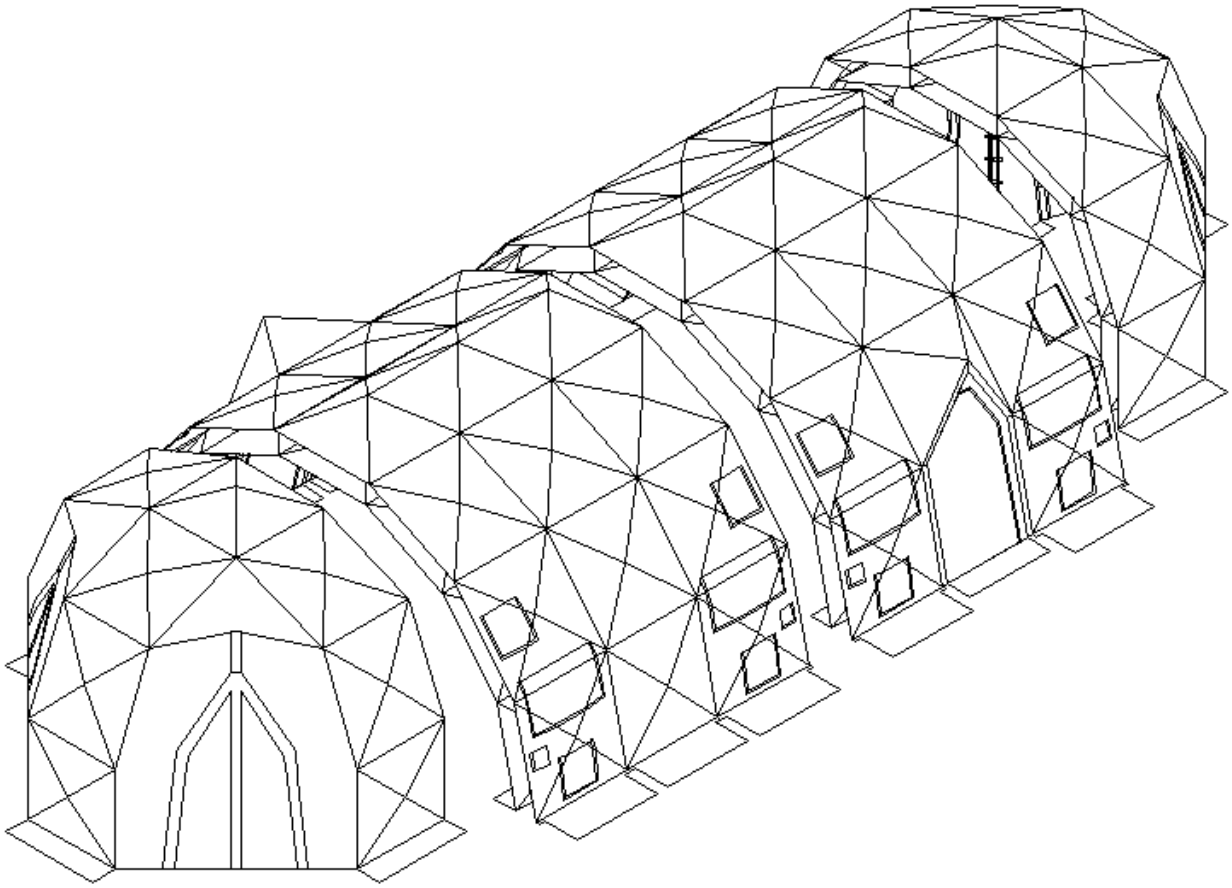
DRASH®

M SERIES SHELTER



OPERATION & MAINTENANCE MANUAL

WARNING: Failure to follow the operating procedures described in this manual may result in damage to the equipment and are not covered under warranty. Please read before proceeding.

DHS SYSTEMS LLC

ISO 9001: 2000 Registered Quality Management System

DHS MANUAL NUMBER: 95330-00
Issued – July 24, 2004

Hotline: 800-977-3647
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Revision History

Date	Revision	Description
07/24/04	95330-00	Original Issue.

WARNING SUMMARY

This Warning Summary explains the use of general safety Note, Caution, and Warning notices present in this Technical Manual that must be understood and applied during the operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel.

Equipment Specific Safety Issues

General

The cautions and warnings point out known conditions that are potentially hazardous. However, no manual can cover every possible situation. If in doubt, contact DHS.

Service and repair procedures not covered in this manual should be performed only by authorized DHS technicians.

General Precautions

REMEMBER SAFETY FIRST. If unsure of the instructions or proper operating procedures, contact DHS before continuing.

This manual emphasizes the safety precautions necessary during the operation and maintenance of the M Series Shelter. Each section uses caution and warning messages for both the safety of the operator as well as the durability of the equipment. If any of the cautions or warnings is not readily understood, contact DHS before proceeding.

When an abnormal condition is observed and procedures in the manual do not specifically describe the condition, all operations should be stopped and DHS Systems should be immediately contacted for assistance.

DHS SYSTEMS LLC Contact Information

Phone: 800-977-3647
FAX: 845-365-2114
e-mail: drash@drash.com

Qualified Personnel

A qualified person is one who is familiar with this manual, the operation of the M Series Shelter and the hazards involved in its operation and maintenance and who has been certified by the DHS SYSTEMS LLC Training program.

This manual is not intended to be a substitute for proper training. DHS SYSTEMS LLC strongly recommends that operators receive training directly from DHS SYSTEMS LLC.

Warning Boxes

Warning Box Words & Icons

Warning Boxes are provided throughout this Technical Manual and are used to call attention to various details about either the equipment that are important enough to separate from the normal operating descriptions and/or procedures or a safety-related situation that the operator must be aware of. The appearance of the basic Warning Box is shown in Figure a. There are generally four information points provided by each Warning Box that follow a defined pattern. Figure a defines the positions of the information points.

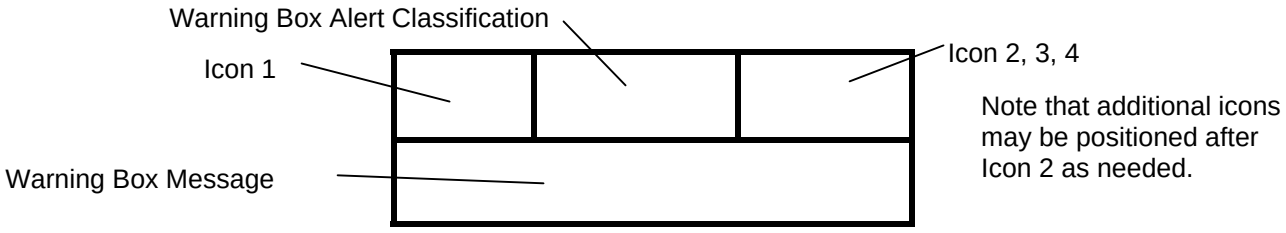


Figure a - Warning Box Definition

Icon 1:

Icon 1 is the primary indication of the contents of the Warning Box. The Icon is meant to visually alert the reader to the level of importance of the Warning.

Icons 2, 3, 4:

The icons that appear to the right of the Warning Box Classification provide a secondary indication of the contents of the Information Box. The position is labeled Icon 2, 3, 4 in Figure a (above) because there may be multiple types of alerts associated with the warning. The types of Icons found in Icon Box 2 are as follows:

When Icon 2 is the same as Icon 1, it means that there is no further specific information about the type of Alert.

If Icon 2 is different than the icon shown in Icon Box 1, it means that there is more specific information available about the type of Alert. An example of an Warning Box where there would be two different Icons shown in Icon Box 1 and Icon Box 2 would be that of a burn hazard. In this case, Icon Box 1 will show an Icon representing a burn hazard. If the burn hazard was created by a particular substance such as gasoline, Icon Box 2 would be an Icon indicating a Flammable Fluid.

In certain instances, additional icons will appear after Icon #2. These icons will either enhance the definition of the warning or they will indicate the presence of additional hazards that may exist either because of the original condition or in addition to the original condition.

Warning Box Alert Classifications

The Warning Box Alert Classification is an indication of the level of importance of the Warning Box. The various levels of Alert Types are defined below, from the most important (Danger) to items of lesser importance.

Danger: Danger refers to immediate hazards that will result in severe personal injury or death.

Warning: Warning refers to a hazard or unsafe method or practice that may result in severe personal injury or death.

Caution: Caution refers to a hazard or unsafe method or practice that may result in personal injury or equipment damage.

Note: Note refers to an important feature that the operator should be aware of for maximum operating efficiency of the equipment.

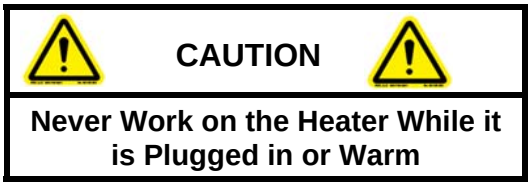


Figure b - Example of a Generic Warning

Common Warning Symbols Definitions

The following symbols are commonly used to indicate that a task requires precautionary measures be understood and practiced during the execution of the task.

Icon	Definition	Notes
	CAUTION The exclamation point is intended to alert the user to the presence of important operating and/or maintenance (servicing) information in the literature accompanying the product.	
	PRESENCE OF ELECTRICITY The lightning bolt is intended to alert the user to the presence of electricity. The electricity can be directly related to the specific operation or it can be in the area of the operation.	This icon is typically used with another, more specific, icon that identifies the nature of the warning.
	HAZARDOUS VOLTAGE The lightning bolt and human figure is intended to alert the user to the presence of voltages that can serious or fatal shock to a person.	
	EXPLOSION The explosion is intended to alert the user to the possibility that something associated with or in the area of the particular operation presents the risk of an explosion.	This icon is typically used with another, more specific, icon that identifies the nature of the warning.
	EXPLOSION The explosion with a face is intended to alert the user that a particular operation or task exposes the individual(s) to a risk of explosion within close proximity to the immediate work location.	This icon is more specific than the previous EXPLOSION icon.
	HOT SURFACE The open flame and heat lines is a generic icon to alert the user that there is or could be an exposed source of flame in the immediate vicinity of the particular operation.	This icon is not the same as the FLAMMABLE icon described below.
	HOT SURFACE w/BURN HAZARD The radiating surface with a hand alerts the user to the risk that there is or could be a potential for being burned by contact with a surface.	Hot surfaces are not always associated with a flame. An engine exhaust pipe is one example of a hot surface with no flame.
	FLAMMABLE The large open flame indicates that the associated operation involves working with fluids and/or gases that are flammable.	Burning gases and liquids can cause severe burns. Keep ignition sources away.

Icon	Definition	Notes
	LIFTING HAZARD The image of a person lifting a box indicates that the object in question is particularly heavy and presents a risk of back injury if not lifted properly or with assistance.	Other warnings that use this same icon include: HEAVY OBJECT TWO-PERSON LIFT
	HAND ENTANGLEMENT The image of a hand being trapped between two rollers indicates that there is a risk of a hand being trapped and possibly injured by one or more pieces of moving machinery.	
	PINCH POINT The image of a hand being crushed between two objects indicates that the particular piece of equipment or the particular operation presents the possibility that a hand or other part of the body can be pinched during the task.	
	STOP The uplifted hand within a red circle indicates that the person should stop and identify all possible risks and hazards associated with the particular operation before proceeding. Failure to observe this warning can lead to serious problems and the risk of injury or death.	Other warnings that use this same icon include: STAY CLEAR
	HAZARDOUS GASSES The image of a person inhaling gasses is intended to alert the user to the possible presence or release of gasses in the immediate area that can be harmful if inhaled.	
	FIRE EXTINGUISHER The image of a fire extinguisher indicates that the person should have an extinguisher ready or be aware of the location of the nearest fire extinguisher during a particular operation or task.	
	FIRST AID The cross in a circle is the international standard icon for a first aid kit. When used within an Operation & Maintenance Technical Manual, the First Aid icon indicates that the person should be aware of the location of such a kit.	

HOW TO USE THIS MANUAL

Work Package Description

This Technical Manual and the procedures within it are organized according to the Work Package numbering format identified in DoD Standard Practice for Preparation of Technical Information for Technical Manuals (MIL-STD-40051A) and DoD Guide to the General Style Format of US Army Work Package Technical Manuals (MIL-HDBK-1222B(TM).

Work Package Numbering

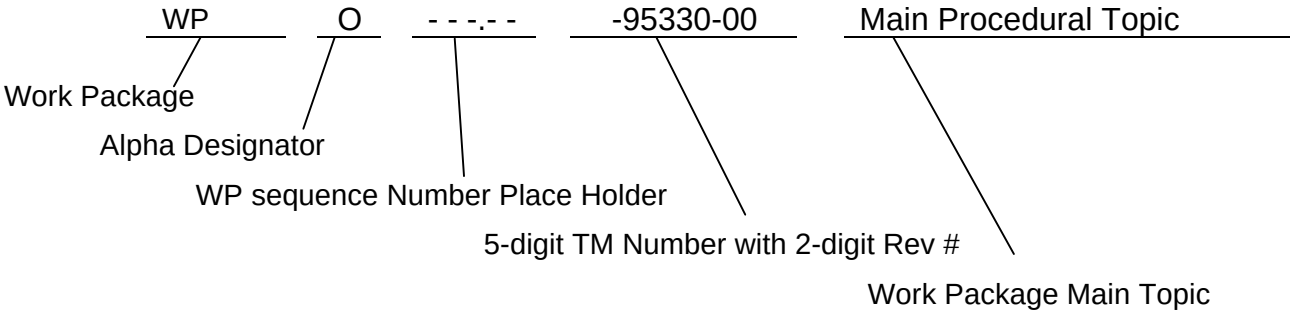
The Work Package numbering and lettering sequence is derived from MIL-STD-40051, page 25, and is explained here for reference.

The following alpha designators describe the specific types of information within this Technical Manual and within the specific Work Packages.

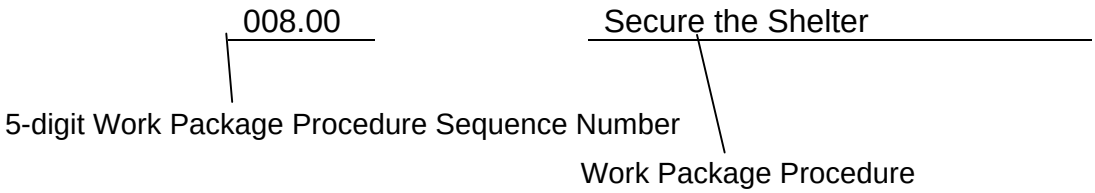
Alpha Designator	Description		Alpha Designator	Description
G	Descriptive information and theory of operation		**R**	Repair parts and Special Tools List (RPSTL)
I	Inspection Procedures		**S**	Supporting Information
M	Maintenance Procedures		**T**	Troubleshooting Procedures
O	Operation Procedures			

This manual uses two methods to present the Work Package numbering sequence:

The first method identifies the Parent Work Package by Alpha Designator, 5-digit Technical Manual number with revision number, and Work Package Main Topic. The Work Package Main Topic identifies the general scope of the Work Package Procedures to follow. An example Parent Work Package number is defined below.



The second numbering method identifies the titles of specific procedures by Work Package Sequence Number and Work Package Procedure. The Work Package Procedure Sequence Numbers will always flow from a lower number to a higher number, indicating the progress towards completing the Main Topic Procedure. An example of a specific Work Package Procedure is defined below.



Note that the first three digits of the Work Package Sequence Number will never change for the life of the product.

The last two digits of the Work Package Sequence Number and the last two digits of the Technical Manual Number are revision numbers and will change from time to time as revisions to either the product or the Work Package occur.

In all instances, the last two digits of the Work Package Sequence Number and the last two digits of the Technical Manual Number must always match. An examination of the Table of Contents page will show how the two numbering systems integrate.

All Work Packages will end with " **END OF WORK PACKAGE** " statement in bold type. The next Work Package will then begin and be identified by a Parent Work Package title described above.

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TABLE OF CONTENTS

Section 1

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1. INTRODUCTION

DRASH is an acronym for DEPLOYABLE RAPID ASSEMBLY SHELTER. The shelter can be deployed by a minimum of four people in a matter of minutes. It does not require any assembly in the field and it does not require any special equipment for either erecting or striking.

The major component of the DRASH Shelter is a frame with two (2) pre-attached covers. The Frame consists of an arrangement of various sized Titanite® struts. Struts are connected as pairs and articulate at the hubs. These hubs enable the struts to move freely. The unique frame design allows for quick erect and strike.

Each DRASH M Series Shelter is divided into four distinct sections with two Center Sections and two End Sections. This module arrangement provides the ability to add or subtract Sections to fit mission requirements as well as arrange the Sections such that all doors are either on one side or opposing sides and to join with other DRASH series shelters to form large complexes.

The basic features of the DRASH M Series are shown in Figure 1-1.

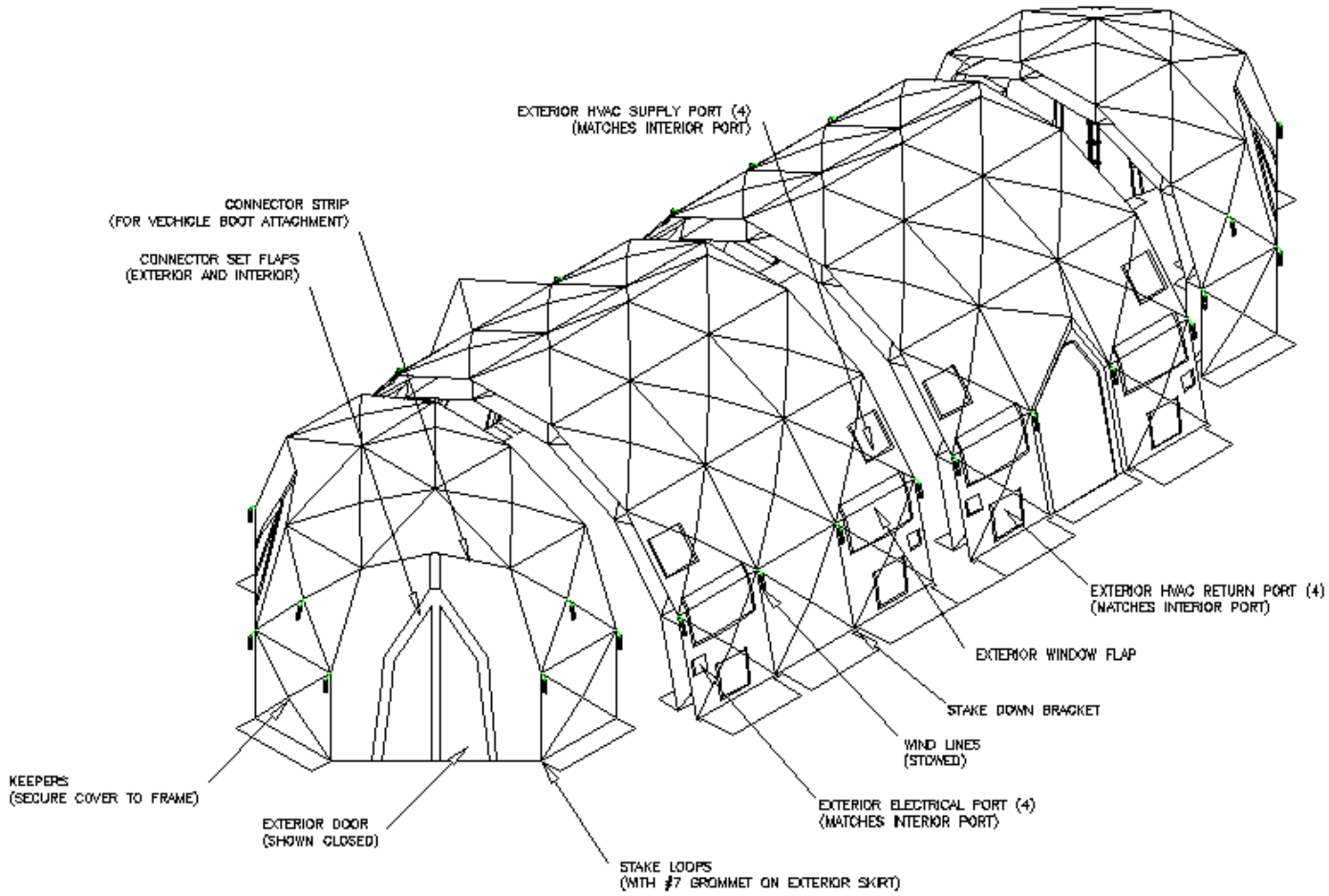

Figure 1-1 - DRASH Shelter Basic Features

1.1 M Series Shelter Features

Both the interior and exterior cover are made with specially coated polyester fabrics named XYTEX®. All fabrics are fire retardant, mildew resistant and water repellent. They have abrasion resistance and are UV resistant. The exterior fabric includes blackout in the visual and near infrared spectrum.

The interior and exterior cover are pre-attached to the frame using "KEEPERS" at the hub points in such a way that there is approximately one foot of dead air space between the two covers that acts as natural insulation. These covers are easily removable in the event of damage or change of venue.

The "GROUND COVER" and "FLOOR" are made from a heavy-duty polyester material. The ground cover provides a barrier against insects and vermin, abrasion and ground moisture. The floor acts as an inner lining. All shelters feature screen windows, electrical ports, conditioned air supply and return duct ports, built-in screen doors, wind lines, and ground stake loops.

1.2 M Series Shelter Components

The following list names the primary components that comprise each of the two (2) Center Sections of the M Shelter.

Ref #	Quantity (per section)	Item
1.	1	M Shelter Section
2.	1	Floor
3.	1	Ground Cover
4.	4	Push Poles (PVC)
5.	1	Field Repair Kit
6.	3	Cinch Belt
7.	1	Transport Bag
8.	1	O & M Manual

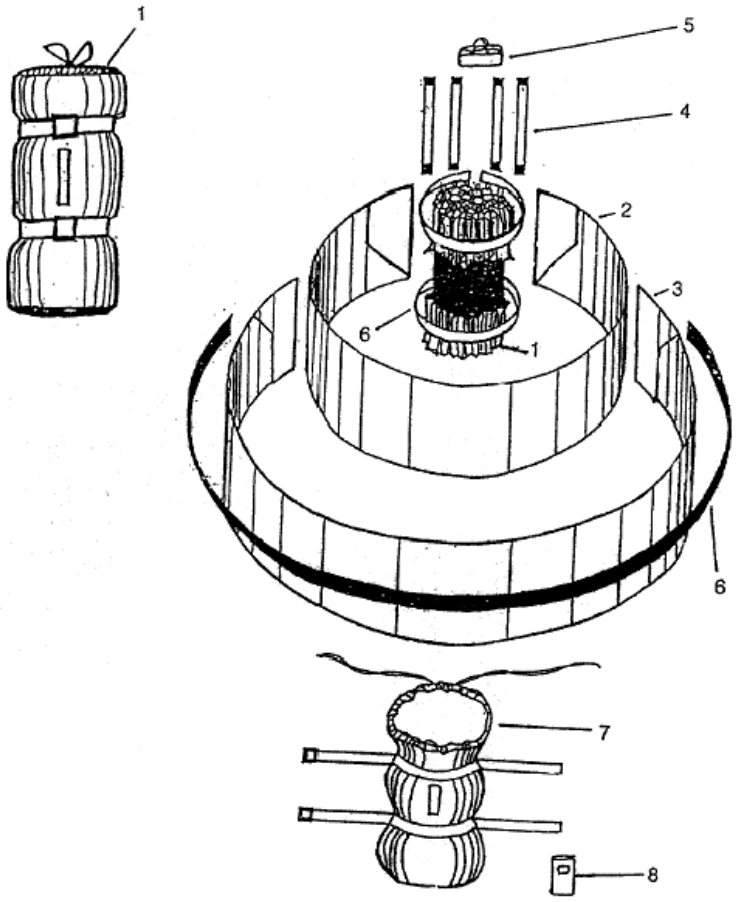

Figure 1-2 - Major Shelter Components

1.3 M Series Shelter Dimensions

Figure 1-3 detail the various M Shelter dimensions.

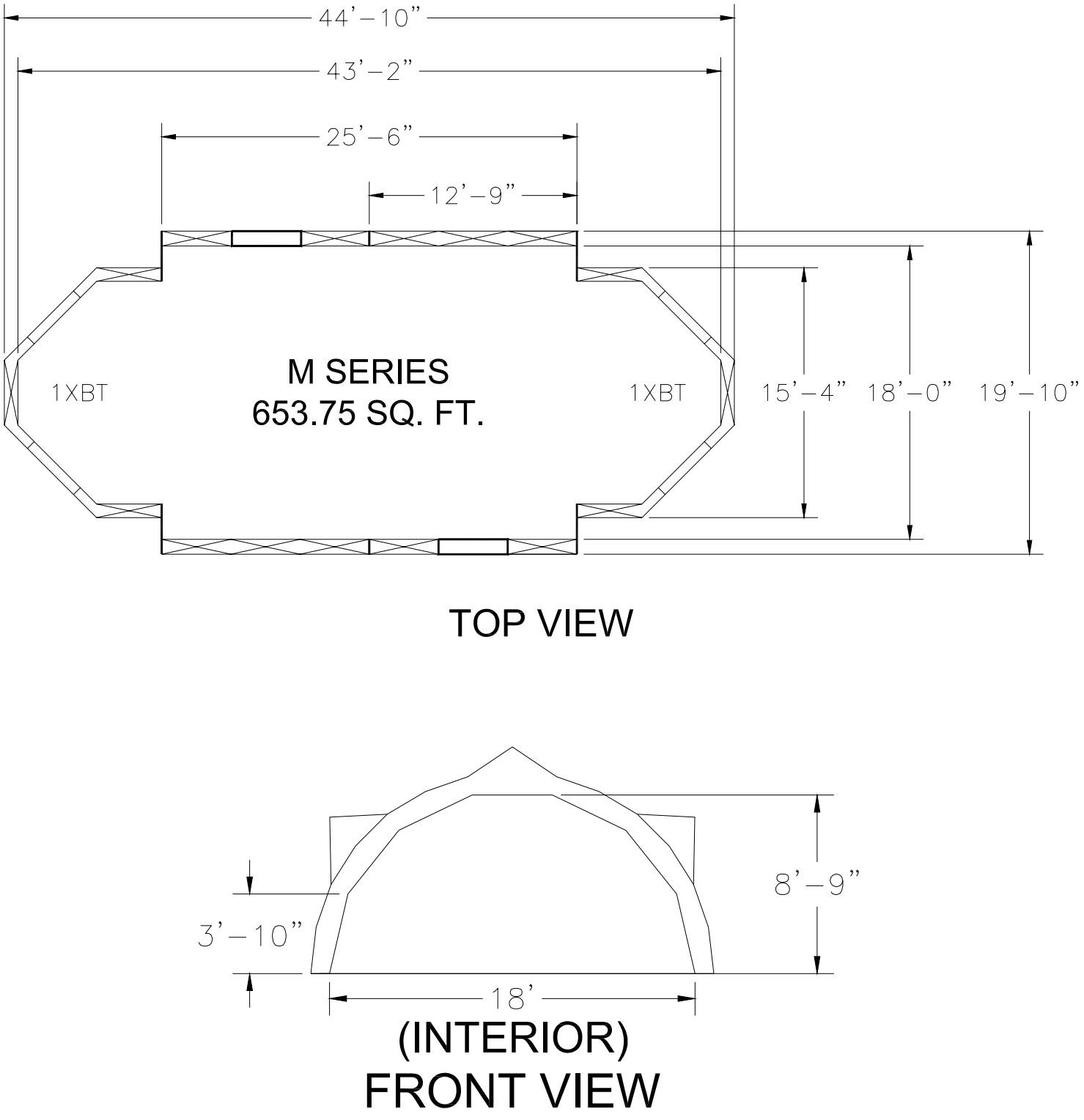

Figure 1-3 - M Shelter Configuration Dimensions

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Section 2

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2. ERECTING THE SHELTER

This manual and a separate video tape or CD-ROM have been prepared to assist you in understanding the correct procedure for deploying and striking the Shelter.

WP O --- . -- -95330-00 Deployment Procedure

FOLLOW THESE PROCEDURES TO INSURE PROPER DEPLOYMENT AND STRIKING OF THE SHELTERS.

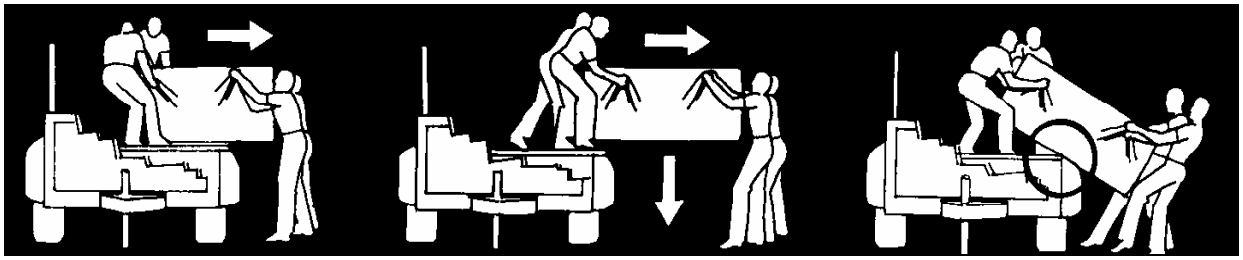
001.00 Offloading the Shelter

To off-load the Shelter package from any platform;

1. Assign one member from the four people (minimum) as the TEAM LEADER to be responsible for coordinating the smooth and uniform motion of the deployment crew.
2. Lift and slide the shelter so that it remains parallel with the ground (see Figure 2-1).
3. Do not rock the shelter when off-loading. Rocking may cause damage to the struts (see Figure 2-1).

CAUTION

THIS STEP REQUIRES FOUR PERSONNEL TO LIFT THE SHELTER PACKAGE FROM THE TRANSPORT VEHICLE AND LOWER IT TO THE GROUND.



YES YES NO

Figure 2-1 - Offloading the Shelter

002.00 Position the Shelter Parts

The M Series Shelter is comprised of two (2) End Sections, two (2) Center Sections, with each Section having its own fabric Tarp and Floor.

1. Clear enough space to erect the Shelter.
2. Open the Transport Bag and remove the Field Repair Kit, Push Poles, and the cinched Shelter Sections.
3. Unwrap the Ground Cover and Floor. The Ground Cover has coated staking loops around the edge.
4. Place the ground cover on site (Stenciled side up).
5. Place one End Section on each end of the Ground Cover as shown in Figure 2-2.
6. Place the two Center Section on the center of the Ground Cover as shown in Figure 2-2.
   - **a)** Position the Center Sections with the exterior sides facing up and the white sides down.
   - **b)** Each of the Center Sections has one built-in side doorway. Determine whether the installation should have both side doorways on one side of the M Shelter or one side doorway on either side of the shelter and position each of the center sections accordingly.
     NOTE that the position of the side doorway is indicated on each Center Section by two different colored keeper disks.

     For instance, if the Center Section color is Green, most of the keeper disks will also be Green but there will be two Tan colored circular disks to indicate the position of the doorway.

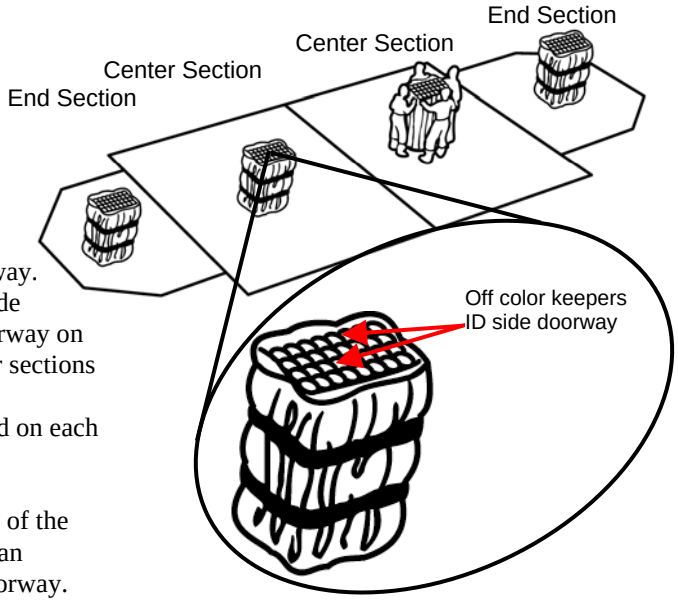


Figure 2-2 - Shelter Section Layout and Side Door Identification

7. Remove the Shelter cinch straps and place them in the Transport Bag to prevent loss.

003.00 Position Personnel & Locate the Exterior Lifting Hubs

1. Position one person at each end of the section.
2. Center one person on each side of the section as shown in Figure 2-3.
3. Locate the outermost hubs. These are the hubs with the coated steel wire looped keepers shown in Figure 2-4. The outermost hubs or "lifting hubs" and the top part of the struts are the only places from which the Shelter should be lifted.
4. Check that the wind lines are not snagged on any hubs which would prevent the Shelter from spreading.

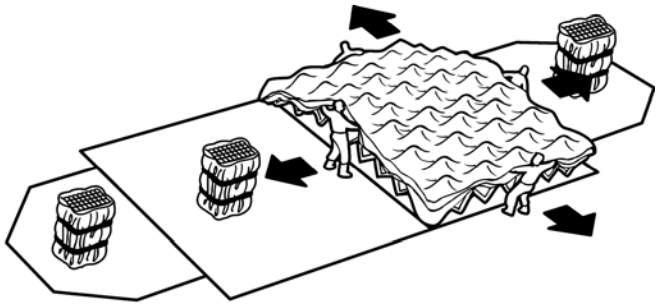


Figure 2-3 - Positioning Personnel

004.00 Lift &Spread the Center Section

1. Before any commands or movements by personnel, the TEAM LEADER must be sure that all team members are in position and alert. All movements must be uniform and coordinated.
2. Start with one M Center Section.
3. Locate the line of the outermost hubs with loops (shown in Figure 2-4).
4. Position hands under hub and on top part of strut.
5. On command, each person must lift upward and walk back two steps.
6. With both hands, grasp the lifting hubs. The hubs will spread out as the Shelter is spread. The top of the Shelter must be spread out at the same rate as the bottom.

NOTE: THE SHELTER MUST BE LIFTED OFF THE GROUND. DO NOT STEP ON THE FABRIC LINER.

NOTE

DO NOT GRAB THE MIDDLE OF THE STRUTS.

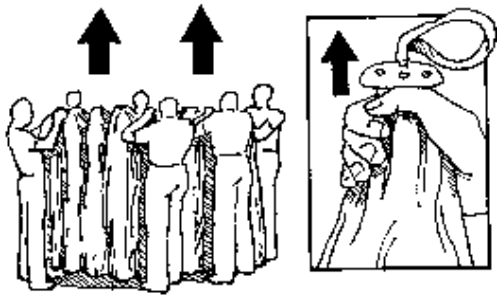


Figure 2-4 - Lifting & Spreading the Shelter

7. On the Team Leader's command ("Ready to lift?…Lift") each team member will lift the Shelter off the ground, take two short steps backward and put the shelter down.
   a) If any resistance felt by any team member, immediately yell "STOP", identify the restriction and correct it.
   b) Continue to lift, step back, and spread the Shelter.
   c) On command, continue to lift the Shelter at the highest point of the strut, step backward, and spread.
   d) At maximum spread, the Shelter will resist any further expansion and the center of the exterior cover will rise slightly and appear to inflate or "puff". The shelter should be extended beyond the ground cover.

NOTE

IF ANY RESISTANCE IS FELT, IMMEDIATELY YELL STOP TO PREVENT POSSIBLE DAMAGE TO THE FRAME OR MATERIAL.

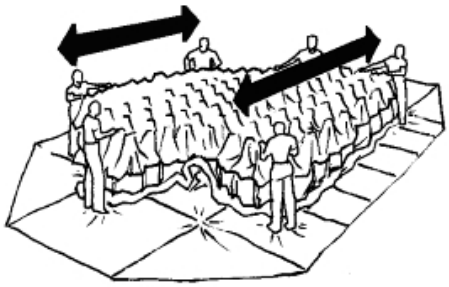


Figure 2-5 - Continue Spreading the Shelter

005.00 Raise Center Section to Pole Height

1. Locate the push poles.
2. Locate the red flags inside the Center Section liner.
3. Locate the red flags between the covers. These flags are the points from which personnel will lift the shelter into position.
4. Place one hand underneath the push point hub. Hold the push pole in the other hand. All personnel should be ready to push up. At this time, the Team Leader should get a verbal signal from each member.
5. On command ("Ready to lift to pole height?…Lift"), each team member should simultaneously lift at their push point.
6. As quickly as possible, place either end point of the push pole directly underneath the looped keeper with the red flag, keeping the push pole straight.
7. The Shelter should now be resting on four push poles which are in a vertical position as shown in Figure 2-6.

NOTE

NEVER PUSH ON A HUB THAT DOES NOT HAVE A RED FLAG

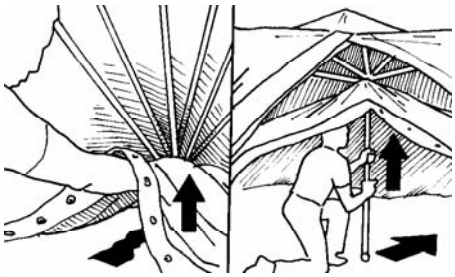


Figure 2-6 - Push Pole Placement

006.00 Final Push To Full Height

1. Locate the red flags at the vertex of the doorway. Personnel should alternately move inward to this new push point. This action more evenly distributes the weight of the shelter.

   The push poles are used to push the Section to full height.

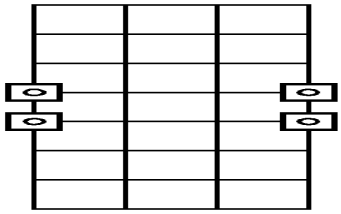


Figure 2-7 - Personnel Positioned for Final Lift

Check for obstructions before starting the final push to full height.

Prior to the final push, personnel should leave their push pole and check that the doors are not caught on any hubs or between the struts. Fabric that is snagged will prevent the Shelter from easily pushing to full height.

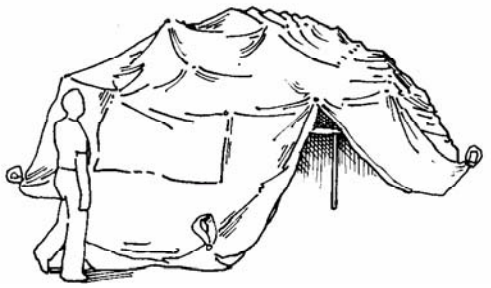


Figure 2-8 - Inspect Shelter for Obstructions

Return to the push pole and prepare to lift the Shelter. Note: If setting up during high winds, position additional personnel on windward side along the length of the shelter. Unravel the windlines on both short ends and at least two windlines on the windward side. Have personnel hold onto the windlines while the shelter is being erected.

On command ("Ready to lift?…Lift"), all personnel should evenly and in a coordinated effort, lift the DRASH until the side walls come to a vertical position and the DRASH is self supporting.

Let the Shelter rest back on the push poles and check for any obstructions.

The Shelter should be properly positioned on the ground cover when fully erect as shown in Figure 2-9.

Figure 2-9 - Center Section in Erected Position

The Shelter is in final position when the Velcro strips on the ground cover are centered in the doorway.

007.00 Repositioning the Center Section

1. The red tabs on the ground cover should be between the interior and exterior hubs of the Center Section. If not, move the Shelter so that it is positioned correctly.
2. There are two methods of moving the shelter:

   a) **Push Poles** Four people are required for this procedure.

   - Using the push poles, four personnel should lift at the push points identified by the red flags in each doorway so that the Center Section is off the ground.
   - Move the Shelter so that it is positioned correctly.

   b) **Arms & Hands**
   For small adjustments, position personnel around the sides of the Center Section. Place one hand on the exterior looped keeper with a wind line and the other hand on the corresponding interior looped keeper. On command, all four personnel should lift the wall in unison and move the Shelter into the correct position.

   c) **NOTE: Make sure that during this process, the end or side walls do not angle inward beyond a vertical position. The SPOTTER should alert personnel if the walls are no longer vertical during movement of the Shelter.**
3. Return the Push Poles to the Transport Bag. Make sure all cinch belts and the Repair Kit are also in the bag. Stow the Transport Bag so that it is available for packing and storing.

008.00 Erecting the End Sections

Both of the End Section are erected with the same procedure.

1. Position the End Section so that the open end of the Section faces the open end of the adjoining Center Section as shown in Figure 2-10.
2. Position hands under hub and on top part of strut.
3. On command, each person must lift upward and walk back two steps.
4. With both hands, grasp the lifting hubs. The hubs will spread out as the Shelter is spread. The top of the Shelter must be spread out at the same rate as the bottom.

   NOTE: THE SHELTER MUST BE LIFTED OFF THE GROUND. DO NOT STEP ON THE FABRIC LINER.

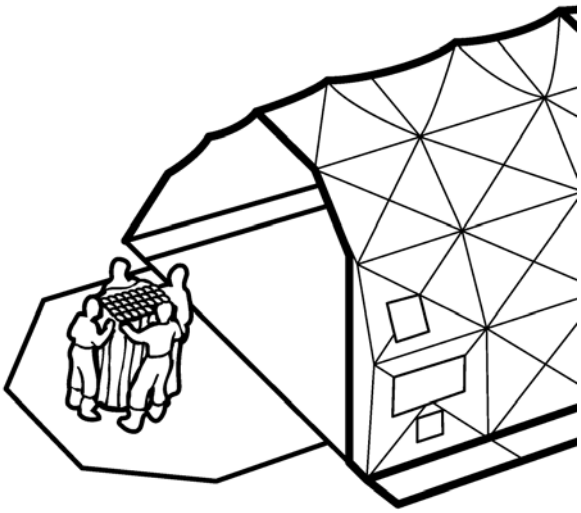


Figure 2-10 - Position the End Section

5. On the Team Leader's command ("Ready to lift?…Lift") each team member will lift the End Section off the ground, take two short steps backward and put the shelter down.
6. If any resistance felt by any team member, immediately yell "STOP", identify the restriction and correct it.
7. Continue to lift, step back, and spread the Shelter.
8. On command, continue to lift the End Section at the highest point of the strut, step backward, and spread as shown in Figure 2-11.
9. At maximum spread, the End Section will resist any further expansion and the center of the exterior cover will rise slightly and appear to inflate or "puff". The shelter should be extended beyond the ground cover.

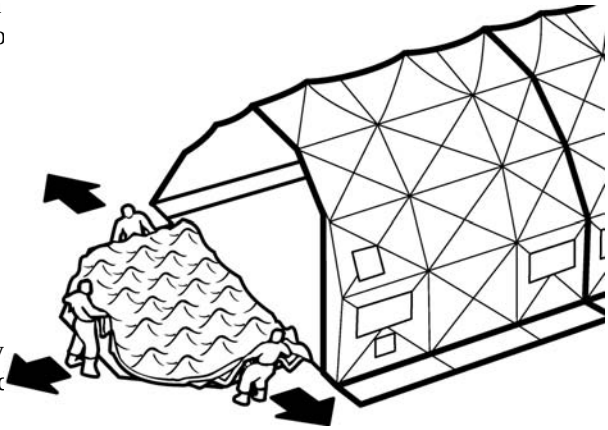


Figure 2-11 - Lift & Spread the End Section

009.00 Connect End Sections to Center Sections

> **NOTE**
>
> A LADDER OR SIMILAR DEVICE TO GAIN HEIGHT FOR PERSONNEL IS REQUIRED TO COMPLETE THIS PROCEDURE.

1. Locate the red tabs affixed to the peaks of both the Center Section and the associated End Section.
2. The End Section may have to be adjusted to make a proper connection the End Section slightly and move back (or forward) as needed.
3. Starting at the two Red tabs at the peak of each Section, begin joining the exterior Velcro cover strips.
4. Continue joining the exterior Velcro cover strips, working from the top of the seam towards the ground.
5. Complete the outside seam first, then repeat the procedure to join the interior Velcro cover seam.
6. Repeat steps 1 through 5 to connect the opposite End Section to the Center Section.

010.00 Install and Secure the Shelter Floor

1. Position the fabric floor section inside the M Shelter and secure to the edge of the floor.
2. Begin securing the Velcro strip on the Floor to the exterior cover starting at the center of the respective Section.
3. Open the shorter connector strip.
4. Locate the longer connector strip on the other Shelter and secure the Velcro.
5. Check that each connection has been properly made.

011.00 Secure the Entire Shelter

1. All wind lines and staking loops must be utilized, especially during inclement and changing weather conditions. This will help stabilize the shelter.
2. Fully unravel all wind lines and stake them down 4-5 feet from shelter.
3. Use the tensioner on the wind lines to keep them taut.
4. Place stakes in all the stake loops around the Shelter base perimeter to insure that the shelter is adequately secured.
5. During adverse weather conditions, the wind lines and stakes should be periodically checked to see that they are properly secured.

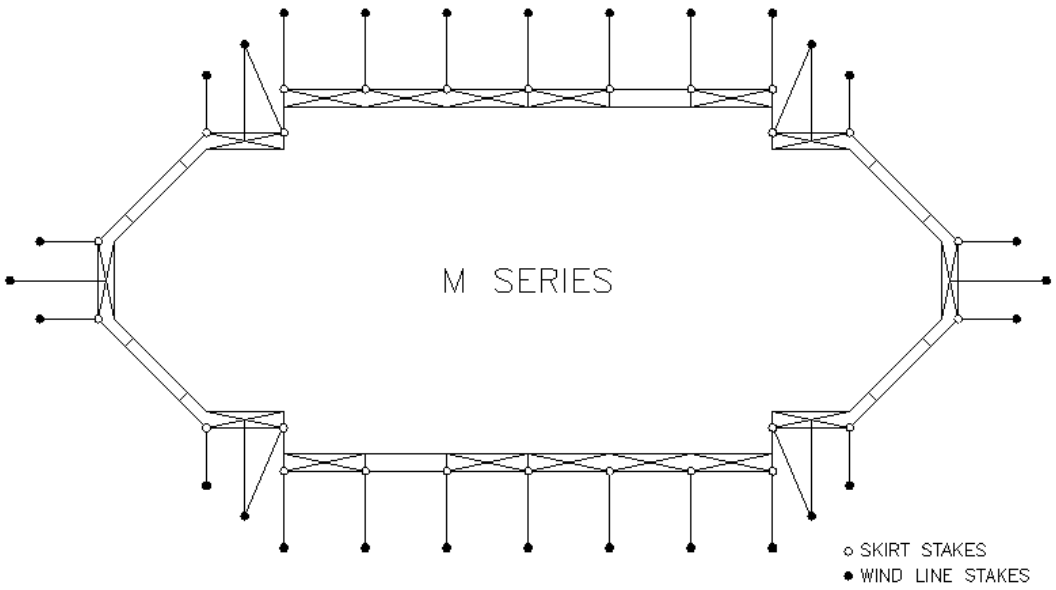


Figure 2-12 - Shelter Staking and Tie-down Diagram

END OF WORK PACKAGE

WP O --- . -- -95330-00 Installing Shelter Accessories

012.00 Vehicle Door Boot

The Shelter's Door Boot is designed for use with specific vehicles to provide a weather and light tight seal between the shelter and vehicle. A door boot must be attached prior to final erection of shelter.

To attach the door boot:

1. Spread the Shelter.
2. Identify the door boot which will be installed over one of the doorways.
3. Locate the Brown tab on the door boot.

   Locate the Brown tab under the connector strip on the door.

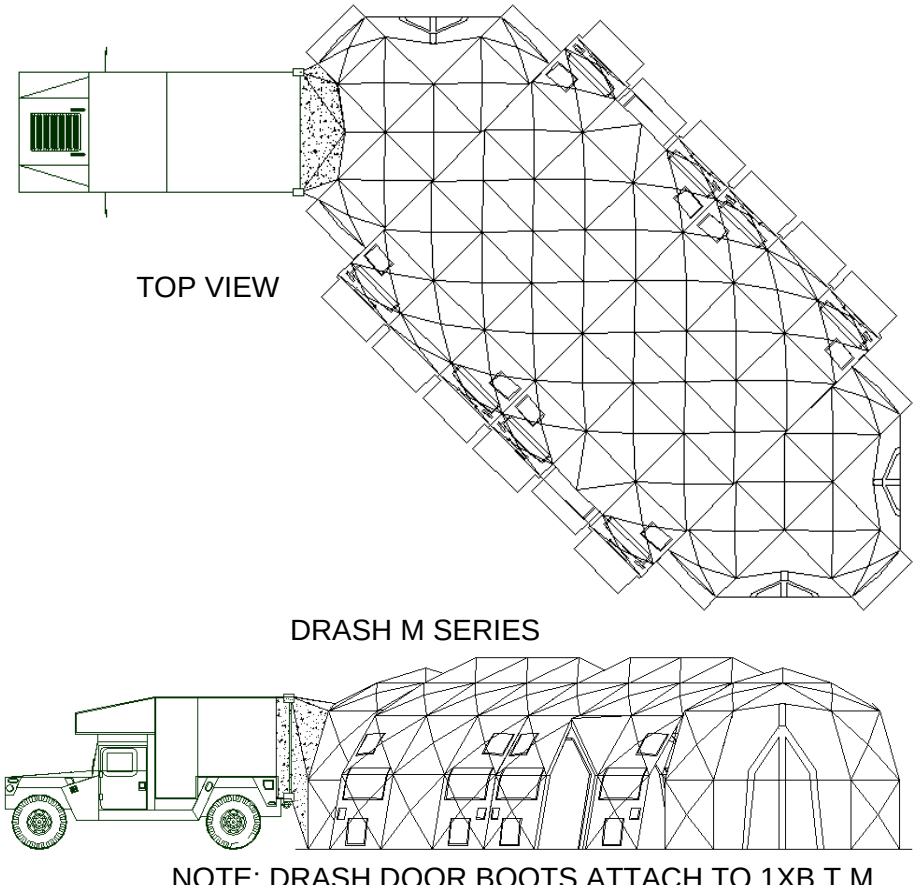
   To attach the door boot to the connector strip, start at the red tab and work down on each side to the grommet locations on the door boot.

The Shelter can now be erected.

   a) Use caution in the doorway where the Shelter door boot is now attached.

   b) One person should hold the boot while the Shelter is being erected.

4. Continue with the regular Shelter deployment procedures.
5. Finish attaching the Door Boot to the connector strip starting at the grommet location once the Shelter has been erected.
6. Stake down the outside bottom corners of the Door Boot Floor using Stake Loops.
7. Use Velcro strips to attach the Door Boot Floor between the Ground Cover and the Shelter.
8. Back the vehicle square into the center of the doorway and place the elastic part of the Boot over the vehicle.



9. Reposition the vehicle for a better fit if necessary.

Figure 2-13 - Vehicle Booted to an M Shelter

013.00 Plenum

A Plenum provides even distribution of heated or cooled air throughout the Shelter. To install the Plenum:

1. Remove the Plenum from the bag.
2. Insure that at least two feet (2') of the supply ducting is pulled inside the Shelter through the duct port located above the window near the doorway.
3. Slip the Plenum over the duct until the first hook on the Plenum reaches the looped keeper closest to the duct port.
4. Secure the Plenum to the duct with the provided cord.
5. Attach the hooks affixed along the length of the Plenum to the corresponding looped keepers.
6. The air flow through the Plenum may be regulated by adjusting the opening(s) with the drawstring.

014.00 Window Set

The plastic Window Set covers the Shelters' interior mesh windows and allows ambient light to enter the Shelter while maintaining a controlled environment inside. To install the Window Set:

1. Remove the Window from the Window Set bag.

   Keep Window flaps open using the Velcro ties.

   The back of each window has four (4) Velcro strips along the perimeter and the other side has three (3) Velcro strips.

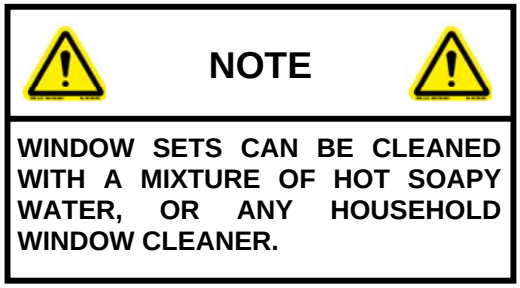
   Position the Window so that the edge without any Velcro is on top and facing inward.

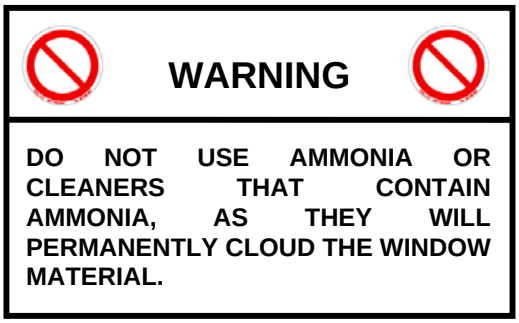
   Starting from the narrow end and leaving approximately 1 inch overlap, secure the Velcro from top to bottom.

   Continue joining the Velcro until the Window is secure.

   Straighten out any ripples found along the length of the Window.

Window Sets can be cleaned with a mixture of hot soapy water, or any household window cleaner





015.00 "T" to "T" Connection

The length of M Shelters can be extended by joining one or more Shelters together at the ends. To attach "T" shelters to form a longer Shelter:

1. Butt each of the "T" ends together when all of the Shelters are at Push Pole height.
2. Begin securing the Velcro on the exterior cover starting at the center of the "T" end.
3. Open the shorter connector strip.
4. Locate the longer connector strip on the other Shelter and secure the Velcro.
5. Check that each connection has been properly made.
6. Move back to the center of the Shelter. Use the same method to secure the Velcro on the interior cover.
7. To finish setting up, continue to follow manual procedures.

END OF WORK PACKAGE

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Section 3

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3. STRIKING THE SHELTER

WP O --- . -- -95330-00 Striking Procedure

016.00 Prepare the Shelter

1. Remove all equipment and accessories from inside the Shelter.
2. Detach the floor by unfastening the Velcro.
3. Remove the floor from the Shelter and fold into quarters lengthwise. Place the floor far enough away so as not to interfere with striking the Shelter.
4. Close all interior and exterior windows.
5. Remove all Ground Stakes.
6. Rewind the wind lines. Unwound wind lines may become tangled when the Shelter is packed.

017.00 Separate the End and Center Sections

1. Starting with one End Section, separate the Velcro cover strips working from the bottom (at the floor) up to the peak of the Section.
2. Locate the Push Poles and position at least four personnel around the End Section
3. On command, while maintaining visual contact, lift the End Section slightly off the ground with the Push Poles.
4. Move the End Section out about six to eight inches.
5. Position one person at each corner of the End Section so that they can easily grasp the exterior lifting hub.
6. The team leader should circle the Shelter to verify that each person is in position and ready to execute on command.
7. On command ("Ready to strike?...Strike on the count of three"), the team leader will count to three at which time each team member must lift their hub up and out, **in one swift motion.** This action will release the frame wall, allowing them to compress inward.
8. On command, each team member lifts the Shelter off the ground by the hubs and walks toward the center.

NOTE

DO NOT STEP ON THE FABRIC WHICH MAY GATHER AT YOUR FEET.

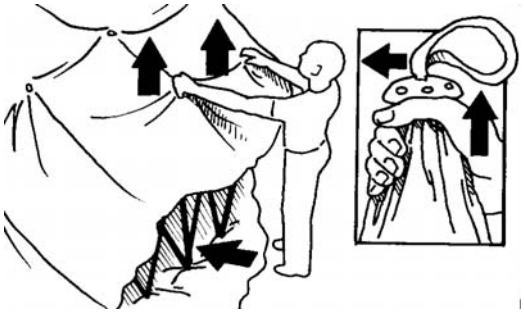

Figure 3-1 - Hold Shelter by Hubs and Walk Forward

9. Before completely compressing, carefully push the exterior cover between the struts so that all keepers are exposed.
10. Check that all wind lines are free and not tangled within the frame or fabric. If tangled, lift the Shelter and walk out one to two steps, untangle and re-compress the End Section.
11. Place the wind lines on top of the End Section.
12. Compress further to compact the End Section.

018.00 Securing the End Section

1. Invert the End Section so the white side is up.
2. Spread the Shelter approximately one foot.
3. Carefully push the interior liner between the struts so that all looped keepers are exposed.
4. Secure one of the cinch straps around the top section of the collapsed End Section approximately 1.5 feet down from the top interior hubs as shown in Figure 3-2 .

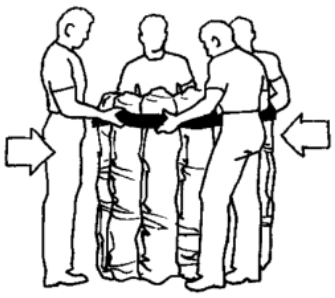

Figure 3-2 - Secure First Cinch Strap

continued

5. Invert the End Section so that the exterior cover is facing up.
6. Compress and secure with a second cinch belt approximately 1.5 feet from the exterior keepers as shown in Figure 3-3.
7. Remove the compressed End Section from the ground cover.
8. Lay the End Section on its widest side.
9. The End Section can now be lifted off the ground by the cinch straps or by the hubs closest to the ground. Remember to lift with your legs, and not with your back.
10. Repeat the above steps for the opposite End Section.

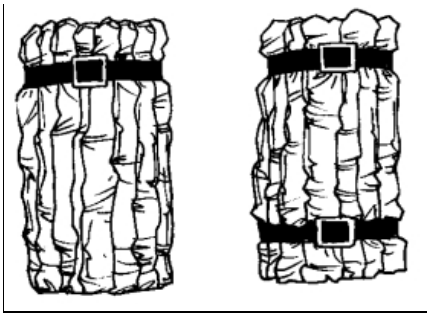

Figure 3-3 - End Section Secured with Two Cinch Straps

019.00 Secure the Floor & Ground Cover

1. Remove all ground stakes from the ground cover.
2. Fold the Ground Cover into quarters lengthwise.
3. Lay the folded Floor on top of the folded Ground Cover.
4. Place the Shelter on its side at the end of the folded ground cover and floor.
5. Three people are required to wrap the ground cover and floor around the Shelter.
   a) Have two people roll the Section.
   b) Have the third person tuck in the ground cover and floor as it is wrapped around the Shelter (tucking the ground cover and floor keeps the wrap tight and further compresses the Shelter).

Figure 3-4 - Rolling Shelter with Ground Cover

6. When complete, stand the Shelter with the white side up, holding the Ground Cover close to the End Section.
7. Secure the End Section with the third cinch belt in the center.
8. Remove the Push Poles and Repair Kit from Transport Bag.
9. Place the Transport Bag over the End Section.
10. Align the carrying straps on the outside of the bag with the end walls. This will allow the Instruction Panels to fall against the wide section when slipped over the End Section.
11. Push the End Section over with the instruction panel down.
12. Return the Push Poles and Repair Kit to the Transport Bag.
13. Pull the rope to close the end of the Transport Bag and secure bag with a knot.
14. Fasten the two belts on the Transport Bag.
15. The End Section is now secure and ready for the next deployment.

END OF WORK PACKAGE

Section 4

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4. FIELD MAINTENANCE OF THE SHELTER

Before initiating repair to any Shelter, identify the nature of the problem. Most repairs can be made with the standard Field Repair Kit, included with the Shelter. Each kit contains the following components:

Duct Tape, 1 Roll	Strut Repair Sleeves, 5
Spanner Wrench, 1	Exterior Looped Keeper, 1
Tube Cutter, 1	Interior Looped Keeper, 2
1 oz Adhesive, 1 Tube	Exterior Keeper, 1
Wind Line, 1	Exterior Swatch Repair Fabric, 1
4” Scissors, 1	Interior Swatch Repair Fabric, 1

WP M --- . -- -95330-00 Shelter Repairs

020.00 Repair of Shelter Struts

Fractured struts are repaired as follows:

1. After identifying the fractured strut or struts, assess whether the exterior cover needs to be removed to reach the fracture. If it is necessary to remove the exterior cover, use the spanner wrench and remove only those keepers necessary to peel back the cover to reach the fractured strut or struts.
2. Locate the tube cutter.
3. Place the strut between the cutter wheel and the rollers and bring the cutter wheel in contact with the strut by turning the feed wheel.
4. Turn the feed wheel an additional one half turn for the first cut.
5. Revolve the cutter wheel around the strut slowly until the cut is complete.
6. Trim off one half inch from each damaged side.
7. Retrieve a repair sleeve.
8. Slide a repair sleeve over the broken strut. Keep the break centered in the repair sleeve.
9. Tape **ONLY** one end of the repair sleeve with the duct tape. This will allow the other broken end to telescope within the sleeve and maintain its critical length (see Figure 4-1).
10. Replace the liner.
11. Insert the keeper and turn by hand until snug.
12. Use the spanner wrench to tighten one-quarter turn past hand tight. **Do not tighten excessively.**
13. All sewn seams should be aligned and fabric reinforced circles around keepers should not be twisted.

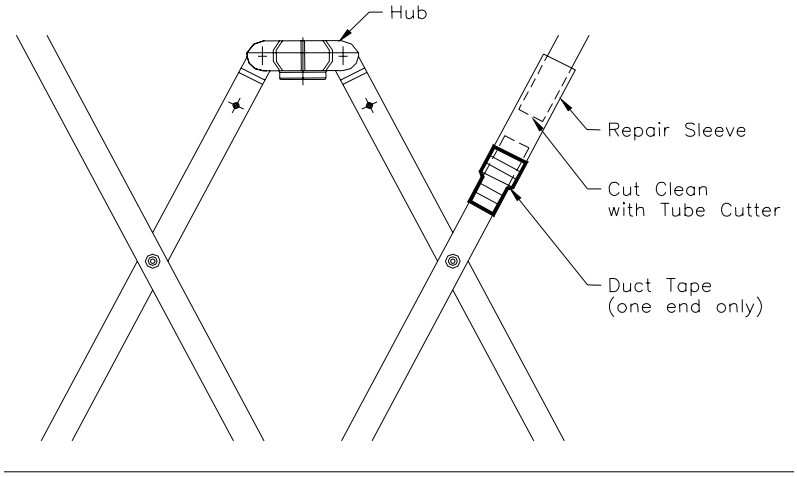

Figure 4-1 - Repairing Shelter Struts

021.00 Replacement of Shelter Strut Pairs

NOTE

REPLACING ONE OR MORE STRUT PAIRS REQUIRES THE ACQUISITION OF A SPARE PARTS KIT CONTAINING THE PARTS LISTED ON THE RIGHT.

CONTENTS OF SPARE PARTS KIT

5 ea Interior Looped Keepers	**1 ea Ratchet Screwdriver**
5 ea Exterior Looped Keepers	**2 ea A Side Pair/Blue**
5 ea Exterior Keepers	**4 ea B Side Pair/Red**
2 ea Interior Hub Set	**2 ea A Sub Pair/Green**
2 ea Exterior Hub Set	**4 ea B Sub Pair/Yellow**
50 ea Screws	**1 ea Spanner Wrench**

If a strut pair(s) is damaged, strike the Shelter and effect repairs as follows: (refer to Figure 4-2, page 4-3.

14. Identify the damaged strut pair.

15. Use a spanner wrench to remove keepers from the exterior cover. Work only in the area where the damaged struts are located (see Figure 4-2, **Frame 1**).

16. Use the ratchet screwdriver to loosen all screws from both exterior hubs where the damaged strut pair is connected. **Do not remove damaged strut pair from hubs at this time** (see Figure 4-2, **Frame 2**).

17. Determine the color code on the damaged strut pair. The color code plug may be located on any one of the four ends of the pair. Select the same color-coded strut pair from the spare parts kit.

18. Orient the replacement strut pair so that it is identical to the damaged pair.

19. Place the replacement pair next to the damaged strut pair making certain that both color coded plugs and scissor pins match exactly (see Figure 4-2, **Frame 3**).

20. When the replacement pair is properly positioned, remove the ends of the damaged strut pair from exterior hubs and insert replacement strut pair (see Figure 4-2, **Frame 4**).

21. After replacement pair is in placed, tighten the screws on the exterior hubs so that it is again secured (see Figure 4-2, **Frame 5**).

22. Replace the liner.

23. Insert the keeper and tighten by hand until snug. Use the spanner wrench to tighten one-quarter turn past hand tight. **Do not over-tighten.** All seams should be aligned and the fabric reinforced circles around the keepers should not be twisted (see Figure 4-2, **Frame 6**).

24. Compress and invert the Shelter.

25. Repeat steps 1 and 2 on the interior liner and interior hubs.

26. Remove the damaged strut pair from the hub and lift out from the frame.

27. Replace the strut pair and tighten the screws on the hub so that it is again secure.

28. Repeat step 9.

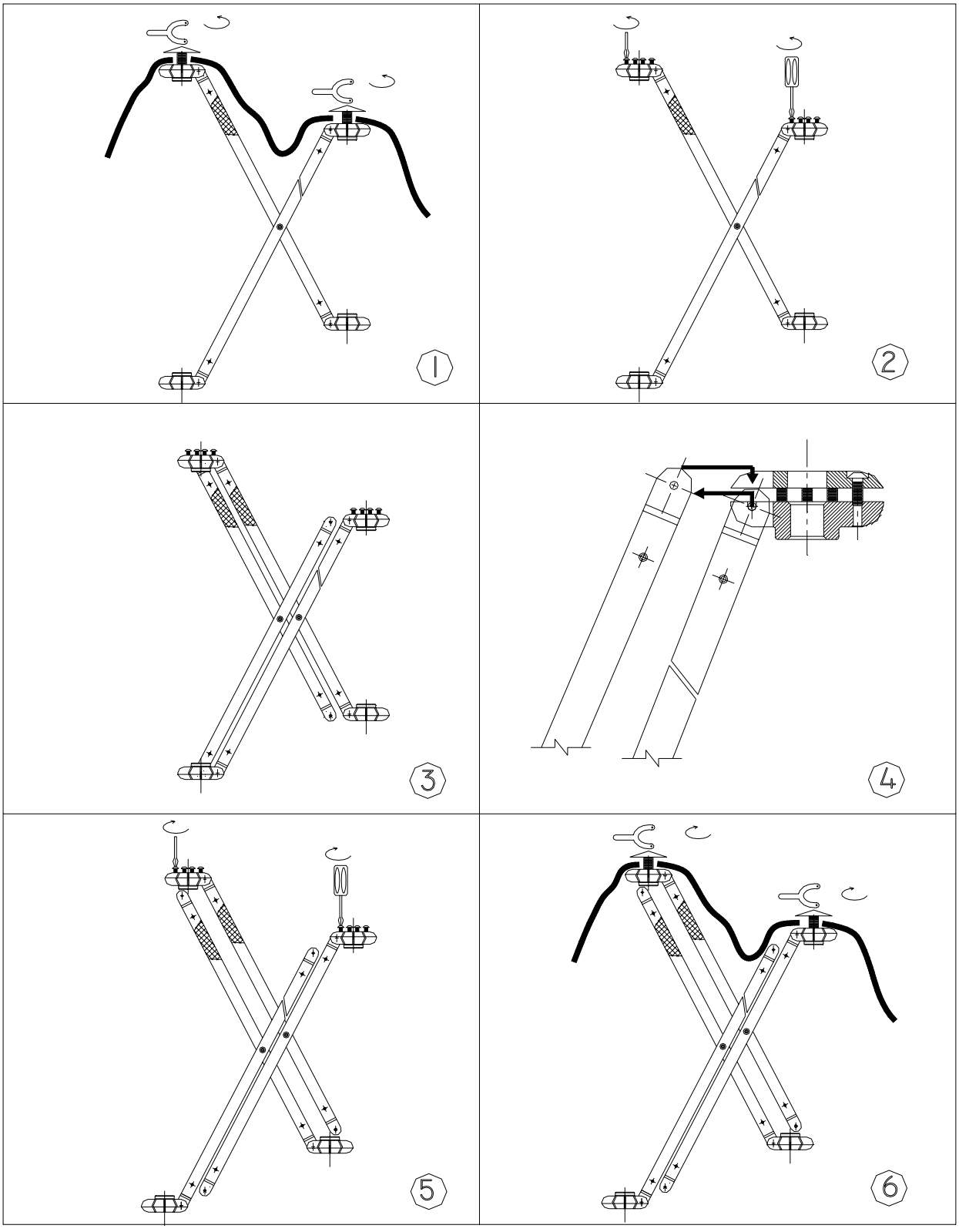

Figure 4-2 - Strut Pair Replacement Frames

022.00 Repair of Shelter Liner

This repair procedure can be accomplished in any weather condition.

1. Cut enough fabric to cover the tear or hole, with approximately ¼" extra on all sides.

   Apply a thin layer of adhesive to the reverse side of patch.

   Apply a tin layer of adhesive to the area around the tear or hole in the Shelter to which patch will be applied.

   Press the patch firmly over the tear.

   Smooth out any air bubbles from under the patch.

   The patch will be secure in three hours.

   Allow the patch to cure for 24 hours.

NOTE

IF TIME DOES NOT ALLOW FOR THE ABOVE PROCEDURE, THE REPAIR CAN BE DONE ON A TEMPORARY BASIS USING DUCT TAPE.

023.00 Shelter Maintenance During Inclement Weather

To prevent damage to the Shelter due to heavy snow or freezing rain, the roof must be checked periodically for rain puddles or ice/snow accumulation. This can be accomplished by:

1. Shaking the exterior cover from the outside of the Shelter.

   Place a Push Pole between the interior and exterior covers and gently tapping the exterior cover until the Shelter is cleared of the snow or ice accumulation.

NOTE

THE SHELTER SHOULD BE STRICKEN IF IT IS TO BE LEFT UNATTENDED FOR AN EXTENDED PERIOD WHEN THERE IS A POSSIBILITY OF INCLEMENT WEATHER.

During adverse weather conditions, routinely check and verify the security of the;

a) Wind lines
b) Stakes
c) Keepers

024.00 Cleaning the Shelter & Accessories

Proper maintenance of the Shelter requires that it be cleaned after every field exercise. To clean the Shelter;

1. Brush off all excess dirt/debris with a soft bristle brush.

   Using a cloth, sponge or mop, the shelter can be manually cleaned using a mixture of warm water and mild household detergent.

   Remove grease, oil, or other heavy stains by scrubbing with Simple Green® or equivalent.

   Rinse with clean water.

   Allow the Shelter to dry completely before repackaging.

NOTE

A POWER WASHER MAY BE USED AT LOW PRESSURE WITH WARM WATER. USE GOOD JUDGMENT AND CAUTION REGARDING WATER PRESSURE AND TEMPERATURE.

WARNING

DO NOT USE SOLVENTS TO CLEAN THE SHELTER.

THEY WILL DISSOLVE THE PROTECTIVE COATING ON THE FABRIC.

END OF WORK PACKAGE

Section 5

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5. PARTS LISTS

WP R --- . -- -95330-00 Parts Lists

025.00 M Shelter Package Part Numbers

Item #	Description	Part #
1.	M Shelter System, green	MA100100
2.	1XBT M Section, green	MA100105
3.	Complete M Section	MA100110
4.	Cover, Exterior, green	MA100120
5.	Side Door, Exterior, green	MA100130
6.	Shelter Transport Bag, M, brown	MA100140
7.	Shelter Transport Bad, 1XBTM, brown	MA100145
8.	Ancillary Bag, brown, double handle	MA100150
9.	Connector Bag, Large, brown	MA100155
10.	Connector Bag, Small, brown	MA100160
11.	Tent Stake Bag, brown	MA100165
12.	DRASHLite Bag, brown	MA100170
13.	Repair Kit Bag, brown	MA100175
14.	Spare Parts Kit Bag, brown	MA100180
15.	Interior Cover	MA100300
16.	Interior Side Door	MA100310
17.	Ground Cover	MA100700
18.	Floor	MA100710
19.	Exterior Stake Bracket, M	MA100720
20.	Staking Bracket Screw, M	MA100725
21.	Operators Manual	95330-00

END OF WORK PACKAGE

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Section 6

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6. WARRANTY

DHS SYSTEMS LLC LIMITED WARRANTY

DHS Systems LLC warrants that all DRASH® (Deployable Rapid Assembly SHelter) products purchased hereunder will be free from defects in materials and workmanship. This warranty shall extend to the ultimate user as well as original equipment purchasers and shall be valid for the elapsed time beginning with the date of shipment according to the following schedule:

WARRANTY SCHEDULE

DRASH Shelters and Shelter Accessories: 60 Months

DRASH UST Trailers and Trailer Accessories: 12 Months

DRASH Heaters and Heater Accessories: 12 Months

DRASH Power Distribution Unit (PDU): 12 Months

The liability of DHS Systems LLC under this warranty is limited to the repair or replacement of any defective part or component due to a material defect or substandard workmanship. Damage due to excessive wear and tear, improper use or carelessness is not covered under this limited warranty.

Furthermore, it should be understood that this warranty does not constitute a guarantee that the products under warranty identified in the Schedule above will function without following instructions, including reading of the Operators Manual, and following proper maintenance procedures as well as using reasonable care for the periods stated in the above Schedule. On-site repair without prior discussion and approval from DHS Systems may void the warranty.

Warranty claims must contain a detailed explanation of the defect and be supported by summary extracts of pertinent service and maintenance records if applicable. DHS Systems LLC shall have the right to examine the alleged defect and may require the claimant, at the claimant's expense, to return the product for such an examination. If DHS Systems' personnel are required to visit the claimant's site to confirm any alleged defect, all expenses for travel and accommodations may be charged to the claimant.

Any warranty claims must be filed with DHS Systems LLC within 90 days after the alleged defect has been identified. All claims must be mailed or faxed to the following:

DHS SYSTEMS LLC
33 Kings Highway
Orangeburg, NY 10962-1802
Attn: Customer Service, Dept. C
Phone: 845-359-6066 Fax: 845-365-2114 email: drash@drash.com

GSA

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6.1 M Series Shelter Warranty Registration Form

The product warranty is included with the shipping of your product(s). Additional copies of this manual on CD-ROM may be purchased for the price of $25.00. Please contact us for further information.

DHS SYSTEMS LLC
33 Kings Highway
Orangeburg, NY 10962-1802
Attn: Customer Service, Dept. C
Phone: 845-359-6066 Fax: 845-365-2114 email: drash@drash.com

To validate the Limited Warranty, you must register the equipment with DHS SYSTEMS LLC. Please fill in the information bellow, make a copy and mail to the above address or fax to (845) 365-2114. If you have multiple units you may list their VIN#, SSN# and HSN# below.

Warranty Registration

Date:	Primary POC Rank:
Company/Unit Name:	Secondary POC Rank:
Address:	VIN# (Vehicle Identification Number)
Address:	SSN# (Shelter Serial Number)
City State: Zip Code:	HSN# (Heater Serial Number)
Country:	DHS use only
Phone: Fax:	
Email:	

VIN# (Vehicle Identification Number)	SSN# (Shelter Serial Number)	HSN# (Heater Serial Number)

(fold)

Return Address:

Place
Stamp
Here

_____
_____
_____

DHS Logistics
33 Kings Highway
Orangeburg, NY 10962

RE: Warranty Registration

(fold)

6.2 M Series Shelter Feedback Form

RECOMMENDED CHANGE(S) TO EQUIPMENT MANUAL

FROM: (PRINT YOUR UNIT'S CORRECT ADDRESS)		**DATE SUBMITTED:**
PUBLICATION TITLE **M Series Shelter Operation & Maintenance Manual**		PUBLICATION DATE **July 24, 2004**
DHS Part:	MANUAL P/N: **95330-00**	

BE EXACT PIN-POINT WHERE IT IS				**IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:**
PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO	

PRINTED NAME, GRADE OR TITLE, PHONE NUMBER, AND EMAIL ADDRESS	SIGN HERE

(fold)

Return Address:

Place
Stamp
Here

DHS Logistics
33 Kings Highway
Orangeburg, NY 10962

RE: Equipment Feedback Form

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