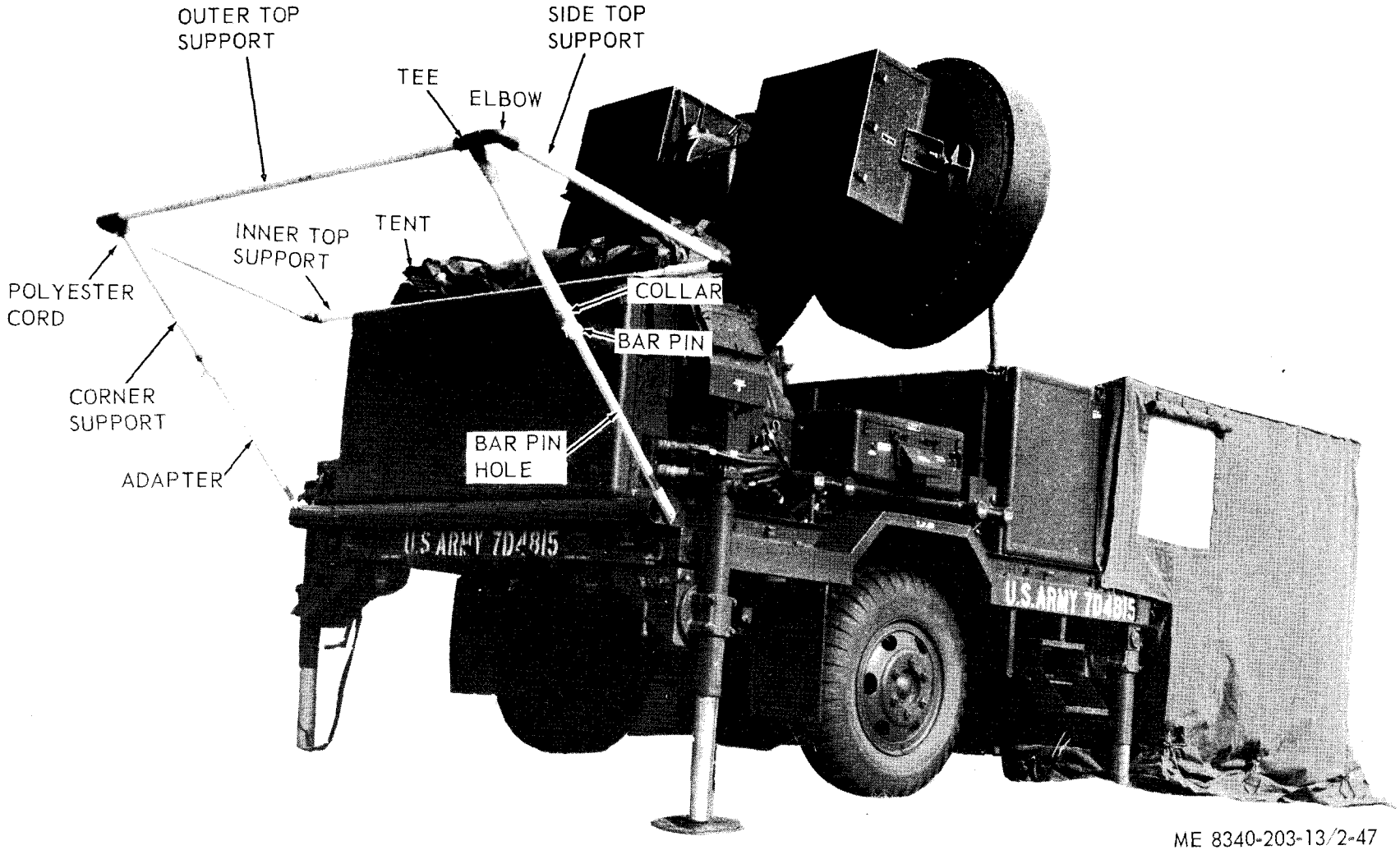



*Figure 2-47. High power illuminator aft tent frame erected.*

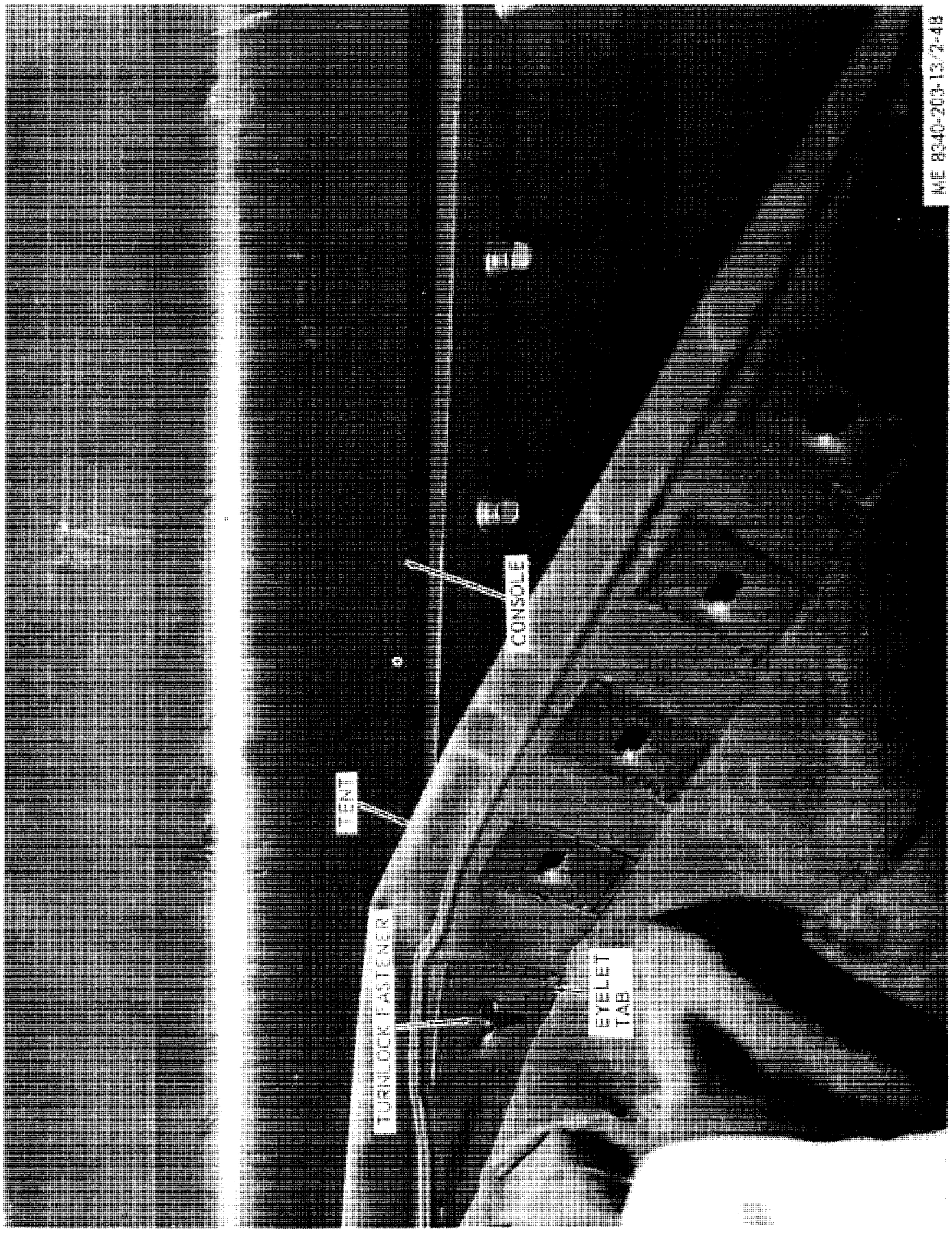



*Figure 2-48. Attaching tent wall to console.*

*c. Anchoring the Tent.*

(1) Fold the sod cloth back against the tent. Aline the 12-inch tent pins with the footstop tiedown ropes and drive the pins into the ground. Make sure the footstops are directly under the frame outer supports.

(2) Secure the footstop tiedown ropes to the pins.

(3) Install guy lines (fig. 2-46), using 16-inch tent pins at appropriate locations. Pull the lines taut by adjusting the tent pins.

(4) Adjust the wall height to suit existing ground conditions by pulling the free end of the adjusting line through the rope eye and securing with a knot.

(5) Pull the sod cloth out and over the footstop pins, and weight the cloth with rocks, dirt, sandbags, or other available material.

*d. Reefing the Back Wall.* When the high powered illuminator is to be operated below the horizontal, the roof is lowered and additional wall height adjustment is made by setting the corner supports (fig. 2-47) to the shortest position ( *b* ( (5) above) and reefing the back wall (fig. 2-49). To reef the back wall, mate the strips of touch-and-close fasteners (fig. 2-46) provided for this purpose.

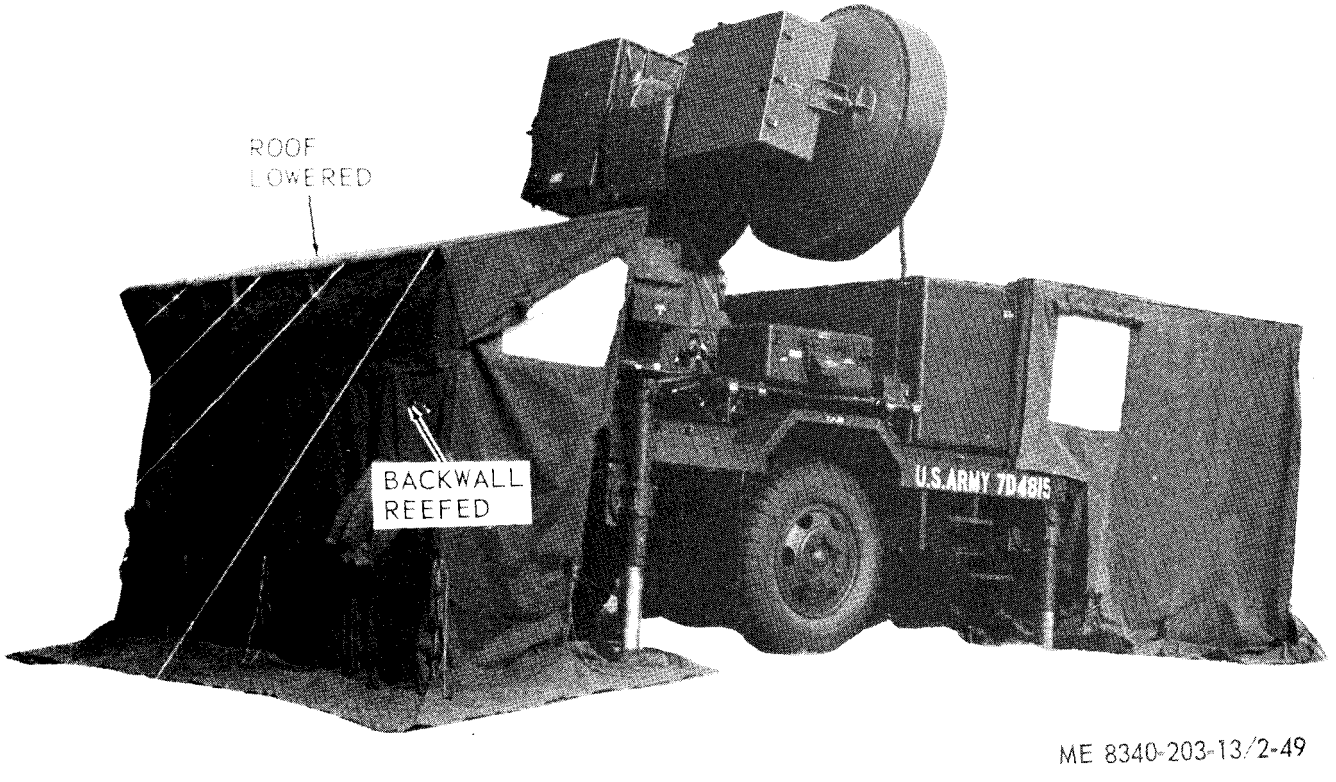



***Figure 2-49. Back wall reefed and roof lowered.***

*e. Trenching around the Tent.* See paragraph 2-3 e.

### 2-19. Dismantling for Movement

*a. Striking the Tent.* To strike the tent, reverse the procedures described in paragraph 2-18.

*b. Packing.* Packing procedures are the same as those provided for the front tent. Refer to paragraph 2-16 *b* and pack the tent.

### 2-20. Reinstallation After Movement

Reinstallation procedures are the same as installation procedures. Refer to paragraph 2-18 and erect the aft tent.

## Section VI. HAWK MISSILE COVER

### 2-21. General

**NOTE**

The right and left sides of the cover refer to the reader's right and left as he faces the missile tail cone section of the cover while the cover is attached to the missile.

For description purposes only, nomenclature of the cover (fig. 2-50) conforms with nomenclature of the missile for that portion of the missile covered. The Hawk missile cover is form fitting, tailored to conform to the shape of the Hawk missile. It has two pull handles at the section which covers the missile radome and one pull handle on each side of the center of the missile cover. The cover remains taut on the missile by means of five longitudinal rubber tarp straps, one tail cone rubber tarp strap, one bottom center rubber tarp strap, and one top center buckle strap.

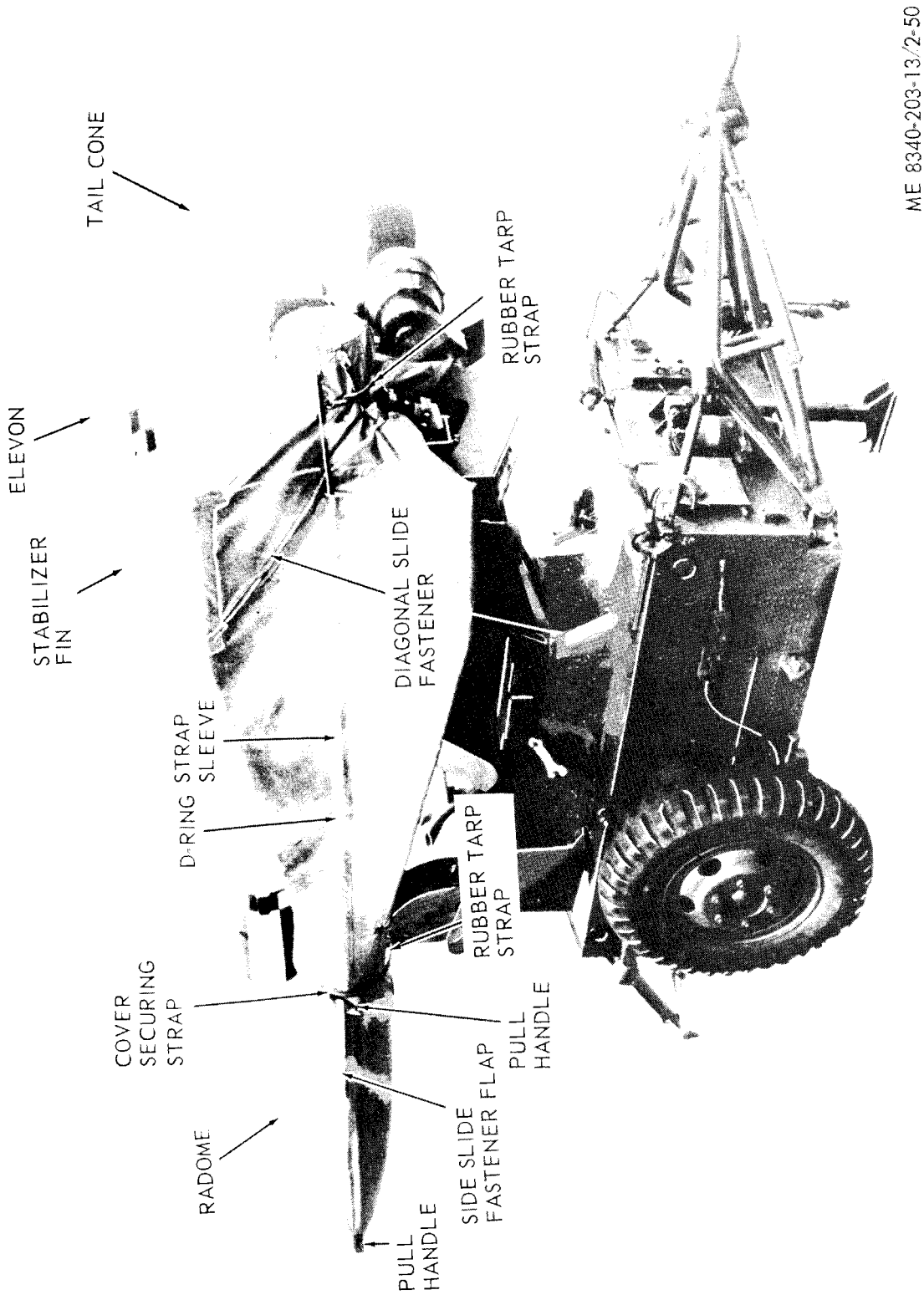



***Figure 2-50. Hawk missile cover on emplaced missile.***

## 2-22. Attaching Cover

*a.* Slip the cover over the missile radome and pull it over the missile, using the pull handles located at each center side of the missile cover (fig. 2-51).

*b.* Close the side slide fastener and the cover fastener with the slide fastener flap, which is provided with a nylon touch-and-close fastener (fig. 2-52)

*c.* Close the top slide fastener by pulling the slide toward the missile radome (fig. 2-53). Cover the fasteners with the double flap which is provided with a touch-and-close fastener (fig. 2-54); make sure the top slide fastener straps (fig. 2-53) are enclosed under the flap.

*d.* Fasten the cover securing strap (fig. 2-54) located at the forward end of the missile stabilizer fin section.

*e.* Attach the center rubber tarp strap across the underside of the center section of the missile as shown in figure 2-56, using the upper D-ring on the right side of the missile cover (inset, Fig. 2-55). When the missile is on the pallet, the lower D-ring is used for attachment of the center rubber tarp strap, as shown in figure 2-56.

*f.* Place the balance of the cover, with the rubber tarp straps, between the two stabilizer fins (fig. 2-57).

*g.* Place both upper stabilizer fin covers over the upper fins and elevons (fig. 2-58).

*h.* Place the missile tail cone cover over the missile tail cone (fig. 2-59).

*i.* Place both lower stabilizer fin covers over the lower fins (fig. 2-60).

*j.* Close the two diagonal slide fasteners located diagonally at each side of the upper stabilizer fins, and attach the two slide fastener thongs together by means of the S-hook and O-ring attached to the thongs (fig. 2-60).

*k.* Attach the five rubber tarp straps to the tail cone cover by means of the S-hook and D-ring arrangement (fig. 2-61).

*l.* Attach the tail cone rubber tarp strap across the underside of the tail cone cover (fig. 2-62).

*m.* Tuck the flaps of the bottom slide fastener as shown in figure 2-63.

NOTE

When the missile is on the pallet, the bottom slide fastener is closed.

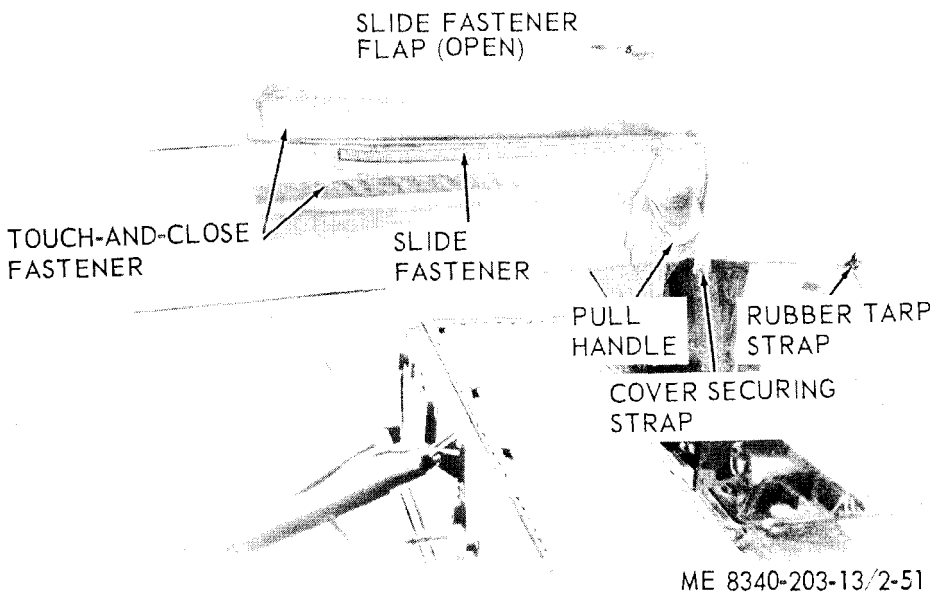



***Figure 2-51. Left center pull handle and side slide fastener with flap open.***

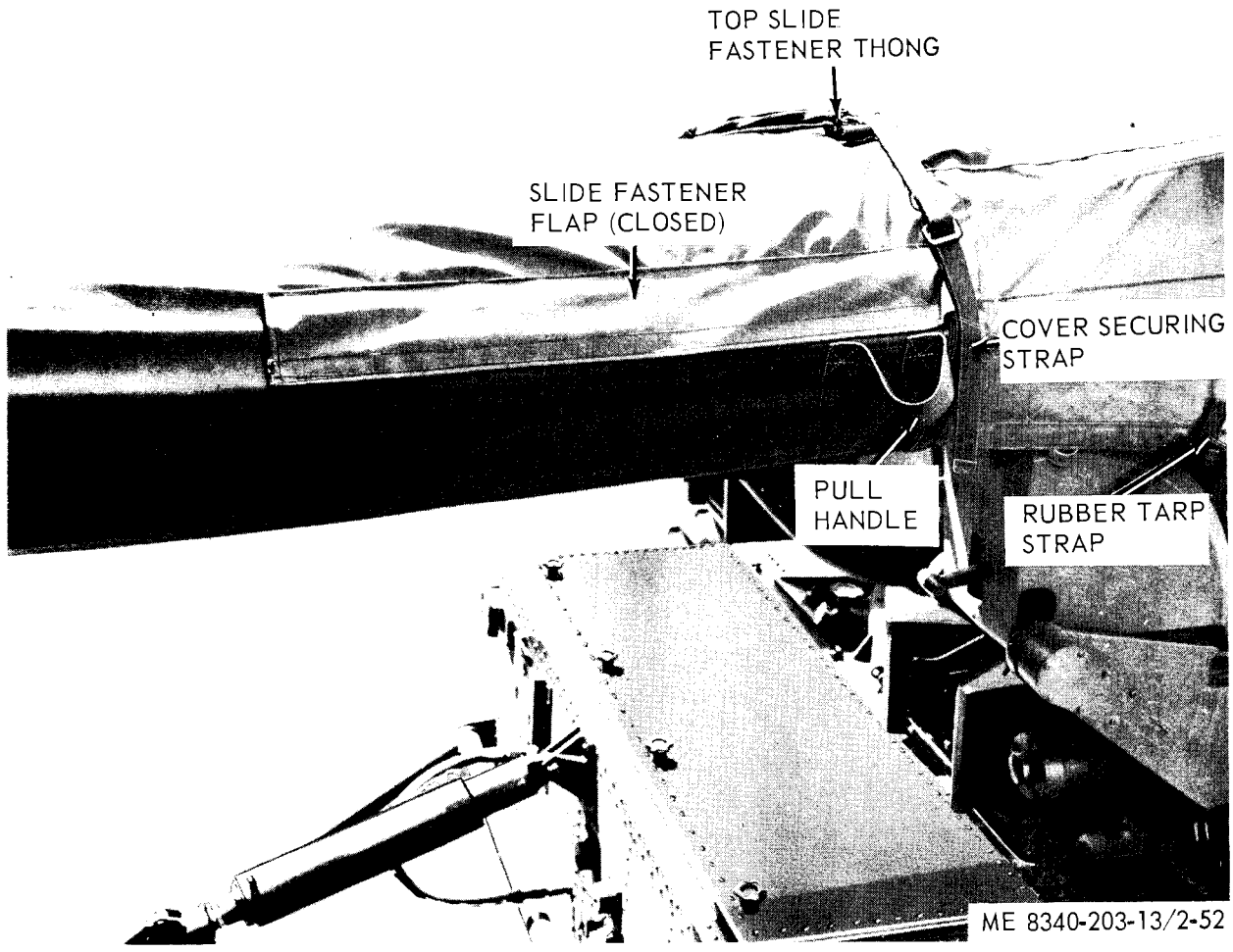



*Figure 2-52. Side slide fastener flap closed.*

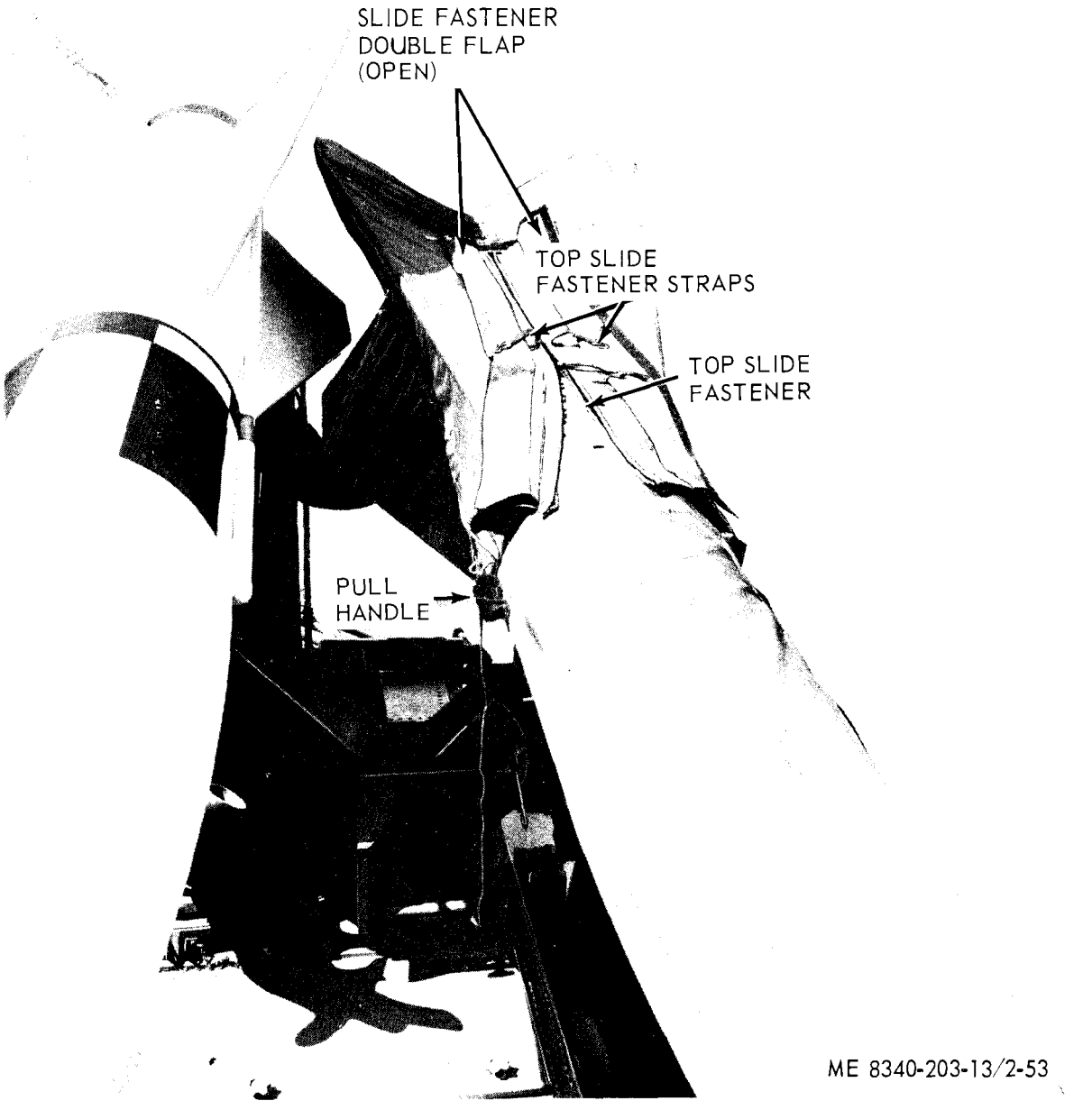



*Figure 2-53. Top slide fastener with double flap open.*

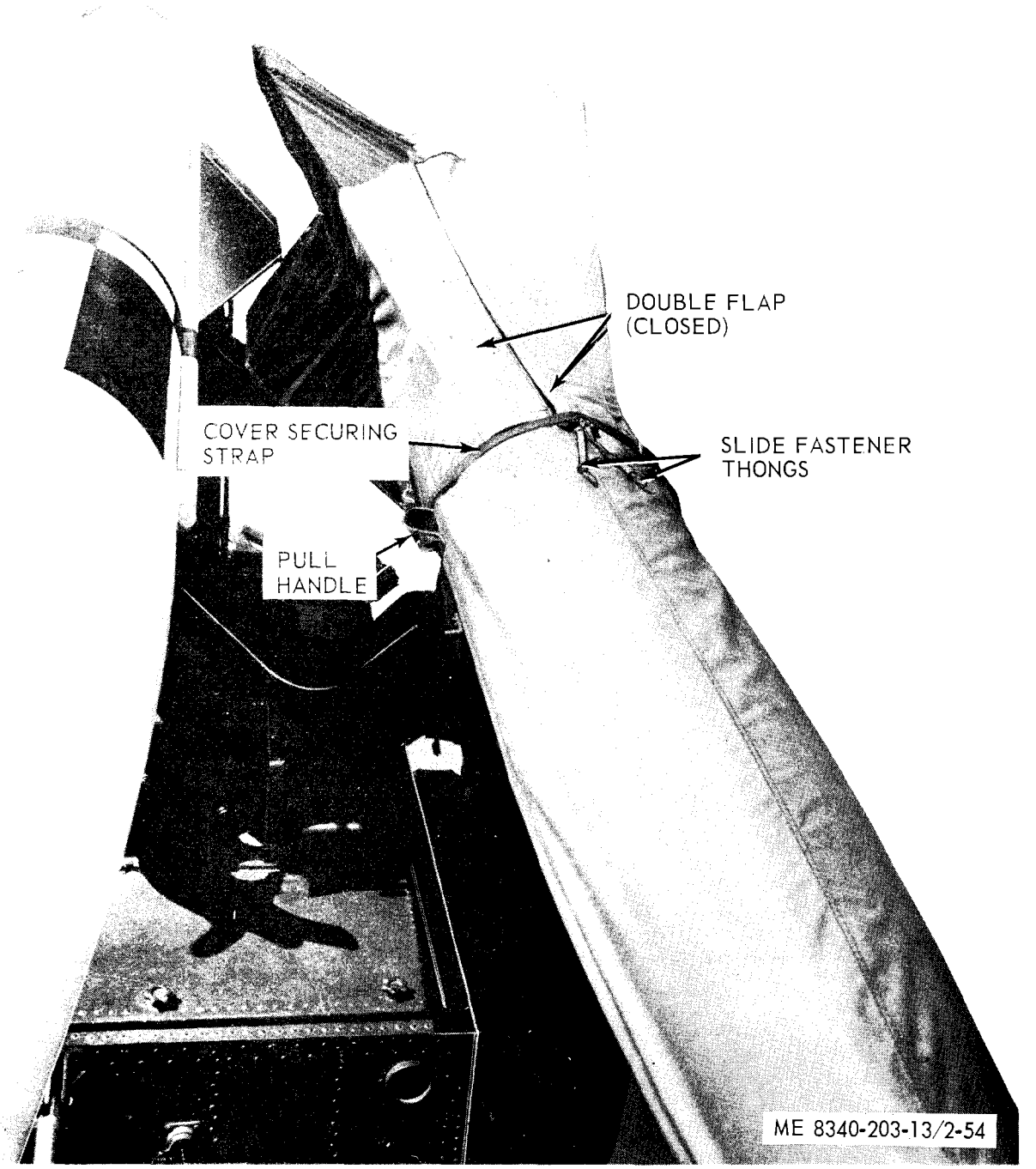



***Figure 2-54. Top slide fastener double flap closed and cover securing strap fastened.***

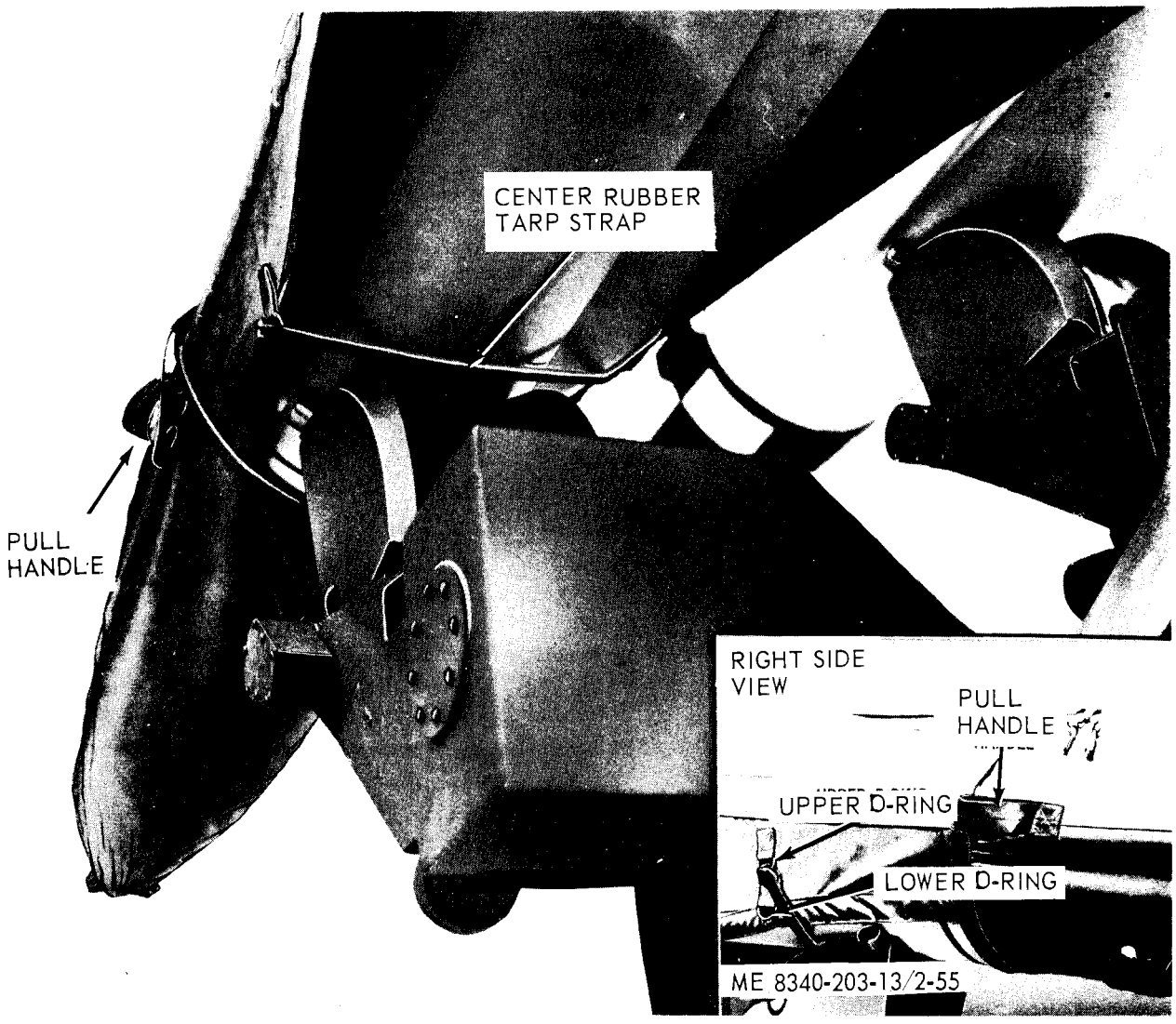



*Figure 2-55. Attachment of center rubber tarp strap to upper D-ring.*

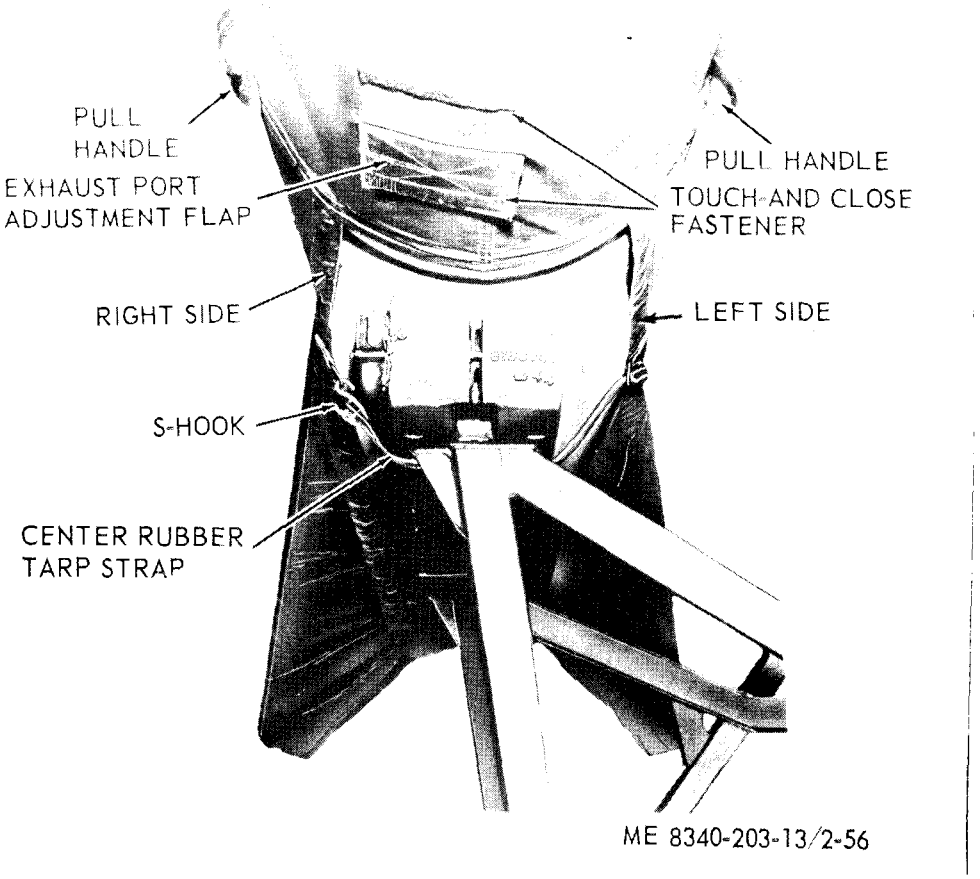



*Figure 2-56. Attachment of center rubber tarp strap to lower D-ring on missile pallet.*

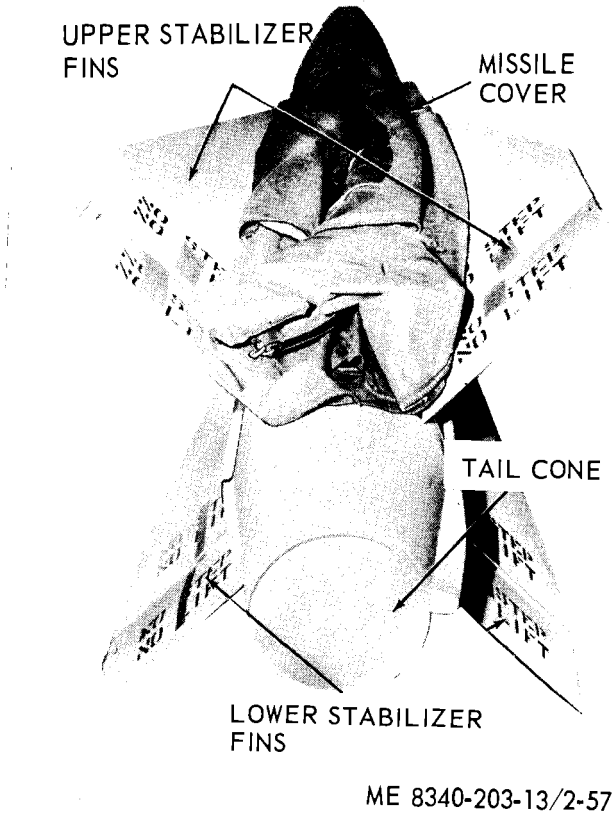



*Figure 2-57. Fin sections, cone sections, and straps of missile cover placed between upper fins of missile.*

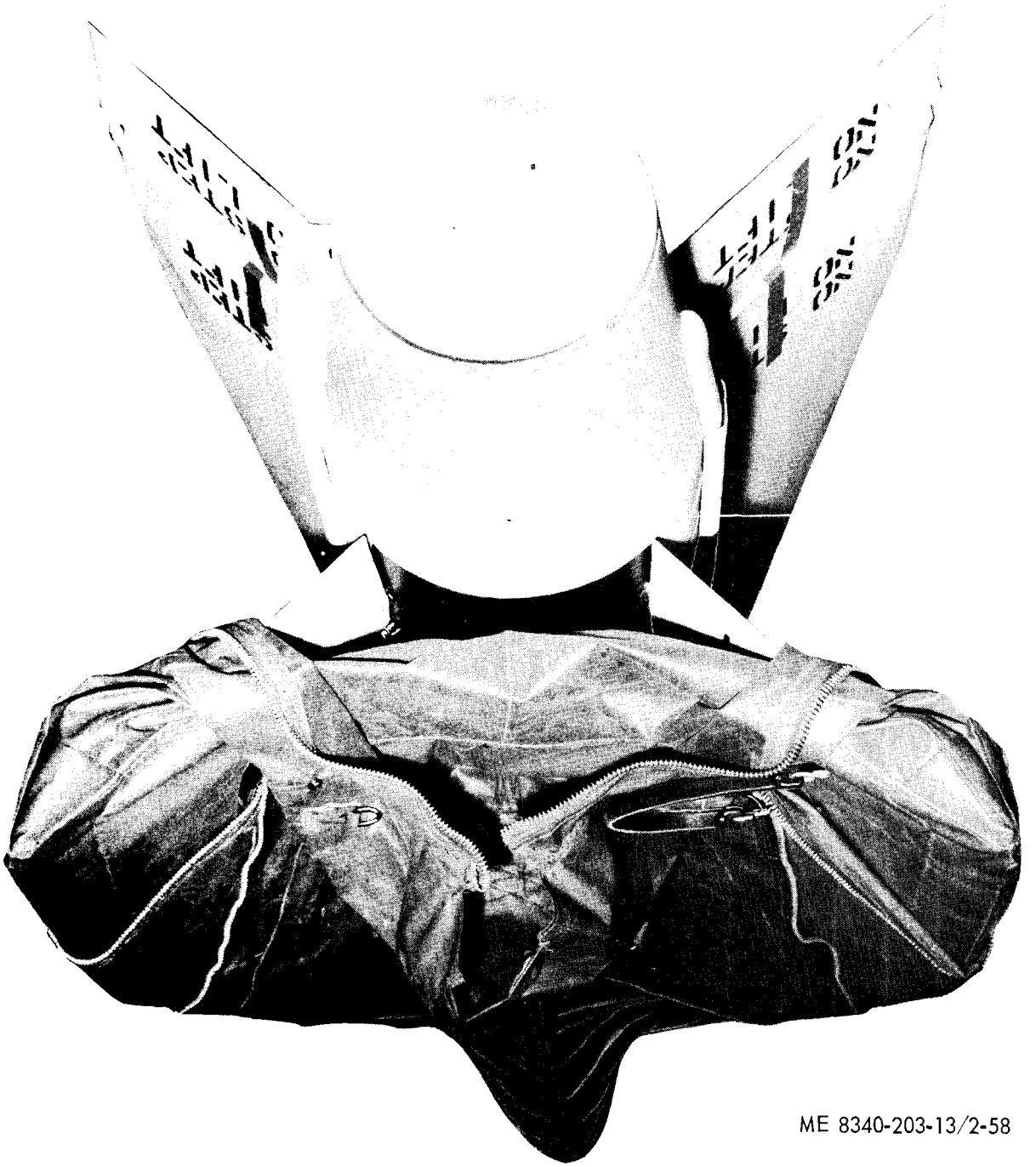



*Figure 2-58. Upper fin covers over upper fins of missile with balance of cover placed between upper fins.*

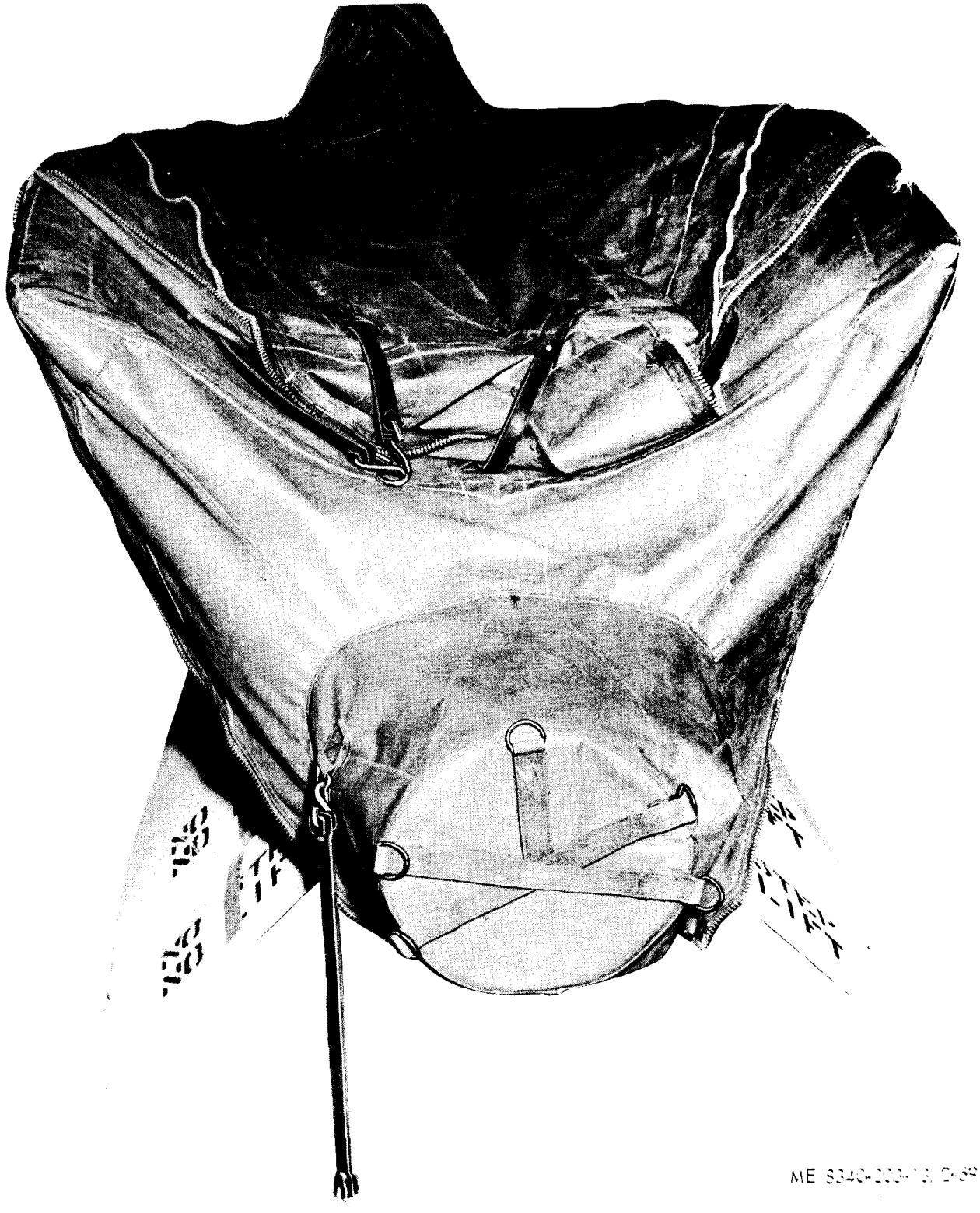


*Figure 2-59. Missile tail cone cover over missile tail cone with balance of cover placed between upper fins.*

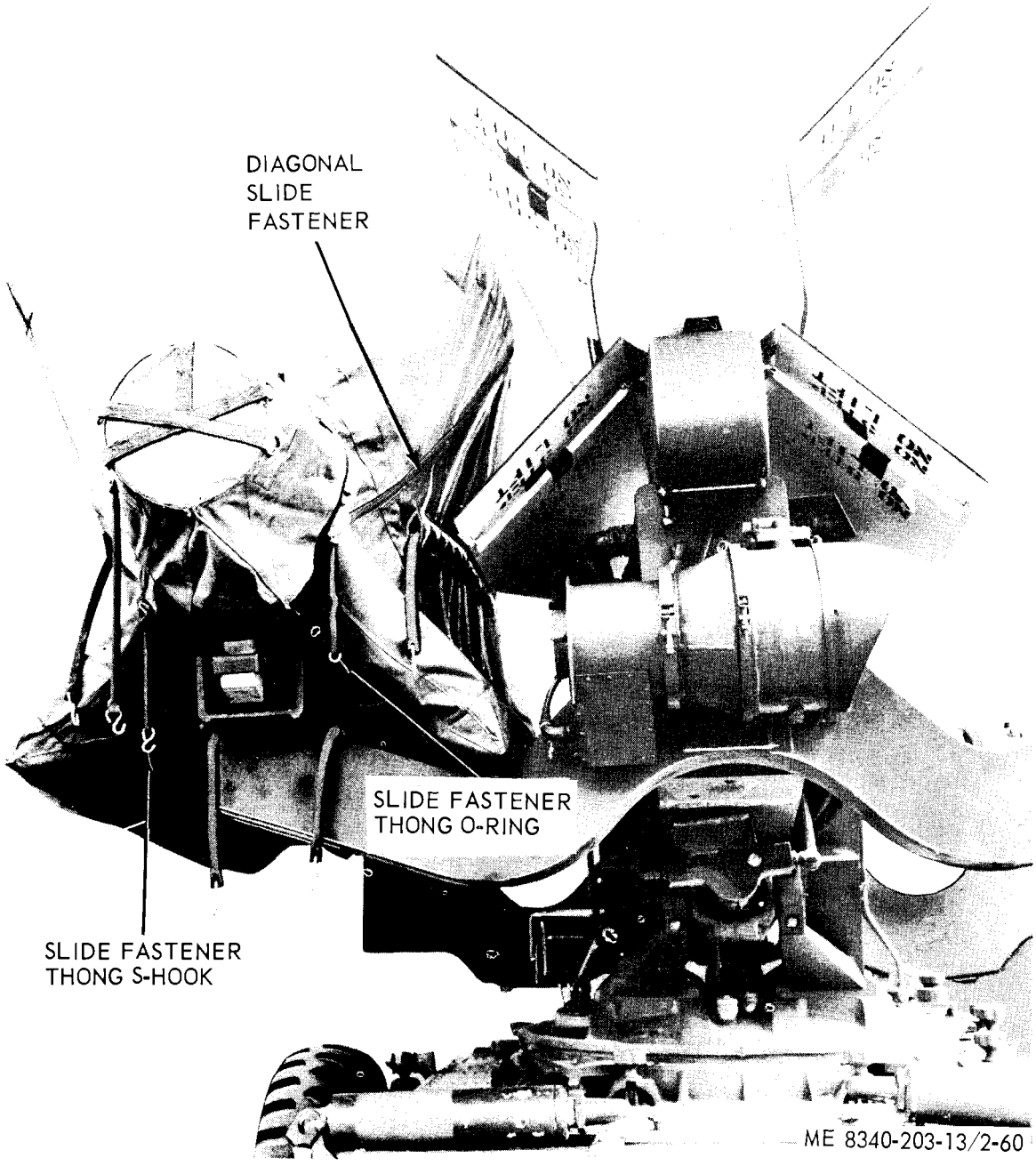



*Figure 2-60. Missile fins and tail cone covered.*

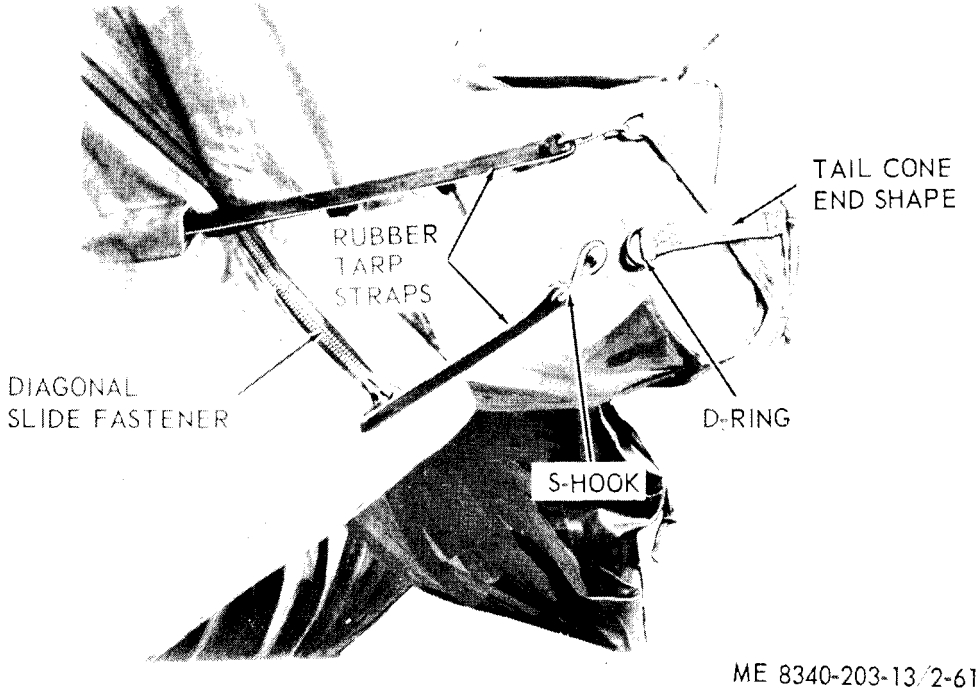



*Figure 2-61. Attaching longitudinal rubber tarp straps.*

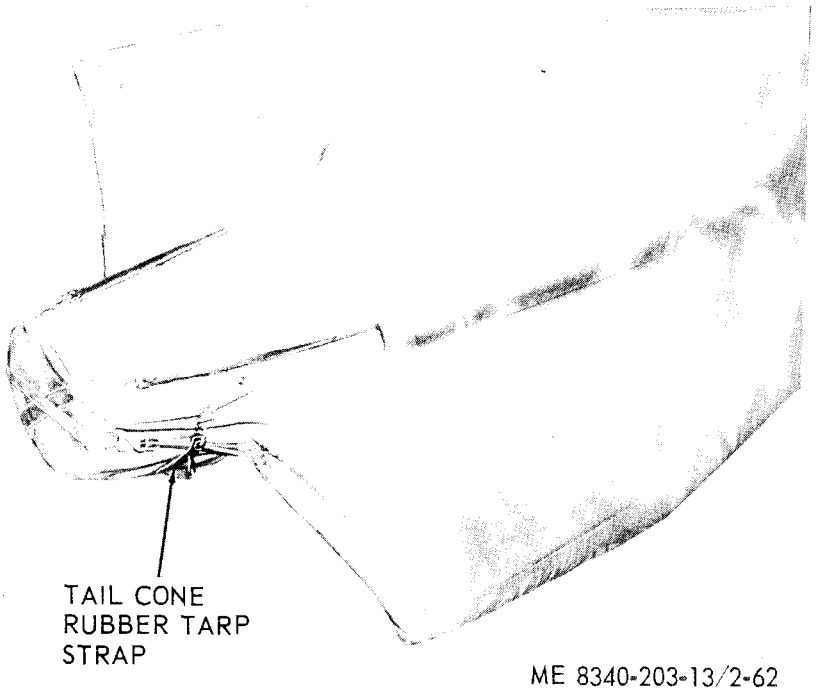



*Figure 2-62. Attaching tail cone rubber tarp strap.*




***Figure 2-63. Bottom slide fastener flaps tucked under.***

## 2-23. Removing Cover

*a.* Release the cover securing strap (fig. 2-54).

*b.* Unhook the center rubber tarp strap (fig. 2-55).

*c.* Open the side slide fastener double flap and side slide fastener (fig. 2-52).

*d.* Open the top slide fastener double flap and open the top slide fastener (fig. 2-53) about 1 inch.

*e.* Unhook the diagonal slide fastener thongs (fig. 2-60) and release the tail cone rubber tarp strap.

*f.* Unhook the five rubber tarp straps (fig. 2-61) from the tail cone cover.

*g.* Open the two diagonal slide fasteners (fig. 2-60).

*h.* Pull both lower stabilizer fin covers from the lower fins and elevons and place them between the two upper stabilizer fins (fig. 2-59).

*i.* Pull the missile tail cone cover from the missile tail cone and place it between the two upper stabilizer fins (fig. 2-58).

*j.* Pull both upper stabilizer fin covers from the upper fins and elevons and place them between the two upper stabilizer fins (fig. 2-57).

CAUTION

Make sure the covers, rubber tarp straps, and hooks are placed carefully between the upper stabilizer fins to prevent them from becoming entangled on the missile when the cover is pulled off the missile.

*k.* Pull the cover off the missile by using the two pull handles located on the cover at the missile radome (fig. 2-64).

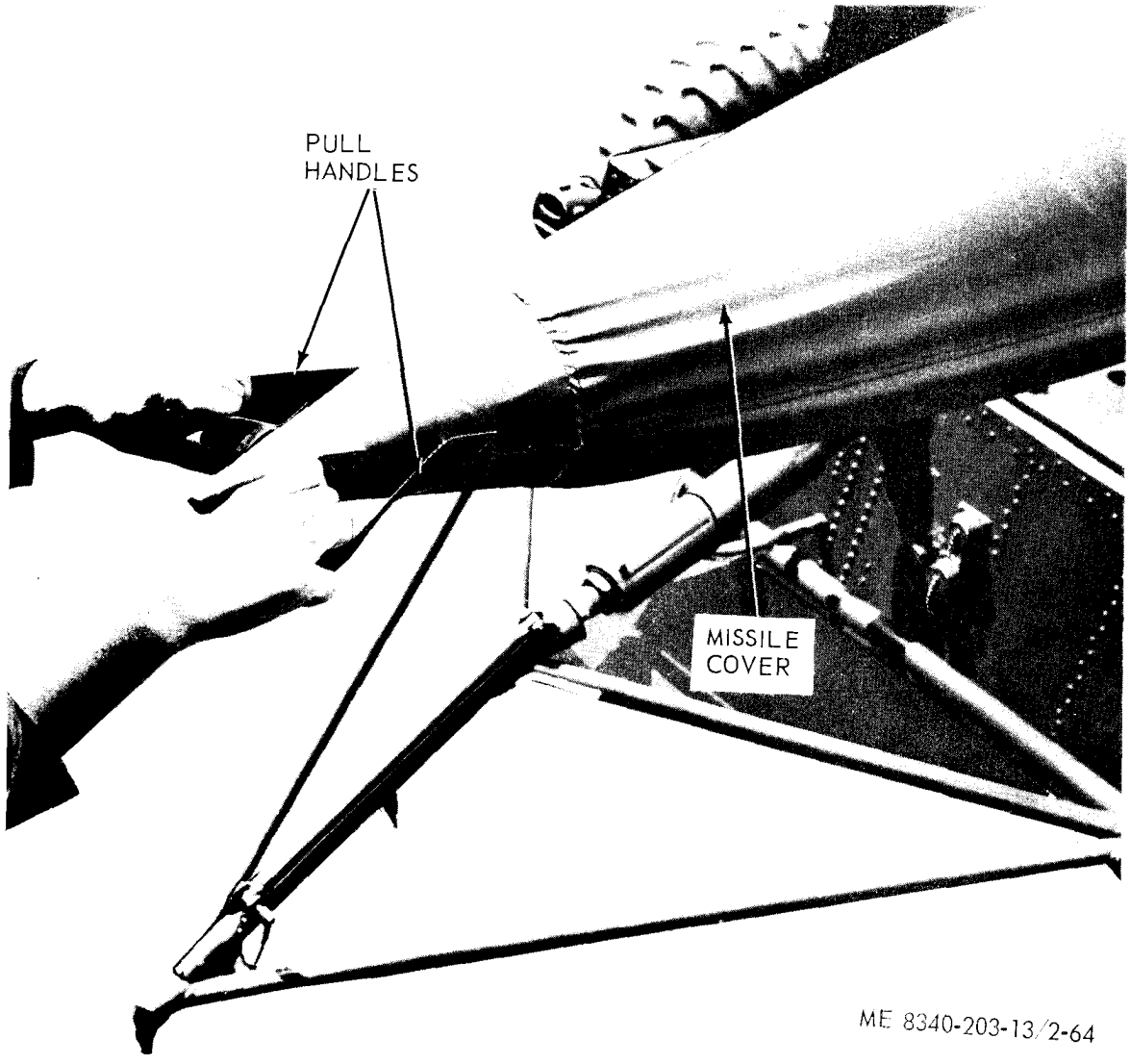



***Figure 2-64. Pulling cover off missile.***

## 2-24. Preparing Cover for Missile Pickup and Transport

To prepare the cover for missile pickup and transport when the cover is on the missile, proceed as follows:

*a.* Release the cover securing strap (fig. 2-54).

*b.* Unhook the center rubber tarp strap (fig. 2-55).

*c.* Open the side slide fastener flap and the side slide fastener (fig. 2-52).

*d.* Open the top slide fastener double flap and completely open the top slide fastener (fig. 2-53).

*e.* Attach each top slide fastener strap to the D-ring (fig. 2-63) located on each side of the missile between the upper and lower stabilizer fins.

## 2-25. Exhaust Port Adjustment Flap

The exhaust port adjustment flap has a dual purpose nylon touch-and-close fastener which provides for the flap to remain in either an open or closed position. Figure 2-65 shows the flap in an open position; figure 2-56 shows the flap in a closed position.

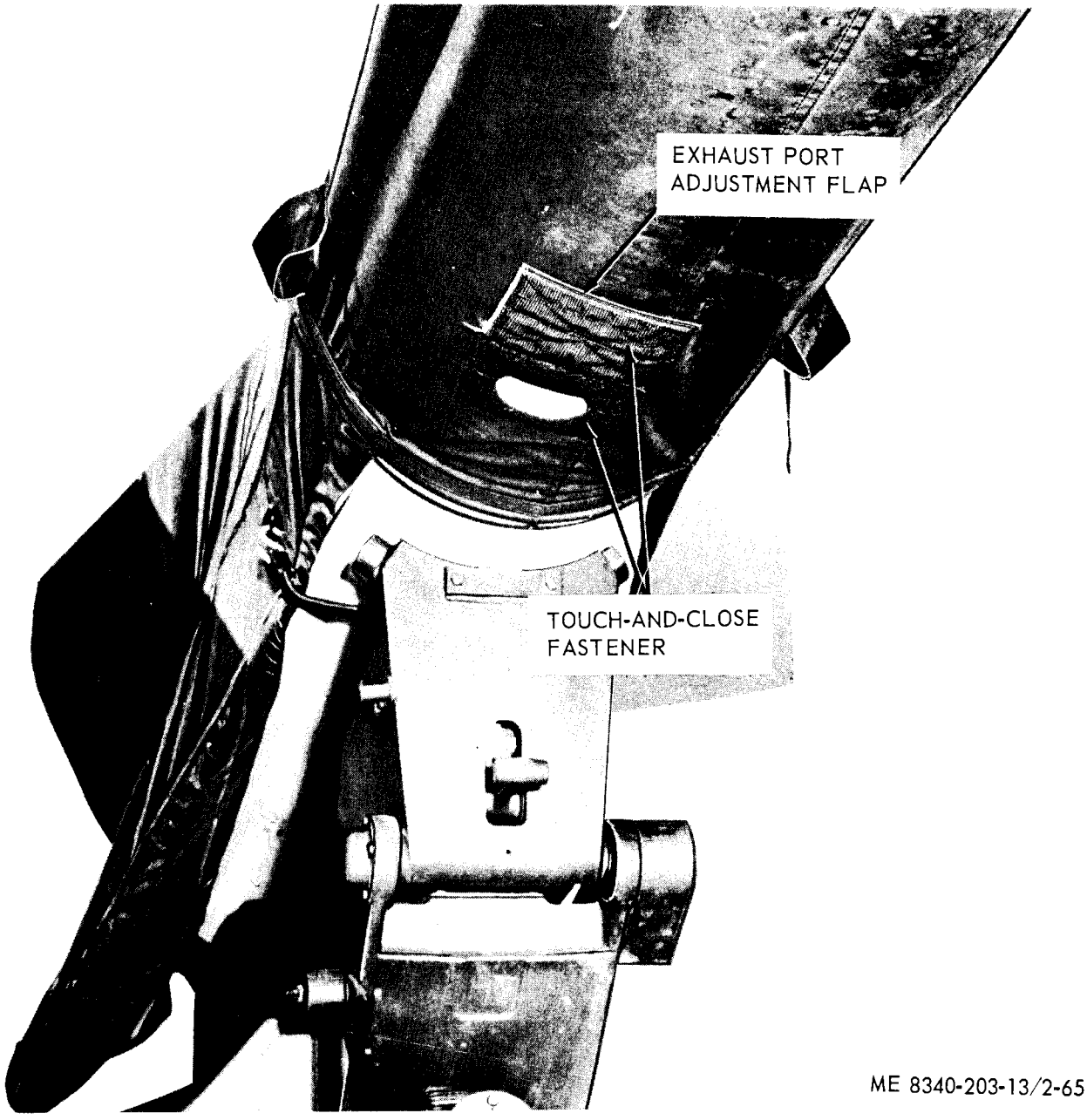



*Figure 2-65. Exhaust port adjustment flap in open position.*

## Section VII. OPERATION UNDER USUAL CONDITIONS

### 2-26. Windows

The windows are opened by rolling up the blackout curtain and securing it with blackout curtain lines.

### 2-27. Personnel Door

The personnel door is opened or closed with slide fasteners. When closed, the door is secured by pressing touch-and-close fasteners together.

## Section VIII. OPERATION UNDER UNUSUAL CONDITIONS

### 2-28. Operation Under Windy Conditions

Make sure all guy lines are secured to prevent damage by the wind.

### 2-29. Operation Under Rainy Conditions

Loosen wet guy lines to prevent damage to the tent.

### 2-30. Operation In Snow

Remove snow and ice from the tent before it accumulates and causes damage.

# CHAPTER 3

# OPERATOR/CREW MAINTENANCE INSTRUCTIONS

## Section I. BASIC ISSUE ITEMS

Tools, equipment, and repair parts issued with or authorized for the tentage for the Hawk Missile System are listed in the basic issue items list, appendix C.

## Section II. LUBRICATION INSTRUCTIONS

### 3-1. General Lubrication Information

Keep the lubricant (zipper ease) in a closed container and store in a clean, dry place away from extreme heat. Allow no dust, dirt, or other foreign material to mix with the lubricant.

### 3-2. Detailed Lubrication Information

Only the slide fasteners, located on the tent body, require lubrication. Once each week, or at a shorter interval as needed, clean the foreign matter from each slide fastener. After cleaning, apply a light coat of zipper ease lubricant to each slide fastener on each tent body.

## Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (DAILY AND WEEKLY)

### 3-3. General

To insure that the tentage for the Hawk Missile System is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage. Defects discovered will be noted for future correction to be made as soon as possible. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 at the earliest possible opportunity.

### 3-4. Preventive Maintenance Checks and Services

The necessary preventive maintenance checks and services to be performed are listed as described in table 3-1. The item numbers indicate the sequence of minimum inspection requirements.

*Table 3-1. Preventive Maintenance Checks and Services*

B - Before Operation A - After Operation M - Monthly
D - Operation W - Weekly Q - Quarterly

| Item number | Interval: Operator: Daily: B | Interval: Operator: Daily: D | Interval: Operator: Daily: A | Interval: Operator: W | Interval: Org.: M | Interval: Org.: Q | Item to be Inspected | Procedure | Reference |
|---|---|---|---|---|---|---|---|---|---|
| 1 | x | x | x | | | | Tent body | Inspect canvas for tears, rips, holes, cuts, broken or missing stitching, and extreme wear. | |
| 2 | x | x | x | | | | Slide fasteners | Inspect slide fasteners for missing scoops and stops. Check to see that slide fastener tapes are securely sewed to canvas and that sliders operate properly. | |
| 3 | x | x | x | | | | Lines | Check to see that all guy lines, ground-line or tab line adjusting lines and brackets, and footstops are present and in serviceable condition, and are properly utilized. Tighten loose guy lines. Loosen guy lines during rain. | |
| 4 | x | x | x | | | | Windows | Inspect windows for torn blackout curtains and rope stiffeners. | |
| 5 | x | x | x | | | | Hardware | Check to see that all hardware such as nuts, screws, washers, snap fasteners, turnlock fasteners, grommets, tent slips, and tent pins are present, are in serviceable condition, and are being used correctly. Remove burs from tent pins with a metal file. Clean pins using soap and water and a brush. | |
| 6 | x | x | x | | | | Tapes | Check to see that all tie tapes, tabs, drawstrings and rope stiffeners are present, are in serviceable condition, and are properly used. | |
| 7 | x | x | x | | | | Support components | Inspect frame supports and fittings for breaks, dents bends, or nicked components check for bent or broken spindles. | |
| 8 | x | | x | | | | Covers and carrying case | Inspect for rips, tears, cuts, holes, broken or missing stitching, defective hardware, and extreme wear. | |

## Section IV. MAINTENANCE OF TENTAGE FOR HAWK MISSILE SYSTEM

### 3-5. General

This section furnishes the operator/crew personnel with the necessary instructions for the performance of assigned maintenance on all tents for the Hawk Missile System.

### 3-6. Cleaning

*a.* Remove dust, dirt, mud and other foreign matter from the fabric by sweeping with a household-type broom of cornstraw or synthetic fiber; use clear water.

*b.* Brush exceedingly dirty portions of the tents with a scrub brush.

*c.* Dry tents thoroughly.

*d.* Clean tent lines by brushing.

*e.* Wipe metal surfaces with a clean, dry cloth.

CAUTION

Do not drag tents or supports on the ground or over a rough surface.

CAUTION

Do not fold tents when they are wet.

CAUTION

Do not fold tents with anchors or objects that may tear or damage the cloth material.

CAUTION

Do not throw or drop supports and fittings on hard surfaces.

## Section V. MAINTENANCE OF HAWK MISSILE COVER

### 3-7. General

This section furnishes the operator/crew personnel with the necessary instructions for the performance of assigned maintenance on the Hawk Missile cover.

### 3-8. Cleaning

CAUTION

Do not direct a stream of water onto the cover while it is installed on the missile.

Use a fiber brush dipped in clear water to remove dirt or other foreign matter from the missile cover.

# CHAPTER 4

# ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

## Section I. SERVICE UPON RECEIPT OF MATERIEL

### 4-1. Inspecting the Equipment

*a.* Check the packing list and Basic Issue Items List to make certain all items are present.

*b.* After erecting the tents, perform the daily and quarterly preventive maintenance services (para 3-4 and 4-7).

### 4-2. Servicing the Equipment

After erecting the tents, check to see that the slide fasteners operate properly. If the sliders stick, refer to paragraph 3-2 and lubricate the slide fasteners.

## Section II. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

### 4-3. Tools and Equipment

Tools, equipment, and repair parts issued with or authorized for the tentage for the Hawk Missile System are listed in the basic issue items list, appendix C.

### 4-4. Special Tools and Equipment

No special tools are required for this tentage.

### 4-5. Maintenance Repair Parts

Repair parts and equipment covering organizational maintenance for the Hawk Missile System tentage are listed in the repair parts and special tools list, TM 10-8340-203-23P.

## Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (MONTHLY AND QUARTERLY)

### 4-6. General

To insure that the tentage for the Hawk Missile System is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage. Defects discovered will be noted for future correction to be made as soon as possible. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 at the earliest possible opportunity.

### 4-7. Preventive Maintenance Checks and Services

The necessary preventive maintenance checks and services to be performed monthly and quarterly are listed as described in table 4-1. The item numbers indicate the sequence of minimum inspection requirements. A quarterly interval is equal to 3 calendar months, or 250 hours of operation, whichever occurs first.

*Table 4-1. Preventive Maintenance Checks and Services*

B - Before Operation A - After Operation M - Monthly
D - During Operation W - Weekly Q - Quarterly

| Item number | Interval: Operator Daily B | Operator Daily D | Operator Daily A | Operator W | Org. M | Org. Q | Item to be Inspected | Procedure | Reference |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | x | x | Tent body | Check the cloth for holes, rips, and deterioration. Inspect the tent lines for cuts, frays, and deterioration. Check the slide fasteners for broken or damaged parts. Inspect the grommets for damage and insecure mounting. | |
| 2 | | | | | x | x | Tent pins | Inspect the pins for burs, bends, breaks, and chipped paint. | |
| 3 | | | | | x | x | Support component | Check the frame assembly for bent, cracked or broken supports. Check the spindles, where appropriate, for bends and insecure mounting. Check the elbows for cracks and missing setscrews. | |
| 4 | | | | | x | x | Hawk missile cover (Nose section) | Inspect the polyester coated cloth for rips, holes, and deterioration. Check the pull handles for tears and insecure mounting. Inspect the slide fastener flap and the exhaust opening flap for insecure mounting and damaged hook-and pile closures. Check the slide fasteners for damaged parts and improper operation. Inspect the cover securing strap for frays, missing or broken hardware, and insecure mounting. | |
| | | | | | x | x | Hawk missile cover (Wing section) | Inspect the polyester coated cloth and the spacer cloth for rips, holes, and deterioration. Check each slide fastener for damaged parts and improper operation. Inspect all tent hooks for visible damage. Check the rubber straps for breaks, cuts, and deterioration. Check the sleeve straps and the tie back tapes for damaged hardware, cuts, and insecure mounting. | |

## Section IV. MAINTENANCE OF TENT BODY

### 4-8. General

This section furnishes organizational maintenance personnel with the necessary instructions to perform assigned maintenance on each tent body included in the tentage for the Hawk Missile System.

### 4-9. Range Only Radar, CW Acquisition Radar and CW Illuminator Radar Tent

*a. Tent Cloth.*

(1) *Inspection.* Inspect the cloth (fig. 2-2) for rips, holes, dirt, and missing components.

(2) *Removal.* Remove the tent body (para 2-5).

(3) *Cleaning.*

*(a)* Use a mild soap and water solution and a soft bristle brush and remove dirt from the tent.

*(b)* Rinse the cloth in clear water.

*(c)* Hang up the tent and allow the cloth to dry.

(4) *Repair and Replacement.*

*(a)* Hand sew any rips or holes in the tent cloth by following the procedures in TM 10-269.

*(b)* Apply a cement patch to a hole or rip not greater than 4¾ inches in diameter or length; follow the procedures in TM 10-269.

NOTE

If the damaged area supports a grommet, a cement patch cannot be used.

*(c)* If the cloth is damaged beyond repair, replace the unserviceable tent body with a serviceable like item.

*(5) Installation.* Install the tent body (para 2-3).

*b. Slide Fastener Thong.*

(1) *Inspection.* Inspect the slide fastener thongs for cuts, deterioration, and insecure mounting.

(2) *Repair.* Remove a damaged slide fastener thong from the slider, and install a serviceable one by looping it through the slider.

*c. Ground Line Adjusting Assembly (fig. 2-17).*

(1) *Inspection.*

*(a)* Inspect the adjusting brackets for cracks, deterioration, and insecure mounting.

*(b)* Inspect the adjusting ground lines for cuts, frays, deterioration, and insecure mounting.

(2) *Cleaning.* Use a mild soap and water solution and a soft-bristle brush, and remove dirt from the ground line adjusting assemblies.

(3) *Repair and replacement.*

*(a) Adjusting brackets.* Untie the overhand knot in each end of the ground line, and remove the damaged adjusting bracket from the line. Place a serviceable adjusting bracket on the ground line and tie an overhand knot in each end of the line.

*(b) Ground lines.* Remove the adjusting bracket from a damaged ground line ( (a) above). Remove the damaged line from the grommets and install a serviceable ground line in the grommets. Install a serviceable adjusting bracket on the ground line, and tie an overhand knot in each end of the line.

*(c) Grommet tab grommets.* Replace missing or damaged grommets as instructed in TM 10-269.

*d. Footstops and Grommets.*

(1) *Inspection.*

*(a)* Inspect the footstops (fig. 2-15) for cuts, frays, deterioration, and insecure mounting.

*(b)* Inspect the grommets for breaks and insecure mounting.

*(2) Cleaning.* Use a mild soap and water solution with a soft-bristle brush and remove any dirt from the footstops and grommets.

*(3) Replacement.*

*(a)* Remove the damaged footstops from the grommets.

NOTE

If the grommet is damaged or missing, install a serviceable one by following the procedures in TM 10-269.

*(b)* Tie an overhand knot in the ends of the new footstop, and install the footstop through the grommet so that the overhand knot is inside the tent.

*e. Ground Hem Line, Heater Duct Sleeve Lines, and Blackout Curtain Lines.*

(1) *Inspection.* Inspect the lines for cuts, frays, deterioration, and insecure mounting.

(2) *Replacement of ground hem line.*

*(a)* Remove the damaged line from the ground hem.

*(b)* Install a serviceable line in the ground hem, and tie an overhand knot in the unspliced end of the line.

(3) *Replacement of heater, duct sleeve lines.*

*(a)* Remove the damaged line from the heater duct sleeve.

*(b)* Install a serviceable line in the heater duct sleeve, and tie an overhand knot in each end of the line.

(4) *Replacement of blackout curtain lines.*

*(a)* Remove a damaged line from the blackout curtain (B, fig. 2-2).

*(b)* Install a serviceable blackout curtain line in the blackout curtain, and tie an overhand knot in each end of the line.

*f. Turnbutton Fastener Sockets.*

(1) *Inspection.* Inspect the turnbutton fastener sockets (B, fig. 2-20) for breaks and insecure mounting.

(2) *Replacement.*

*(a)* Strike the tent (para 2-5).

*(b)* Replace a damaged turnbutton fastener socket by following the procedures in TM 10-269.

*(c)* Erect the tent (para 2-3).

### 4-10. Pulse Acquisition Radar Tents (Front and Aft)

*a. Tent Cloth.*

(1) *Inspection.* Inspect the cloth (fig. 2-20 or 2-27) for rips, holes, dirt, and missing components.

(2) *Removal* Remove the tent body (para 2-9 or 2-10).

(3) *Cleaning, Repair and Replacement. See* paragraph 4-9.

(4) *Installation.* Install the tent body (para 2-7 or 2-8).

*b. Slide Fastener Thong.* Refer to paragraph 4-9 *b* for maintenance on the slide fastener thong.

*c. Ground Line Adjusting Assembly.* Refer to paragraph 4-9 *c* for maintenance on the ground line adjusting assembly.

*d. Footstops and Grommets.* Refer to paragraph 4-9 *d* for maintenance on the footstops and grommets.

*e. Ground Hem Line and Heater Duct Sleeve Lines.* Refer to paragraph 4-9 *e* for maintenance on the ground hem line and heater duct sleeve lines.

*f. Turnbutton Fastener Sockets.* Refer to paragraph 4-9 *f* for maintenance on the sockets.

### 4-11. Missile Test Shop Maintenance Tent

*a. Tent Cloth.*

(1) *Inspection.* Inspect the cloth (fig. 2-31) for rips, holes, dirt, and missing components.

(2) *Removal.* Remove the tent body (para 2-13).

(3) *Cleaning, Repair and Replacement. See* paragraph 4-9.

(4) *Installation.* Install the tent body (para 2-12).

*b. Slide Fastener.* Refer to paragraph 4-9 *b* for maintenance on the slide fastener.

*c. Ground Line Adjusting Assembly.* Refer to paragraph 4-9 *c* for maintenance on the ground line adjusting assembly.

*d. Footstops and Grommets.* Refer to paragraph 4-9 *d* for maintenance on the footstops and grommets.

*e. Ground Hem Line and Heater Duct Sleeve Lines.* Refer to para 4-9 *e* for maintenance on the ground hem line and heater duct sleeve lines.

*f. Turnbutton Fastener Sockets.* Refer to paragraph 4-9 *f* for maintenance on the sockets.

### 4-12. High Power Illuminator Tents (Front and Aft)

*a. Tent Cloth.*

(1) *Inspection.* Inspect the cloth (fig. 2-40 or 2-46) for rips, holes, dirt, or missing components.

(2) *Removal.* Remove the tent body (para 2-16 or 2-19).

(3) *Cleaning, repair and replacement. See* paragraph 4-9.

(4) *Installation.* Install the tent body (para 2-15 or 2-18).

*b. Slide Fastener Thong.* Refer to paragraph 4-9 *b* for maintenance on the thong.

*c. Ground Line Adjusting Assembly.*

(1) *Inspection.* Inspect the adjusting ground lines (fig. 2-40) for cuts, frays deterioration, and insecure mounting.

(2) *Cleaning.* See paragraph 4-9 *c.*

(3) *Repair and Replacement.*

*(a) Ground Lines.* Untie the overhand knot in each end of the line and remove the damaged line from the grommets. Install a serviceable line in the grommets and tie a knot on each end of the line.

*(b) Grommet tab grommets.* Replace missing or damaged grommets as instructed in TM 10-269.

*d. Footstops and Grommets.* Refer to paragraph 4-9 *c* for maintenance on the footstops and grommets.

*e. Ground Hem Lines and Heater Duct Sleeve Lines.* Refer to paragraph 4-9 *e* for maintenance on the ground hem line and heater duct sleeve lines.

*f. Turnbutton Fastener Sockets.* Refer to paragraph 4-9 *f* for maintenance on the turnbutton fastener sockets.

## Section V. MAINTENANCE OF TENT SUPPORT COMPONENTS

### 4-13. General

This section furnishes organizational maintenance personnel with the necessary instructions to perform assigned maintenance on the support components for all tentage in the Hawk Missile System.

## 4-14. Frame Assembly (Range Only Radar, CW Acquisition Radar and CW Illuminator Radar Tent)

*a. Removal and Disassembly.* Strike the tent (para 2-5).

*b. Inspection (fig. 2-3).*

(1) Inspect the elbows and tee for cracks, damaged or missing screws, and insecure mounting.

(2) Inspect the side supports for cracks, breaks, bends, and insecure mounting.

(3) Inspect the inner and outer supports for cracks, bends, missing or damaged screws and retaining rings, and insecure mounting.

(4) Inspect the lunette support for bends, breaks, and insecure mounting.

*c. Cleaning and Painting.*

(1) *Cleaning.*

*(a)* Brush a light coat of corrosion removing compound on the corroded area of the frame assembly.

*(b)* Wipe the compound from the frame assembly with a clean cloth.

*(c)* Repeat procedures *(a)* and *(b)* until the corrosion is removed.

(2) *Painting.*

*(a)* Clean the frame assembly as described above.

NOTE

Make certain all corrosion removing compound is removed from the frame assembly.

*(b)* Apply a coat of primer paint to the unpainted surface of the frame assembly and allow it to dry.

*(c)* Apply a coat of enamel to the primed surface of the frame assembly.

*d. Replacement.* Replace a damaged support component with a serviceable like item.

*e. Assembly and Installation.* Erect the tent (para 2-3).

## 4-15. Frame Assembly (Pulse Acquisition Radar Front Tent)

*a. Removal and Disassembly.* Strike the tent (para 2-9).

*b. Inspection (fig. 2-21).*

(1) Inspect the elbows and tee for cracks, damaged thread, damaged or missing screws, and insecure mounting.

(2) Inspect the diagonal supports for cracks, breaks, broken spindles, and insecure mounting.

(3) Inspect the inner and outer supports, for cracks, breaks, bends, and insecure mounting.

(4) Inspect the lunette support for bends, breaks, or broken or missing bar and insecure mounting.

*c. Cleaning, Painting, and Replacement.*

(1) *Cleaning and painting.* See paragraph 4-14 *c.*

(2) *Replacement.* Replace a damaged support component with a serviceable like item.

*d. Assembly and Installation.* Erect the tent (para 2-7).

## 4-16. Frame Assembly (Pulse Acquisition Radar Aft Tent)

*a. Removal and Disassembly.* Strike the tent (para 2-10).

*b. Inspection (fig. 2-28).*

(1) Inspect the elbows for cracks, damaged threads, damaged or missing screws, and insecure mounting.

(2) Inspect the diagonal supports for cracks, breaks, broken spindles, and insecure mounting.

(3) Inspect the inner and outer supports for cracks, bends, breaks, missing or damaged screws, and insecure mounting.

*c. Cleaning, Painting, and Replacement.*

(1) *Cleaning and painting.* See paragraph 4-14 *c.*

(2) *Replacement.* Replace a damaged support component with a serviceable like item.

*d. Assembly and Installation.* Erect the tent (para 2-8).

## 4-17. Frame Assembly (Missile Test Shop Maintenance Tent)

*a. Removal and Disassembly.* Strike the tent, (para 2-13).

*b. Inspection (fig. 2-32).*

(1) Inspect the elbows and tees for cracks, damaged threads, damaged or missing screws, and insecure mounting.

(2) Inspect the supports for cracks, bends, damaged threads, and insecure mounting.

*c. Cleaning, Painting, and Replacement.*

(1) *Cleaning.* See paragraph 4-14 *c.*

(2) *Replacement.* Replace a damaged support component with a serviceable like item.

*d. Assembly and Installation.* Erect the tent (para 2-12).

## 4-18. Frame Assembly (High Power Illuminator Front and Aft Tents)

*a. Removal and Disassembly.* Strike the tent (para 2-16 or 2-19).

*b. Inspection (fig. 2-43 or 2-47).*

(1) Inspect the elbows and tees for cracks and breaks.

(2) Inspect the polyester cord for fraying or other damage.

(3) Inspect the supports, adapters, and collars for cracks, and breaks.

(4) Inspect the bar pins for bends and corrosion.

*c. Cleaning and Replacement.*

(1) Clean the frame assembly with a soap and water solution.

(2) Replace a damaged support component with a serviceable like item.

*d. Assembly and Installation.* Erect the tent (para 2-15 or 2-18).

## Section VI. MAINTENANCE OF TENT ANCHORING COMPONENTS

### 4-19. General

This section furnishes organizational maintenance personnel with the necessary instructions to perform assigned maintenance on the tent guy lines and tent pins included in the tentage for the Hawk Missile System.

### 4-20. Tent Guy Lines, Tent Slips, and Grommets

*a. Inspection (fig. 2-40).*

(1) Inspect the guy lines for cuts, deterioration, frays, and insecure mounting.

(2) Inspect the tent slips for bends, breaks, and insecure mounting.

(3) Inspect the grommets for bends and insecure mounting.

*b. Removal, Replacement, and Installation.*

(1) Untie the overhand knot in the end of the damaged guy line and remove the damaged tent slip from the guy line.

(2) Remove the guy line from the grommet.

(3) Replace a damaged grommet by following the procedures in TM 10-269.

(4) Place the unspliced end of a new guy line through the grommet and through the splice on the remaining end of the guy line. Pull the guy line tight.

(5) Install a new tent slip on the guy line, and tie an overhand knot in the unspliced end of the line.

### 4-21. Tent Pins

*a. Inspection.* Inspect the tent pins (fig. 2-40) for breaks, bends, and burs.

*b. Cleaning.* Remove dirt from the pins with a soap and water solution and a brush.

*c. Replacement.* Replace all unserviceable tent pins with serviceable like items.

## Section VII. MAINTENANCE OF TENT ACCESSORIES

### 4-22. General

This section furnishes organizational maintenance personnel with the necessary instructions to perform assigned maintenance on the tent cover and the carrying case.

### 4-23. Tent Cover

*a. Inspection.* Inspect the tent cover (fig. 2-4) for rips, holes, tears, broken or missing stitching, and signs of extreme wear.

*b. Cleaning.*

(1) Remove dirt from the cover with a mild soap and water solution and a soft bristle brush.

(2) Rinse the cover in clear water.

(3) Allow the cover to dry.

*c. Repair.*

(1) Hand sew rips and holes in the cover by following the procedures in TM 10-269.

(2) Apply a cement patch to a hole or rip not greater than 4¾ inches in diameter or length; follow the procedures in TM 10-269.

### 4-24. Carrying Case

*a. Inspection.* Inspect the carrying case for holes, tears, broken or missing stitching, and bend or missing buckles.

*b. Cleaning. See* paragraph 4-23 *b.*

*c. Repair. See* paragraph 4-23 c.

## Section VIII. MAINTENANCE OF HAWK MISSILE COVER

### 4-25. General

This section furnishes organizational maintenance personnel with the necessary instructions to perform assigned maintenance on the Hawk Missile Cover Components.

### 4-26. Missile Cover

*a. Inspection.*

(1) Inspect the missile cover (fig. 2-50) for rips, holes, deterioration, and foreign matter.

(2) Inspect the slide fasteners for damaged thongs, foreign matter, improper operation, and insecure mounting.

(3) Inspect the hook-and-pile fasteners for rips, deterioration, and insecure mounting.

(4) Inspect the strap sleeves for cuts, breaks, deterioration, damaged hardware, and insecure mounting.

(5) Inspect the cover securing strap for cuts, frays, damaged hardware, and insecure mounting.

(6) Inspect the pull handles for cuts, rips, and insecure mounting.

*b. Cleaning.* Clean the cover with a soap and water solution and a fiber brush.

*c. Repair and Replacement.*

(1) Cloth.

*(a)* Hand sew rips and holes in the cover by following the procedures in TM 10-269. Replace a cover damaged beyond repair.

*(b)* Apply a cement patch to a hole or rip not greater than 4¾ inches in diameter or length; follow the procedures in TM 10-269.

**NOTE**

If the damaged area supports a grommet, a cement patch cannot be used.

(2) *Tent hooks.* Remove a damaged tent hook from the missile cover components and install a serviceable like item.

(3) *Slide fastener thongs and connecting rings.*

*(a)* Cut a 1-foot length from the bulk braid.

*(b)* Fold the slide fastener thong in half, and tie an overhand knot in the loose ends.

*(c)* Pry open the connecting ring, and remove it from the slide fastener slider and thong.

*(d)* Install a new connecting ring in a serviceable thong.

*(e)* Install the connecting ring with the thong in the slide fastener slider.

(4) *Rubber straps.*

*(a)* Unhook a damaged strap from the tent hooks, and remove it from the cover.

*(b)* Install a serviceable strap of the correct length on the cover by hooking the strap in place with the tent hooks.

# CHAPTER 5

# DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

## Section I. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

### 5-1. Tools and Equipment

Tools, equipment, and repair parts issued with or authorized for the tentage for the Hawk Missile System are listed in the basic issue items list, appendix C.

### 5-2. Special Tools and Equipment

The special key used with the tent is an Allen-type wrench. This key is listed in TM 10-8340-203-23P.

### 5-3. Maintenance Repair Parts

Repair parts and equipment covering direct support maintenance for the Hawk Missile System tentage are listed in the repair parts and special tools list, TM 10-8340-203-23P.

## Section II. REPAIR OF TENT BODY

### 5-4. General

This section furnishes direct support maintenance personnel with the necessary instructions to perform assigned maintenance on the tent body of the following tents: Range only radar, CW acquisition radar, and CW illuminator radar tent; pulse acquisition radar front and aft tents; missile test shop maintenance tent; high power illuminator front and aft tents.

### 5-5. Range Only Radar, CW Acquisition Radar, and CW Illuminator Radar Tent Body (Fig. 2-2)

*a. Fabrication of Ground Line Adjusting Brackets (Fig. 2-17).*

(1) Cut a 1½-by 3-inch piece of stock to form the bulk plywood.

(2) Using the proper tools, shape the piece of stock to form a bracket as shown in figure 5-1.

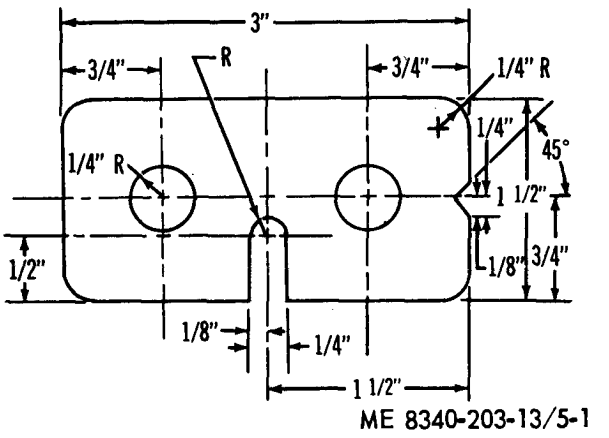



***Figure 5-1. Fabricated ground line adjusting bracket.***

*b. Fabrication of Tent Lines.*

(1) *Ground hem stiffener line.*

*(a)* Cut a 26-foot, 6-inch ground hem stiffener line from the ¼-inch diameter bulk rope.

*(b)* End-whip one end of the ground hem stiffener line by following the procedures in TM 10-269.

*(c)* Eye-splice the remaining end of the line by following the procedures in TM 10-269.

(2) *Heater duct sleeve lines (fig. 2-2).*

*(a)* Cut a 78-inch heater duct sleeve line from the ¼-inch diameter bulk rope.

*(b)* End-whip each end of the heater duct sleeve line by following the procedures in TM 10-269.

(3) *Adjusting ground lines (fig. 2-2).*

NOTE

The adjusting ground lines are either 30 inches, 40 inches, or 50 inches long.

*(a)* Cut the new adjusting ground line from the ⅜-inch bulk rope.

*(b)* End-whip each end of the adjusting ground line by following the procedure in TM 10-269.

(4) *Blackout curtain stiffener lines.*

*(a)* Cut a 28½-inch length from the bulk rope.

*(b)* End-whip each end of the new blackout curtain stiffener line.

c. *Replacement of Slide Fastener and Components and Fabrication of Slide Fastener Thongs.*

(1) *Slide fastener.*

*(a)* Cut the stitching and remove the damaged fastener from the personnel door (fig. 2-2) window, or tent wall.

*(b)* Place a serviceable fastener in position on the tent, and machine-sew it with a double straight stitch.

(2) *Slide fastener slider, stop, and reinforcement.*

*(a)* Cut the stitching and remove the slide fastener reinforcement from the tent. Remove the slide fastener stop from the fastener.

*(b)* Remove a damaged slider from the fastener.

*(c)* Install a serviceable slider on the slide fastener. Loop thread around the end of the slide fastener several times to form a slide fastener stop.

*(d)* Cut a 4½-by 2¾-inch reinforcement from the bulk tent cloth.

*(e)* Fold the reinforcement as shown in figure 5-2. Place the reinforcement in position on the tent.

*(f)* Machine-sew the reinforcement with a straight stitch.

(3) *Fabrication of slide fastener thongs.* Fabricate a new thong from the bulk braid using an old slide fastener thong as a pattern.

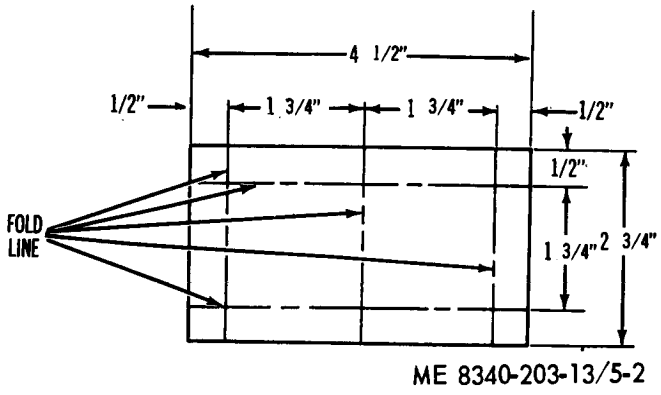



***Figure 5-2. Slide fastener reinforcement.***

*d. Replacement of Tiedown Snap Fasteners.* Replace a damaged fastener by following the procedures in TM 10-269.

*e. Replacement of Tiedown Straps.*

(1) Cut the stitching and remove a damaged tiedown strap from the tent.

(2) Cut a new tiedown strap from bulk cloth using a damaged strap as a pattern.

(3) Install new snap fasteners on the tiedown strap by following the procedures in TM 10-269.

(4) Machine-sew the tiedown strap to the tent with the original stitch formation.

*f. Replacement of Tent Roof Grommets.* Replace damaged tent roof grommets by following the procedures in TM 10-269.

*g. Fabrication of Tie Tapes.*

(1) Cut the stitching and remove a damaged tie tape (fig. 2-2) from the tent wall and blackout curtain.

(2) Cut a new tie tape from bulk tape using a serviceable tape for measurements.

*h. Replacement of Blackout Curtain.*

(1) Cut the stitching and remove a damaged blackout curtain (fig. 2-2) from the tent.

(2) Cut a new blackout curtain from bulk cloth using a serviceable curtain for measurements.

(3) Make the necessary folds, and machine-sew them according to the serviceable curtain. Position new tie tapes on the blackout curtain and machine-sew them with the original stitch formation.

(4) Place the blackout curtain in position on the tent, and machine-sew it with the original stitch formation.

*i. Replacement of Window, Heater Duct Sleeve, Grommet Tab, and Sod Cloth (Fig. 2-2).*

(1) *Window.*

NOTE

When a window is damaged beyond repair, it must be replaced with a new like item.

*(a)* Cut the stitching and remove the damaged window from the tent.

*(b)* Cut a new window from bulk polyester fiber cloth with measurements as shown in figure 5-3.

*(c)* Fold the new window along the fold lines shown in figure 5-3.

*(d)* Place the new window in position on the tent and machine sew it to the tent with the original stitching.

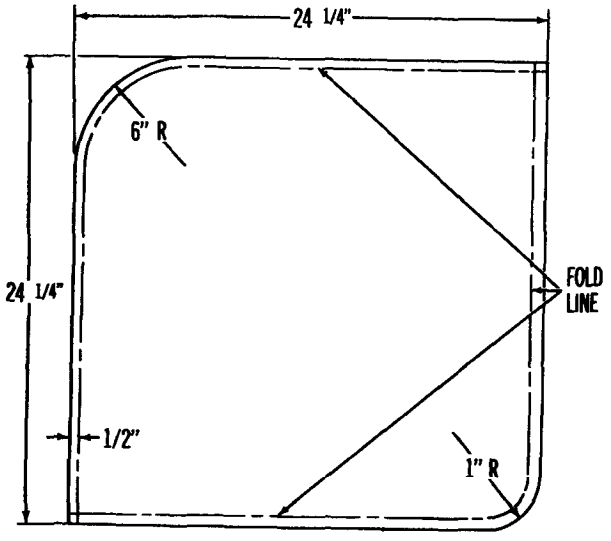



***Figure 5-3. Window measurements.***

(2) *Heater duct sleeve (fig. 2-2).*

NOTE

When a heater duct sleeve is damaged beyond repair, replace it with a new like item.

*(a)* Cut the stitching and remove the damaged sleeve from the tent.

*(b)* Cut a new sleeve from the bulk cloth using measurements shown in figure 5-4.

*(c)* Make a ½-inch fold along the three sides of the heater duct sleeve (fig. 5-4).

*(d)* Place the two 8½-inch ends together, and machine-sew them with a lap seam.

*(e)* Measure ¼-inch on one side of the lap seam, and machine-sew two straight stitches 3 inches long from the unfolded edge of the heater duct sleeve.

*(f)* Cut a 3-inch split in the heater duct sleeve between the lap seam and the nearest straight stitch made (step *(e)* above).

*(g)* Place a serviceable heater duct sleeve line along the unfolded edge of the heater duct sleeves and fold 1½-inches of the heater duct sleeve over the heater duct sleeve line (fig. 5-4). Fold under ½-inch of the fold along the unfolded edge, and machine-sew the fold.

*(h)* Place the sleeve in position on the tent, and machine-sew it with the original stitch formation.

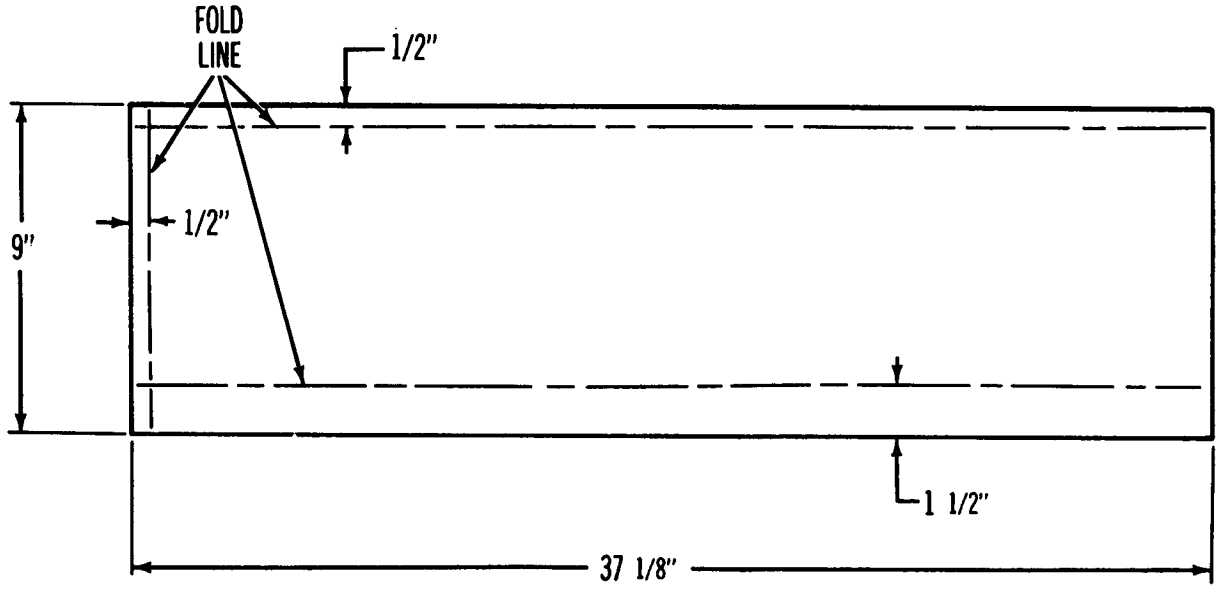



***Figure 5-4 Heater duct sleeve measurements.***

(3) *Replacement of grommet tabs.*

*(a).* Remove the stitching from a damaged tab, and remove it from the tent.

*(b)* Take the measurements from a remaining tab, and cut a new one from bulk cloth.

*(c)* Fold the new tab in half and install a new grommet by following the procedures in TM 10-269.

*(d)* Make the proper folds in the grommet tab, and machine-sew it to the tent with the original stitch formation.

(2) *Trailer jack sleeve lines.*

*(a)* Cut a 54-inch length from the bulk rope.

*(b)* End-whip the ends of the new line by following the procedures in TM 10-269.

*c. Replacement of Slide Fastener and Components, and Fabrication of Slide Fastener Thongs.* See paragraph 5-5 *c.*

*d. Replacement of Tiedown Strap Snap Fasteners.* Replace a damaged tiedown strap snap fastener by following the procedures in TM 10-269.

*e. Replacement of Tiedown Straps.* See paragraph 5-5 *e.*

*f. Replacement of Tent Roof Grommets.* Replace a damaged grommet by following the procedures in TM 10-269.

*g. Replacement of Window, Heater Duct Sleeve, Grommet Tab, and Sod Cloth.* See paragraph 5-5 *i.*

*h. Replacement of Trailer Jack Sleeves.*

(1) Remove the stitching from a damaged trailer jack sleeve, and remove the sleeve from the tent.

(2) Take the measurements from the remaining trailer jack sleeve, and cut a new sleeve from bulk cloth.

(3) Make the proper folds in the new sleeve, and machine-sew it to the tent with the original stitch formation.

*i. Repair of Tent Cloth.* See paragraph 5-5 *j.*

(4) *Replacement of sod cloths (fig. 2-2).*

NOTE

When a sod cloth is damaged beyond repair, replace it with a like item.

*(a)* Remove the stitching from the damaged sod cloth, and remove the cloth from the tent.

*(b)* Take the measurements of the undamaged sod cloth, and cut a new sod cloth from the bulk cloth.

*(c)* Machine-sew the new sod cloth to the tent with the original stitch formation.

*j. Repair of Tent Cloth.*

(1) When a seam in the tent is ripped, machine-sew the entire seam with the original stitch formation.

(2) When any part of the tent has a hole or tear, machine patch it by following the directions in TM 10-269.

## 5-6. Pulse Acquisition Radar Front and Aft Tent Bodies (fig. 2-20 and 2-27)

*a. Fabrication of Ground Line Adjusting Brackets (fig. 2-17).* See paragraph 5-5 *a.*

*b. Fabrication of Tent Lines.*

(1) *Ground hem stiffener line, heater duct sleeve lines, and adjusting ground lines.* See paragraph 5-5 *b.*

## 5-7. Missile Test Shop Maintenance Tent Body (fig. 2-31)

*a. Fabrication of Ground Line Adjusting Brackets.* See paragraph 5-5 *a.*

*b. Fabrication of Tent Lines.*

(1) *Ground hem stiffener line.* See paragraph 5-5 *b.*

(2) *Heater duct sleeve lines.* See paragraph 5-5 *b.*

(3) *Adjusting ground lines.* See paragraph 5-5 *b.*

*c. Replacement of Slide Fastener and Components, and Fabrication of Slide Fastener Thongs.* See paragraph 5-5 *c.*

*d. Replacement of Tiedown Strap Snap Fasteners.* Replace a damaged tiedown strap snap fastener by following the procedures in TM 10-269.

*e. Replacement of Tiedown Straps.* See paragraph 5-5 *e.*

*j. Replacement of Tent Roof Grommets.* Replace damaged Grommets by following the procedures in TM 10-269.

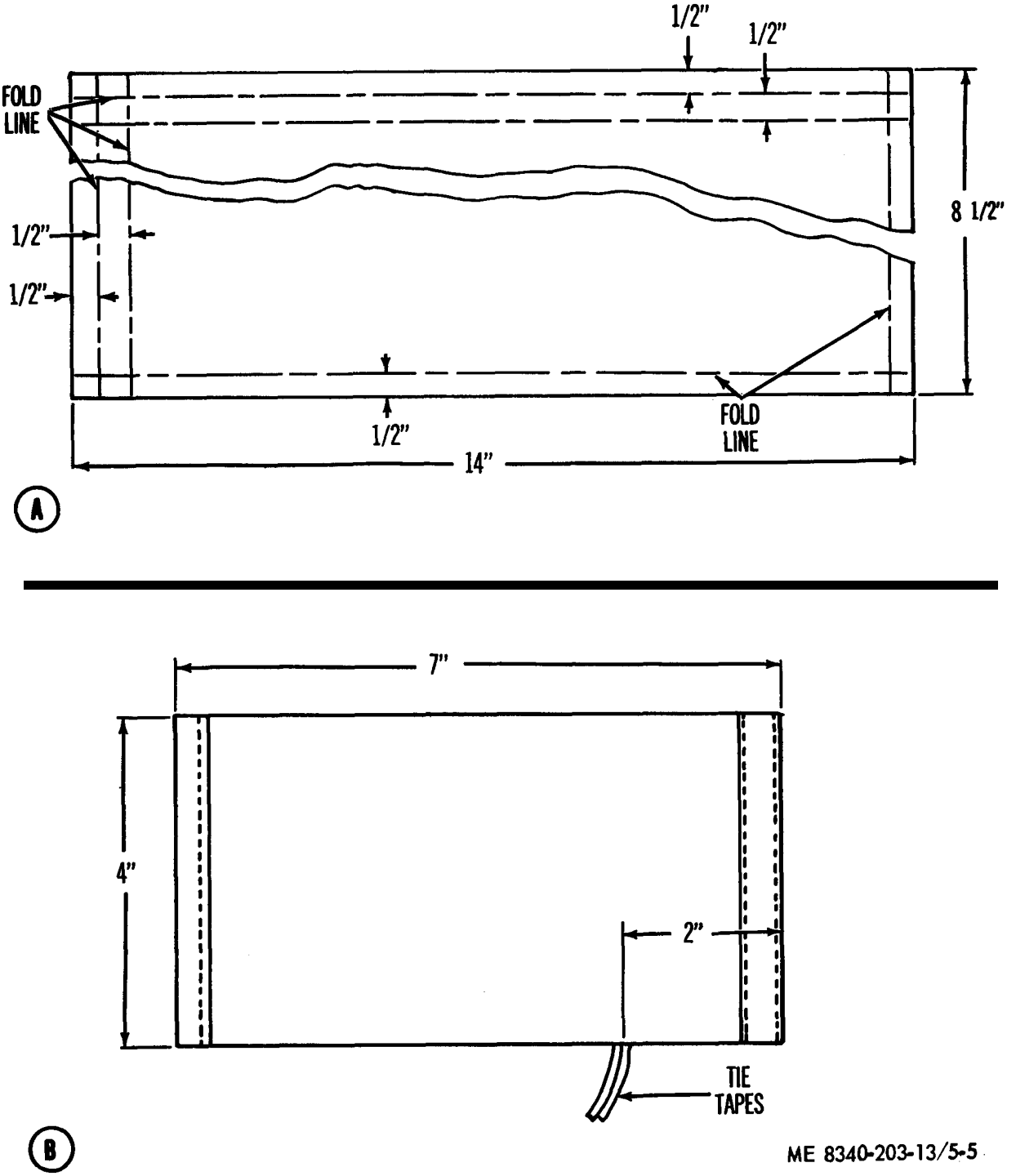
*g. Replacement of Window, Heater Duct Sleeve, Grommet Tab, and Sod Cloth.* See paragraph 5-5 *i.*

*h. Replacement of Cable Sleeve.*

(1) Cut the stitching from the damaged cable sleeve (fig. 2-31) and remove the sleeve from the tent.

(2) Cut a new sleeve from bulk cloth according to measurements shown in A, figure 5-5.

(3) Observe one of the remaining cable sleeves for construction. Fold the new sleeve as in B, figure 5-5 and machine-sew it to the tent with the original stitch formation.




**A. Unfolded measurements.**
**B. Folded measurements.**

***Figure 5-5. Cable sleeve construction.***

*i. Repair of Tent Cloth.* See paragraph 5-5 *j.*

## 5-8. High Power Illuminator Front and Aft Tent Bodies (Fig. 2-40 and 2-46)

*a. Fabrication of Tent Lines.*

(1) *Ground hem stiffener line.* See paragraph 5-5 *b.*

(2) *Heater duct sleeve line.* See paragarph 5-5 *b.*

(3) *Adjusting ground lines.* See paragraph 5-5 *b.*

(4) *Blackout curtain stiffener lines.* See paragraph 5-5 *b.*

*b. Replacement of Slide Fastener and Components, and Fabrication of Slide Fastener Thongs.* See paragraph 5-5 *c.*

*c. Replacement of Tent Roof Grommets.* Replace damaged grommets by following the procedures in TM 10-269.

*d. Fabrication of Tie Tapes.* See paragraph 5-5 *g.*

*e. Replacement of Blackout Curtain.* See paragraph 5-5 *h.*

*f. Replacement of Window, Heater Duct Sleeve, Grommet Tab, and Sod Cloth.* See paragraph 5-5 *i.*

*g. Repair of Tent Cloth.* See paragraph 5-5 *j.*

## Section III. REPAIR OF TENT SUPPORT COMPONENTS

### 5-9. General

This section furnishes direct support maintenance personnel with the necessary instructions to perform assigned maintenance on the frame assembly of the following tents: Range only radar, CW acquisition radar, and CW illuminator radar tent; pulse acquisition radar front and aft tents; missile test shop maintenance tent; high power illuminator front and aft tents.

### 5-10. Range Only Radar, CW Acquisition Radar, and CW Illuminator Radar Tent Support Components

*a. Fabrication of Side Top Supports (fig. 2-3).*

(1) Cut a 75⅜-inch length from the bulk pipe.

(2) Remove burs or rough edges from the cut ends of the fabricated side support.

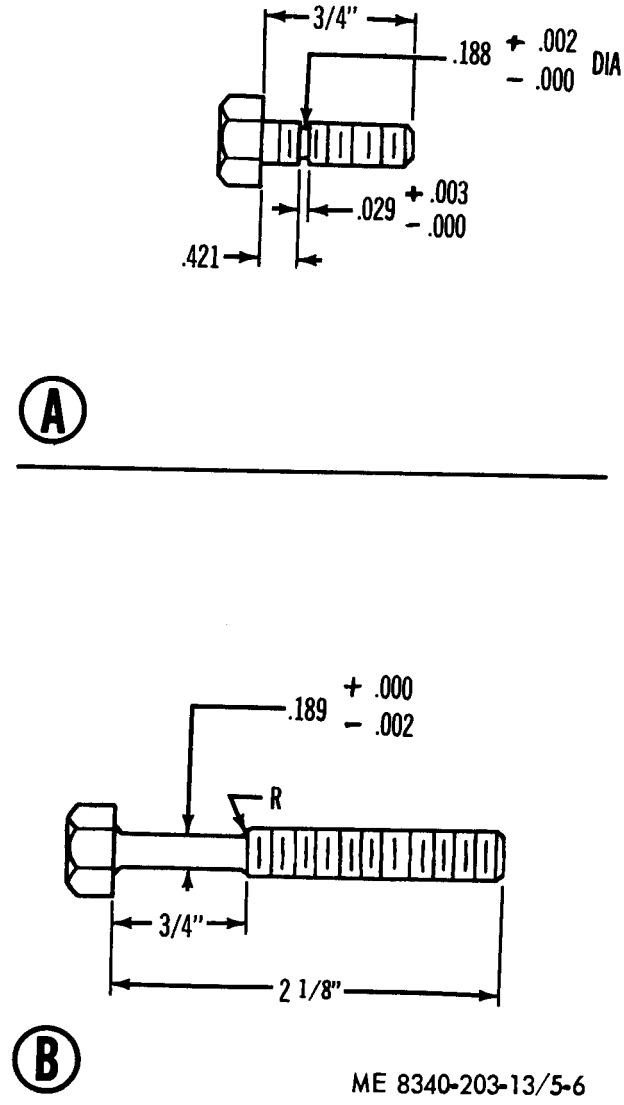
*b. Fabrication of Outer Top Support (fig.* 2-3).

(1) Cut a 92-inch length from the bulk pipe.

(2) Remove burs or rough edges from the cut ends of the fabricated outer top support.

(3) Place a tie on the fabricated outer support midway between the ends, and secure it with the setscrew.

*c. Fabrication of Inner Top Support Capscrews (fig. 2-7).* Machine the Capscrews to the proper measurement (fig. 5-6).




A. Capscrew measurements.
B. Capscrew measurements.

*Figure 5-6. Fabricated capscrews.*

## 5-11. Pulse Acquisition Radar Front Tent

*a. Welding.* Follow the proper welding procedures and weld any cracks or breaks in the support components (fig. 2-21).

*b. Replacement of Spindle (fig. 2-21).*

(1) Use a hammer and a drift punch to drive the spring pin from a damaged spindle.

NOTE

The drift punch must be large enough to fit over the outside edge of the spring pin.

(2) Remove the spindle from the diagonal support.

(3) Place the serviceable spindle inside the diagonal support, and mark a point on the spindle for a hole to aline with holes in the diagonal support.

(4) Remove the spindle from the diagonal side support, and drill a ¼-inch hole at the point marked.

(5) Place a spindle in the diagonal support, and aline the holes in the spindle and diagonal support.

(6) Using a hammer, drive a new spring pin into the holes in the diagonal support and the spindle.

*c. Fabrication of Diagonal Supports (fig. 2-21).*

(1) Cut a 75¼-inch length from the bulk pipe.

(2) Install a spindle on one end of the fabricated diagonal side support (steps (3) through (6) above).

*d. Fabrication of Outer Top Support and Lunette Support (fig. 2-21).*

(1) *Outer support.* See paragraph 5-10 *b.*

(2) *Lunette support.*

*(a)* Cut a 60-inch length from the bulk pipe.

*(b)* Drill a .4995-inch hole in the fabricated lunette support 5 inches from one end.

*(c)* Cut a 6-inch length from the bulk steel bar. Grind the burs from the cut end.

*(d)* Use a hammer to drive the steel bar into the hole in the lunette support until there is an equal length of steel baron each side of the support.

*(e)* Use a metal file and remove any burs from the steel bar.

*e. Fabrication of Inner Support Capscrews.* Use the proper tools to machine the capscrews to measurements shown in figure 5-7.

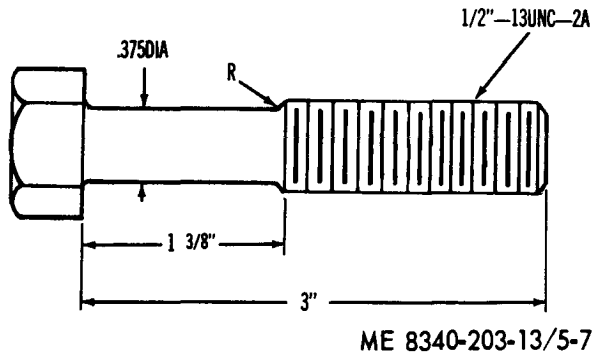



***Figure 5-7. Fabricated capscrew.***

## 5-12. Pulse Acquisition Radar Aft Tent

*a. Welding.* Follow the proper welding procedures and weld any cracks or breaks in the support components (fig. 2-28).

*b. Replacement of Spindles (fig. 2-28).* See paragraph 5-11 *b.*

*c. Fabrication of Diagonal Supports and Outer Top Support.*

(1) *Diagonal support (fig. 2-28).*

*(a)* Cut a 54-7/8-inch length from bulk pipe.

*(b)* Install a spindle on one end of the fabricated diagonal support by following the procedures in paragraph 5-11 *b* (3) through (6).

(2) *Outer Top Support (fig. 2-28).*

*(a)* Cut a 92-inch length from the bulk pipe.

*(b)* Remove burs on rough edges from the cut ends.

*d. Fabrication of Inner Top Support Capscrews* Use the proper tools to machine the capscrews to measurements shown in figure 5-7.

## 5-13. Missile Test Shop Maintenance Tent

*a. Welding.* Follow the proper welding procedures, and weld any cracks or breaks in the support components (fig. 2-32).

*b. Fabrication of Supports.* Cut the proper length of pipe from the bulk material for the support being fabricated.

*c. Fabrication of Inner Support Capscrews.* Use the proper tools and machine capscrews to measurements shown in figure 5-8.

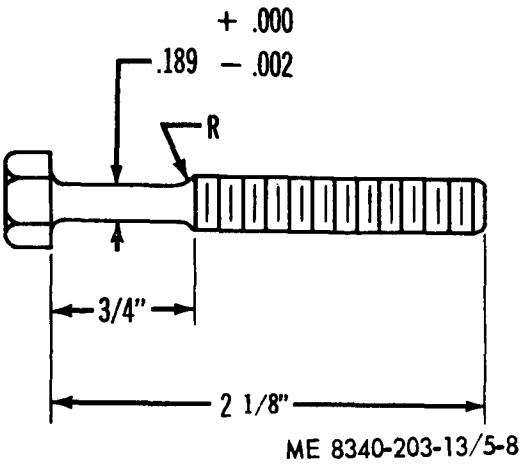



*Figure 5-8. Fabricated inner support capscrews.*

## Section IV. REPAIR OF TENT ANCHORING COMPONENTS

### 5-14. General

This section furnishes direct support maintenance personnel with the necessary instructions to perform assigned maintenance on the guy lines for the following tents: Range only radar, CW acquisition radar, and CW illuminator radar tent; pulse acquisition radar front tent; high power illuminator front and aft tents.

### 5-15. Range Only Radar, CW Acquisition Radar, and CW Illuminator Radar Tent Guy Line Fabrication (fig. 2-2)

*a.* Cut a 14-foot length from the bulk rope.

*b.* Make an eye splice in one end of the new guy line by following the procedures in TM 10-269.

*c.* End-whip the remaining end of the new guy line by following the procedures in TM 10-269.

### 5-16. Pulse Acquisition Radar Front Tent Guy Line Fabrication (fig. 2-20)

*a.* Cut a 12-foot length from the bulk rope.

*b.* Follow the procedures in paragraph 5-15 *b* and *c* above.

### 5-17. High Power Illuminator Front and Aft Tent Guy Line Fabrication (fig. 2-40 and 2-46)

Follow the procedures in paragraph 5-15 above.

## Section V. REPAIR OF TENT ACCESSORIES

### 5-18. General

This section furnishes direct support maintenance personnel with the necessary instructions to perform assigned maintenance on the tent covers and carrying case.

### 5-19. Tent Cover

*a. Machine Sewing.* When a seam in the cover is ripped, machine-sew the entire seam with the original stitch formation.

*b. Machine Patching.* When any part of the cover has a hole or tear, machine-patch it by following the procedures in TM 10-269.

### 5-20. Carrying Case

*a. Machine Sewing and Machine Patching.* See paragraph 5-19.

*b. Hardware.* Repair damaged hardware by following the procedures in TM 10-269.

## Section VI. REPAIR OF HAWK MISSILE COVER

### 5-21. General

This section furnishes direct support maintenance personnel with the necessary instructions to perform all assigned maintenance on the hawk missile cover components.

## 5-22. Cover Securing Strap

*a. Replacement of Buckle.*

(1) Cut the stitching on the cover securing strap (fig. 2-50) at the buckle end, and remove the damaged buckle from the cover securing strap.

(2) Place the buckle on the strap, and machine-sew the folded strap with the original stitch formation.

*b. Replacement of End Clip.*

(1) Cut the damaged end clip from the cover securing strap.

(2) Place a new end clip on the cover securing strap, and flatten out the clip with a hammer.

*c. Replacement of Cover Securing Strap.*

(1) Remove the stitching from the cover securing strap (fig. 2-50) and remove the strap and one end of each pull handle from the missile cover.

(2) Cut a 5-foot length from the bulk webbing.

(3) Place a serviceable buckle on one end of the cover securing strap, and fold the end over 3 inches. Machine-sew the fold with a straight box stitch.

(4) Place a new end clip on the remaining end of the cover securing strap, and flatten out the clip with a hammer.

(5) Place the cover securing strap in the original position on the missile cover, and machine-sew it with the original stitching at the original locations.

(6) Place the loose end of each handle in its original position, and machine-sew it with the original stitch formation.

## 5-23. Pull Handles

*a.* Cut the stitching at each end, of a damaged handle (fig. 2-50), and remove the handle from the missile cover.

*b.* Cut an 11½-inch length from the bulk webbing.

*c.* Place the ends of the handle in the original position on the missile cover, and machine-sew the ends with the original stitch formation.

## 5-24. D-Rings and Chapes

*a. Replacement of Dee Rings.*

(1) Cut the stitching on the chape as necessary, and remove the damaged D-ring (fig. 2-61) from the chape.

(2) Place a new D-ring on the chape, and make the original folds in the chape.

(3) Machine-sew the chape to the missile cover with the original stitch formation.

*b. Replacement of Chapes.*

(1) Cut the stitching from the chape and remove the damaged chape and D-ring from the missile cover.

(2) Using the old chape as a pattern, cut the proper length from the bulk webbing.

(3) Place a serviceable D-ring on the chape, and make the original folds.

(4) Place the chape in position on the missile cover, and machine-sew it with the original stitch formation.

## 5-25. Top Slide Fastener Strap

*a.* Cut the stitching from the damaged strap (fig. 2-53), and remove it from the missile cover.

*b.* Cut a 9-inch length from the bulk tape.

*c.* Make a 2-inch fold in the hook end of the strap, and machine-sew the fold with the original stitch formation on the damaged strap.

*d.* Place the strap in position on the missile cover, and machine-sew it with the original stitch formation.

## 5-26. Sleeves, Sleeve Straps, and Sleeve Strap Reinforcements

*a. Replacement of Sleeves.*

(1) Cut the stitching from the damaged sleeve (fig. 2-50), and remove it from the missile cover.

(2) Using the damaged sleeve as a pattern, cut a new one from the basic tent cloth.

(3) Make a ½-inch fold in each end of the new sleeve, and machine-sew the fold with a straight stitch.

(4) Place the new sleeve in position on the missile cover, and make a ¼-inch fold along each side of it.

(5) Machine-sew the sleeve to the missile cover with the original stitch formation.

*b. Replacement of Sleeve Strap.*

(1) Remove the stitching that attaches the sleeve strap to the missile cover, and remove the sleeve strap from the sleeve.

(2) Using the damaged sleeve strap as a pattern, cut a new sleeve strap from the bulk webbing.

(3) Make a 3-inch fold in the tent hook end of the sleeve strap and machine-sew, the fold with the original stitching used in the damaged sleeve strap.

(4) Install a serviceable tent hook in the fold, and install a serviceable rubber strap on the tent hook.

(5) Place the unfolded end of the sleeve strap in position on the missile cover, and machine-sew it with the original stitch formation.

(6) Place the end of the rubber strap in the sleeve opening, and feed it through the sleeve until all the sleeve strap is in the sleeve.

(7) Restitch any stitching removed on the other components.

*c. Replacement of Sleeve Strap Reinforcement.*

NOTE

Only the short sleeve strap has a reinforcement.

(1) Remove the stitching from a damaged strap reinforcement and remove the strap reinforcement from the missile cover.

(2) Cut a 3 x 4-inch piece from the bulk basic missile cover cloth.

(3) Place the new strap reinforcement in position on the inside of the missile cover, and make a ¼-inch fold along each edge.

(4) Machine-sew the strap reinforcement to the missile cover with the original stitch formation.

(5) Restitch the slide fastener and the sleeve strap to the missile cover and strap reinforcement.

## 5-27. Slide Fasteners

*a. Replacement of Nose Section Slide Fastener.*

(1) Cut the stitching from the nose section slide fastener (fig. 2-51) and remove it from the cover.

(2) Place a serviceable slide fastener in position on the missile cover, and machine-sew it with the original stitch formation.

*b. Replacement of Wing Section Slide Fastener With Welt.*

(1) Remove the stitching from the slide fastener (fig. 2-51), and remove it from the welt.

(2) Remove the stitching from the damaged welt, and remove it from the missile cover.

(3) Remove the stiffener from the welt.

(4) Cut a new welt (12 ft. 8 in. long and 1¾ in. wide) from the bulk basic tent cloth.

(5) Cut a stiffener of the same length as the welt from the bulk cord.

(6) Fold the welt width in half over the stiffener, and machine-sew a straight stitch along the length of the welt to secure the stiffener in it.

(7) Place the slide fastener on the welt so the stiffener side is located along the edge of the slide fastener scoops.

(8) Machine-sew the slide fastener to the welt with the same stitching used on the damaged one.

(9) Place the slide fastener with the welt in position so the welt stiffener is located along the outside edge of the missile cover.

(10) Machine-sew the slide fastener and the welt to the missile cover with the original stitch formation.

*c. Replacement of Wing Section Diagonal Slide Fasteners.*

(1) Remove the stitching from a damaged diagonal slide fastener (fig. 2-50) and remove it from the missile cover.

(2) Place a serviceable slide fastener in place on the missile cover, and machine-sew it with the original stitch formation.

## 5-28. Touch-and-Close Fasteners

*a. Repair.*

(1) Remove the stitching from the damaged portion of a fastener (fig. 2-51), and remove the damaged portion from the missile cover.

(2) Cut a new portion of fastener from the bulk material and position it on the bulk material.

(3) Machine-sew the piece of fastener to the missile cover with the original stitch formation.

*b. Replacement.* When the entire fastener is damaged or when damaged areas are too numerous, repair is not practical. Replace the entire fastener following the procedure in *a.* above.

## 5-29. Slide Fastener Flaps and Exhaust Opening Flap

*a. Replacement of Intermediate Slide Fastener Flaps.*

(1) Remove the stitching from the damaged flap (fig. 2-53), and remove the flap from the missile cover.

(2) Cut a new flap (75½ in. long and 6½ in. wide) from the bulk basic tent cloth.

(3) Make a ¾-inch fold along all sides of the flap, and machine-sew the folds with two rows of straight stitches.

(4) Cut the necessary pieces of touch-and-close fastener, and machine-sew them in position on the flap.

NOTE

Use the damaged flap as a guide for location of the touch-and-close fastener.

(5) Position the flap on the missile cover, and machine-sew it with the original stitch formation.

*b. Replacement of Nose Section Slide Fastener Flap.*

(1) Remove the stitching from the damaged flap (fig. 2-51), and remove it from the missile cover.

(2) Cut a new flap (26½-in. long and 4½-in. wide) from the bulk basic tent cloth.

(3) Make a ½-inch fold along each side of the flap, and machine-sew each fold with a straight stitch.

(4) Cut a 25½-inch hook closure from the bulk material, and machine-sew it along one inside edge of the flap with two rows of straight stitches.

(5) Position the flap on the missile cover so that both sides of the touch-and-close fastener connect when the flap is closed.

(6) Machine-sew the flap to the missile cover with the original stitch formation.

*c. Replacement of Exhaust Opening Flap.*

(1) Cut the stitching from the damaged flap and remove it from the missile cover.

(2) Cut a new flap (5¾ inches square) from the bulk basic tent cloth.

(3) Cut a new flap reinforcement (5¼ inches square) from the bulk basic tent cloth.

(4) Position the reinforcement on the inside of the flap, and make a ½-inch fold along each edge of the flap.

(5) Machine-sew the flap and reinforcement together, along the folded edge, with the stitching used on the damaged flap.

(6) Cut five 5¼-inch lengths from the bulk touch-and-close fastener material.

(7) Position the fastener lengths on the flap, and machine-sew them to the flap. Use the damaged flap as a guide for positioning and machine-sewing.

(8) Machine-sew the flap to the missile cover with the original stitch formation.

## 5-30. Wing Edge Padding and Thrust End Padding

*a. Replacement of Wing Edge Padding.*

(1) Remove the stitching from a damaged wing edge padding, and remove the padding from the missile cover.

(2) Use one of the remaining wing edge paddings to construct a pattern.

(3) Use the pattern as a guide, and cut a new padding from the bulk spacer cloth. Cut a piece with the same size and shape as the padding from the bulk basic tent cloth.

(4) Place the padding in position on the inside of the missile cover, and position the piece of basic tent cloth over the padding.

(5) Machine-sew the padding and the piece of basic tent cloth to the missile cover with the original stitch formation.

*b. Replacement of Thrust End Padding.*

(1) Cut the stitching from the damaged portion of the thrust end padding, and remove the damaged portion from the missile cover.

(2) Cut a new piece of padding from the bulk spacer cloth and a matching piece from the bulk basic tent cloth.

(3) Machine-sew the two pieces together with the original stitch formation.

(4) Position the padding on the missile cover and machine-sew it with the original stitch formation.

## 5-31. Missile Cover

*a. Machine Patching.* Follow the procedures in TM 10-269 to machine-patch any rips or holes in the missile cover.

*b. Restitching.* When a seam on the cover has broken stitching, machine-sew the entire seam with the original stitch formation.

NOTE

When a section of the missile cover is damaged beyond repair, a new section must be made.

# APPENDIX A

# REFERENCES

## A-1. Fire Protection

| | |
|---|---|
| TB 5-4200-200-10 | Hand Portable Fire Extinguishers For Army Users |

## A-2. Painting

| | |
|---|---|
| TM 9-213 | Painting Instructions for Field Use |

## A-3. Maintenance

| | |
|---|---|
| TM 10-269 | General Repair for Canvas and Webbing |
| TM 38-750 | Army Equipment Record Procedures |
| TM 10-8340-203-23P | Organizational and Direct Maintenance Repair Parts and Special Tool Lists: Tentage for Hawk Missile Equipment |
| TM 740-90-1 | Administrative Storage of Equipment |
| TM 38-230 | Preservation, Packaging, and Packing of Military Supplies and Equipment |

## A-4. Destruction of Army Materiel

| | |
|---|---|
| TM 750-244-3 | Procedure for Destruction of Equipment to Prevent Enemy Use |

# APPENDIX B

# MAINTENANCE ALLOCATION CHART

## Section I. INTRODUCTION

### B-1. General

*a.* This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

*b.* Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

*c. Section III.* Not Applicable.

*d.* Section IV contains supplemental instructions, explanatory notes and / or illustrations required for a particular maintenance function.

### B-2. Explanation of Columns in Section II

*a. Group Number, Column (1).* The assembly group is a numerical group assigned to each assembly in a top down breakdown sequence. The applicable assembly groups are listed on the MAC in disassembly sequence beginning with the first assembly removed in a top down disassembly sequence.

*b. Assembly Group, Column (2).* This column contains a brief description of the components of each assembly group.

*c. Maintenance Functions, Column (3).* This column lists the various maintenance functions (A through K). The lowest maintenance category authorized to perform these functions is indicated by a symbol in the appropriate column. The symbol designations for the various maintenance categories are as follows:

C - Operator or crew
O - Organizational maintenance
F - Direct support maintenance
H - General support maintenance
D - Depot maintenance

The maintenance functions are defined as follows:

A - Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

B - Test. To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

C - Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

D - Adjust. To rectify to the extent necessary to bring into proper operating range.

E - Align. To adjust specified variable elements of an item to bring to optimum performance.

F - Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison the two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

G - Install. To set up for use in an operational environment such as an emplacement, site, or vehicle.

H - Replace. To replace unserviceable items with serviceable like items.

I - Repair. Those maintenance operations necessary to restore an item to serviceable condition through correction of material damage or a specific failure. Repair may be accomplished at each category of maintenance.

J - Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

K - Rebuild. The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild

reduces to zero the hours or miles the equipment or component thereof, has been in use.

*d. Tools and Equipment, Column (4).* Not Applicable.

*e. Remarks, Column (5).* This column is provided for referencing by code the remarks (sec. IV) pertinent to the maintenance functions.

### B-3. Explanation of Columns in Section IV

*a. Reference Code.* This column consists of two letters separated by a dash, both of which are references to section II. The first letter references column (5) and the second letter references a maintenance function, column (3), A through K.

*b. Remarks.* This column lists information pertinent to the maintenance function being performed, as indicated on the MAC, section II.

## Section II. MAINTENANCE ALLOCATION CHART

| (1) Group No. | (2) Functional group | (3) Maintenance functions A | B | C | D | E | F | G | H | I | J | K | (4) Tools and equipment | (5) Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | Tentage | | | | | | | | | | | | | |
| | Tent Body | C | .. | O | .. | .. | .. | .. | O | O | F | .. | ..... | A-I |
| | Fastener Slide | C | .. | C | .. | .. | .. | .. | F | O | | | | |
| 02 | Tent Support Components | | | | | | | | | | | | | |
| | Frame Assembly | C | .. | O | .. | .. | .. | .. | O | F | F | .. | | |
| 03 | Tent Anchoring Components | | | | | | | | | | | | | |
| | Lines | C | .. | C | .. | .. | .. | .. | O | O | F | | | |
| | Pin Tent | C | .. | C | .. | .. | .. | .. | O | | | | | |
| 04 | Tent Accessories | | | | | | | | | | | | | |
| | Cover, tent | C | .. | C | .. | .. | .. | .. | .. | O | F | .. | ..... | B-I |
| 05 | Cover | C | .. | C | .. | .. | .. | .. | .. | .. | F | .. | ..... | C-I |
| | Fastener Slide | C | .. | O | .. | .. | .. | .. | | | | | | |

## Section IV. REMARKS

| Reference code | Remarks |
|---|---|
| A-I | Hand sewing and cement patching. |
| B-I | Hand sewing and cement patching. |
| C-I | Hand sewing and cement patching. |

# APPENDIX C

# BASIC ISSUE ITEMS LIST

## Section I. INTRODUCTION

### C-1. Scope

This appendix lists items which accompany the tentage for the Hawk Missile System or are required for installation, operation, or operator's maintenance.

### C-2. General

This Basic Issue Items List is divided into the following sections:

*a. Basic Issue Items - Section II.* A list of items which accompany the tentage for the Hawk Missile System and are required by the operator / crew for installation, operation, or maintenance.

*b. Maintenance and Operating Supplies - Section III.* Not Applicable.

### C-3. Explanation of Columns

The following provides and explanation of columns in the tabular list of Basic Issue Items, section II.

*a. Source, Maintenance, and Recoverability Codes (SMR):*

(1) Source code, indicates the source for the listed item. Source codes are:

| *Code* | *Explanation* |
|---|---|
| P | Repair parts which are stocked in or supplies from the GSA / DSA, or Army Supply system and authorized for use at the indicated maintenance categories. |
| P2 | Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system. |
| M | Repair parts which are not procured or stocked, but are to be manufactured in indicated maintenance levels. |
| A | Assemblies which are not procured or stocked as such, but are made up of two or more units. Such components units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories. |
| X | Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system. |
| X1 | Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component. |
| X2 | Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain them through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normaly supply channels. |
| G | Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above GS and DS level or returned to depot supply level. |

(2) Maintenance code, indicates the lowest category of maintenance authorized to install the listed item. The maintenance level code is:

| *Code* | *Explanation* |
|---|---|
| C | Operator / crew |

(3) Recoverability code, indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are:

| *Code* | *Explanation* |
|---|---|
| R | Repair parts (assemblies and components) which are considered economically reparable at direct and general support maintenance levels. When the maintenance capability to repair these items does not exist, they are normally disposed of at the GS level. When supply considerations dictate, some of these repair parts may be listed for automatic return to supply for depot level repair as set forth in AR 710-50. When so listed, they will be replaced by supply on an exchange basis. |
| S | Repair parts and assemblies which are economically reparable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically reparable they will be evacuated to a depot for evaluation and analysis before final disposition. |
| T | High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities. |
| U | Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casings, or casting. |

*b. Federal Stock Number.* This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

*c. Description.* This column indicates the Federal item name and any additional description of the item required. The abbreviation "w / e", when used as a part of the nomenclature, indicates the Federal stock number, includes all armament, equipment, accessories, and repair parts issued with the item. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parenthesis. Repair parts quantities included in kits, sets, and assemblies are shown in front of the repair part name.

*d. Unit of Measure (U / M).* A two character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

*e. Quantity Incorporated in Unit.* This column indicates the quantity of the item used in the assembly group. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

*f. Quantity Furnished With Equipment.* This column indicates the quantity of an item furnished with the equipment.

*g. Illustration. This* column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item number.* Indicates the callout number used to reference the item in the illustration.

## C-4. Abbreviations

ea ..... each

## Section II. BASIC ISSUE ITEMS

| (1) SMR CODE | (2) FEDERAL STOCK NUMBER | (3) DESCRIPTION Reference Number & Mfg. Code Usable on Code | (4) UNIT OF MEAS. | (5) QTY INC IN UNIT | (6) QTY FURN WITH EQUIP | (7) ILLUSTRATION (a) FIGURE NO. | (7) ILLUSTRATION (b) ITEM NO. |
|---|---|---|---|---|---|---|---|
| PC | 7520-559-9618 | CASE: Operators Manual | EA | | 1 | | |
| | | DEPT. OF THE ARMY TECHNICAL MANUAL: TM 10-8340-203-13 | EA | | 1 | | |

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**By Order of the Secretary of the Army:**

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**Distribution:**

**To be distributed in accordance with DA Form 12-32 (qty rqr block No. 13) organizational maintenance requirements for the Hawk Missile System.**

* U.S. GOVERNMENT PRINTING OFFICE: 1994 300-421/82179

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