CONDITIONS OF RELEASE

1 ~~This information is released by the UK Government for Defence purposes only.~~

2 ~~This information must be afforded the same degree of protection as that afforded to information of an equivalent security marking originated by the recipient Government or as required by the recipient Government's National Security regulations~~.

3 ~~This information may be disclosed only within the Defence Department of the recipient Government~~, ~~except as otherwise authorised by the Ministry of Defence (Army)~~.

4 This information may be subject to privately owned rights.

SHELTER, GENERAL PURPOSE 3.6 M x 3.6 M (12 FT x 12 FT) Mk 2

NSN 8340-99-984-7785

OPERATING INFORMATION

This publication contains information covering the requirements of Categories 2 and 6 at information level 1

~~THIS DOCUMENT IS THE PROPERTY OF HER BRITANNIC MAJESTY'S GOVERNMENT, and is issued for the information of such persons only as need to know its contents in the course of their official duties. Any person finding this document should hand it to a British forces unit or to a police station for its safe return to the MINISTRY OF DEFENCE, D Def Sy, MAIN BUILDING, WHITEHALL, LONDON SW1A 2HB, with particulars of how and where found. THE UNAUTHORISED RETENTION OR DESTRUCTION OF THIS DOCUMENT MAY BE AN OFFENCE UNDER THE OFFICIAL SECRETS ACTS OF 1911-1989. (When released to persons outside Government service, this document is issued on a personal basis and the recipient to whom it may be entrusted in confidence, within the provisions of the Official Secrets Acts 1911-1989, is personally responsible for its safe custody and for seeing that its contents are disclosed only to authorized persons~~).

Sponsored for use

in the

UNITED KINGDOM MINISTRY OF DEFENCE AND ARMED FORCES

by the

DEFENCE EQUIPMENT AND SUPPORT ORGANISATION

AMENDMENT RECORD

Amdt No	Incorporated By (Signature)	Date
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Amdt No	Incorporated By (Signature)	Date
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		

CONTENTS

PREFACE

Sponsor: DE&S OIP
Publication Agency: DE&S JSC SCM EngTLS-TD-Pol

INTRODUCTION

1 Service users should forward any comments on this publication through the channels prescribed in AESP 0100-P-011-013. An AESP Form 10 is provided at the end of the preliminary pages; it should be photocopied and used for forwarding comments on this AESP.

2 AESPs are issued under Defence Council authority and where AESPs specify action to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Instructions Notices (DINs), Standard Operating Procedures (SOPs) or by local regulations. When any such Instruction, Order or Regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

4 The octad for the subject equipment consists of all the categories shown in Table 1. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index in AESP 0100-A-001-013.

TABLE 1 RELATED PUBLICATIONS

Category/Sub-Category			Information Level			
			1 User/Operator	2 Unit Maintenance	3 Field Maintenance	4 Base Maintenance
1	0	Purpose and Planning Information	101	101	101	101
	1	Equipment Support Policy Directives	*	*	*	*
2	0	Operating Information	*	*	*	*
	1	Aide Memoire	201	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	*	*	*	*
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	*	*	*	*
	2	Repair Instructions	*	*	*	*
	3	Inspection Standards	*	*	*	*
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedules	201	*	*	*
7	1	Illustrated Parts Catalogues	711	711	711	711
	2	Commercial Parts Lists	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	741	741	741	741
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	*	*	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	*	*	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Category/Sub-category not published.

Associated publications

5 The following publications are associated with this AESP octad.

Reference	Title
NONE	

ABBREVIATIONS

6 The following abbreviations are used in this AESP.

Abbreviation	Nomenclature
AESP	Army Equipment Support Publication
DIN	Defense Instruction Notices
Fig	Figure
ft	feet (foot)
ft3	feet cubed
in.	inch
kg	kilogram
lb	pound
m	metre
m2	metres squared
m3	metres cubed
mm	millimeters
NATO	North Atlantic Treaty Organisation
NSCM	NATO Supply Code for Manufacturers
NSN	NATO Stock Number
Para	Paragraph
PPE	Personal Protective Equipment
SOP	Standard Operating Procedures

WARNINGS

HAZARDOUS SUBSTANCES

7 Before using any hazardous substances or material, the user must be conversant with the safety precautions and first aid instructions:

7.1 On the label of the container it was supplied in.

7.2 On the material Safety Data Sheet.

7.3 In local Safety Orders and Regulations.

WARNINGS

(1) PERSONNEL INJURY/EQUIPMENT DAMAGE. SUFFICIENT PERSONNEL ARE REQUIRED WHEN LIFTING THE ASSEMBLED ROOF, THE MINIMUM IS ONE PERSON PER WALL MEMBER.

(2) PERSONNEL INJURY/CRUSH HAZARD. EXERCISE CAUTION WHEN ASSEMBLING POLES AND BRACKETS DUE TO THE RISK OF CRUSH INJURY TO FINGERS.

(3) PERSONNEL INJURY. WHEN POLES ARE CURVED UNDER TENSION THERE IS A HIGH RISK THAT THEY MAY SLIP AND SPRING BACK TO THEIR STRAIGHT RELAXED POSITION. PERSONNEL SHOULD NOT POSITION THEMSELVES DIRECTLY IN FRONT OF THE POLES.

(4) PERSONNEL INJURY/HEAVY WEIGHT. A MINIMUM OF FOUR PERSONNEL ARE REQUIRED TO LIFT OR MOVE THE SHELTER.

(5) PERSONNEL INJURYIBURN HAZARD. WHEN BURNING WEBBING TO PREVENT FRAYING, THE WEBBING WILL BECOME EXTREMELY HOT AND MELT.

(6) PERSONNEL INJURY/TOXIC HAZARD. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING GLOVES, GOGGLES OR FACEMASK AND COVERALLS ARE TO BE WORN WHEN USING MYSTOX.

(7) PERSONNEL INJURY/TOXIC HAZARD. IF MYSTOX COMES INTO CONTACT WITH SKIN OR EYES WASH THE AFFECTED AREA IMMEDIATELY WITH WATER AND SEEK MEDICAL ATTENTION. JSP 437 REFERS

(8) PERSONNEL INJURY/TOXIC HAZARD. IF MYSTOX IS SWALLOWED, SEEK IMMEDIATE MEDICAL ATTENTION.

(9) PERSONNEL INJURY/TOXIC HAZARD. ONLY USE MYSTOX IN AUTHORIZED AREAS, DO NOT USE WHERE THERE IS A DANGER OF SPILT MYSTOX ENTERING THE WATER COURSE INCLUDING PONDS, DITCHES OR WATERWAYS.

(10) PERSONNEL INJURY/TOXIC HAZARD. DISPOSAL OF SURPLUS MYSTOX AND EMPTY CONTAINERS IS TO BE ORGANISED BY THE UNIT QUARTERMASTER/SUPPLY OFFICER IN ACCORDANCE WITH UNIT ENVIRONMENT STANDING ORDERS AND/OR LOCAL PUBLIC HEALTH BY-LAWS.

(11) PERSONNEL INJURY. WHEN FITTING OR RELEASING THE INSULATION TENSIONERS THERE IS A HIGH RISK THAT UNDER TENSION THEY MAY SLIP AND SPRING BACK AT PERSONNEL.

CAUTIONS

(1) EQUIPMENT DAMAGE. The shelter is to be pitched on firm level ground and it is essential that adequate anchorage or ballast be placed on the coated fabric sod cloths at the bottom of the wall and ends of the shelter. The listed tent pins or spoil from drainage trenches is suitable for this purpose and may be used in sandbags or other flexible containers, if available. Guy lines are also provided to give additional stability under high wind conditions.

(2) EQUIPMENT DAMAGE. Wet canvas should never be folded or packed unless circumstances render this unavoidable. Shelters should therefore be left to dry thoroughly before they are struck. If the shelter is not completely dry the officer in charge of the campsite or receiving unit is to be informed.

(3) EQUIPMENT DAMAGE. All insulation panels can be added after the shelter has been erected EXCEPT the roof panel that must be attached to the frame prior to the canvas.

(4) EQUIPMENT DAMAGE. When lifting the roof, the supervisor must ensure that the lift is even along the length of the frame, thus avoiding distortion of the brackets and poles.

(5) EQUIPMENT DAMAGE. The sunshade is to be erected prior to the shelter if possible or alternatively moved into position over the tent after assembly with the base restraint straps being added after it is in its final position. The ratchet straps should not be over tightened and never used if damaged.

(6) EQUIPMENT DAMAGE. The shelter is to be erected on firm level ground, which has been cleared of any large stones or rubble.

(7) EQUIPMENT DAMAGE. A power washer may be used at low pressure with warm water. Use judgement and caution regarding water pressure and temperature.

(8) EQUIPMENT DAMAGE. Do not use solvents or detergents to clean the shelter as they will dissolve the protective coating on the fabric.

OPERATING INFORMATION

CONTENTS

Para

Table Page

Fig

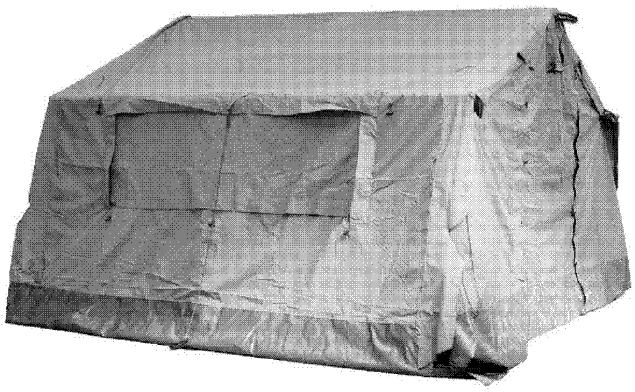


Fig 1 Shelter, General Purpose 3.6 m X 3.6 m (12 ft X 12 ft) Mk 2

DESCRIPTION

1 The shelter (Fig 1) consists of a metal frame supporting a canvas cover. The frame is constructed of light alloy tubular members that are connected by brackets.

2 The frame is built from three different tubular components.

2.1 Aluminium members 1.8 m long OD (32 mm).

2.2 4-way cast light alloy brackets for connecting the members at the eaves and ridge.

2.3 T-brackets for connecting the members at ground level to the wall members.

3 The fabric from which the cover is made is woven from cotton covered polyester core yarn. It is of ripstop construction and is given a Flame retardant, Water repellent, Rot Resistant (FWRR) finish.

4 The cover is made up by lacing a single sheet, constituting the roof and sidewalls, to two end sections. The two end sections each have, a personnel entrance fitted with slide fasteners, toggles and loops, that can be rolled up and secured with toggles and loops.

5 Two windows are incorporated into each sidewall. The apertures are fitted with mosquito netting, clear plastic sheeting and a canvas flap. The plastic sheeting and/or the canvas flap can be fastened in either the open or closed positions, whereas the mosquito netting is stitched closed at all times.

6 The sidewall has a snood incorporated into it to allow electric cables and environmental control ducts to enter the interior. This snood can then be secured around the cable/hose or closed off to ensure a closed environment within the shelter.

7 The sod cloth is made from coated synthetic fabric that ensures ample strength and rot resistance. It also stops water permeating the canvas by capillary action from the ground.

8 The shelter is free-standing, but in order to ensure stability the sod cloth should be anchored with tent pins or weighted with sandbags or other suitable ballast. Under high wind conditions, an overstrap is positioned over the centre of the ridge and anchored with 18 in. pins on both ends. Two end guys are also attached to the ridge brackets on each end of the shelter and are likewise anchored close to the position of the overstrap. All straps are then adjusted and made taut.

9 The shelter is designed to be extendable in length by multiples of 3.6 m (12 ft) by using an additional frame and roof and wall components. The shelter is compatible with the porch, 12 ft passageway or 4-way connector by means of the alternative end section with porch attachment. The shelter can also be attached to a 7,3 m x 5.5 m (24 ft x 18 ft) shelter directly to the shelter via a dual attachment end section attached to the 24 ft x 18 ft shelter.

10 The insulation panels provide extra insulation when inserted between the canvas and the frame. They also provide additional protection against the ingress of water through the canvas.

DEPLOYMENT

11 It is possible to link many of the GS types of shelters together, and to extend in length by 12 ft increments, the 12 ft x 12 ft and 18 ft x 24 ft shelters to make composite arrangements such as headquarters layouts, cooking/dining rooms, field hospitals and other specific to requirement temporary shelter facilities. Also, on the newer variations, it is possible to link shelters to vehicles and together, through the medium of zipped connectors.

12 It has been discovered that the canvas tentage can leak when new. The canvas is a 50:50 polyester/cotton blend and when initially erected is not waterproof due to small holes within the textile as well as the stitching holes around the thread. When the tentage is initially soaked the cotton fibres swell as they absorb the water, which in turn plugs the holes in the canvas. After the canvas naturally dries, the cotton fibres do not shrink back but instead remain permanently enlarged thus the canvas becomes permanently water-resistant.

SITING

13 To site shelters, proceed as, follows:

13.1 The ground should be as level as possible, avoiding hollows where water would collect during heavy rain. Dry river beds or wadis, must be avoided as heavy rainfall or flash floods, however infrequent, can jeopardise the integrity of the shelter.

13.2 The ground should also be firm thus ensuring stability for pins and poles.

13.3 The site should be clear from obstacles such as rocks, trees and bushes to avoid the risk of tears in the canvas or ground cloth.

13.4 Drainage may be achieved by cutting channels around each shelter when the gradient and composition of the ground allows it.

13.5 Alternatively, the ground should be broken up between the tent pins and tent walls and a small bank of earth built on the inside of the tent wall.

13.6 Attention should be paid to the direction of the prevailing wind so that the tent is erected with its entrance located on the side facing away from the wind. Consideration should also be given towards minimising the area exposed to the wind, as this will gradually loosen the over straps and guy lines.

13.7 To prevent the propagation of fire between shelters, wherever possible, a spacing of 6 m between shelters or shelter complexes is to be maintained.

PITCHING

WARNING

PERSONNEL INJURY/EQUIPMENT DAMAGE. SUFFICIENT PERSONNEL ARE REQUIRED WHEN (LIFTING THE ASSEMBLED ROOF. THE MINIMUM IS ONE PERSON PER WALL MEMBER.

CAUTION

(1) EQUIPMENT DAMAGE. The shelter is to be pitched on firm level ground and it is essential that adequate anchorage or ballast be placed on the coated fabric sod cloths at the bottom of the wall and ends of the shelter. The listed tent pins or spoil from drainage trenches is suitable for this purpose and may be used in sandbags or other flexible containers, if available. Guy lines are also provided to give additional stability under high wind conditions.

(2) EQUIPMENT DAMAGE. All insulation panels can be added after the shelter has been erected EXCEPT the roof panel that must be attached to the frame prior to the canvas.

(3) EQUIPMENT DAMAGE. When lifting the roof, the supervisor must ensure that the lift is even along the length of the frame, thus avoiding distortion of the brackets and poles.

General

14 The pitching space should be marked out in accordance with the ground plan

15 The valise or bundle containing the tent canvas should be carried as near as possible to the pitching site.

16 To prepare the canvas, proceed as follows:

16.1 Open canvas and lay out with inside uppermost.

16.2 Lace canvas sections together loosely and tie off at eaves as shown in Figs 2 to 9.

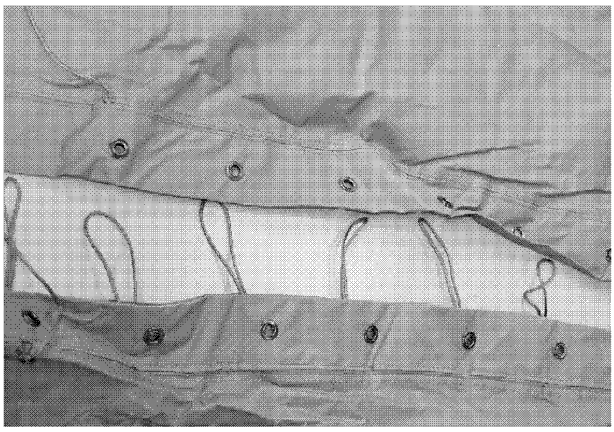


Fig 2 Lacing canvas sections (1)

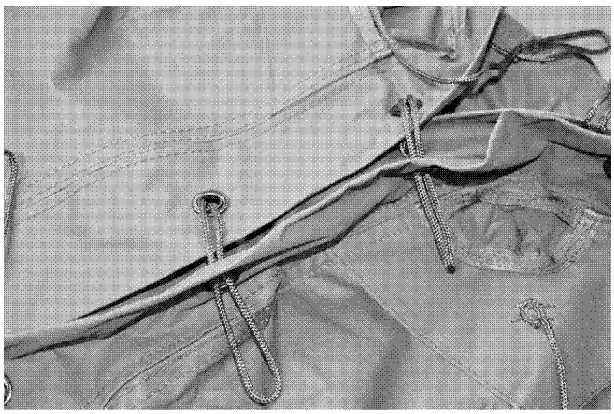


Fig 3 Lacing canvas sections (2)

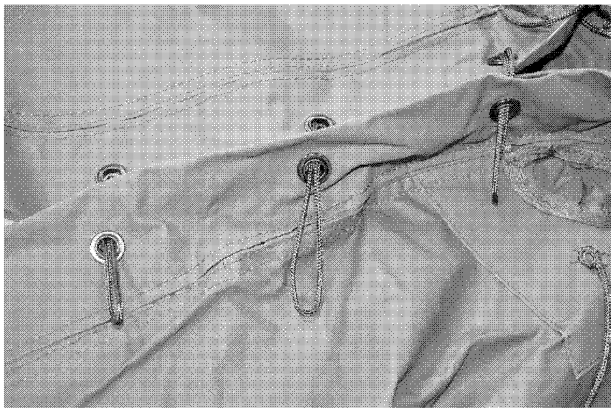


Fig 4 Lacing canvas sections (3)

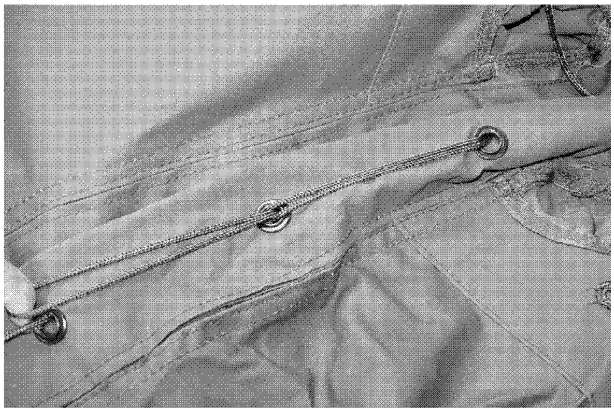


Fig 5 Lacing canvas sections (4)

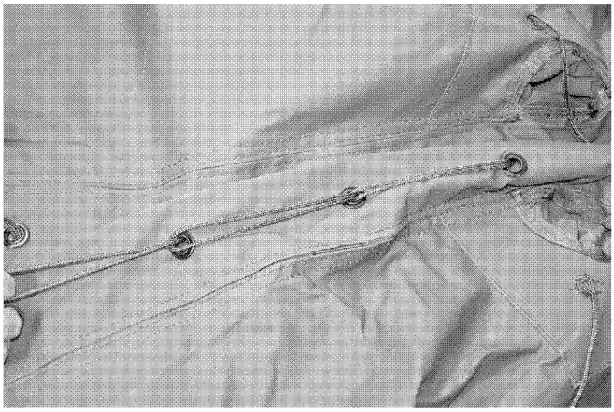


Fig 6 Lacing canvas sections (5)

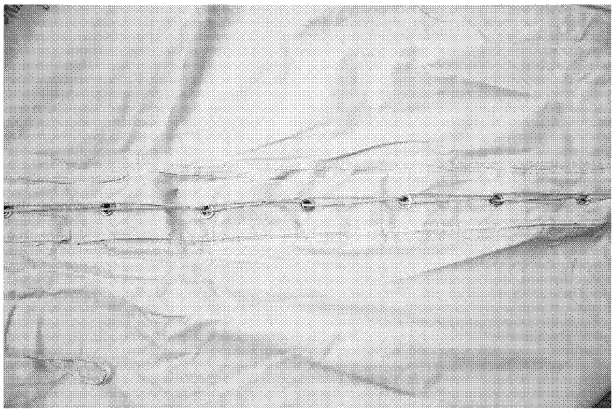


Fig 7 Lacing canvas sections (6)

Fig 8 Lacing canvas sections (7)

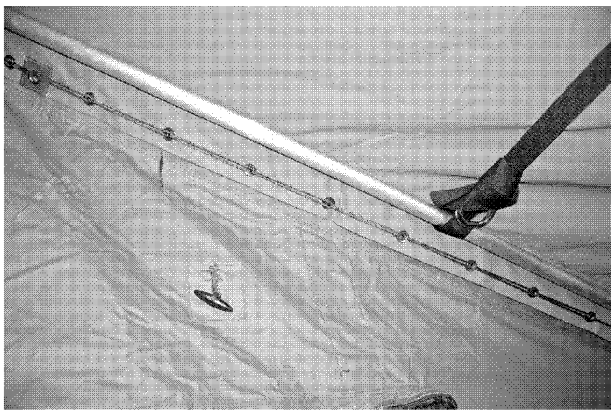


Fig 9 Lacing canvas sections (8)

17 Tent poles should be fitted together to produce the roof framework with roof restraint straps attached, and insulation support straps (if insulation provided) laid over the roof frame. The roof insulation panel (if provided) should then be attached to the framework. Attach the top of the insulation end sections (if provided) to the framework by using tensionors. Then the canvas should be placed over the roof framework. The overstrap and end guys (if provided) should be placed over to the shelter. The sides should be lifted one at a time and the wall and base members inserted. The remaining lacing on the walls of the canvas should be completed and the end insulation sections (if provided) should be completely attached to the framework. Base restraint straps (if provided) should be attached to the base brackets. Insert insulation side panels (if provided) and attach between the framework and canvas by using tensioners.

18 The sod-cloth should be pinned through the external eyelets using tent-pins at an angle of 90 degrees from the horizontal (J11/8340-99-137-3895) and internal cords using (J11/8340-99-132-0028) at an angle of 60 degrees from the horizontal.

19 When pegging out the shelter, proceed as follows:

19.1 Pins for shelter lines (8340-99-943-9052) should be driven at an angle of 60 degrees from the horizontal approximately four fifths into the ground whereby the bottom of the hook or head of the pin is level with the ground and approximately 300 mm (1ft) from the edge of the sod cloth.

19.2 Hooks on tent pins should face in the opposite direction to the pulling force of the line and any cords should be placed around the pin prior to pegging.

19.3 For ease of driving the pins into the ground and to obtain the correct angle, personnel should try to position themselves behind the pin, facing away from the direction of the pulling force of the line when striking.

19.4 Avoid unequal strain and wear on the canvas by ensuring that:

19.4.1 Weather lines are not twisted and lie flat across the canvas.

19.4.2 Restraint and insulation straps are not twisted and lie flat across the insulation.

19.4.3 Doorways are closed while erection and pegging is carried out.

20 The shelter sod-cloth can be ballasted to restrict the bellowing effect of the wind. Sandbags (F2/5610-99-200-4386) filled with spoil from the drainage trench is recommended for this purpose.

21 To pitch the shelter, proceed as follows:

21.1 The pitching party comprises three personnel and a supervisor.

21.2 Lay out the components and assemble the roof frame as shown in (Fig 11) using the components shown in Fig 10.

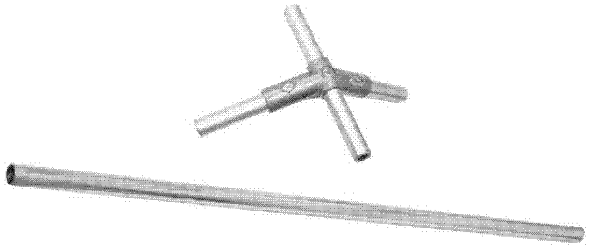
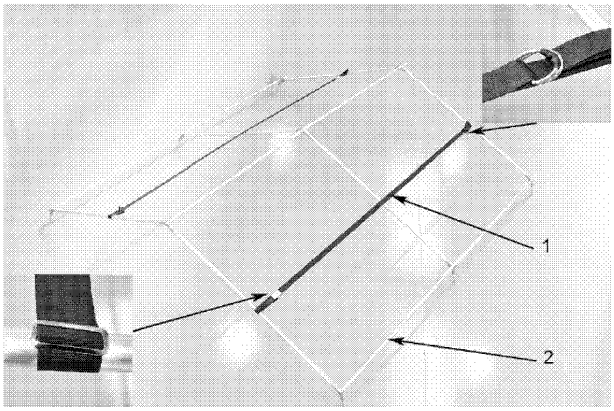


Fig 10 Roof frame components

21.3 Fit strap, adjustable roof restraint (Qty 2) (1) horizontally and situate the strap, insulation support (Qty 2) vertically as shown in Fig 11 and Fig 12. Ensure the straps are not twisted and the buckles are on the inside of the roof to allow future adjustment.



1 Strap, adjustable roof restraint
2 Universal members (assembled)

Fig 11 Universal members assembled

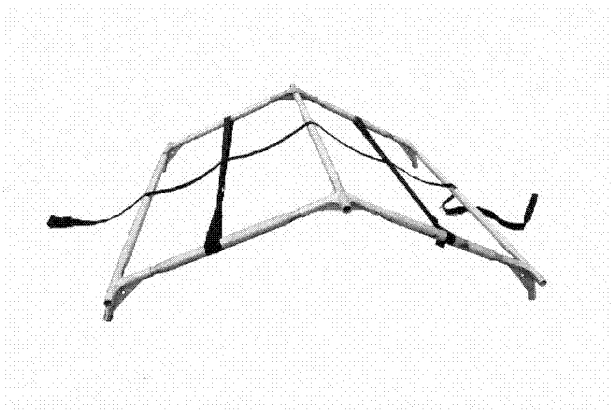


Fig 12 Insulation support straps placed across frame (Typical arrangement)

21.4 Lay the roof insulation panel, over the roof with white side facing inwards and loosely attach to the framework by the use of the tensioners, ensuring the ridge of the roof panel is aligned centrally. (Figs 13).

NOTE

The roof insulation panel must be fitted before erection - all other panels may be fitted after erection.

Fig 13 Roof frame with insulation panel unsecured

WARNING

PERSONNEL INJURY. WHEN FITTING OR RELEASING THE INSULATION TENSIONERS THERE IS A HIGH RISK THAT UNDER TENSION THEY MAY SLIP AND SPRING BACK AT PERSONNEL.

21.5 The tensioners are fitted by passing the loose end through the centre of the clip, pulling the tail to tension, then still under tension laying the tail into the jaws and end opening of the clip before releasing the tension to secure; the remaining tail should continue round and be reinserted through the centre of the clip to double secure. To release pull the tail to tension' lift the loose cord out of the clip, and release. Tensioner tails should pass through the insulation from the inside and be secured around the tent frame. Fig 14 and Fig 15.

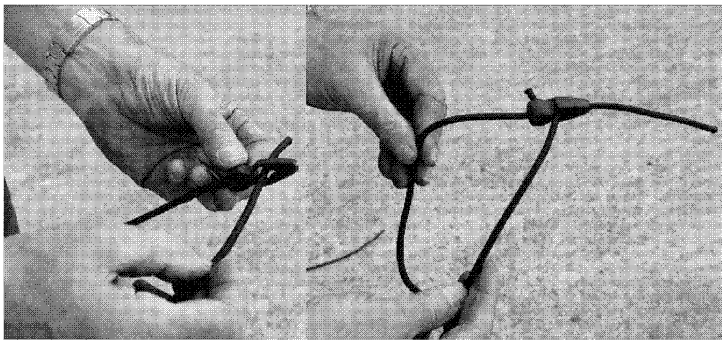


Fig 14 Tensioner loose and locked

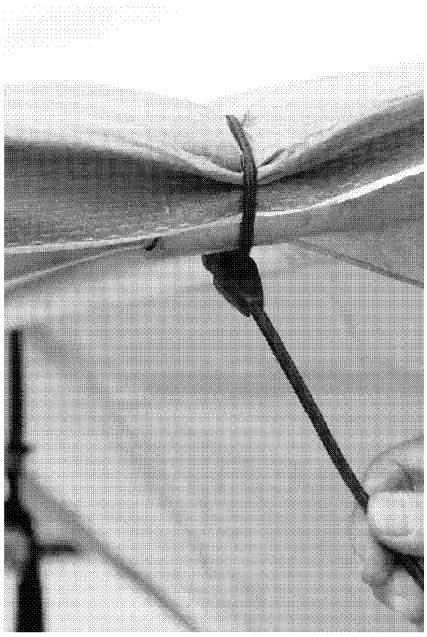


Fig 15 Tensioner

21.6 The Mk 3 end panel consists of 4 items per end and are shown in Fig 16, viewed from the inside.

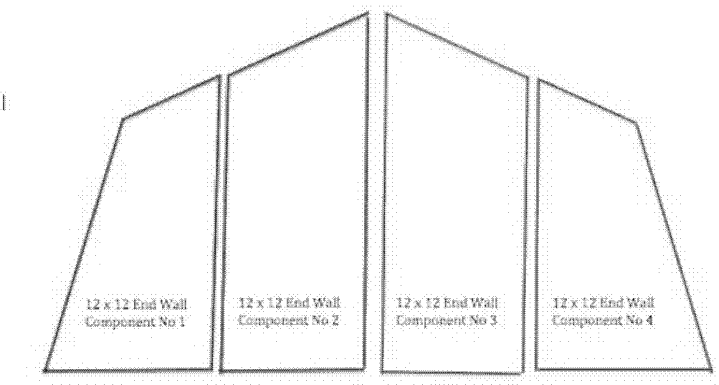


Fig 16 The Mk 3 end panel (Viewed from inside)

21.7 Lay the 4 end wall component insulation panels at each end of the shelter. Attach the centre 2 insulation panels with tensioners to the roof panel ensuring the tensioners are fitted around the poles. The centre panels can overlap each other either way.

21.8 Raise one side of the shelter and attach the outer component. Working from inside, tighten the uppermost tensioners and ensure that all panels overlap correctly. Raise the other side of the shelter and attach the remaining end wall component insulation panels at each end. Viewed from the outside the outer 2 end wall panels must overlap the centre two Fig 17.

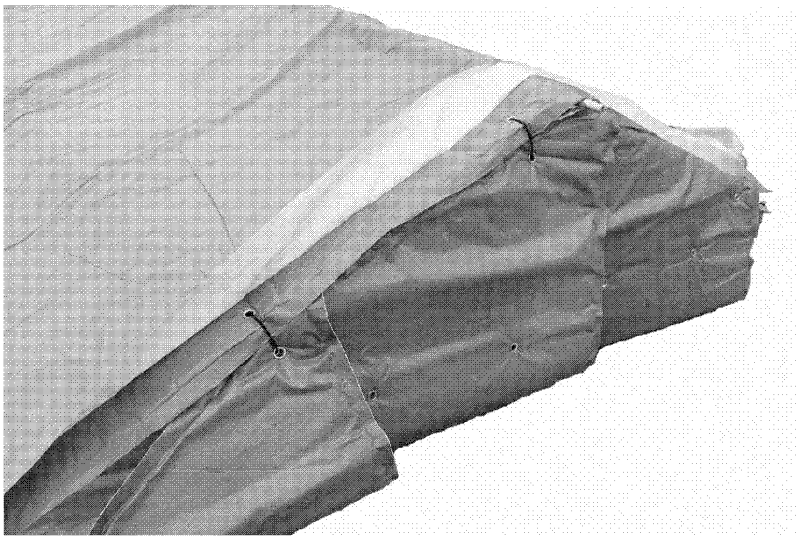


Fig 17 End wall insulation panel (Typical arrangement)

NOTE

The Mk 3 end panel consists of 4 items per end

Fitting Canvas

21.9 Lay the canvas end sections at each end of the roof and wall section and lace them together, starting at the ridge as shown in Figs 2 - 9. Continue lacing down to the eaves and temporarily tie off. Ensure the slide fasteners around the personnel entrances are closed to ensure they are not over-stretched. Insert the end brackets of the assembled roof section into the sleeves on the corners of the canvas end section. The angle of the upright poles are critical if the slide fasteners are to run freely, so therefore the base restraint straps are to be fitted to ensure the correct spacing.

NOTE

Pay particular attention to the canvas roof/end joints at the ridge. If the flaps are incorrectly laced when fitted, the tent will allow water in and light out.

21.10 Place the assembled canvas over the roof frame. Fig 18

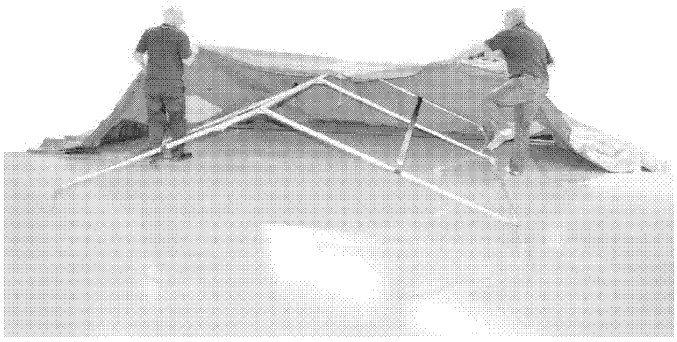


Fig 18 Place canvas over roof frame (typical arrangement)

21.11 Place the centre metallic ring of the end guy, quick release around the exposed part of the ridge brackets at each end, and lay the overstrap over the centre ridge of the shelter. Ensure straps are not twisted and the buckles are facing away from the tent to allow future adjustments.

21.12 Lift one side of the roof to shoulder height and assemble wall and ground members as shown in Fig 20 using the components shown in Fig 19. One person is required for each wall member and the lift must be even to avoid damage to the frame.

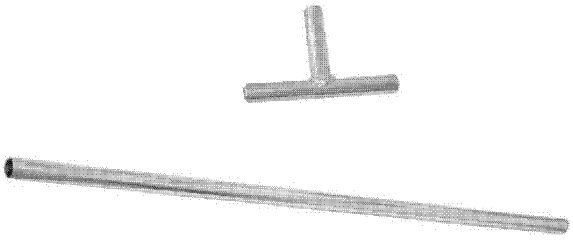


Fig 19 Side frame components

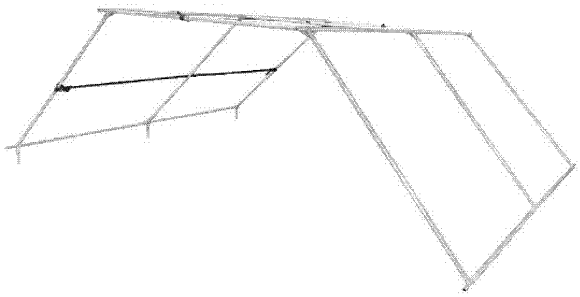


Fig 20 Raise the roof assembly by fitting the two wall members
(Typical arrangement - Canvas not shown for clarity)

21.13 Raise the other side of the roof to shoulder height and fit the wall and ground poles. Push the base of the wall inwards and fit the base straps around the brackets as shown on Fig 21 and 22. Ensure the straps are not twisted.

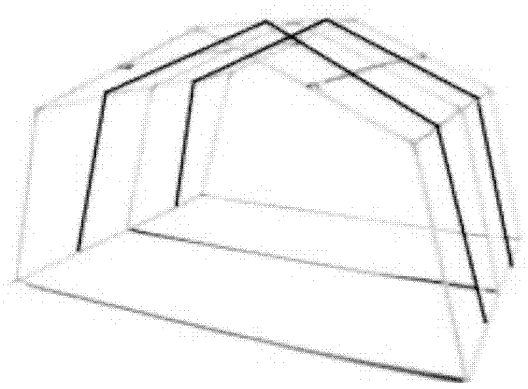


Fig 21 Base restraint straps (Typical arrangement – canvas not shown for clarity)

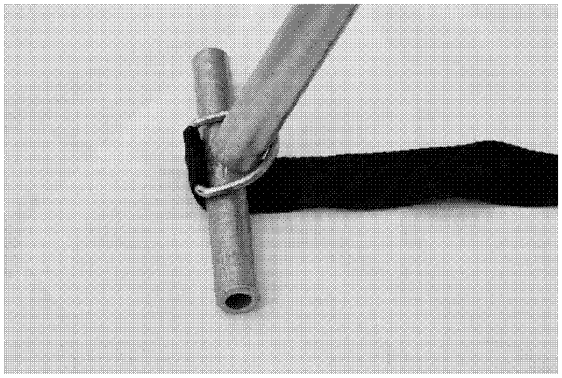


Fig 22 Correct attachment of base restraint strap

21.14 Insert pins to all internal pegging points and secure into the ground. Ensure the pins are placed on the inside of the framework.

21.15 Fit and secure the roof insulation support straps ensuring that loose ends are tidied away Fig 23.

Fig 23 Correct attachment of Insulation Support strap

21.16 Attach the insulation panel walls (qty 4 per side) with the tensioners, loosely at first, Working from the inside ensure that all panels are fitted correctly before tightening the tensioners fully Fig 24. The insulation roof panel must overlap the top of the wall panels on the canvas side. Viewed from the outside the end wall panels should overlap the inner 2 panels.

Fig 24 Wall insulation panel (Typical arrangement)

21.17 To provide access the centre end wall panels should be rolled up from the inside Fig 25.

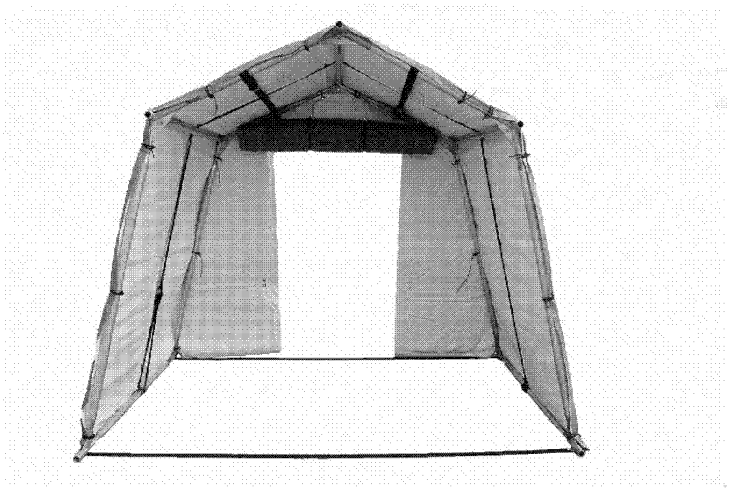


Fig 25 Access (Typical arrangement)

21.18 The windows may be opened by releasing the top tensioners and folding the insulation panels down between the panel and the canvas Fig 26.

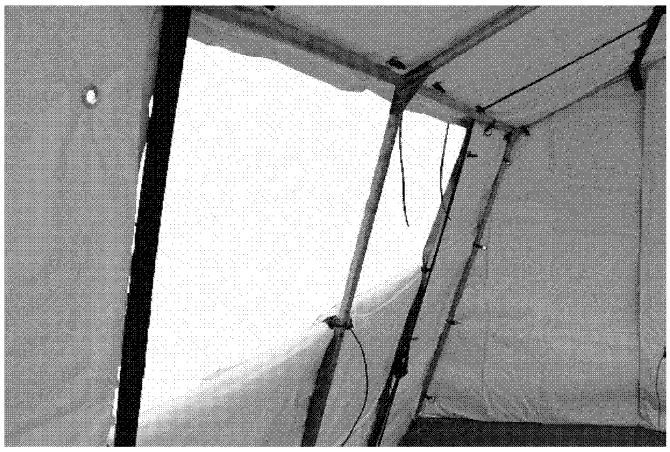


Fig 26 Window (Typical arrangement)

21.19 If an Environmental Control system is to be fitted a replacement insulation panel can be attached to align with the opening on the canvas sheet Fig 27. Release the bottom tensioners and fold the insulation wall panel up between the panel and the canvass. Slide the ECS panel into position and fasten into place with tensioners.

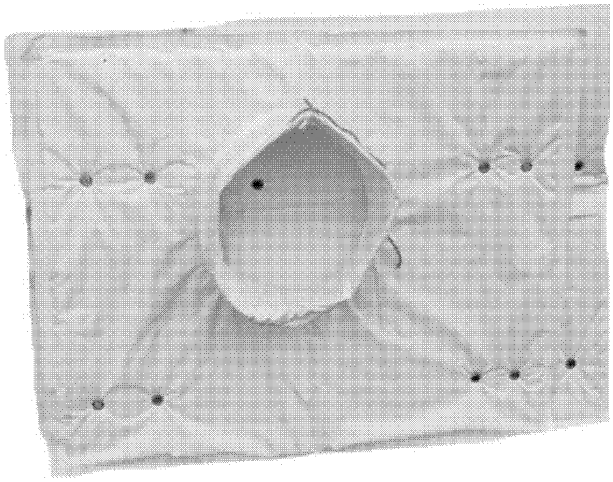
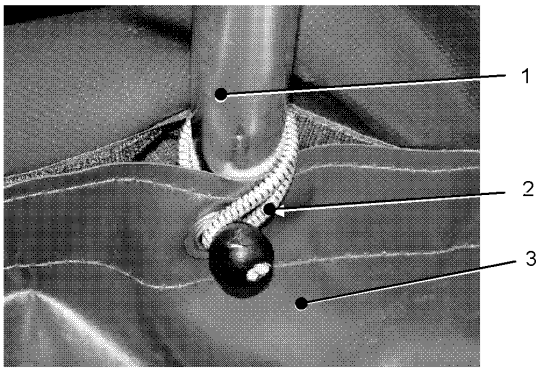


Fig 27 ECU insulation panel (Typical arrangement)

21.20 Ensure the heater/electric access snood lines up with the access panel on the insulation.

21.21 Anchor the sod cloth to the ground. Stake the storm lashings approximately 12 in. (300 mm) away from the tent. Tighten the guys until they are taut.

21.22 Lay the groundsheet (Fig 28) down inside the shelter and attach tensioner (2) to the framework (1).



1 Framework
2 Tensioner
3 Groundsheet

Fig 28 Groundsheet

21.23 Anchor the sod cloth to the ground. Stake the storm lashings approximately 1 ft (300 mm) away from the tent. Tighten the guys until they are taut.

21.24 If required place the hard flooring (Fig 29) over the groundsheet.

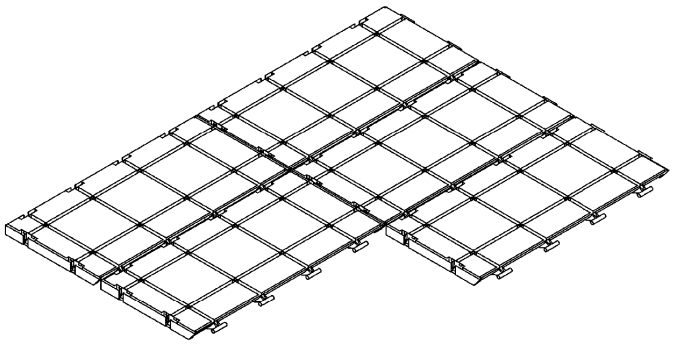


Fig 29 Hard flooring

21.25 Ensure all straps (internal and external) are taut and unable to move from their desired position on the frame.

STRIKING

CAUTION

EQUIPMENT DAMAGE. Wet canvas should never be folded or packed unless circumstances render this unavoidable. Shelters should therefore be left to dry thoroughly before they are struck. If the shelter is not completely dry the officer in charge of the campsite or receiving unit is to be informed.

22 Striking the shelter is the reverse of the pitching procedure.

FOLDING

Shelter canvas roof and wall

23 To fold shelter panels, proceed as follows:

23.1 Lay out canvas with outer side uppermost and brush off as much dirt and debris as possible.

23.2 Fold walls into ridge.

23.3 Fold once more in the same manner.

23.4 Fold over at ridge and fold ends to centre.

23.5 Finally, roll to form the smallest possible bundle.

Shelter canvas end

24 To fold the shelter end, proceed as follows:

24.1 Lay out canvas with outer side uppermost and brush off as much dirt and debris as possible.

24.2 Fold the top and side in to form a square and then fold in half.

24.3 Fold in half to centre of door opening.

24.4 Finally, roll to form the smallest possible bundle.

Insulation panels

25 To fold the side wall insulation panels fold in half. The end wal panels fold in half and half again. The roof panel is folded in half and half again long ways and then rolled from one end.

PACKING

26 To pack the shelter, proceed as follows:

26.1 Whenever it becomes necessary to pack canvas in a wet condition the packages are to be clearly marked NOT DRY to indicate the canvas was packed in a wet condition. If the canvas is being retained in the campsite, the officer in charge is to be notified of the condition of the canvas so he can arrange for it to be dried at the earliest opportunity. If the canvas is to be despatched, the consignee is to be notified by telephone or signal so the canvas can be unpacked and dried as soon as possible after receipt.

26.2 Place the rolled shelter canvas in the valise along with the straps.

26.3 Place the shelter frame components and the tent pins in the bags provided.

MAINTENANCE INSTRUCTIONS

Introduction

27 The life of tentage can be enhanced considerably if reasonable care is taken whilst in use or in storage. Such care will also help to minimise costs involved in refurbishment after exercises or operations.

Common causes of damage to canvas

28 Common causes or damage to canvas are as follows:

28.1 Burns - due to careless smoking or siting shelters near braziers or incinerators.

28.2 Holes - due to careless pitching, stacking or stowage of articles too close to shelter walls. When shelters are used for storage, stacks should be approximately 60 mm (2 ft) from the walls and should not touch the canvas at any point. Gangways are essential in case of fire.

28.3 Tears in canvas can be caused through over-taut weather lines. In wet weather lines directly attached to the canvas should be slackened.

28.4 Tears in the sod-cloth can be caused by walking on it if there is sharp stones or rubble beneath, or if sharp rubble is used to ballast the shelter.

28.5 Damage to the fabric may occur as a result of folding canvas when wet, or on ground contaminated by oil etc.

28.6 Similarly, fabric may be damaged when shelters are used as kitchens or medical theatres if blood, grease or other fats come into contact with the canvas. Canvas should be rinsed off as soon as possible should this occur. Work surfaces that would normally have blood, grease or other fats on them should be kept clear of the canvas. Grease and fats will also become a fire hazard unless cleaned.

28.7 Grease or oil on the hands or clothing of personnel handling or using the tentage will cause damage if in contact with the canvas.

28.8 Care must be exercised when loading or unloading tentage into or from vehicles to avoid damage from contact with projections on the vehicle.

28.9 Vehicles must be examined before loading to check for dirty or contaminated interiors or any oily or dirty items. Unless they can be cleaned prior to loading tentage, such vehicles should not be employed.

28.10 In overseas theatres, where native flora and fauna may damage the canvas, regular checks should be carried out.

28.11 When joining a number of shelters together, care should be taken to avoid abnormal stress being placed on the canvas.

28.12 Exposure to Ultra Violet (UV) light causes damage to all fabrics. To prolong the life of a shelter in areas of high UV an appropriate sunshade should be used.

EFFECTS OF DAMP

29 Wet or damp canvas deteriorates rapidly. If stored in this condition it is liable to catch fire due to spontaneous combustion.

30 All canvas must be thoroughly dry before storing. Stacks should be examined periodically and any damp or suspect canvas removed and examined immediately.

31 Storehouses employed for storing tentage should be inspected regularly for any sources of water ingress.

32 Shelter weather lines and ropes should be dry before storing.

DAMAGE TO POLES AND BRACKETS

33 Common causes of damage to shelter poles are as follows:

33.1 Distortion of alloy shelter frames through misuse and carelessness, i.e. using the alloy poles as bearers or levers, or permitting components to lie where they can be crushed by vehicle tyres/tracks.

33.2 Excessive use of force when fitting framework together. Care should be taken to ensure the hollow ends of the components are free from dirt or other blockages.

33.3 Employing too few people when pitching and striking tentage will result in loss of control over the twisting and bending of the frame and will eventually result in the components becoming unserviceable.

33.4 Excessive loading to the roof such as snow, sand and other debris. Personnel should never climb on or over any shelters.

DAMAGE TO INSULATION

34 The following repair kit is available to effect repairs on the insulation panels

TABLE 1 INSULATION REPAIR KIT

Serial (1)	Item (2)	D of Q:	DMC	NSN (3)
1	INSULATION PANEL REPAIR KIT	1	J11	8340-99-839-8761
2	FABRIC TAPE	Roll	J11	7510-99-854-9439
3	FABRIC HAGIHARA . POLYETHYLENE UV FR - WHITE	2 SQ M	J11	8305-99-741-6212
4	FABRIC HAGIHARA POLYETHYLENE UV FR - GREEN	2 SQ M	J11	8305-99-929-8077
5	MATERIAL REPAIR PATCH KIT	1	J11	8340-99-153-6635
6	ALUMINIUM TAPE	Roll	J11	5999-99-872-2227
7	ALUMINIUM FOIL	2 SQ M	J11	5640-99-297-9453

35 To carry out a repair on the insulation fabric outer cover proceed as follows:

35.1 Apply the green/white tape to repair slits or tear in fabric cover material where there is sufficient remaining material to bring together for a complete tape covering. Using a suitable support behind the panel light pressure should be applied to the tape to ensure a tight seal.

35.2 Apply fabric patch material for holes or tears where there is insufficient material to bring together to enable a tape only repair. Cut a patch to cover the hole/tear. Apply tape to all edges of the patch. Using a suitable support behind the panel light pressure should be applied to the tape to ensure a tight seal.

36 To carry out a repair on the insulation inner material proceed as follows:

36.1 Apply the foil tape to repair slits or tear in inner material where there is sufficient remaining material to bring together for a complete tape covering. Using a suitable support behind the panel light pressure should be applied to the tape to ensure a tight seal.

36.2 Apply foil/bubble patch material for holes or tears where there is insufficient material to bring together to enable a foil tape only repair. Cut a patch to cover the hole/tear. Apply tape to all edges of the patch. Using a suitable support behind the panel light pressure should be applied to the tape to ensure a tight seal.

37 Repairs that require a patch larger than supplied in the repair kit will require the panel to be replaced.

38 Where damage to the eyelets has occurred this will require the panel to be replaced.

PROOFING

WARNINGS

(1) PERSONNEL INJURY/TOXIC HAZARD. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING GLOVES, GOGGLES OR FACEMASK AND COVERALLS ARE TO BE WORN WHEN USING MYSTOX. JSP 437 REFERS.

(2) PERSONNEL INJURY/TOXIC HAZARD. IF MYSTOX COMES INTO CONTACT WITH SKIN OR EYES WASH THE AFFECTED AREA IMMEDIATELY WITH WATER AND SEEK MEDICAL ATTENTION.

(3) PERSONNEL INJURY/TOXIC HAZARD. IF MYSTOX IS SWALLOWED, SEEK IMMEDIATE MEDICAL ATTENTION.

(4) PERSONNEL INJURYITOXIC HAZARD. ONLY USE MYSTOX IN AUTHORIZED AREAS, DO NOT USE WHERE THERE IS A DANGER OF SPILT MYSTOX ENTERING THE WATER COURSE INCLUDING PONDS, DITCHES OR WATERWAYS.

(5) PERSONNEL INJURY/TOXIC HAZARD. DISPOSAL OF SURPLUS MYSTOX AND EMPTY CONTAINERS IS TO BE ORGANISED BY THE UNIT QUARTERMASTER/SUPPLY OFFICER IN ACCORDANCE WITH UNIT ENVIRONMENT STANDING ORDERS AND/OR LOCAL PUBLIC HEALTH BY-LAWS.

Introduction

39 A waterproofing agent Mystox TRP (8030-99-225-1573) is available for the renovation of all canvas tentage. This is a preservative coating that is an olive drab, water solvent emulsion that will restore the Flame resistance, Water resistance and Rot Resistance (FWRR).

Personal protective equipment (PPE) JSP 437

40 Table 2 details some of the NATO Stock Numbers (NSNs) of suitable Personal Protective Equipment (PPE) for personnel using Mystox.

41 Units that do not have sufficient quantities of the items to equip a 4-6 person reproofing team should demand items through the normal supply chain. A team should be sufficient to reproof a battalion's entitlement of shelters.

TABLE 2 PPE

Serial (1)	Item (2)	D of Q:	DMC	NSN (3)	Size (4)
	GLOVES				
1	Chemical & Oil Protective	PR	GL	8415-99-132-1427	Size 7
2	Chemical & Oil Protective	PR	GL	8415-99-132-1428	Size 8
3	Chemical & Oil Protective	PR	GL	8415-99-132-1429	Size 9
4	Chemical & Oil Protective	PR	GL	8415-99-132-1430	Size 10
5	Chemical & Oil Protective	PR	GL	8415-99-978-3706	Size 7
6	Chemical & Oil Protective	PR	GL	8415-99-978-3707	Size 8
7	Chemical & Oil Protective	PR	GL	8415-99-978-3708	Size 9
8	Chemical & Oil Protective	PR	GL	8415-99-978-3709	Size 10
9	Chemical & Oil Protective	PR	GL	8415-99-978-3710	Size 11
10	Rubber		GL	8415-99-130-8250	Size Small
11	Rubber		GL	8415-99-130-8251	Size Medium
12	Rubber		GL	8415-99-130-4729	Size Large
13	Rubber		GL	8415-99-130-8252	Size Extra Large
14	Rubber		GL	8415-99-571-3559	Size 7/7 IA
15	Rubber		GL	8415-99-571-3560	Size 8/8 1/2
16	Rubber		GL	8415-99-571-3561	Size 9/9 1/2
17	Rubber		GL	8415-99-571-3562	Size 10/10 1/2

(continued)

TABLE 2 PPE (continued)

Serial (1)	Item (2)	D of Q:	DMC	NSN (3)	Size (4)
	GOGGLES, INDUSTRIAL				
18	Goggles	EA	VO47	4240-99-577-3798	
19	Goggles	EA	VO47	8415-99-130-9776	
	COVERALLS				
20	Coverall, disposable		CAS	8415-99-130-8302	Size M
21	Coverall, disposable		CAS	8415-99-130-8303	Size L
22	Coverall, disposable		CAS	8415-99-130-8304	Size XL
23	Coverall, disposable		CAS	8415-99-665-7624	Size XXL
24	Coverall, disposable		CAS	8415-99-665-7625	Size XXXL
25	Coverall, disposable		CAS	8415-99-978-4772	Size M
26	Coverall, disposable		CAS	8415-99-978-4773	Size L
27	Coverall, disposable		CAS	8415-99-978-4774	Size XL
28	Coverall, disposable		CAS	8415-99-978-4775	Size XXL
29	Coverall, disposable		CAS	8415-99-978-4776	Size XXXL
	FACEMASK				
30	Mask, disposable		VO47	4240-99-132-1426	
31	Mask, disposable		VO47	4240-99-257-8006	

Mystox - instructions for use

WARNINGS

(1) PERSONNEL INJURY/TOXIC HAZARD. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING GLOVES, GOGGLES OR FACEMASK AND COVERALLS ARE TO BE WORN WHEN USING MYSTOX. JSP 437 REFERS.

(2) PERSONNEL INJURY/TOXIC HAZARD. IF MYSTOX COMES INTO CONTACT WITH SKIN OR EYES WASH THE AFFECTED AREA IMMEDIATELY WITH WATER AND SEEK MEDICAL ATTENTION.

(3) PERSONNEL INJURY/TOXIC HAZARD. IF MYSTOX IS SWALLOWED, SEEK IMMEDIATE MEDICAL ATTENTION.

(4) PERSONNEL INJURY/TOXIC HAZARD. ONLY USE MYSTOX IN AUTHORIZED AREAS, DO NOT USE WHERE THERE IS A DANGER OF SPLIT MYSTOX ENTERING THE WATER COURSE INCLUDING PONDS, DITCHES OR WATERWAYS.

(5) PERSONNEL INJURY/TOXIC HAZARD. DISPOSAL OF SURPLUS MYSTOX AND EMPTY CONTAINERS IS TO BE ORGANISED BY THE UNIT QUARTERMASTER/SUPPLY OFFICER IN ACCORDANCE WITH UNIT ENVIRONMENT STANDING ORDERS AND/OR LOCAL PUBLIC HEALTH BY-LAWS.

42 To apply Mystox, proceed as follows:

42.1 The emulsion is to be applied with a brush only - spray painting is strictly forbidden.

42.2 The emulsion should be well stirred and look like ordinary emulsion paint. If it thickens during application it should be thinned by adding a small amount of water.

42.3 Under cold conditions it may be necessary to stir for a longer period than under warm conditions.

42.4 The emulsion should be stored in a temperature that does not fall below 0°C. If after extended storage, it can be applied with a brush without balling or curdling it should perform satisfactorily.

42.5 Only those parts of the tent which leak (i.e. most worn areas and seams) should be treated.

42.6 If, in spite of wearing protective clothing, any Mystox comes into contact with the skin the affected area should be washed immediately with water.

42.7 Disposal of surplus emulsion and empty containers must be organised by the unit

42.8 Quartermaster/Supply Officer in accordance with the local public health by-laws and advice of local authorities must be sought as regulations may vary from area to area.

42.9 Drying time, with good drying conditions, is between seven and eight hours. However, to ensure the emulsion is absolutely dry, whenever possible drying should be extended over 24 hours in a warm dry atmosphere.

42.10 Application can be made onto a damp canvas if necessary. In such a case, extra care with drying is essential.

42.11 Mystox is issued in 25 kg containers therefore it will probably be necessary to decant the liquid into smaller containers, these are to be suitably labelled and treated for disposal the same as the original containers.

42.12 It is advisable, whenever practicable, to reproof shelters whilst they are erected and to leave them standing during the drying process. This is of course more difficult for the larger shelters that may require their roofs to be reproofed prior to complete erection. Alternatively, a brush on an extended handle can be used, however extra care must be taken to ensure splashes and spillage are kept to a minimum and cleaned as soon as possible.

42.13 After use, all protective clothing should be scrubbed in soapy water and then thoroughly rinsed to aid the removal of residual deposits of Mystox.

42.14 Hands should be washed thoroughly and nails scrubbed with warm soapy water.

42.15 Mystox emulsion paint dries fairly hard, and provided that sufficient drying time is allowed, no problems with sticking (tackiness) should occur.

42.16 If cracking or flaking occurs, the applied layer of Mystoc is too thick, and any excess should be removed and Mystoc re-applied as necessary.

OIP GUIDANCE FOR CONDITIONING ITC/GS TENTAGE SYSTEMS

43 **Current Tentage.** Users must periodically inspect their tentage forthwith in order to apply the new OIP direction on condition based approach for service life outlined below. At any point should users be concerned with the level of fire protection or fire fighting systems being applied to their deployed tent systems they must raise it through the chain of command.

44 **Current General Service (GS) Canvas, including ITC Canvas**. The condition of the canvas is key, when the material becomes thin and worn it begins to loose its fire retardant properties. OIP have

investigated each of the wearing factors (Age, Environment, Use) and found that alone Age is not a contributing factor. The minimum expected deployed life (in desert conditions) for ITC/GS canvas is 4 years of continuous use, however OIP have tested 30 year old samples and found them to achieve the required standard. The material characteristics degrade when the wearing factors are combined together, the actual service life of ITC/GS canvas will be determined by the environmental conditions experienced in storage and when deployed, as well as the nature of usage and the management/maintenance regime being applied by Users. Service life is therefore expected to vary widely.

45 The ITC/GS canvas retains its fire retardant properties as long as the material remains intact:

45.1 Users must inspect their GS tentage when erecting and striking the tent as well as every six months whilst in continual use.

45.2 There must be no open tears in the fabric.

45.3 There must be no holes in the fabric.

45.4 If the canvas leaks, then Users should apply the Mystox (J11/8030-99-225-1573) recoating agent in order to improve the waterproof properties, as well as the resistance to rot.

46 **Current General Service (GS) in service Insulation**. The condition of the insulation is critical. The ITC/GS current in service insulation must be in A1 condition. The minimum deployed life for ITC/GS insulation is 18 months of continuous use. This assessment is limited by the availability of test samples (none older than 18 months) however the actual service life of ITC/GS insulation will be determined by the environmental conditions experienced in storage and when deployed, as well as the nature of usage and the management/maintenance regime being applied by Users. Service life is therefore expected to vary.

46.1 Users must inspect their GS insulation when erecting and striking the tent as well as every six months whilst in continual use.

46.2 There must be no damage to the inner foil layer.

46.3 It is essential that there are no holes in the insulation. Cables must be passed under or around the insulation and not through.

46.4 There must be no damage to the joints or seams of the insulation.

46.5 The insulation must be attached to the tent frame by all points specified within the relevant AESP respective Category 201.

46.6 There must be no personal items hung directly from the insulation or canvas.

46.7 The outer ‘polyethylene’ layer is a protective layer and some minor damage may be acceptable. Materials included within the repair kit (NSN: 8340-99-839-8761) are to be used in accordance with manufacturer’s instructions.

COMMENT(S) ON AESP*

To: OIP
Defence Equipment and Support
Spruce 3a # 1303
MOD Abbey Wood
Bristol BS34 8JH

From: .....
.....
.....
.....

Senders Reference	**BIN Number**	**Date**
AESP* Title: OPERATING INFORAMTION		
Chapter(s)/Instruction	**Page(s)/Paragraph(s)**	
If you require more space please use the reverse of this form or a separate piece of paper. **Comment(s):**		

Signed: ..... Telephone No: .....

Name (Capitals): ..... Rank/Grade: ..... Date: .....

✂ .....

FOR AESP* SPONSOR USE ONLY

To: .....
.....
.....
.....

From: .....
.....
.....
.....

Thank you for commenting on AESP 8340-C-113-201

Your reference: ..... Date: .....

Action is being taken to:	**Tick**		**Tick**
Issue a revised/amended AESP*		Under investigation	
Incorporate comment(s) in future amendments		No action required	
Remarks			

Signed: ..... Telephone No: .....

AESP Form 10 (Issue 5.0 dated Dec 01)

Name (Capitals): ..... Rank/Grade: ..... Date: .....

* AESP or EMER