



Ministry
of Defence



DE&S Secretariat (Land Equipment)

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Via: [REDACTED]

10 December 2019 Our Reference: FOI2019/13197

Dear [REDACTED],

Thank you for your email of 26 November 2019 requesting the following information:

Thank you for your reply. Having re-read my initial request I can see it is short on detail for you to respond with certainty. Yes, I confirm I am looking for the AESP, or similar other material, covering tent assembly instructions and maintenance for the tent "shelter GS 18x24" - as below.

Given the current sodden weather I am unable to unpack the tentage (then re-store it dry) to confirm the NSN printed by manufacturer JS Franklin on the canvas.

However, I have been able to ascertain this information (below) from JTTP 4-05. NB this may contain a numerical typo error in the 2nd NSN - 891 & 8617

JTTP 4-05 lists:

18 x 24 tent: 8340-99-891-0224

18 x 24 tent c/w porch and insulation: 8340-99-861-0226

This seems to cross-check with the ARRSE web site as J11 8340-99-891-0224 Shelter GS MK2 (18 x 24)

I therefore believe this is the NSN detail you require to progress this request (with the caveat one NSN stocklist web site believes this NSN to be a US issue field jacket!).

As I am retired and no longer have access to the Defence Intranet I am not able to check this URL listed on ARRSE. This may or may not provide some or all of the requested information?

<https://eur01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fdefenceintranet.diiweb.r.mil.uk%2FDefenceIntranet%2FLibrary%2FCivilianAndJointService%2FBrowseDocumentCategories%2FLogisticSupport%2FSupportChain%2FSupplyChainSupport%2FEtpcSchedulesDownloadPage.htm&data=02%7C01%7CAnn-Marie.Crampton100%40mod.gov.uk%7Cff88c2ea96404458009708d772757666%7Cbe7760ed5953484bae95d0a16dfa09e5%7C0%7C0%7C637103721128396653&sdata=jmym4IXj7RogsjyUIXX70AV7elsBpXCDfhI9jkg%2BHlc%3D&reserved=0>

I am treating your correspondence as a request for information under the Freedom of Information Act 2000.

A search for the information has now been completed within the Ministry of Defence (MOD) and I can confirm that all the information in scope of your request is held.

The information you have requested can be found enclosed but some of the information falls entirely within the scope of the absolute exemption provided for at section 40 (Personal Data) of the FOIA and has been redacted.

Section 40(2) has been applied to some of the information in order to protect personal information as governed by the Data Protection Act 2018. Section 40 is an absolute exemption and there is therefore no requirement to consider the public interest in making a decision to withhold the information.

If you have any queries regarding the content of this letter, please contact this office in the first instance.

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If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely,

DES SEC PolSec Land Equipment



Ministry of Defence

Army Equipment Support Publication

OPERATING INFORMATION

**SHELTER, GENERAL PURPOSE
7.3 M x 5.5 M (24 FT x 18 FT) MK 4
NSN 8340-99-891-0224/8340-99-421-2154**

8340-C-114-101

3rd Edition September 2018

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PREFACE

Sponsor:	DE&S OI
Project Number:	-
File Ref:	-
Publication Agency:	OI

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 Instruction 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.

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
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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	201	*	201	*
	3	Inspection Standards	201	*	*	*
	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.

Table 1: Related Publications

Associated publications

5. There are no associated publications applicable to this equipment.

ABBREVIATIONS

6. The following abbreviations are used in this AESP.

<u>Abbreviation</u>	<u>Nomenclature</u>
AESP	Army Equipment Support Publication
AFG	Army Form General
CES	Complete Equipment Schedule
DIN	Defence Instruction Notices
Fig	Figure
ft.	feet (foot)
ft ³	feet cubed
in.	inch
IPC	Illustrated Parts Catalogue
kg	kilogram
lb	pound
m	metre
m ²	metres squared
m ³	metres cubed
mm	millimetres
NATO	North Atlantic Treaty Organisation
NI	Not Illustrated
NIV	Not in Vocabulary
NSCM	NATO Supply Code for Manufacturers
NSN	NATO Stock Number
Para	Paragraph
PPE	Personal Protective Equipment
RLC	Royal Logistics Corp
SOP	Standard Operating Procedures
TSP	Training Support Plan

WARNINGS AND CAUTIONS**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 LEG.**
- (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. MINIMUM PERSONNEL NUMBERS REQUIRED TO LIFT OR MOVE THE SHELTER SHOULD BE OBSERVED.**
- (5) **PERSONNEL INJURY/BURN HAZARD. WHEN BURNING WEBBING TO PREVENT FRAYING, THE WEBBING WILL BECOME EXTREMELY HOT AND MELT.**
- (6) **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.**
- (7) **IT IS ESSENTIAL THAT THE BASE RESTRAINT STRAPS AND THE FRAME RESTRAINT STRAPS ARE FITTED TO THE FRAME BEFORE INSTALLING THE PVC COVERS. THIS ENSURES THAT THE FRAME IS RIDGID AND ENHANCES THE WIND RESISTANCE OF THE SHELTER AS WELL AS MAKING IT EASIER TO FIT THE COVERS.**
- (8) **WHEN REPAIRING PVC COVERS, THE TEXTILE NEEDS TO BE ABRAIDED. PVC DUST IS TOXIC AND SHOULD NOT BE INHALED. WEAR THE APPROPRIATE PPE.**
- (9) **WHEN REPAIRING PVC COVERS, A CONTACT ADHESIVE IS UTILISED. FOLLOW SAFETY DATA SHEET SUPPLIED WITH THE CONTACT ADHESIVE.**

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 textile 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 covers.
- (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 when fitted 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.
- (9) **EQUIPMENT DAMAGE.** Rips and tears must be repaired immediately to maintain the insulation integrity.
- (10) **EQUIPMENT DAMAGE.** The PVC covers are different from the cotton canvas covers in that they do not stretch. Fitting the end gables requires the frame to be in the correct position to fit the PVC cover spigots over the frame extensions using the appropriate straps. Do not under any circumstances force the canvas into position or use frame parts to level the canvas into position.

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DESCRIPTION



Figure 1: Shelter, general purpose 7.3 m x 5.5 m (24 ft. x 18 ft.) Mk 4

1. This AESP provides operation and maintenance information for SHELTER, GENERAL PURPOSE 7.3 M X 5.5 M (24 FT X 18 FT) MK 4. The shelter is available in two variants: -
 - 1.1. NATO Stock no 8340-99-891-0224 for the basic shelter
 - 1.2. NATO Stock no 8340-99-421-2154 for the shelter including insulation
2. When installing installation read Chapter 2 in combination with Chapter 1. In summary the roof insulation is applied before the main PVC cover. The wall insulation is installed after the full tent erection.
3. The MK 4 version utilises flame resistant PVC coated polyethylene in place of cotton canvas. All PVC parts are interchangeable with cotton canvas parts by attachment using Dutch lacing. The MK 4 PVC tent also has the option of quick connection using keder rails.
4. The shelter (Fig 1) consists of a metal frame supporting a PVC textile cover. The frame is constructed of light alloy tubular members that are connected by brackets.
5. The frame is built from five different tubular components.
 - 5.1. Aluminium members 1.8 m long Outside Diameter (51 mm).
 - 5.2. Aluminium members 0.9 m long Outside Diameter (51 mm).
 - 5.3. 4-way cast light alloy brackets for connecting the members at the eaves and ridge.
 - 5.4. 4-way cross-shaped, light alloy brackets for connecting the long members and the short members to the purlins.
 - 5.5. T-brackets for connecting the members at ground level to the wall members.

The fabric from which the cover is made is a Polymer of polyethylene coated on both sides with PVC and is 700g/m², this has replaced the woven cotton covered polyester core yarn. The PVC material is waterproof and does not require water resistance treatments through life. For the avoidance of doubt the two materials will be referred to in the AESP as "PVC Covers" and "cotton canvas."

6. The cover is made up of two separate roof sections and two end panels. There are two methods of connecting the panels together. Firstly, the traditional Dutch lacing, this enables the new PVC covers and old cotton canvas panels to be connected together or roof sections to be pre-connected prior to deployment. Secondly there is a fast erect keder rail system when connecting two PVC covers together. The two end sections each have a personnel entrance fitted with slide fasteners, toggles and loops, which can be also rolled up and secured with toggles and loops.

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

8. 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.

The sod cloth is made from Polymer of polyethylene coated on both sides with PVC and is 900g/m² that ensures ample strength and rot resistance.

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

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. It is also possible to link shelters together Fig 2.

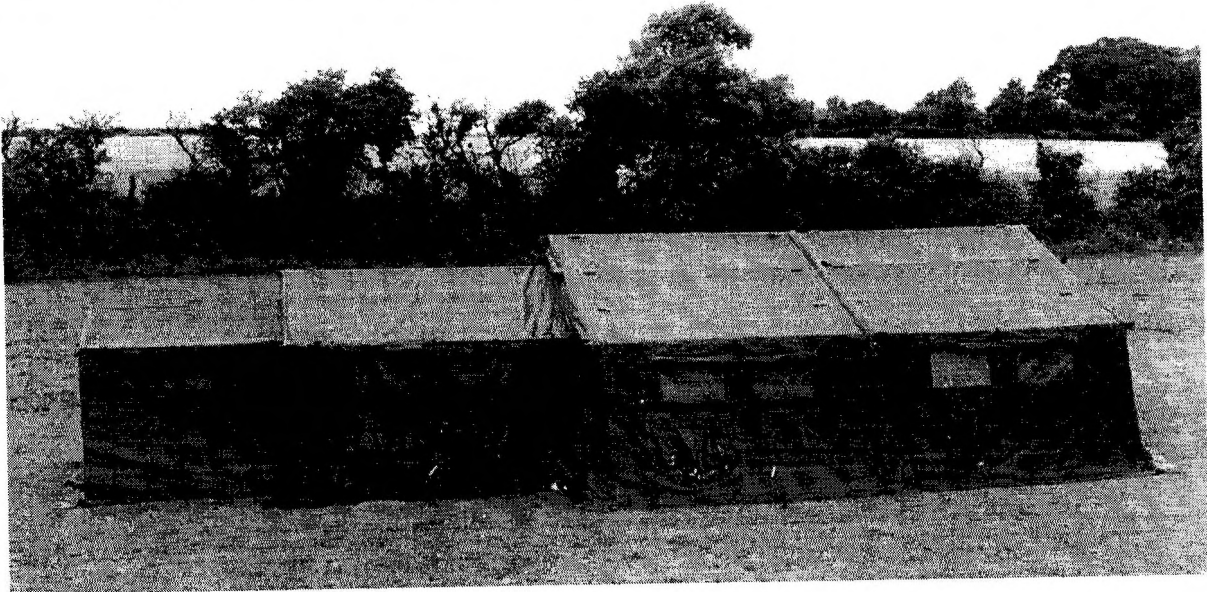


Figure 2: 24 x 18 Connected to 12 x 12 and Passageway

12. The PVC canvas panels are designed to allow the tent to be configured in various lengths and with attachments as detailed above. The tent has Roof and Wall panels (J11/NSN 8340-99-680-0615) and two (2) types of end panel:

- 12.1. End Section Mk 4 (J11/NSN 8340-99-155-6628) is profiled end with a doorway
- 12.2. Design PVC 24ft x 18ft MK4 (J11/NSN 8340-99-155-6628) is a dual end including attachments for the 12 x12 tent, porch or passageway.

13. The shelter is manufactured from PVC coated polyethylene which is completely waterproof. It is not breathable and thus whilst there will be a level of air movement when the tent doors are open permanent ventilation ducts are provided at the eaves of the shelter walls. Further to this the HVAC ducts and windows can be used as air vents as required.

14. With respect to addressing potential condensation issues where the shelters are deployed in high humidity environments (above 50RH which includes most of Europe in the mid-summer) there is a risk of condensation inside the shelters. This is caused by the temperature differential between day time and night time operations and the small differences between dry bulb and wet bulb temperatures in very high humidity areas. There are a number of possible strategies to avoid this effect, which to some degree will depend on the specific air conditions. Ultimately the wet bulb temperature is very close to the dew point temperature so keeping the shelter internal temperature above the wet bulb temperature will negate the formation of condensation. For instance, for an external temperature of 78°C at an RH of 80% gives a wet bulb temperature of 71.37°C and a dew point of 71.34°C. If the internal temperature is maintained above the wet bulb temperature by maintaining a low level of cooling mixed with fresh air or for unoccupied or unconditioned shelters where temperature conditions are not critical ensuring that the internal and external temperatures are normalised by providing natural or forced ventilation.

Humidity

Ambient Relative Humidity 52%
Ambient Outdoor Temperature 26°C

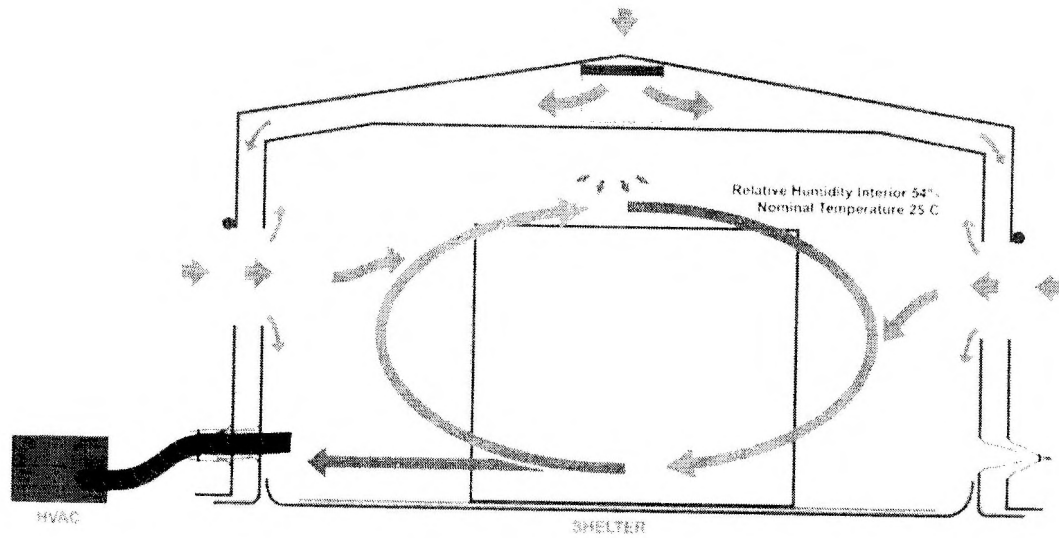


Figure 3: Normal Ventilation

15. Under normal conditions with the HVAC running and the ventilation duct open there should not be any condensation issues, opening windows will aid ventilation.

NOTE: On shelters that are not in use opening the window shutters to let in natural light will also reduce the risk on mould growth and mould spores will not grow if exposed to UV light.

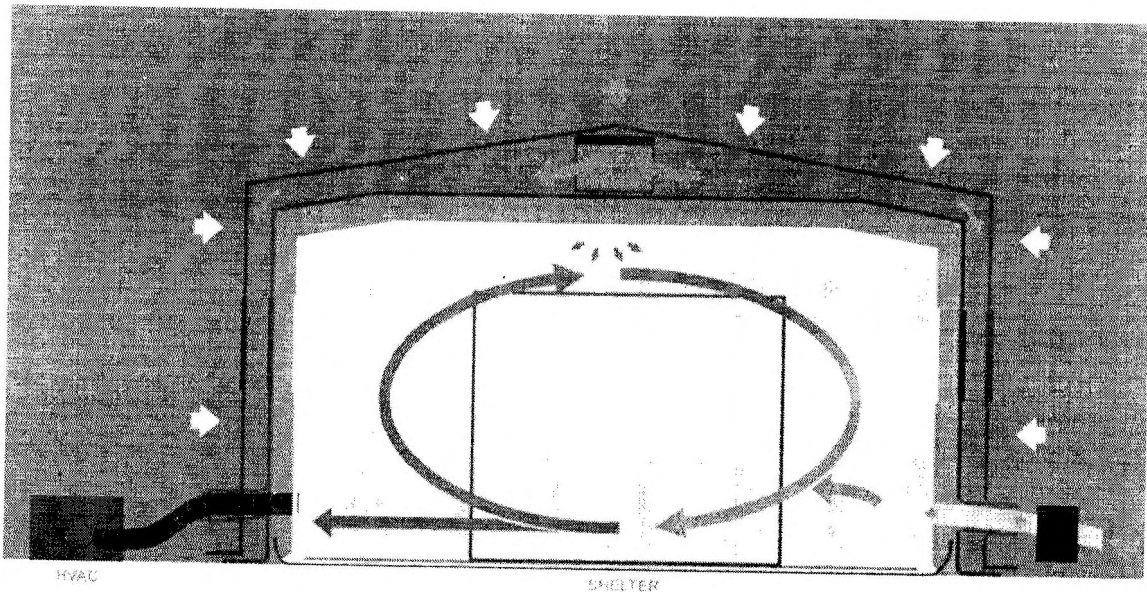


Figure 4: Closed down shelters

16. Fig 4 shows a shelter that is closed down and has the highest risk of condensation particularly if it has been occupied during the day and is closed up at night. To reduce this risk there are a number of mitigation strategies that can be employed, listed as follows: -

- 16.1. Cool with HVAC for 15 minutes to remove condensate from the air then briefly heat to above ambient temperature.
- 16.2. Open or partially open window vents.
- 16.3. Open thermal fly vent.
- 16.4. Open window shutters to let in natural light during the day
- 16.5. Run the HVAC or provide forced ventilation.
- 16.6. Fit Shelter insulation

17. When installing insulation read Chapter 2 in combination with Chapter 1. In summary the roof insulation is applied before the main PVC cover. The wall insulation is installed after the full tent erection.

SITING

18. To site shelters, proceed as follows:

- 18.1. 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.
- 18.2. The ground should also be firm thus ensuring stability for pins and poles.
- 18.3. The site should be clear from obstacles such as rocks, trees and bushes to avoid the risk of tears in the PVC covers or ground cloth.
- 18.4. Drainage may be achieved by cutting channels around each shelter when the gradient and composition of the ground allows it.
- 18.5. 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.
- 18.6. 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.
- 18.7. To prevent the propagation of fire between shelters, wherever possible, a spacing of 6m between shelters or shelter complexes is to be maintained.

PITCHING

WARNING

PERSONNEL INJURY. SUFFICIENT PERSONNEL ARE REQUIRED WHEN LIFTING THE ASSEMBLED ROOF, THE MINIMUM IS ONE PERSON PER SHELTER LEG.

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.** The PVC Covers are manufactures from polyethylene covered PVC, this is a stronger and more waterproof material than the old cotton canvas but it is not flexible and does not stretch. The end gable strap must be installed before the gable cover is fitted to ensure the frame spigots are correctly located.
- (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 covers.
- (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.

General

19. The pitching space should be marked out in accordance with the ground plan provided

NOTE: Pitching party is to comprise of five personnel and a supervisor.

NOTE: The angle of the upright poles is critical if the covers are to fit correctly, base restraint straps are to be fitted to ensure the correct spacing.

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

- 20.1. To prepare the cover, proceed as follows:
- 20.2. Open covers and lay out with inside uppermost.
- 20.3. Follow the assembly instructions

21. With the MK4 shelter system there are options for assembly. The tent can be erected using keder rails or the roof and wall sections can be pre-laced together as detailed in Fig 27 to 34. If the tent is being erected using a combination of MK 4 and earlier cotton canvas panels then you can utilise a combination of the two or just dutch lacing.

22. The frame should be laid out as detailed in Fig 5 & 6.

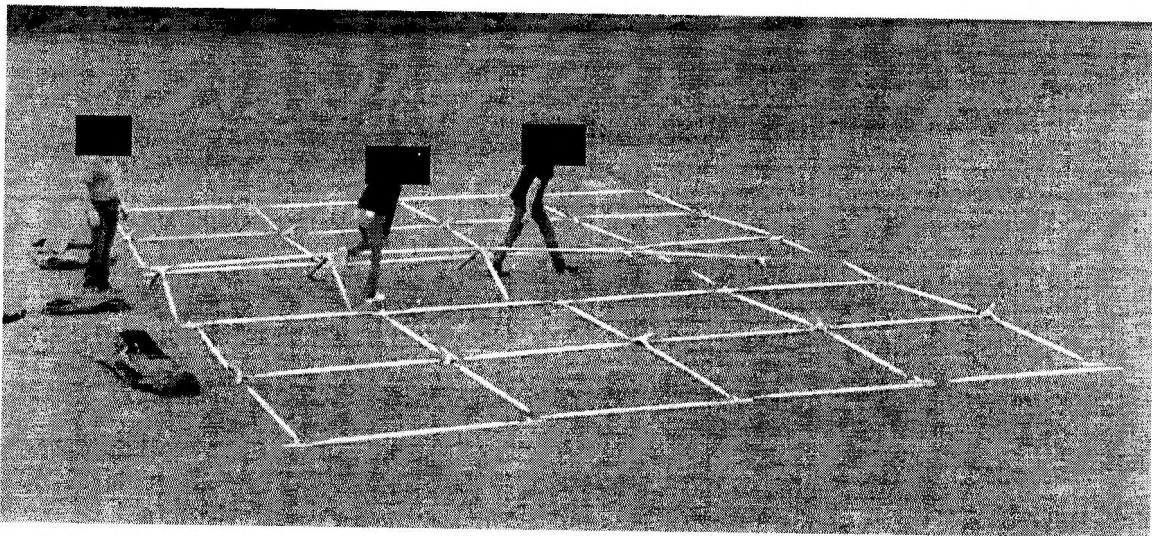


Figure 5: Frame Layout

23. Tent poles should be fitted together to produce the roof framework with roof restraint straps attached. The frame should be assembled from one end and the poles inserted in sequence, this minimises stress on the frame.

24. Fit strap, adjustable roof restraint (J11/8340-99-339-5439) (qty 2) Fig 7 to 16 and situate the strap as detailed in Fig 15. Ensure the straps are not twisted and the buckles are on the inside of the roof.

25. Fit the buckle end of the strap first passing the webbing through the buckle Fig 7, over and through the other side Fig 8 and back over itself Fig 9. Arrange the buckle to be under the frame so that it does not chafe the PVC covers Fig 16.

26. Tension roof restraint strap at other end of frame as detailed in Fig 10.

27. Secure through rings as detailed in Figs 11, 12 & 13.

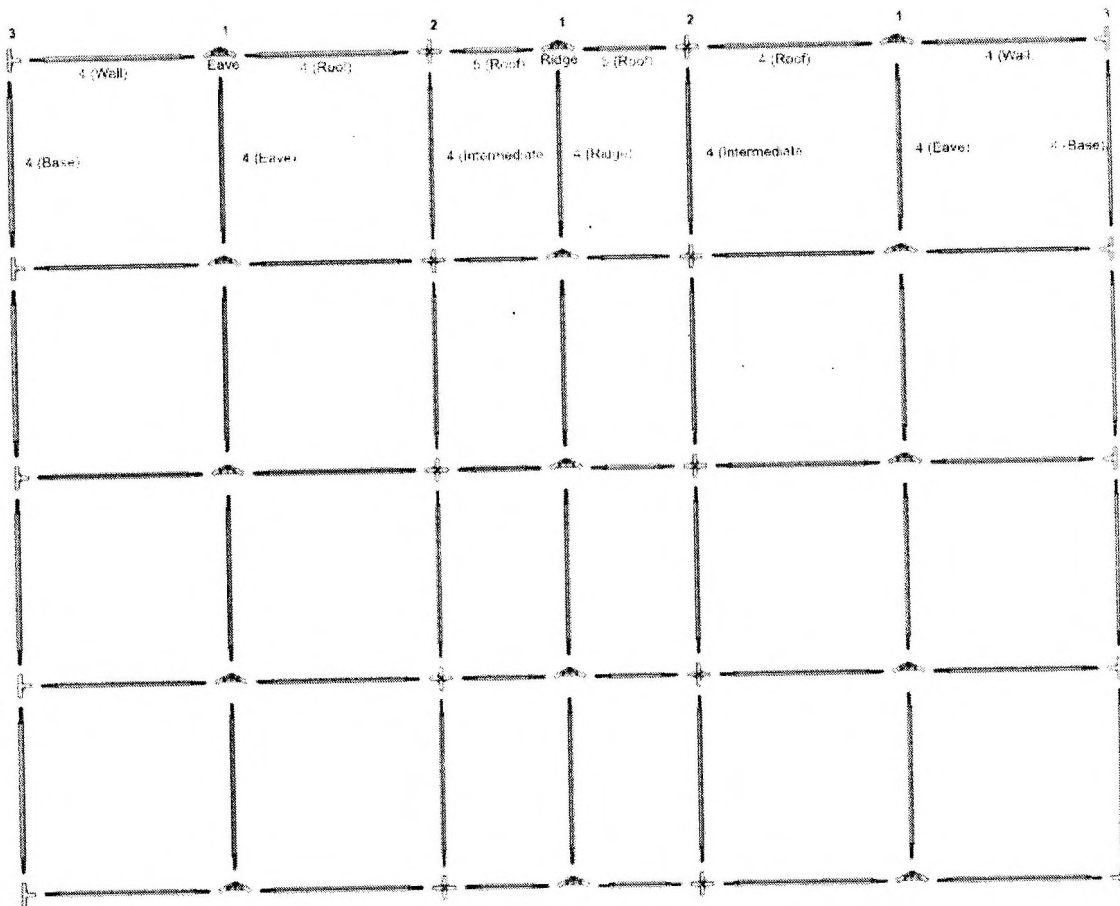
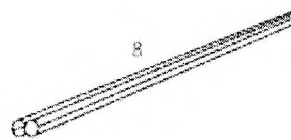


Figure 6: Frame Layout

24x18 Frame Components List
& Assembly Layout

- 1 Universal Bracket (Qty 15)
8340-99-132-0008
- 2 Cross Bracket (Qty 10)
8340-99-132-0009
- 3 Base T Bracket (Qty 10)
8340-99-132-0010
- 4 Universal Member Pole (Qty 48)
8340-99-132-0006
- 5 Roof Member Pole (Qty 10)
8340-99-132-0007
- 6 Strap, Roof Restraint (Qty 2)
8340-99-973-9022
- 7 Strap, Base Restraint (Qty 5)
8340-99-326-5994
- 8 Keder Rail (Qty 50)



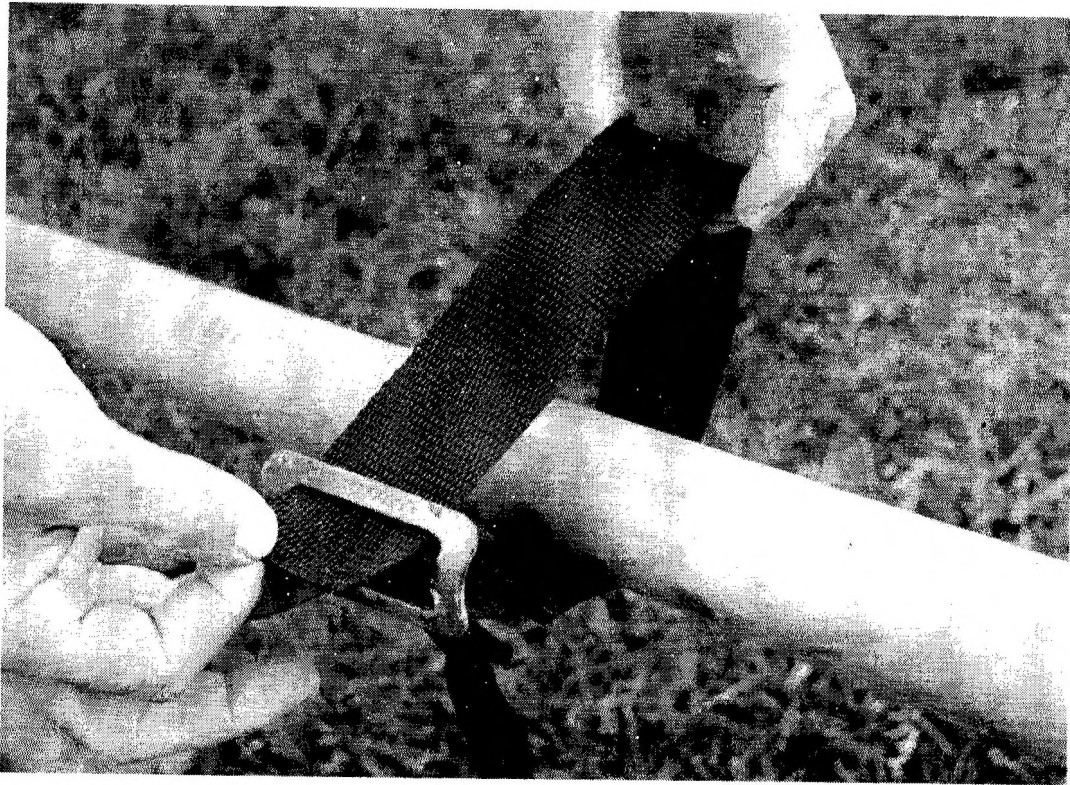


Figure 7: Buckle Connection 1

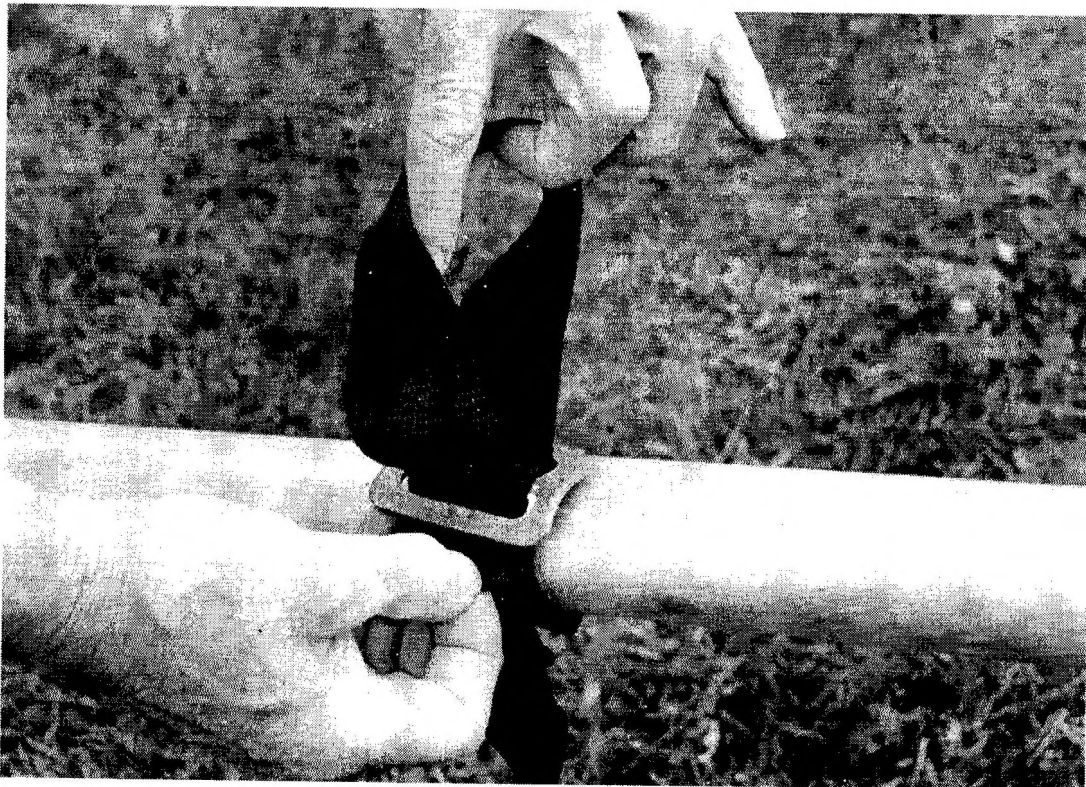


Figure 8: Buckle Connection 2

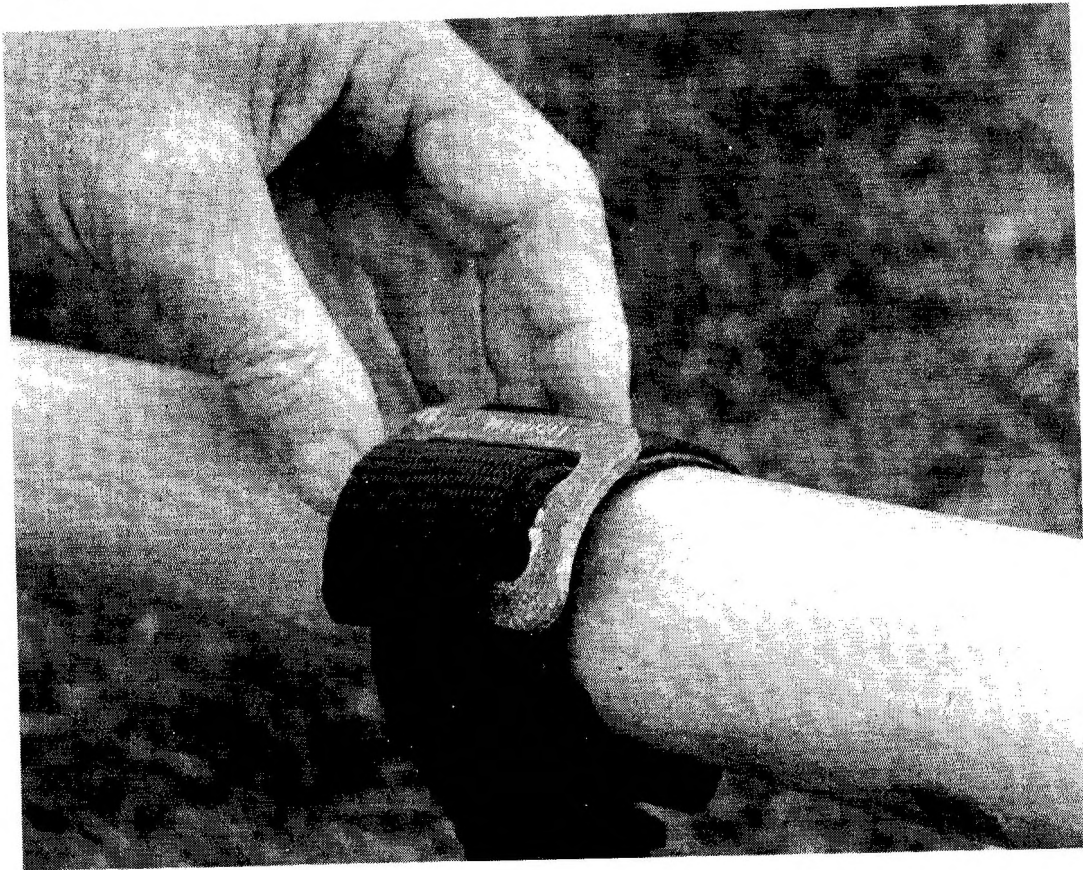


Figure 9: Buckle Connection 3

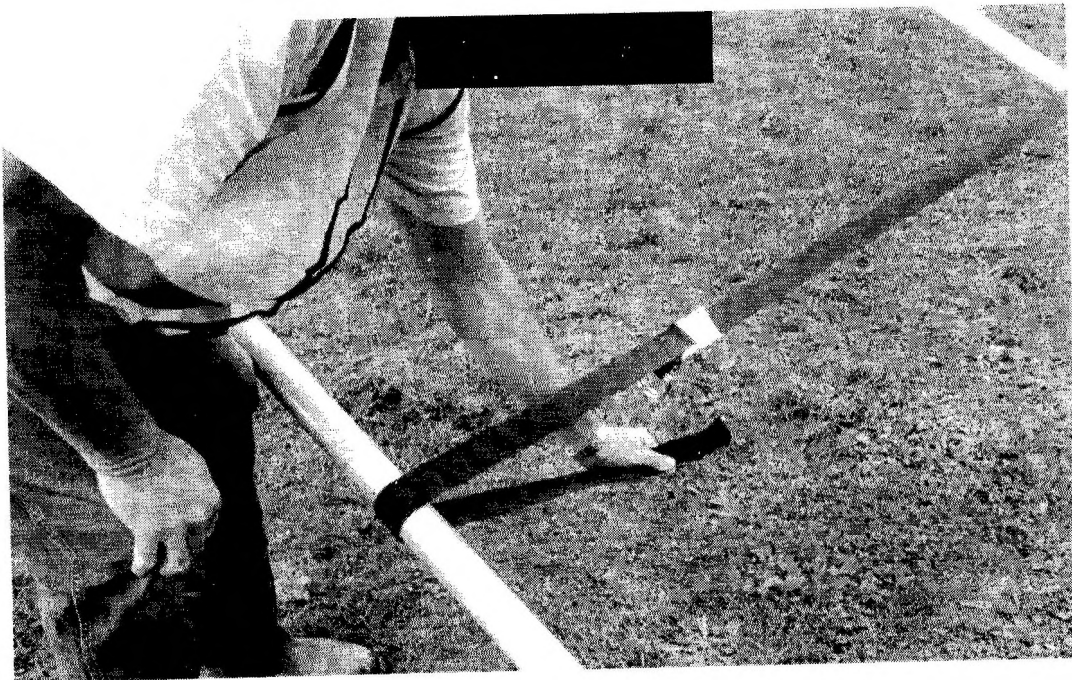


Figure 10: Tensioning Roof Restraint



Figure 11: Secure Roof Restraint Strap through rings 1



Figure 12: Secure Roof Restraint Strap through rings 2

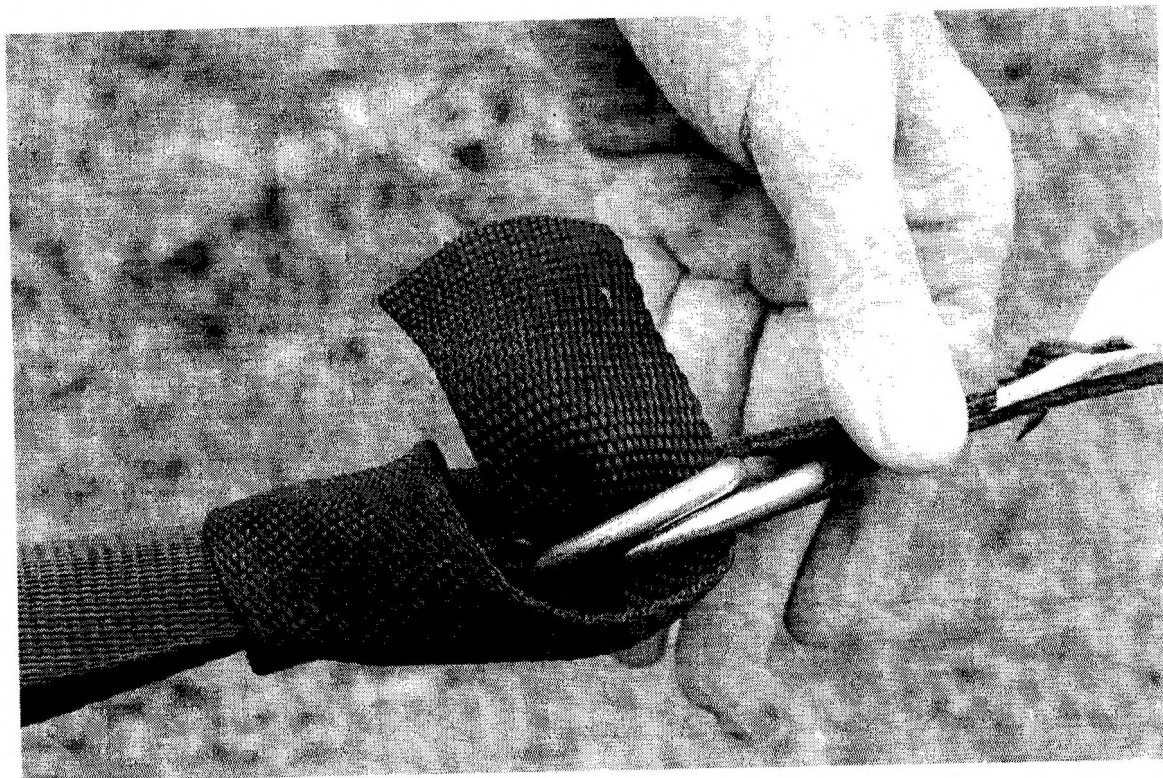


Figure 13: Secure Roof Restraint Strap through rings 3

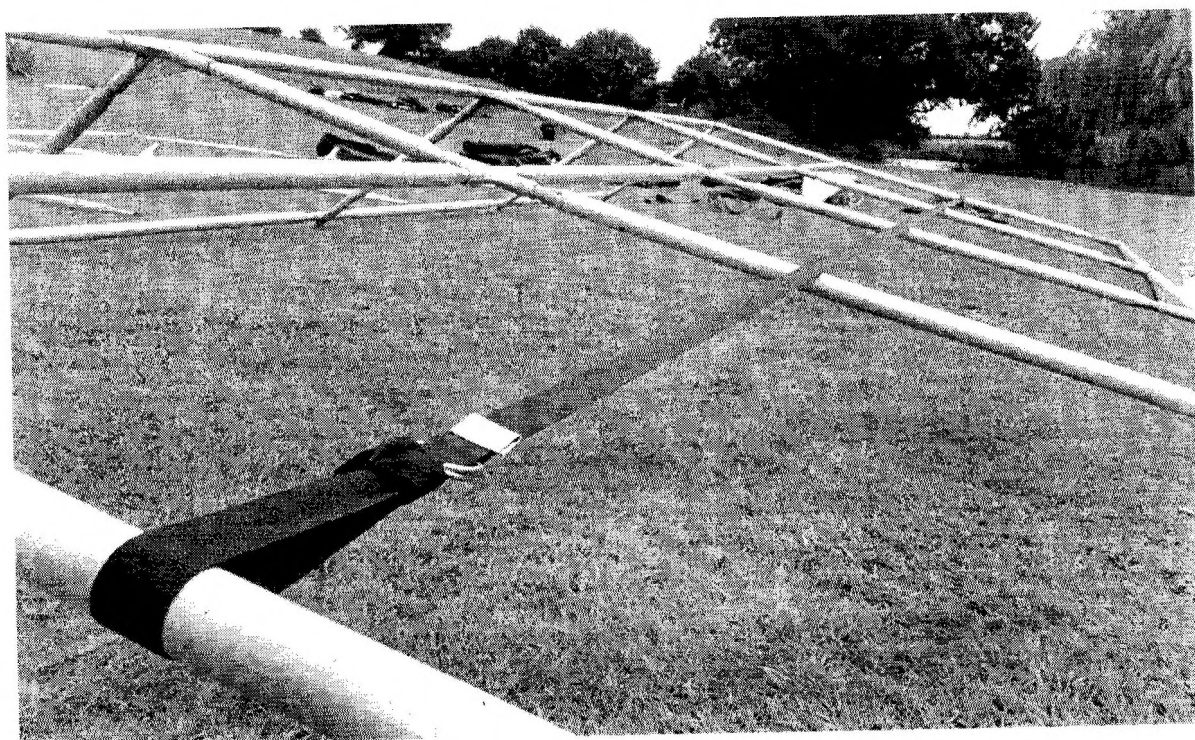


Figure 14: Roof Restraint Straps fitted as frame roof is assembled

28. Tent poles should be fitted together to produce the roof framework with roof restraint straps attached

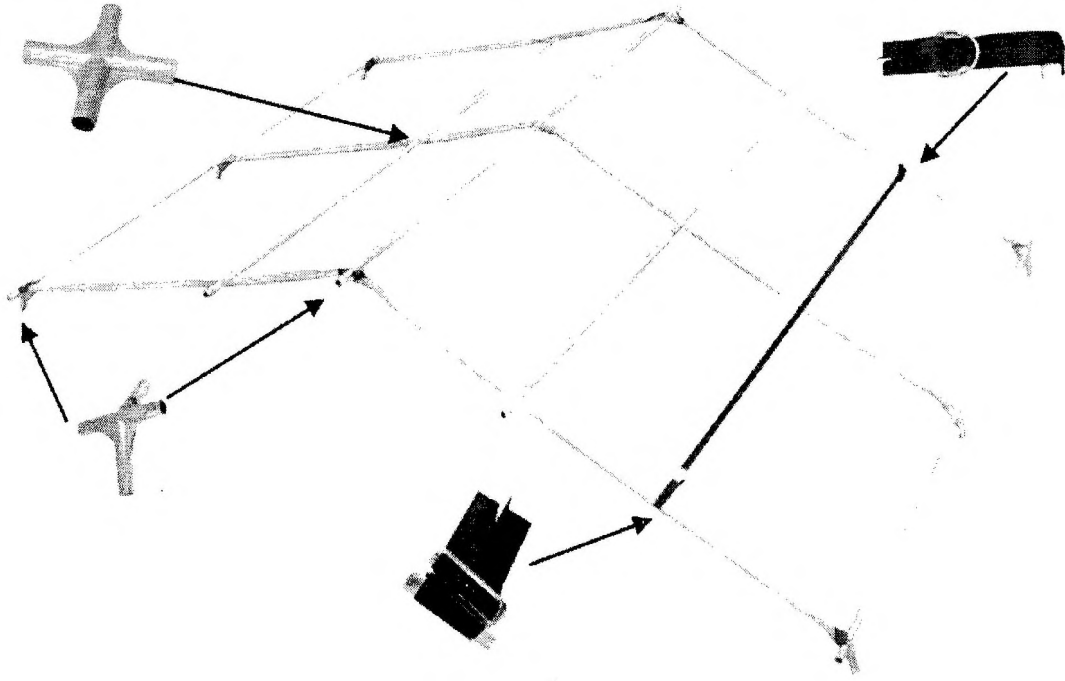


Figure 15: Complete Roof Section (Only half of the frame shown for clarity)

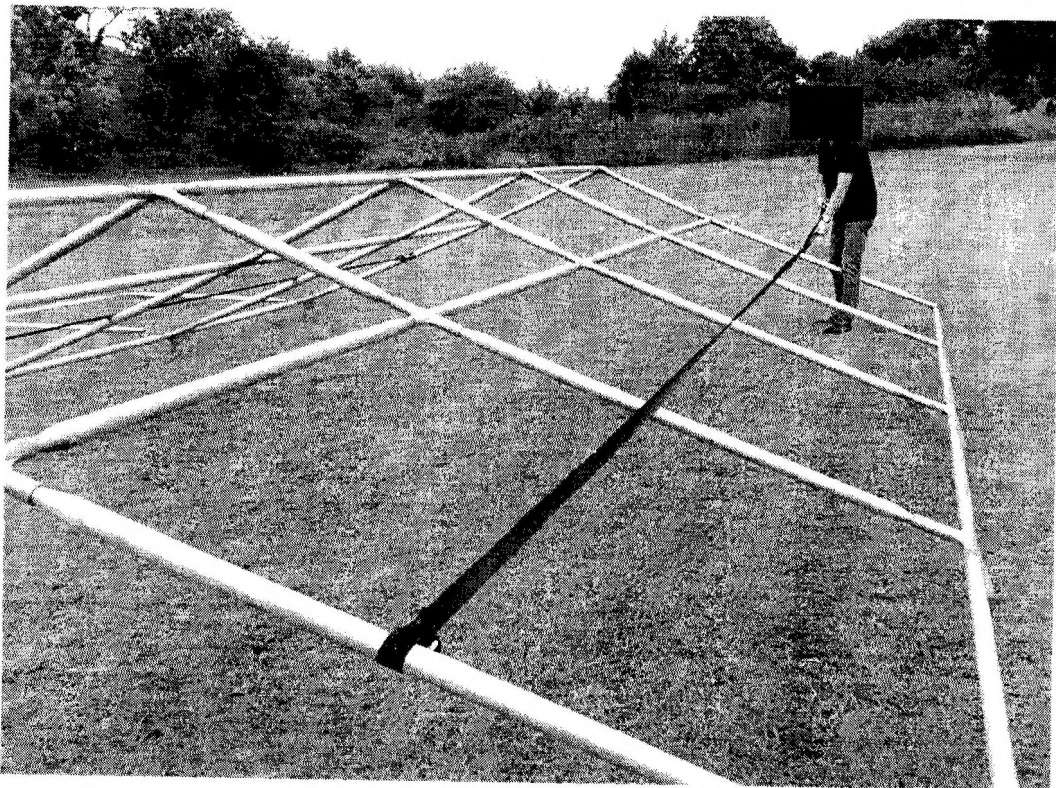


Figure 16: Roof frame complete

CAUTION

The PVC Covers are manufactured from polyethylene covered PVC, this is a stronger and more waterproof material than the old cotton canvas but it is not flexible and does not stretch. The end gable strap must be installed before the gable cover is fitted to ensure the frame spigots are correctly located.

29. Install the end gable strap (Qty 2) Fig 17, this holds the frame eaves in place to enable the end gable cover to be fitted without stressing the material. It also increases the snow and wind loading characteristics of the tent structure. The strap is a pre-set size and attaches to the holes in the web of the apex bracket and the eaves brackets of the frame at the gable ends. Attach the hook to the apex bracket first and then using 2 persons push the frame together at the eaves brackets to enable the strap to be attached.

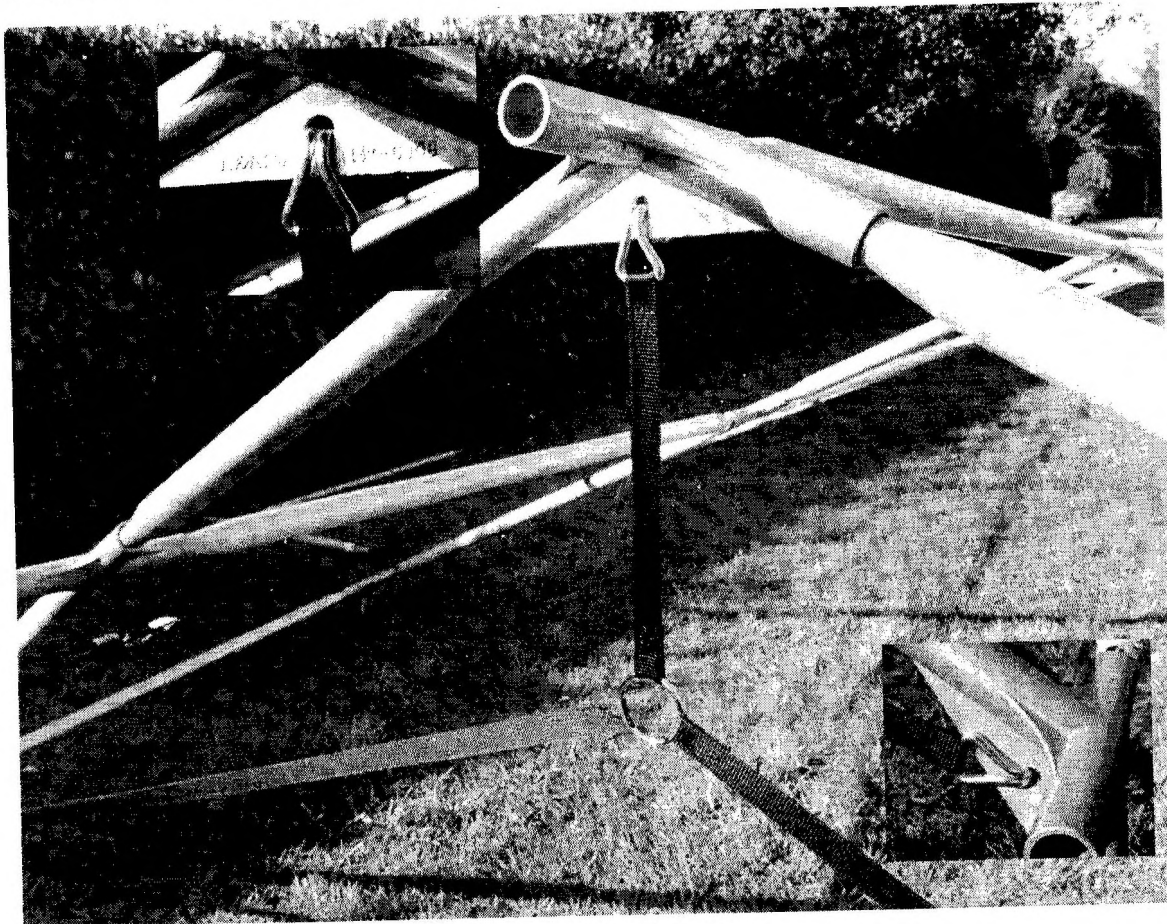


Figure 17: Installation of end gable strap with insets of hook connection

30. The end gable is then laid out ready to be fitted to the roof section of the frame Fig 18, this should be completed at both ends before moving onto the roof and wall.

31. The gable PVC cover should then be fitted over the frame spigots as detailed in Fig 19 & 20.

CAUTION

Do not attempt to stretch the PVC cover using frame parts as a lever, they should fit without any force. If they do not fit re check the end gable strap is attached correctly.

32. Once the gable is fitted over all 5 spigots at each end the spigot covers should be sealed with the Velcro seal and ties off using a double knot Fig 20 Inset.

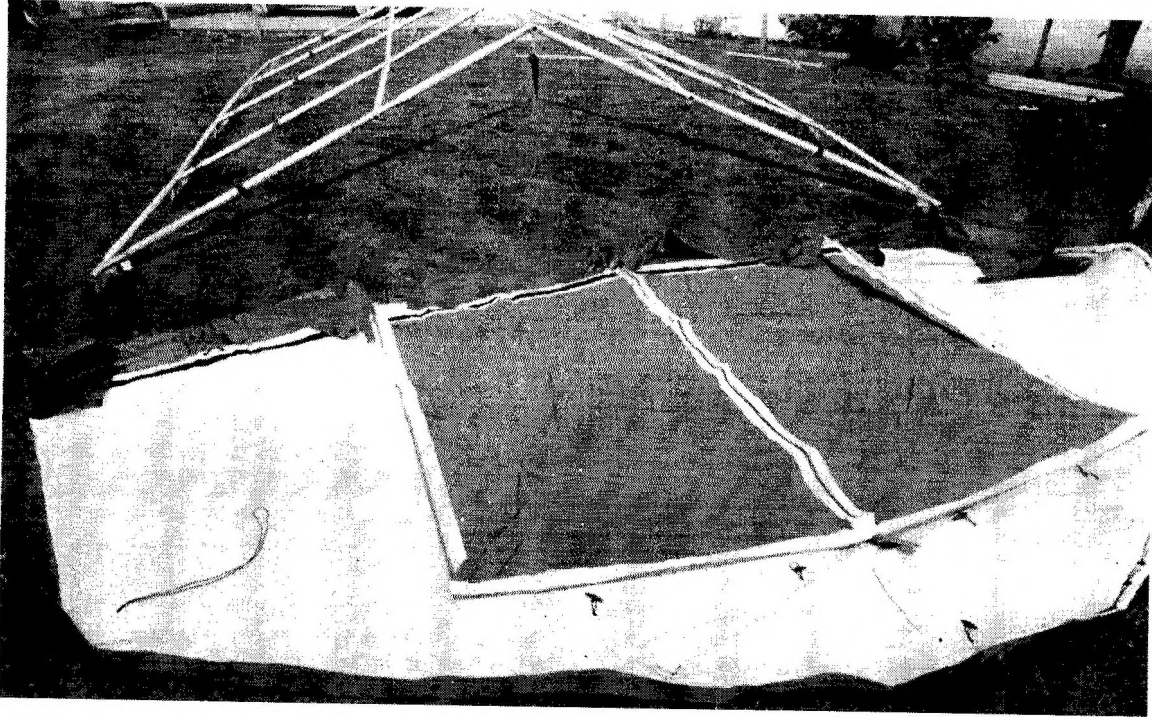


Figure 18: PVC Cover laid out ready to install



Figure 19: Fit covers over frame spigots

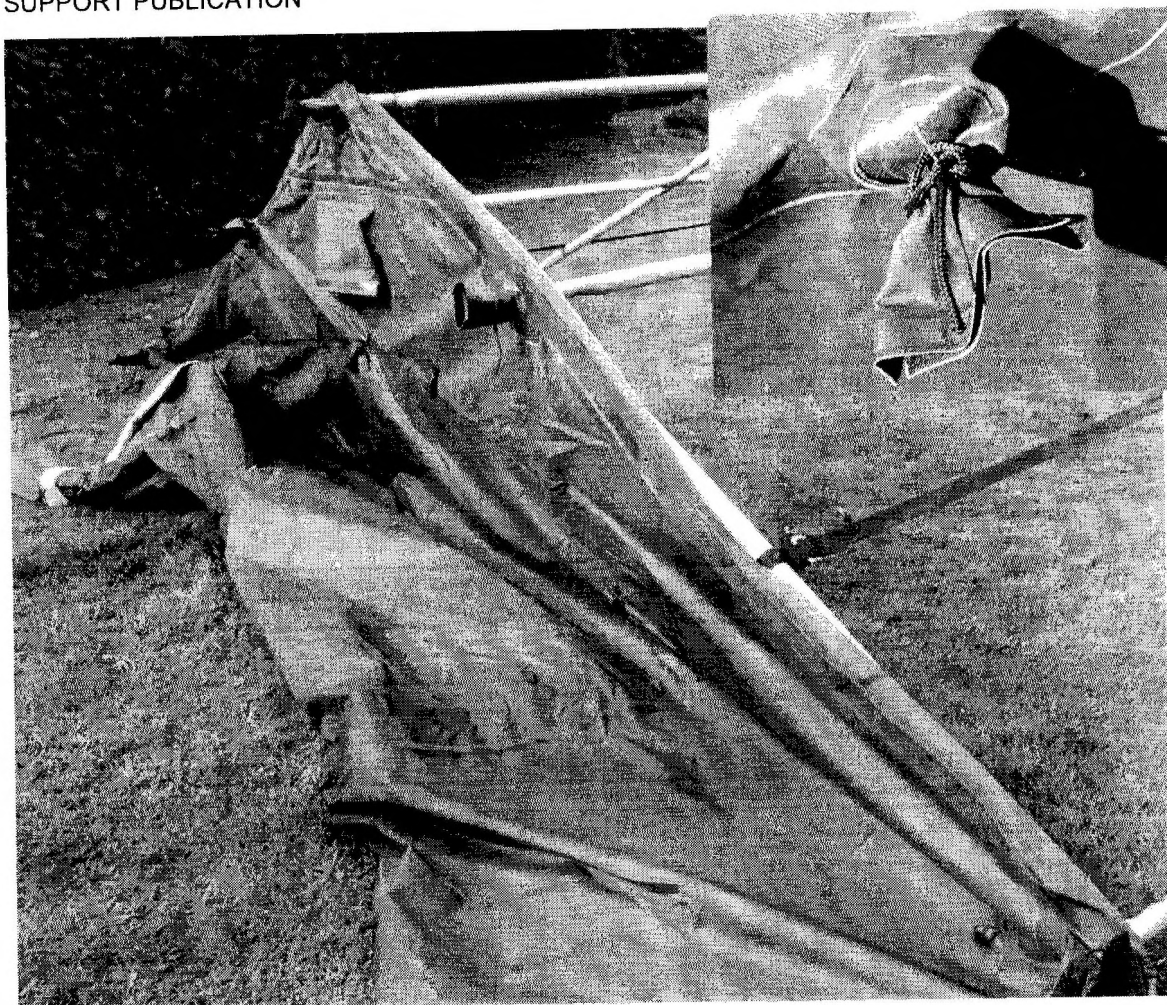


Figure 20: End gable cover in place

33. The tent is assembled from one end attaching the first roof and wall to an end wall. The two roof sections are joined and finally the second end wall is attached as follows:

CAUTION

Protective gloves must be worn when inserting the keder rail to avoid potentially nipping fingers while pushing the rail into position.

34. The roof and wall cover should be placed over the roof framework at one end. It is easier to fold the cover to position for connection with the end wall, this eases access to the keder rail or the dutch lacing as shown in Fig 21.

35. At the joints between the end wall and the roof and wall covers there are a number of flaps. This is due to the combination of the keder rail and dutch lacing combination. The flaps should be interlinked as detailed in Fig 22 and closed together as inset to aid the joining of the keder rail. Note on the right-hand side of the roof looking on the end of the tent the eyelets will be directly under the keder, on the left-hand side there will be a plane flap Fig 23.

36. Inserting the keder rail is a two (2) person operation, insert the rail from above (see Fig 24 below) whilst a second person holds the keder beads together, this allows the rail to slide freely. Keder rails are fitted to each side of the roof (J11/8340-99-477-5695) (Qty 6 in each roof section, total 18 in the roof), one after the other and pushed into place so that they are just short of the eave and apex positions Fig 25.

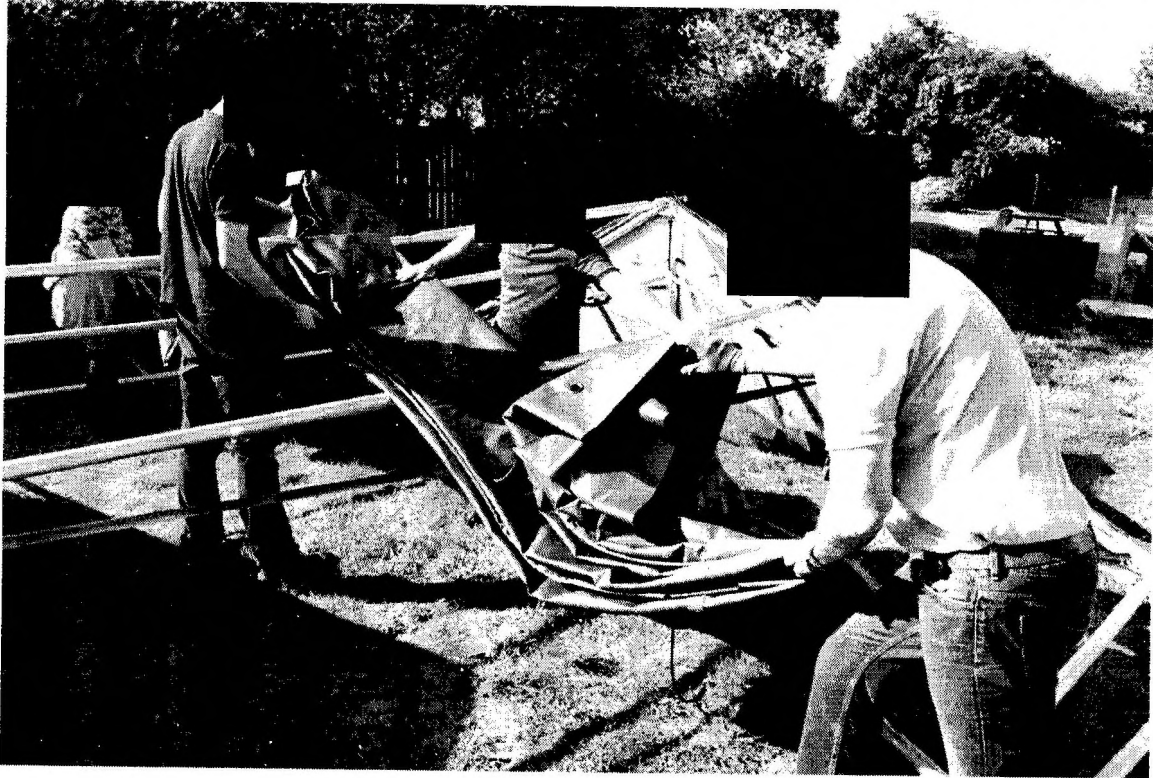


Figure 21: Pull PVC cover into place

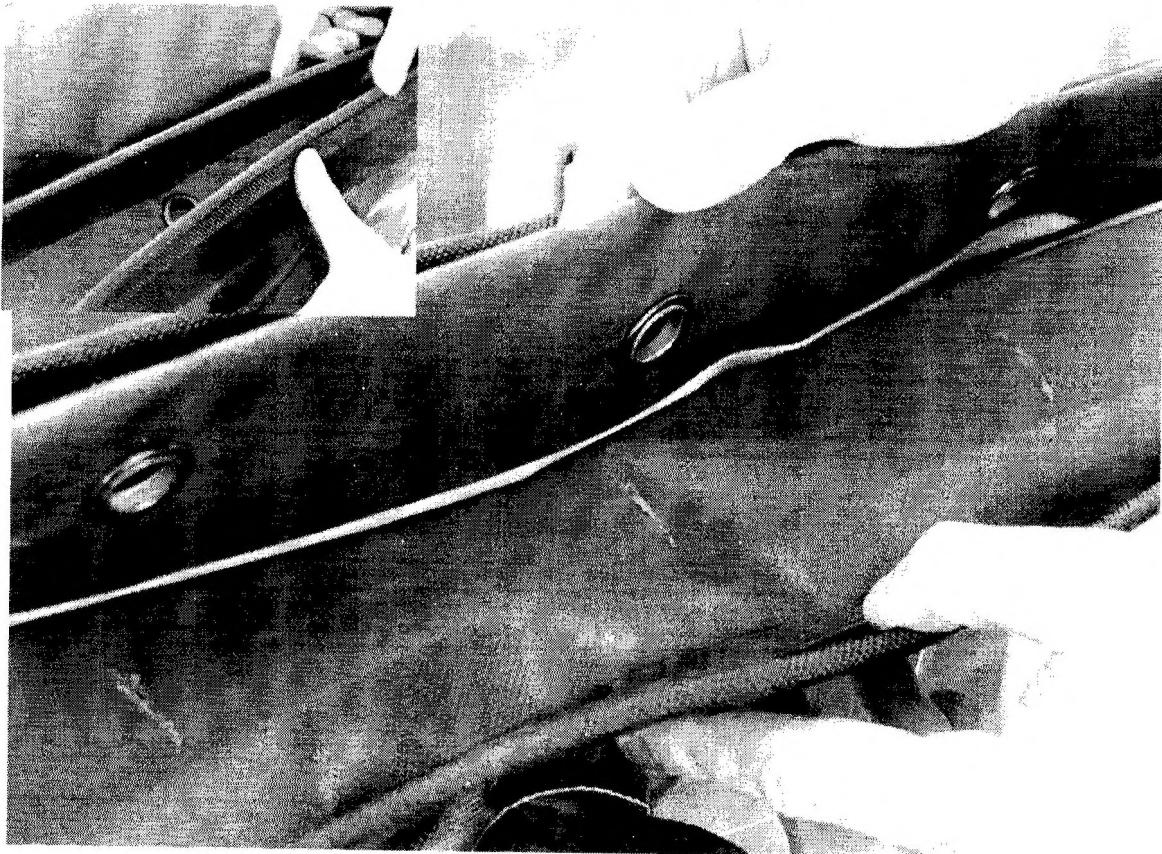


Figure 22: Adjusting flap positions at joints Right Hand Side

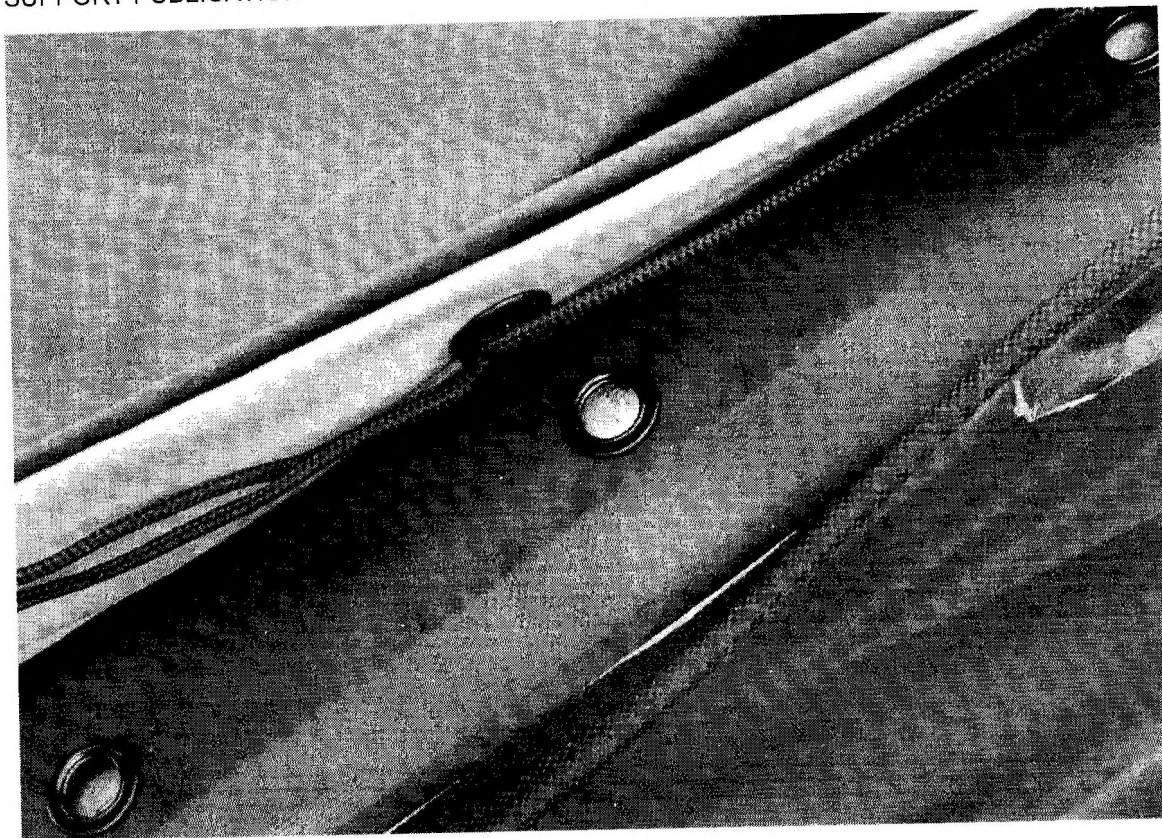


Figure 23: Adjusting flap positions at joints Right Hand Side

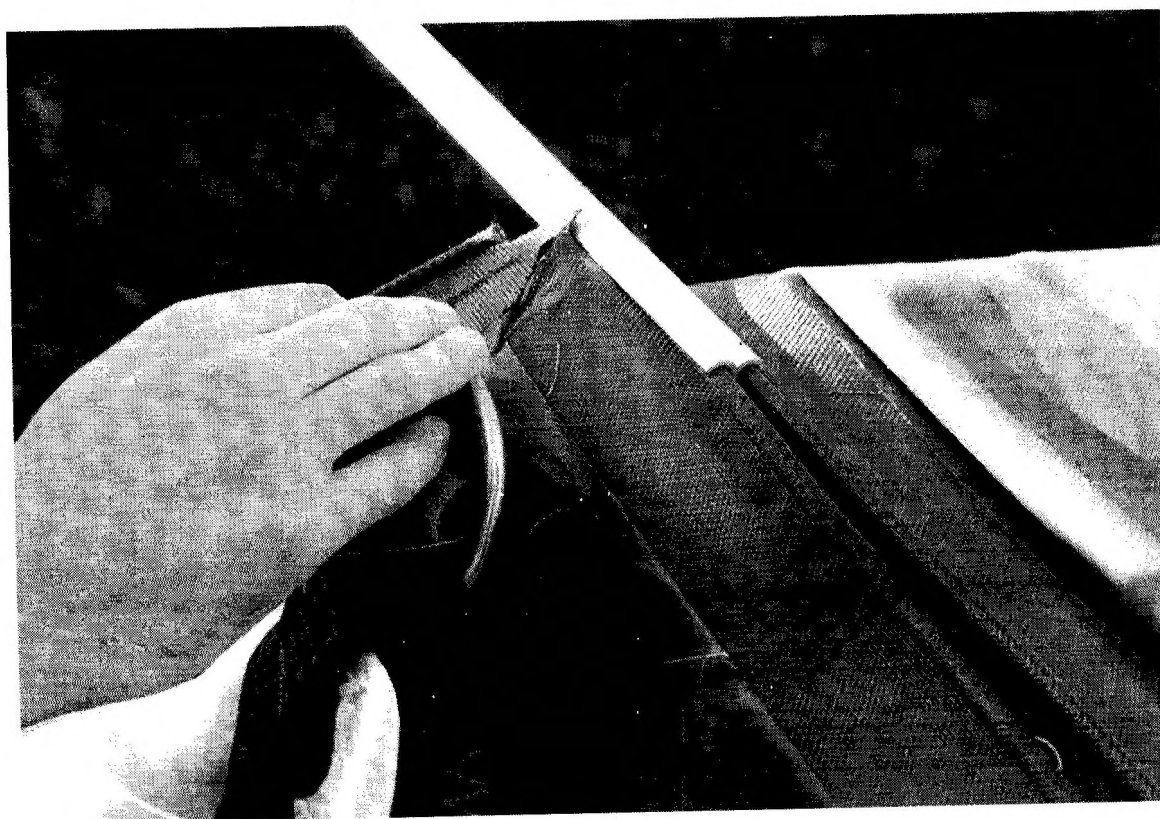


Figure 24: Adjusting flap positions at joints

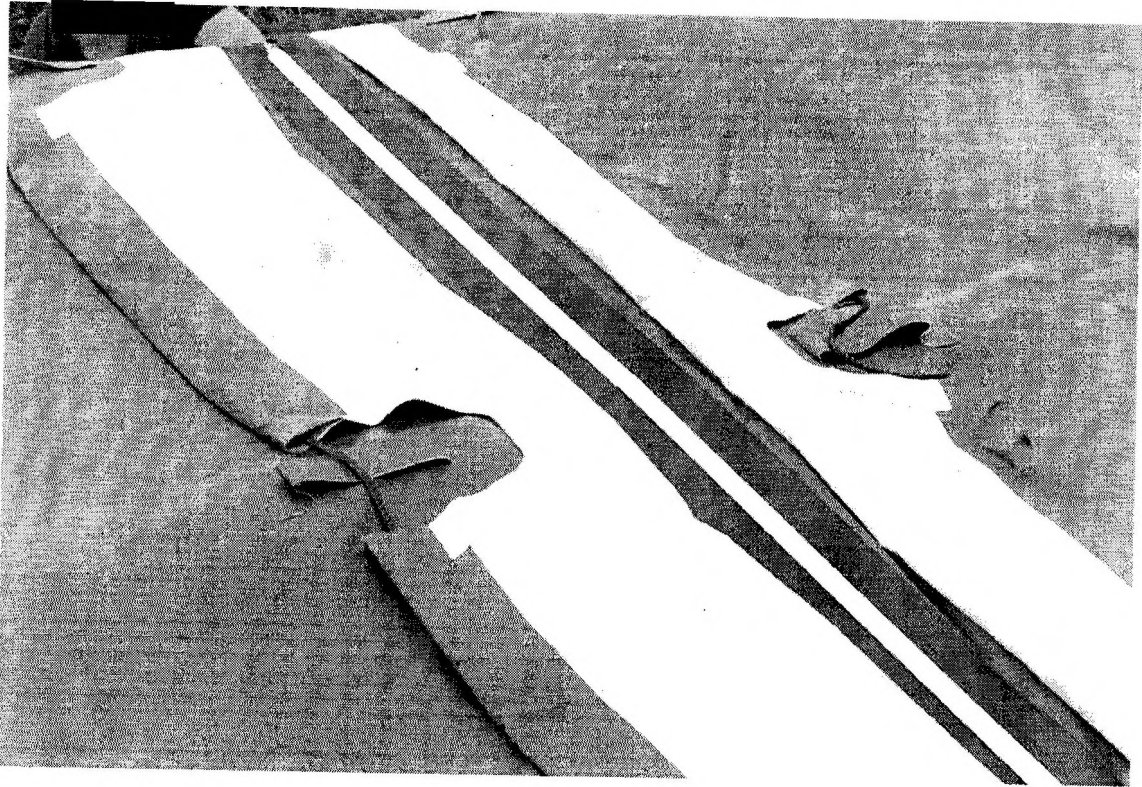


Figure 25: Keder Rail Installation

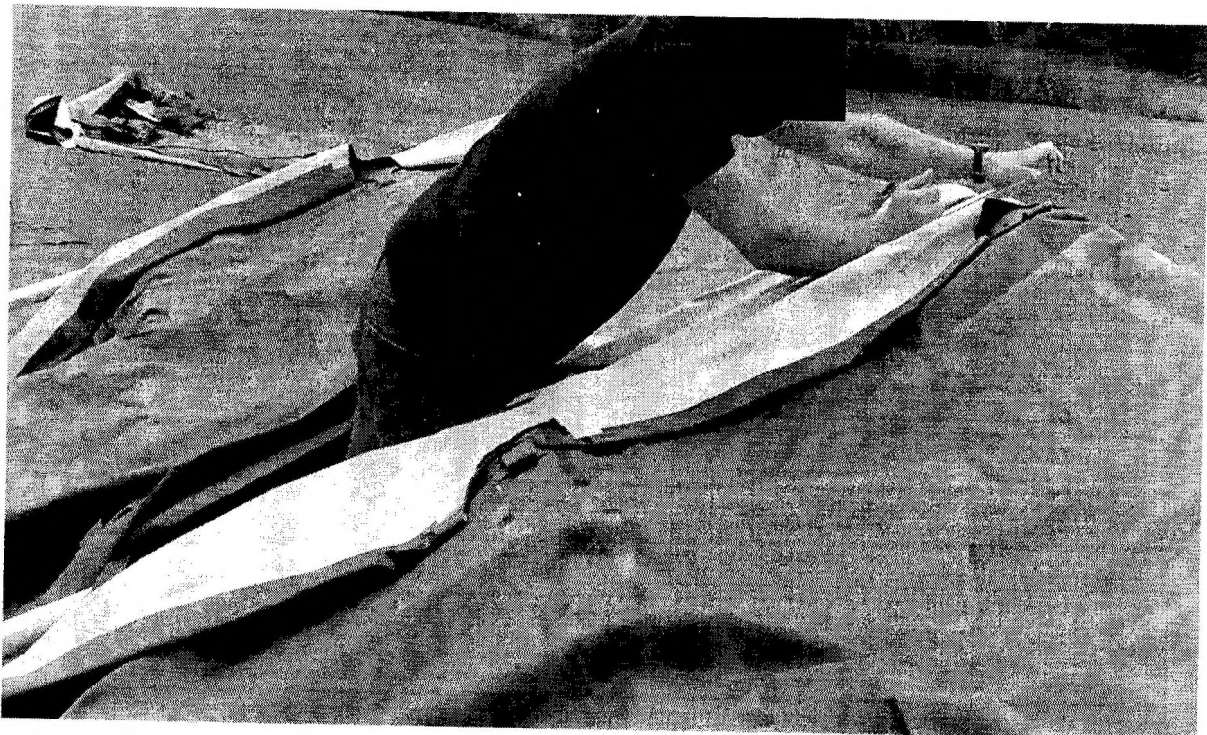


Figure 26: Install Keder, joining the roof

37. Carry out the same procedure for connecting the two roof and wall sections in the centre of the tent, inserting the keder rails in the same way as the end wall and finally the second end wall to the roof and wall.

Dutch Lacing

38. The PVC covers are designed to be compatible with the existing cotton canvas covers and are fitted with dutch lacing, this enables older cover designs to remain in service.

39. The dutch lacing is installed by aligning the eyelets as detailed in Fig 27. Then passing the loops through the eyelets Fig 28. The top loop is them looped over the next loop down Fig 30. Finally, the bottom loop is secured by a toggle or tie Fig 33.

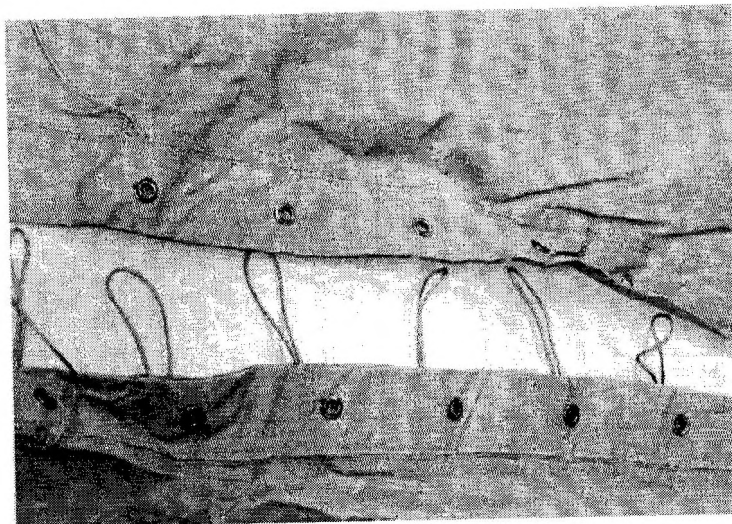


Figure 27: Lacing cover sections (1)

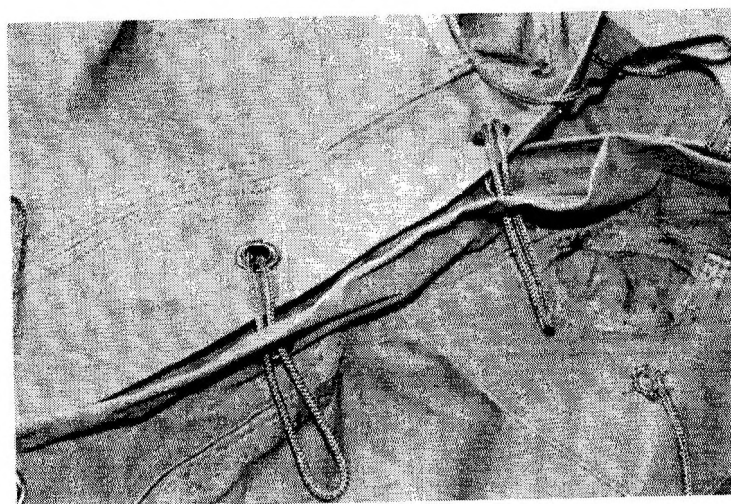


Figure 28: Lacing cover sections (2)

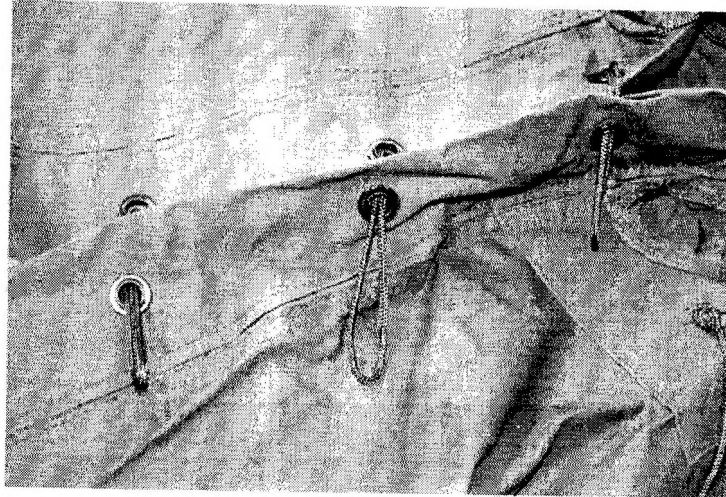


Figure 29: Lacing cover sections (3)

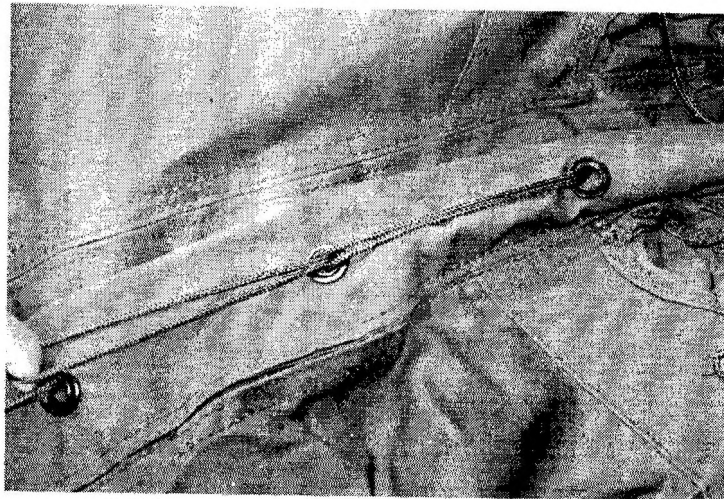


Figure 30: Lacing cover sections (4)

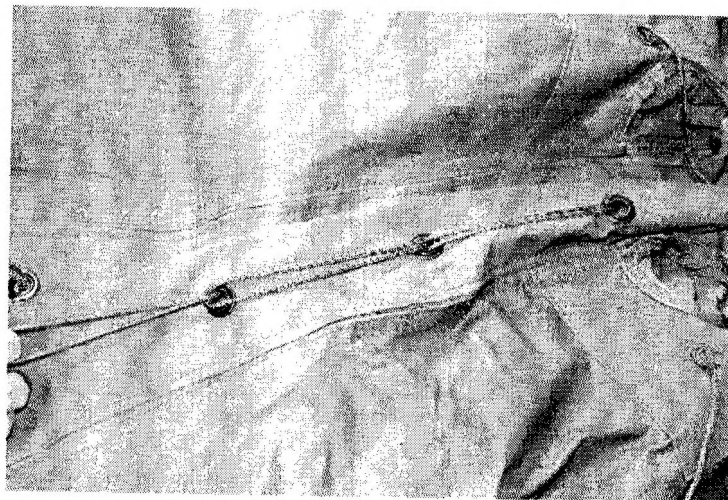


Figure 31: Lacing cover sections (5)

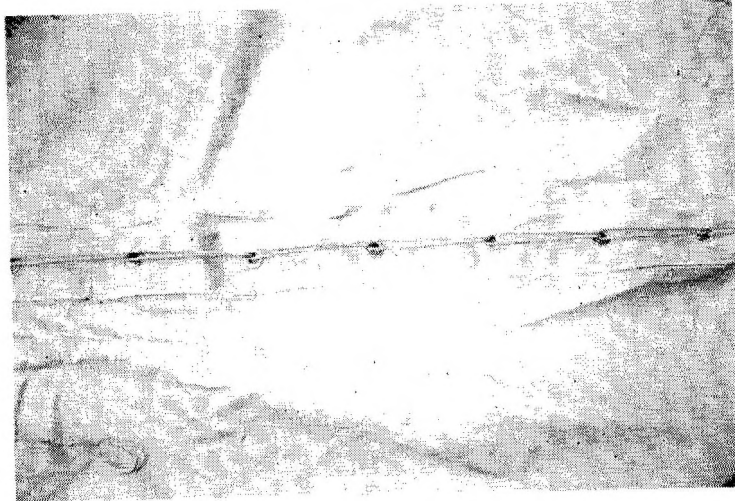


Figure 32: Lacing cover sections (6)

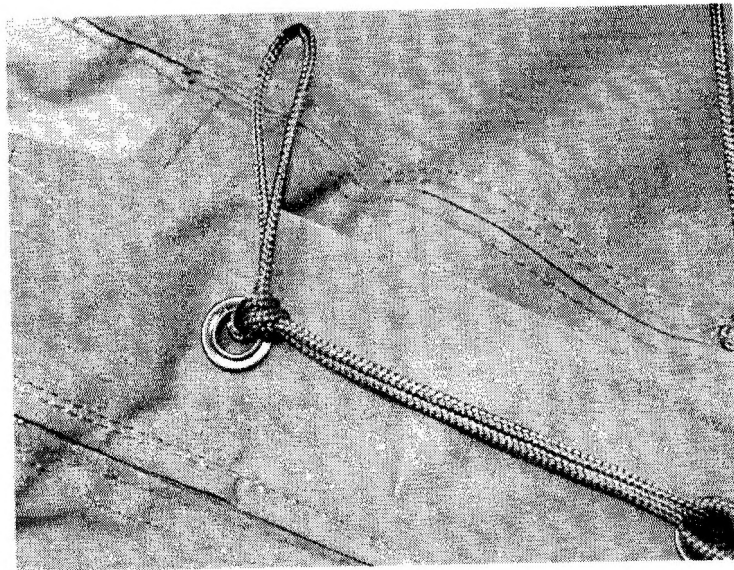


Figure 33: Lacing cover sections (7)

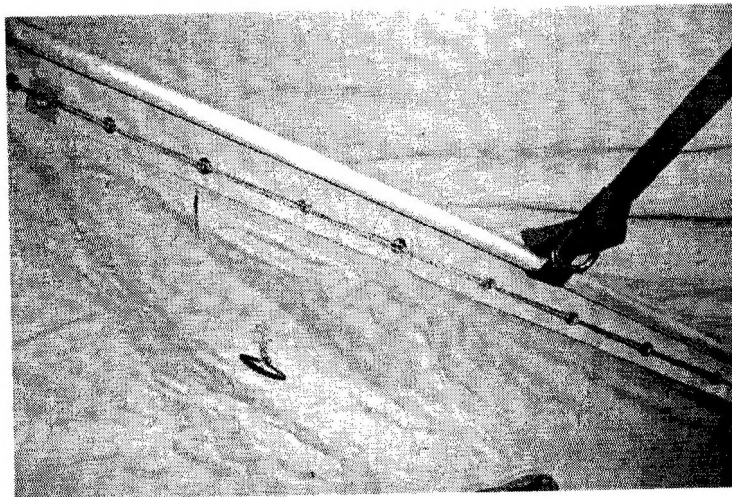


Figure 34: Lacing cover sections (8)

40. When connecting the keder rail it is essential that the lacing is carried out with the covers in precisely the correct position or the lacing will not line up correctly, see Fig 35. The PVC Roof and Wall cover has a manufacturing mark in the top centre which can aid alignment, Fig 35 inset.

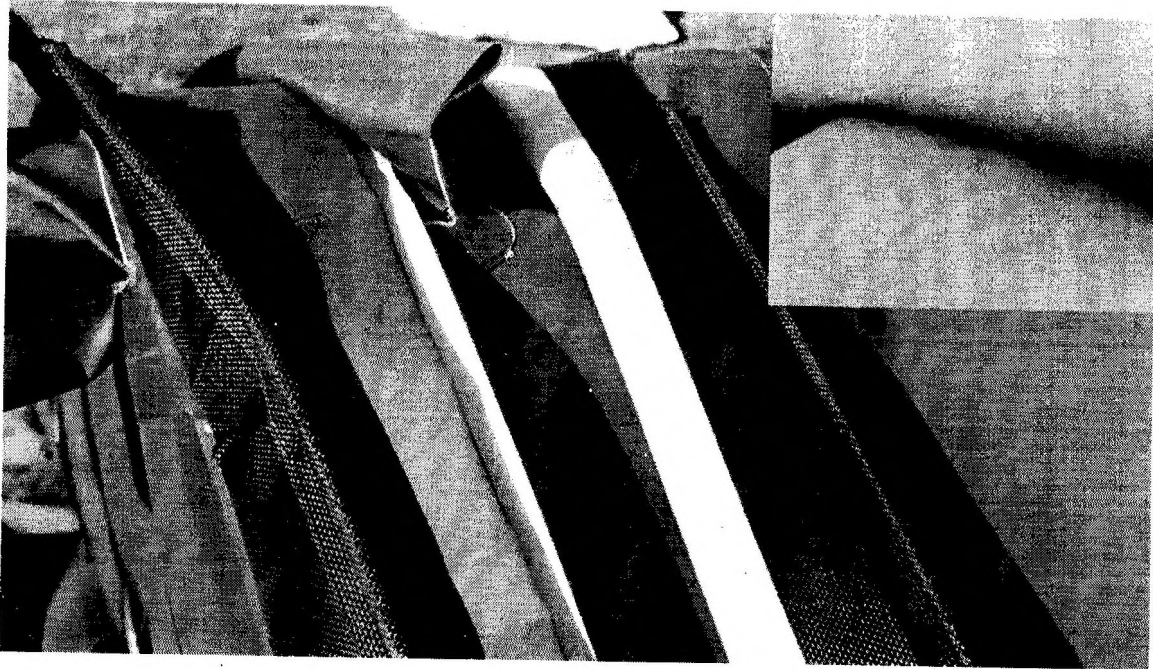


Figure 35: Aligned Cover Position

41. Once the roof sections are joined together the weather covers should be folded over Fig 36 at all of the tent joints as it is very difficult to reach these flaps once the tent is erected.

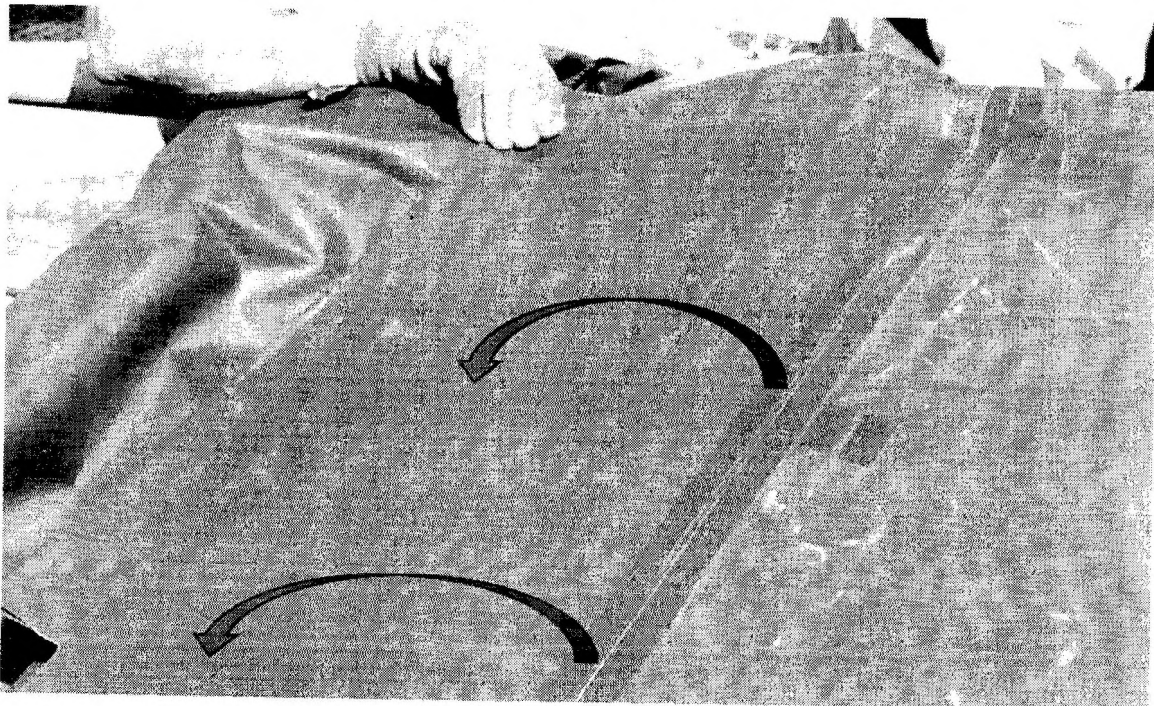


Figure 36: Ensure Water Cover is pulled into position before fitting shelter legs

NOTE: This is relevant for keder or lacing, once the shelter legs are fitted it is difficult to reach the shelter roof

42. The Overstrap (J11/8340-99-575-0778) (Qty 3) and End Guy Strap (J11/8340-99-126-4530) (Qty 2) should be placed over the shelter Fig 37 and 38. The Overstrap should be fitted at both ends and in the centre. The End Guy is fitted at both ends. Details for final installation of these items are given at Paragraph 49.

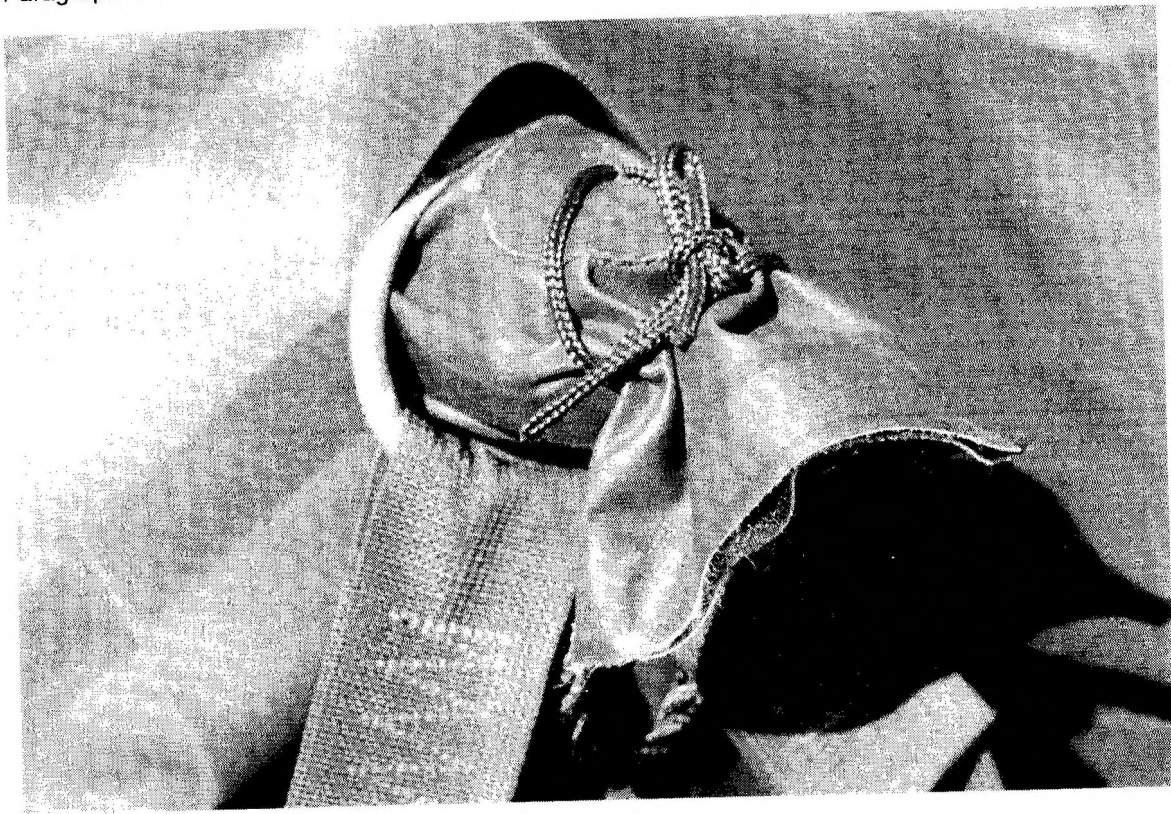


Figure 37: Locating the End Guy Strap on the Apex spigot

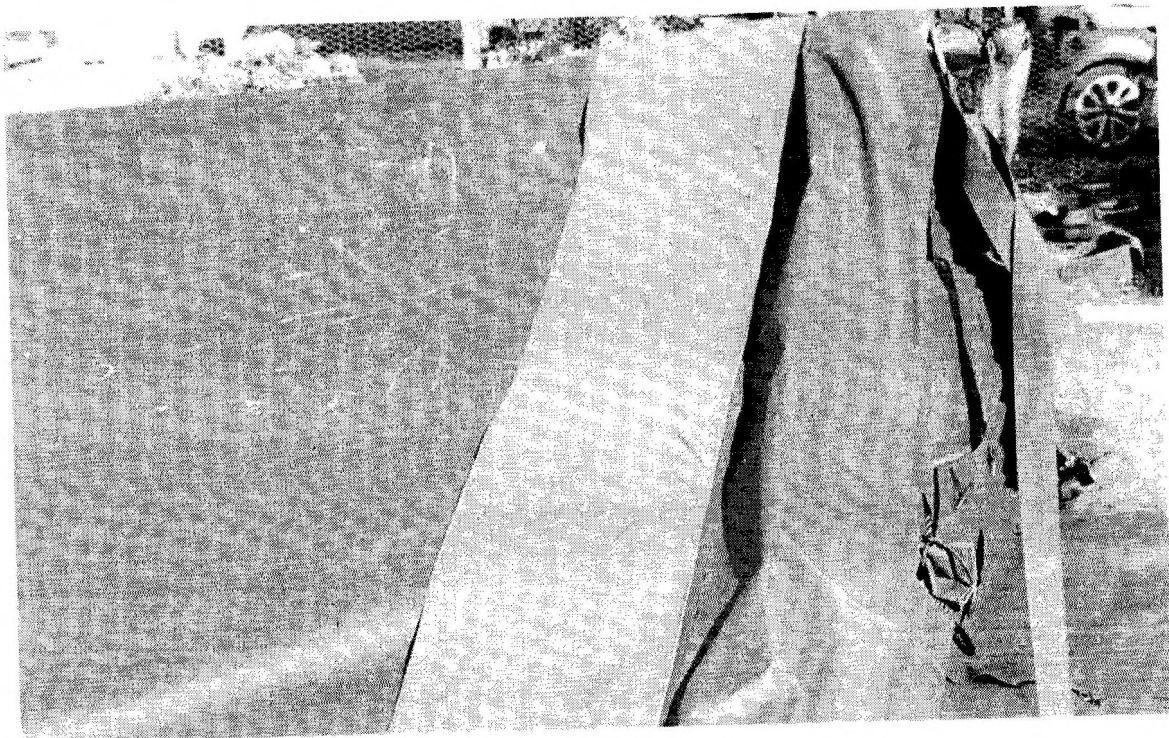


Figure 38: Fit the over strap in three locations

43. The canvas should be folded over to gain access to the frame to lift Fig 39. The sides should be lifted one at a time and the legs inserted. The operation should utilise one person for each leg as shown in Fig 40.

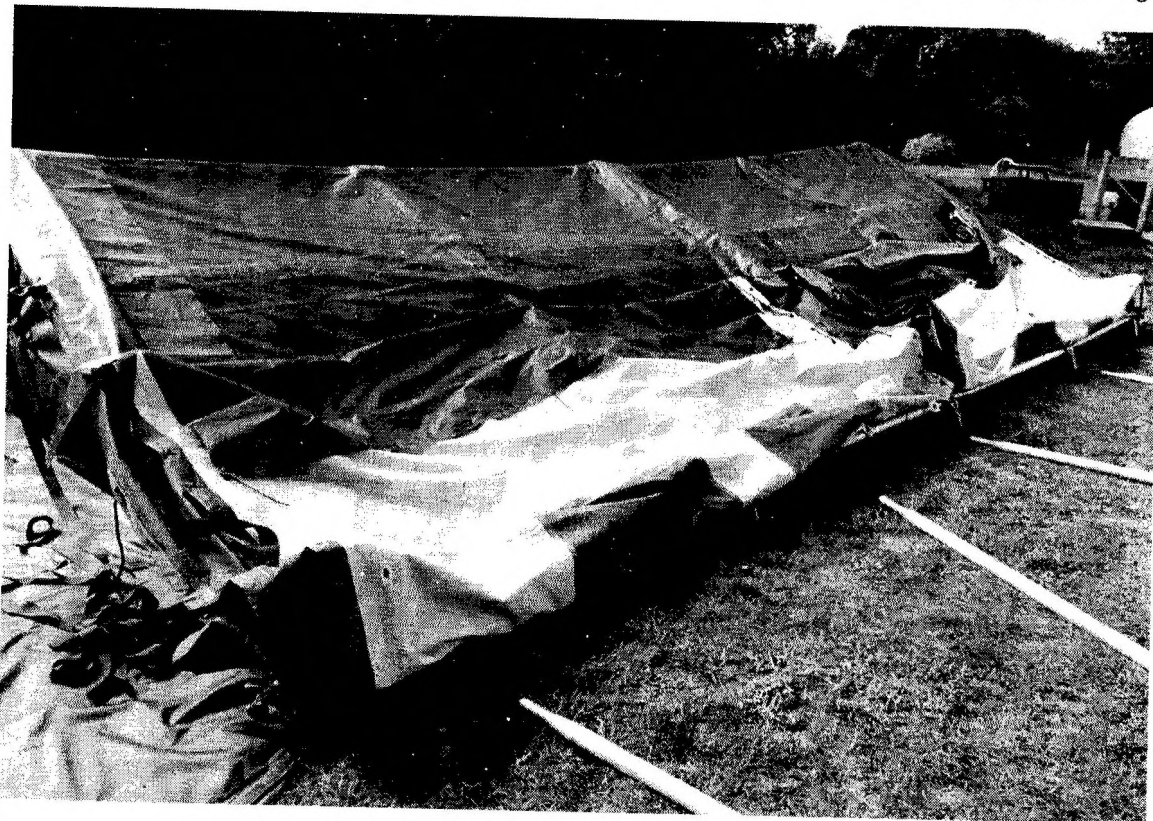


Figure 39: Fold over covers to get access for lifting the frame

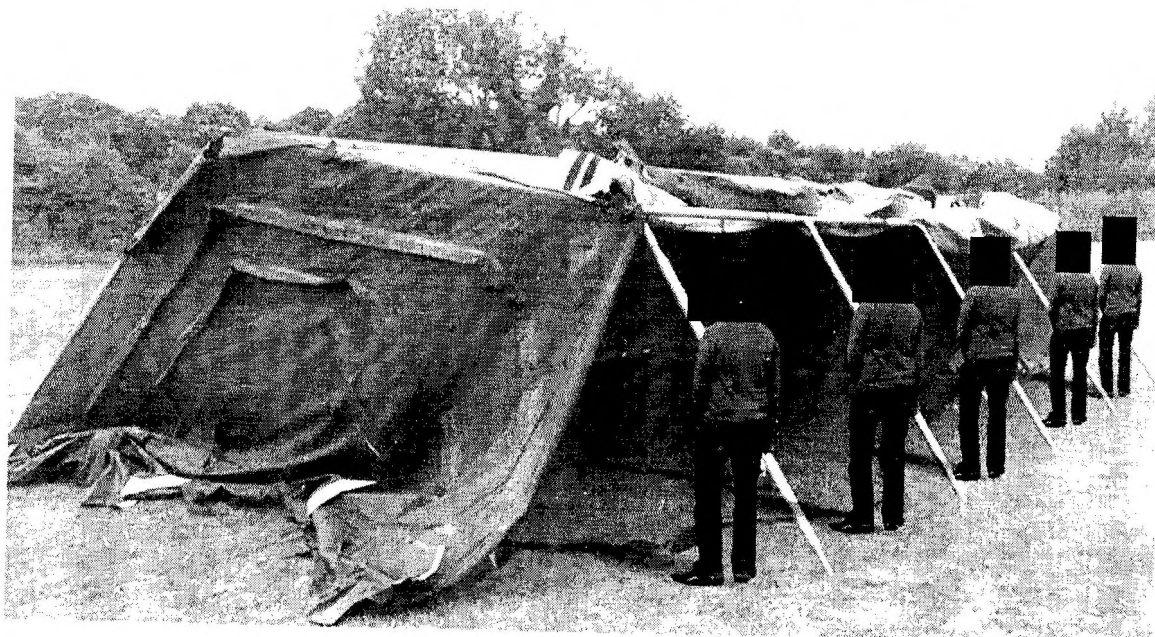


Figure 40: Shelter legs fitted on one side

NOTE: The shelter legs should be fitted using at least 5 people. The shelter is lifted at each leg position evenly and the legs pushed into place.

44. Fit the lower bracket to the legs fitting the base restraint straps in five positions Fig 41. The Base

Restrain Strap (J11/8340-99-326-5994) (Qty 5) pre-sets the width of the tent and ensures that the tent frame is in the correct size configuration, this also aids the fitting of the Ground Sheet (J11/8340-99-196-7832) later in the process. Fit the ground poles as shown in Fig 43 and 47.

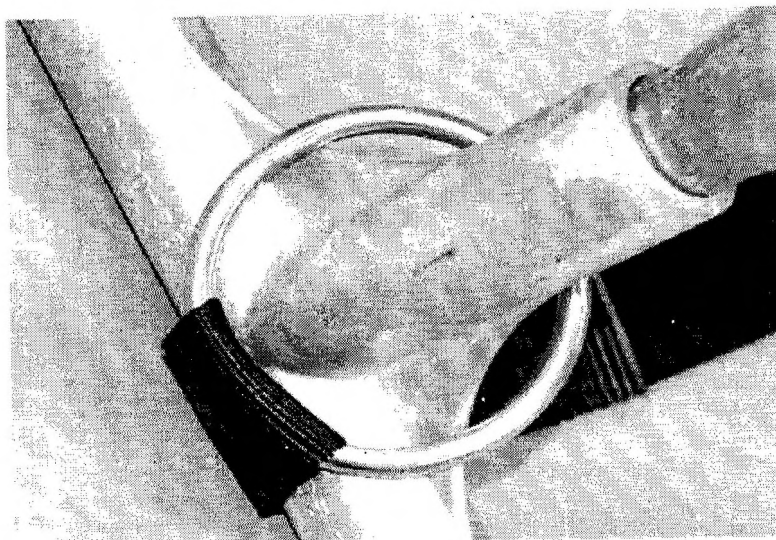


Figure 41: Correct attachment of base restraint strap



Figure 42: Fit lower leg bracket and base restraint strap

45. Fold the canvas down ready to fit the legs on the other side of the tent Fig 43. Install the legs using the same process as for the first side Fig 44.

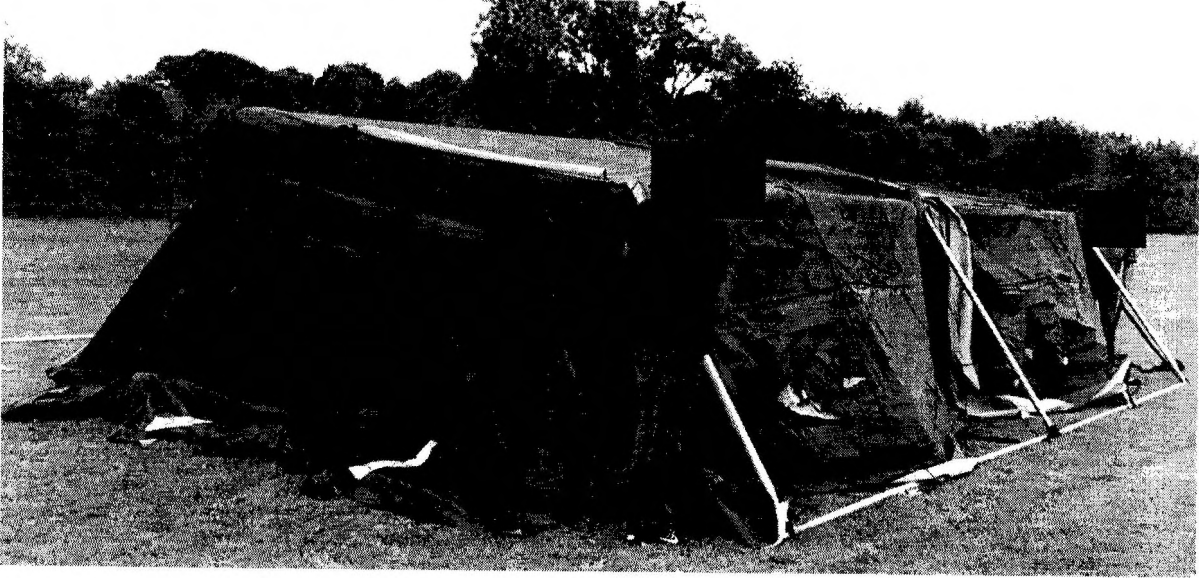


Figure 43: Fold down wall cover



Figure 44: Install the legs on the other side of the tent

46. To aid fitting the base restraint straps it is necessary to tug on the straps using the lower leg bracket as shown in Fig 45 and install leg brackets Fig 46.



Figure 45: Tug on the base restrain strap to adjust the gap between the legs



Figure 46: Install Leg Brackets

47. Install poles Fig 47 and fold down canvas Fig 48.

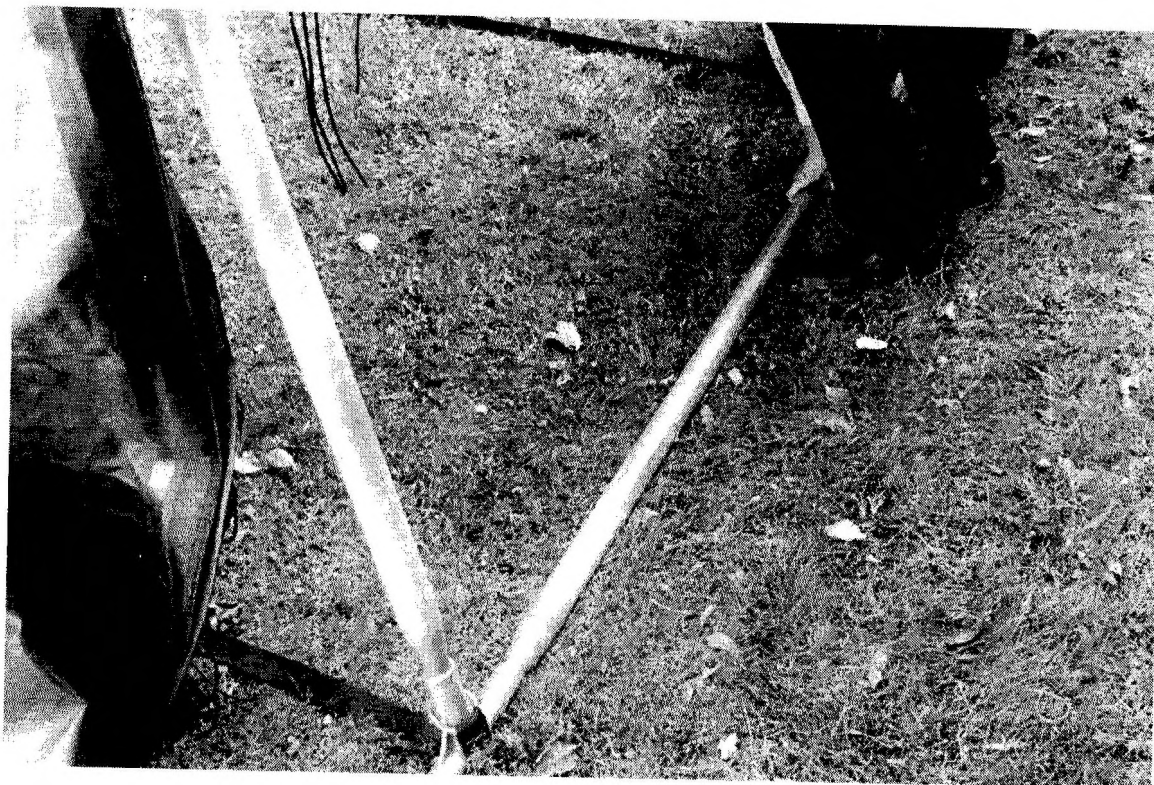


Figure 47: Installing ground poles



Figure 48: Tent ready for connecting side walls



Figure 49: Installing wall keder using two (2) people

48. Install the side wall and gable keder rails (J11/8340-99-477-5695) (Qty 2 each side, total 12) or complete the lacing of the end gables using the same process as detailed for the roof keder, and ensure the tent is light and waterproof by ensuring the flaps are folded over and no light can be seen from inside the tent Fig 36.

49. 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) Fig 50 and internal cords using (J11/8340-99-132-0028) at an angle of approximately 60 degrees from the horizontal Fig 51.

50. When pegging out the shelter, proceed as follows:

50.1. Pins for shelter lines (J11/8340-99-943-9052) should be driven at an angle of approximately 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 Fig 52.

50.2. 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.

50.3. 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.

50.4. Avoid unequal strain and wear on the PVC covers by ensuring that:

50.4.1. Guy lines are not twisted and lie flat across the cover.

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

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

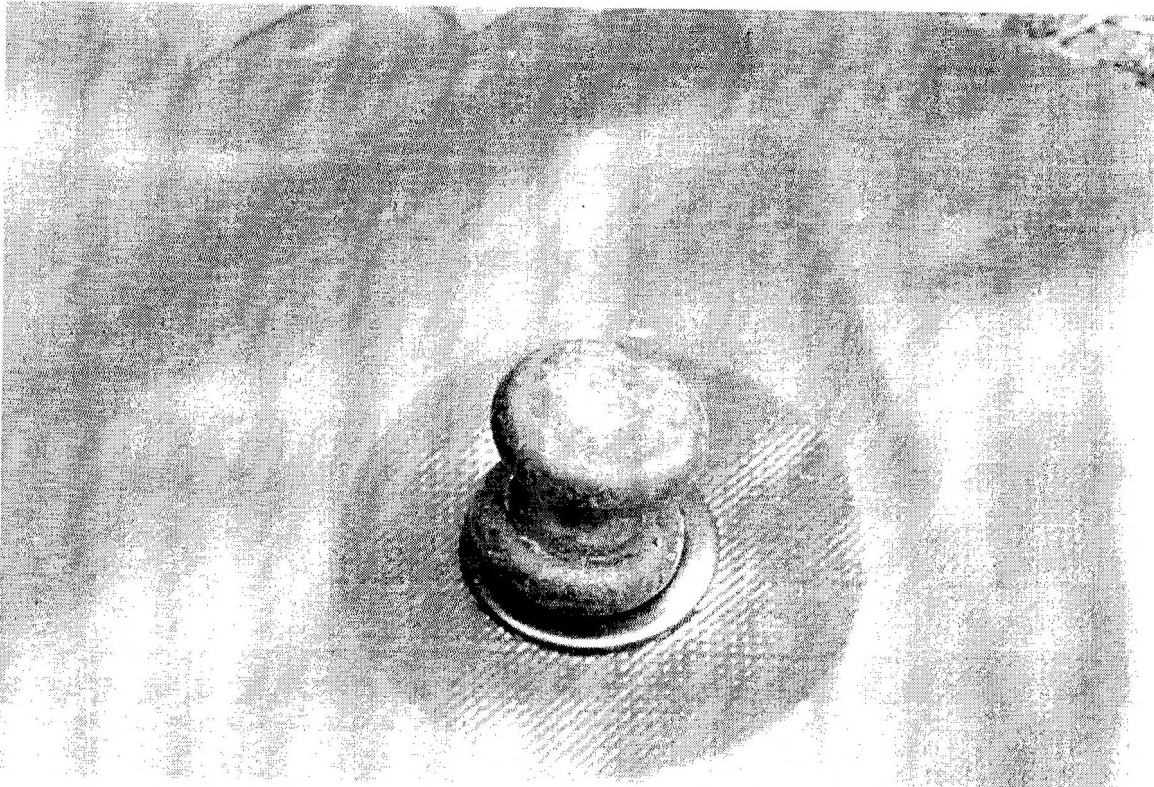


Figure 50: Sod Cloth Pins installed (J11/8340-99-137-3895)

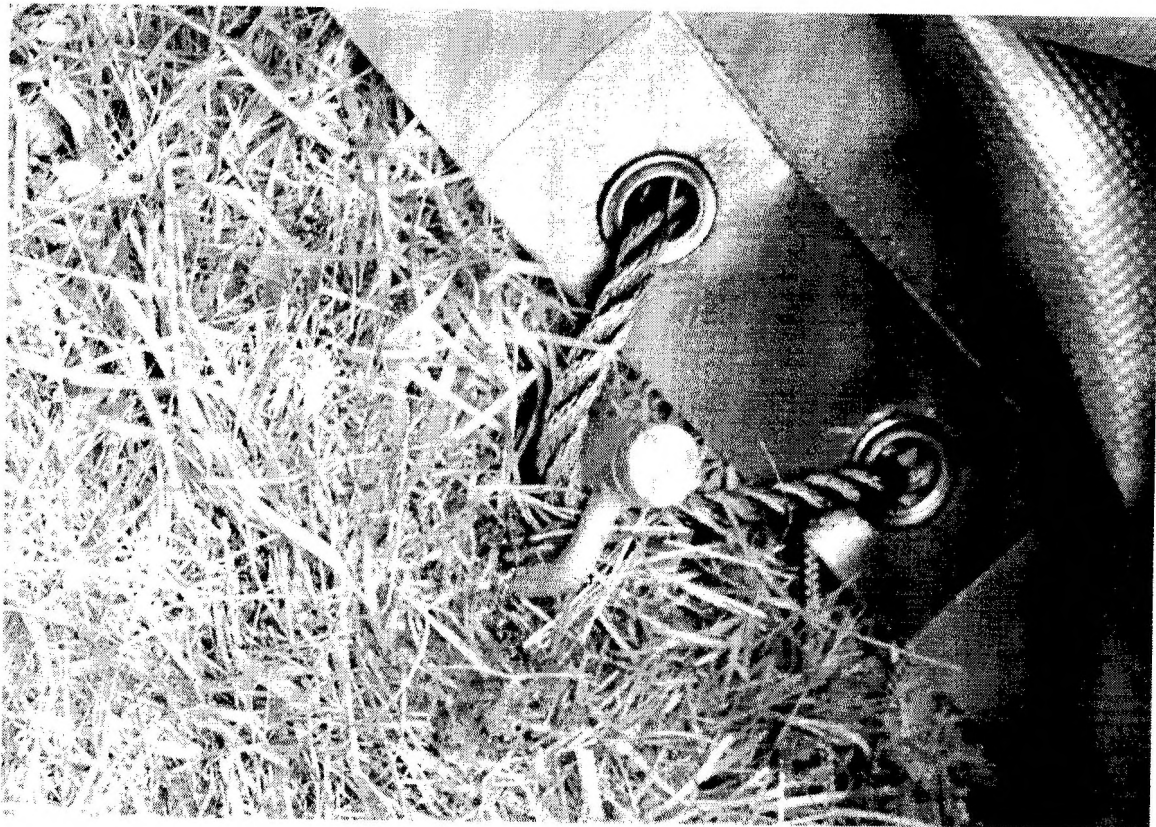


Figure 51: Internal Pins (J11/8340-99-132-0028)

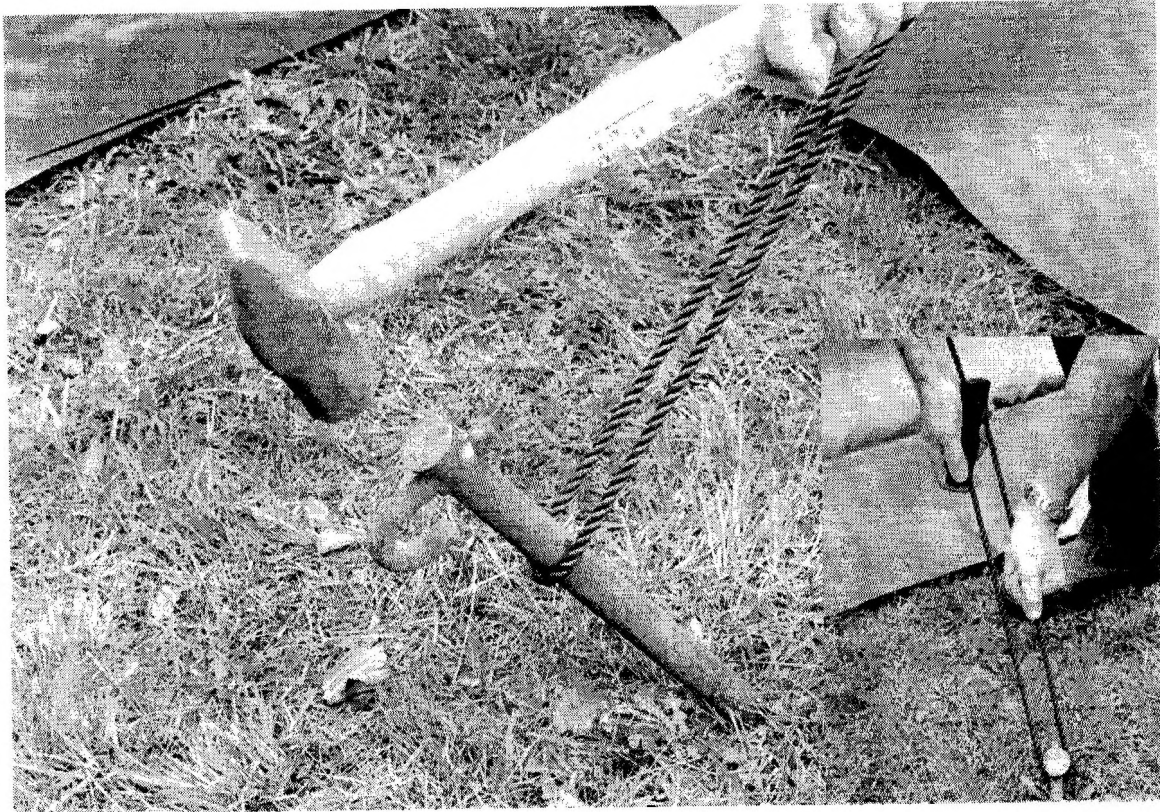
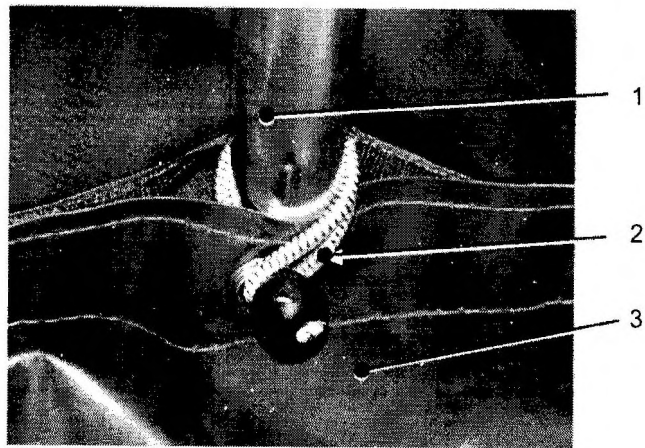


Figure 52: Installing Guy Rope, Weather Flap or Overstrap Pins (J11/8340-99-943-9052)

51. The Overstrap (J11/8340-99-575-0778) (Qty 3) and End Guy Strap (J11/8340-99-126-4530) (Qty 2) Fig 37 and 38 should now be pegged down.
52. The Overstrap should be fitted at both ends and in the centre and installed using (Qty 6) (J11/8340-99-943-9052) Pins pulling the strap directly 180° from the tent and installing the pins so that the Overstrap is tight. The Pin should be driven at an angle of approximately 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.
53. The End Guy Rope pulls back over the roof and is pegged to the ground with the straps approximately 45° to the end wall, this will be approximately in line with the centre of the tent. The strap should be fitted at both ends and in the centre and installed using (Qty 4) (J11/8340-99-943-9052) Pins pulling the strap directly 180° from the tent and installing the pins so that the Overstrap is taught but not too tight. The Pin should be driven at an angle of approximately 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.
54. The Ground Sheet (J11/8340-99-196-7832) (Qty 1) is fitted by tightening the cord in the corners of the ground sheet to form a "bath tub". The sheet is then laid on the floor over the base restraint straps, evenly positioned and connected to the Velcro around the walls of the tent Fig 54.
55. It is then connected to the frame using tensioners Fig 53 (J11/8340-99-865-3035) down inside the shelter and fix this to the framework (If being fitted).



- Item 1: Framework
- Item 2: Tensioner
- Item 3: Groundsheet

Figure 53: Attachment of groundsheets with tensioners



Figure 54: Tent with Groundsheet Installed

DETAILED OPERATING INSTRUCTIONS

56. The tents are fitted with standard doors and windows and operation is generally self-evident given that the deployment of the camp has been undertaken in accordance with the correct procedures. A few areas warrant specific note as detailed below:

57. There are two (2) types of end wall available, the Profile End Wall (J11/8340-99-155-6628) (standard) and the Dual Attachment End Wall (J11/8340-99-177-3894) Fig 55. The latter enables connection to the 12 x 12, porch and passageway tents.

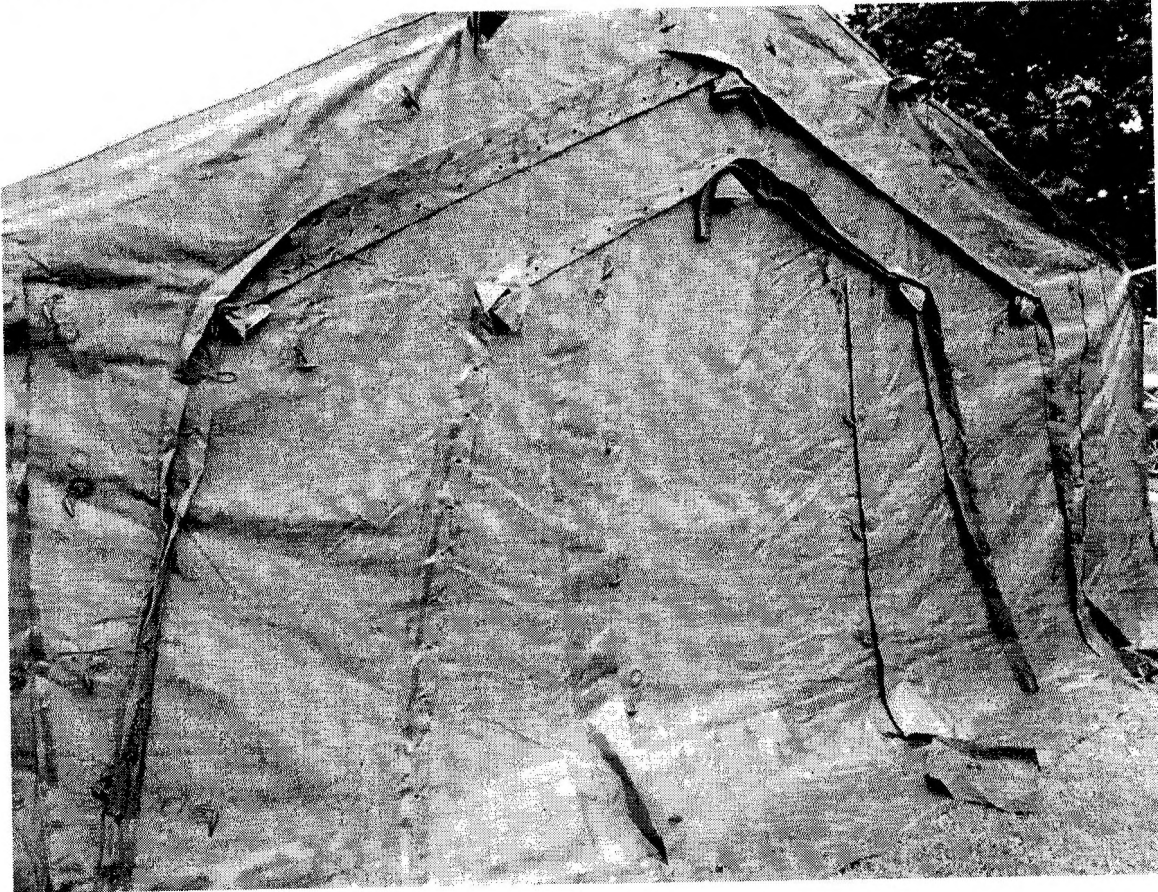


Figure 55: Dual End Wall (J11/8340-99-177-3894) alternative to (J11/8340-99-155-6628)

Doors and Zips

58. Where zips are utilised such as Doors and fly screens heavy duty zips are utilised. However, these still need to be operated with care and must be kept clean.

59. Fly screens are available on most doors, these can be zipped open rolled up.

Windows

60. Operation of the windows is simple, however to minimise the visual signature the canvas should be rolled up so that only the green side is visible and tied back in position using the toggles Fig 56 and Fig 57.

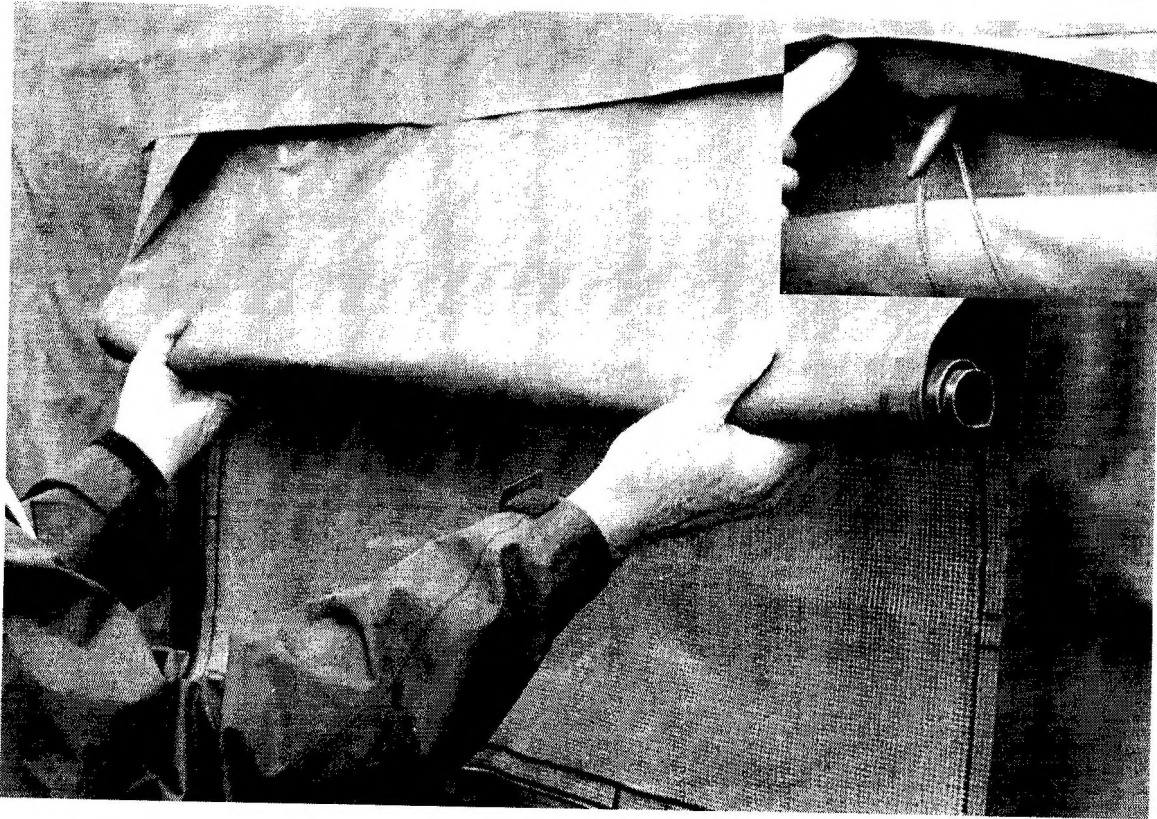


Figure 56: Window adjustment

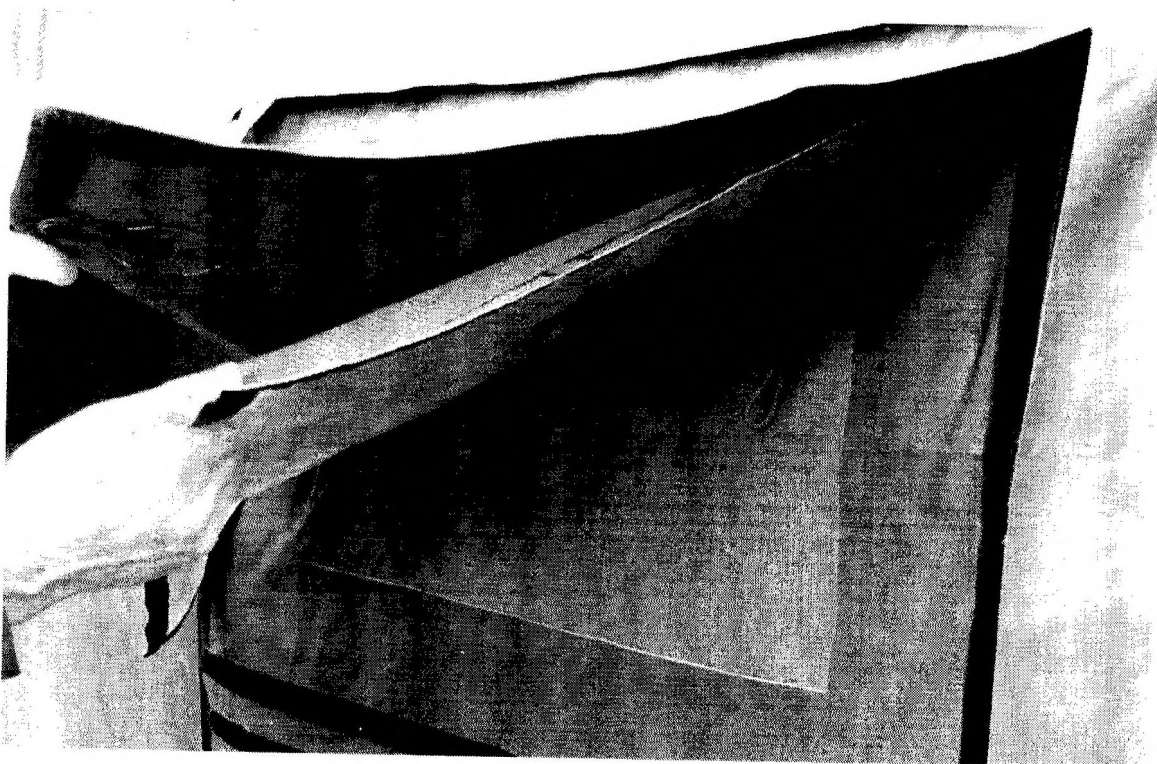


Figure 57: Window adjustment for ventilation

HARD FLOORING IF FITTED (J11/8340-99-551-0054)

61. Place the hard flooring (Fig 58) over the groundsheet (Item 3 from Fig 53) (if used). Do not place hard flooring on hard surfaces. Flooring clips together in sections. Fold flooring back on its self to dismantle.

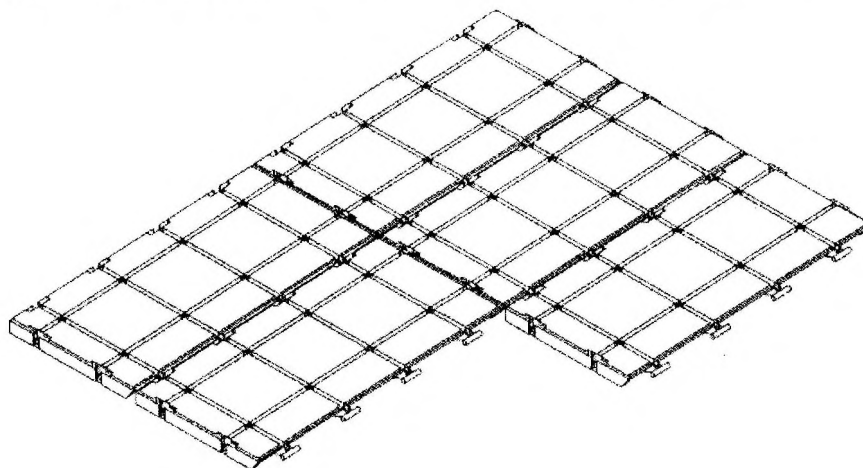


Figure 58: Installation of hard flooring

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

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CHAPTER 2

OPERATING INFORMATION INSULATION NSN 8340-99-421-2154

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INSTALLING INSULATION

63. The insulation is fitted between the PVC covers and the frame. The roof insulation has to be fitted prior to the main PVC cover in the early part of the shelter construction once the frame roof is erected.

64. Additional insulation support straps must be laid over the roof frame (J11/8340-99-425-9476) (Qty 4). The roof insulation panel should then be attached to the framework. Attach the top of the insulation end sections to the framework by using tensioners (4020-99-908-8176) (Qty 150).

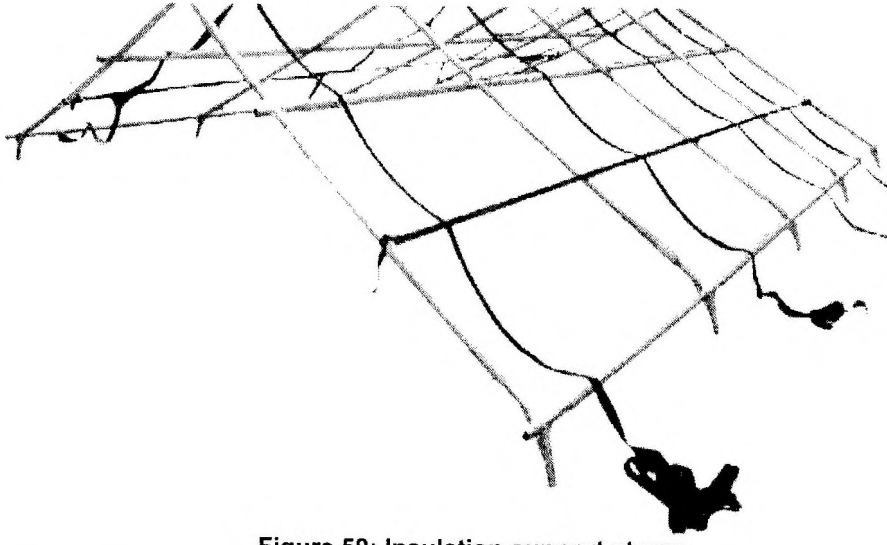


Figure 59: Insulation support straps

65. 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 Fig 60.

NOTE: The insulation panel must be fitted during tent erection - all other panels may be fitted after erection.

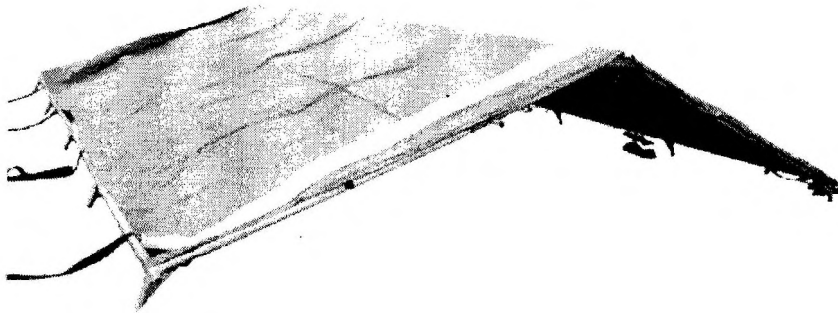


Figure 60: Roof frame with attached insulation panel

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.

66. 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 61 and Fig 62.

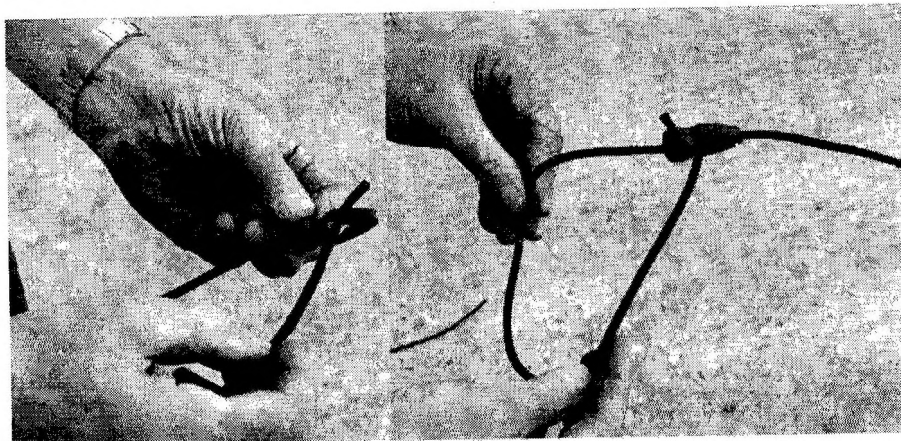


Figure 61: Tensioner loose and locked

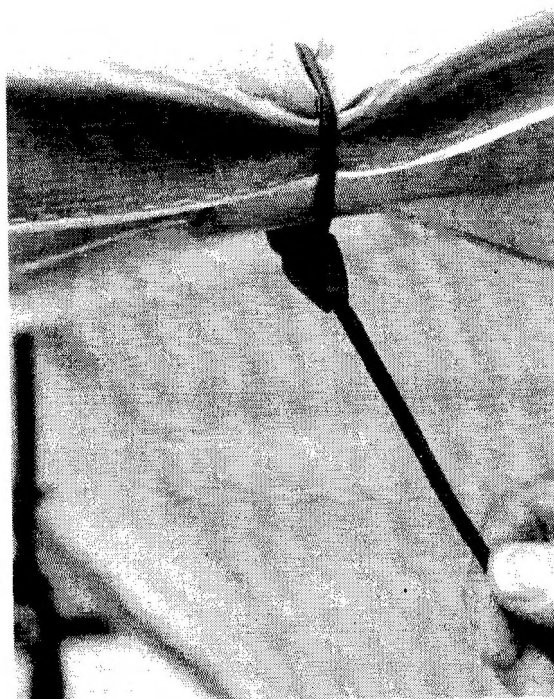


Figure 62: Tensioner Fitted

67. Fit and secure the roof insulation support straps ensuring that loose ends are tidied away Fig 63.



Figure 63: Correct attachment of insulation support strap

68. Once the tent is fully erected with the roof insulation fitted and the PVC covers fitted the wall insulation can now be fitted. The Mk 4 Insulation end panel consists of 5 items per end and are shown in Fig 64, viewed from the inside.

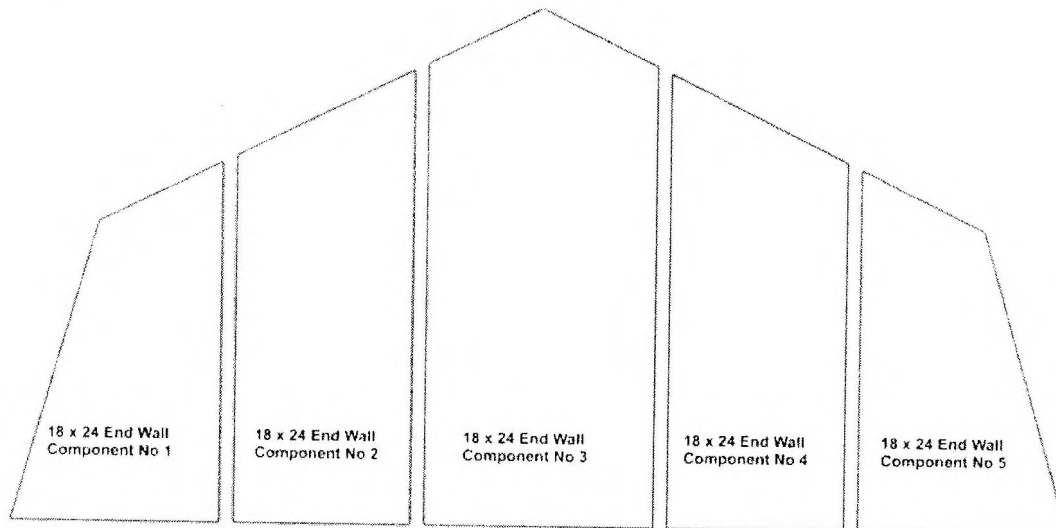


Figure 64: The Mk 3 Insulation end panel (Viewed from inside)

69. Lay the 5-end wall component insulation panels at each end of the shelter.
70. Attach component 3 end wall with tensioners to the roof panel ensuring the tensioners are fitted around the poles.
71. Fit components 2 and 4 ensuring that they overlap on the outside. Fit components 1 and 5 ensuring that they overlap on the outside Fig 65.

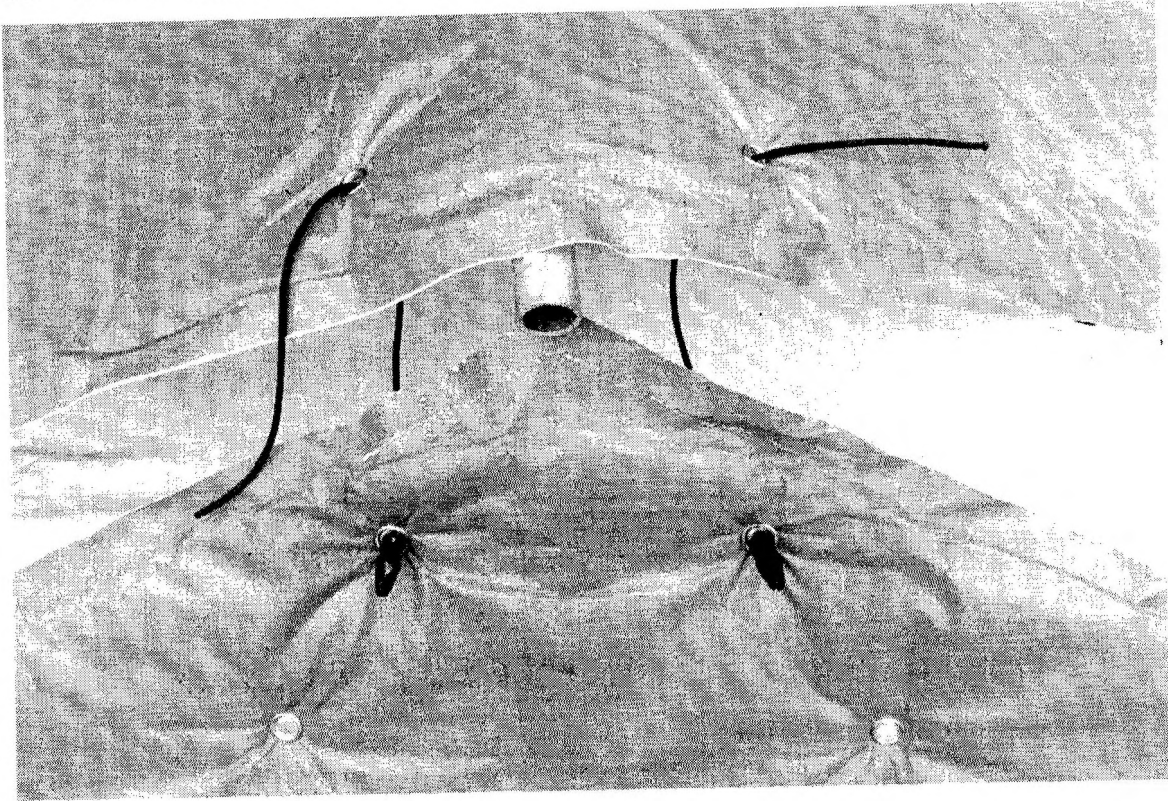


Figure 65: Overlap insulation using toggles and eyelets

72. Attach the 4 insulation wall panels (2 per side). Each insulation wall panel consists of 4 components (qty 8 per side). Attach the wall panels with the tensioners, loosely at first. Working from the inside ensure that all panels are fitted correctly before tightening the tensioners fully Fig 66 and 67.
73. The insulation roof panel must overlap the top of the wall panels on the PVC cover side. Viewed from the outside the side wall panels should overlap the inner panels.



Figure 66: Wall insulation panel (Typical arrangement)

74. To provide access the centre end wall panels should be rolled up from the inside Fig 67.

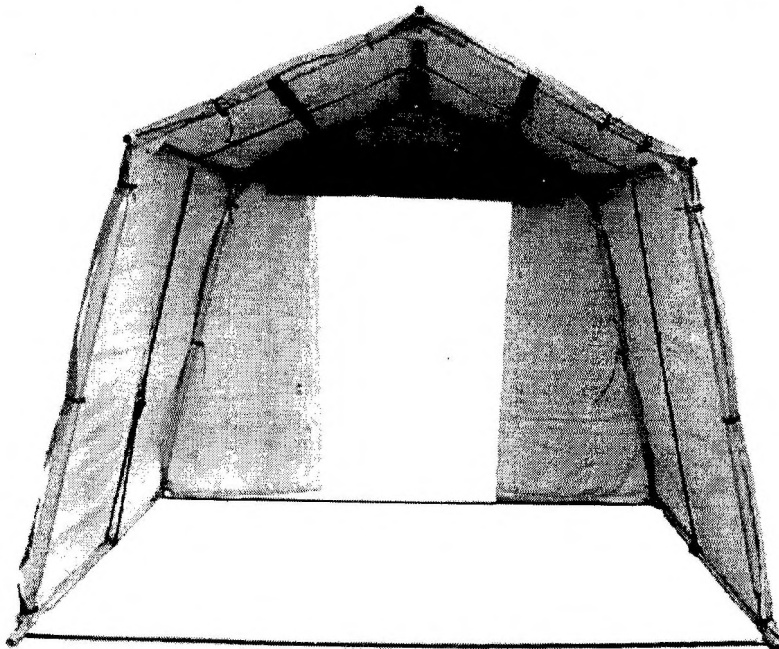


Figure 67: Access (Typical arrangement)

75. The windows may be opened by releasing the top tensioners and folding the insulation panels down between the panel and the PVC cover Fig 68.



Figure 68: Window (Typical arrangement)

76. If an Environmental Control system is to be fitted a replacement insulation panel can be attached to align with the opening on the cover sheet Fig 69. Release the bottom tensioners and fold the insulation wall panel up between the panel and the cover. Slide the ECU panel into position and fasten into place with tensioners.

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

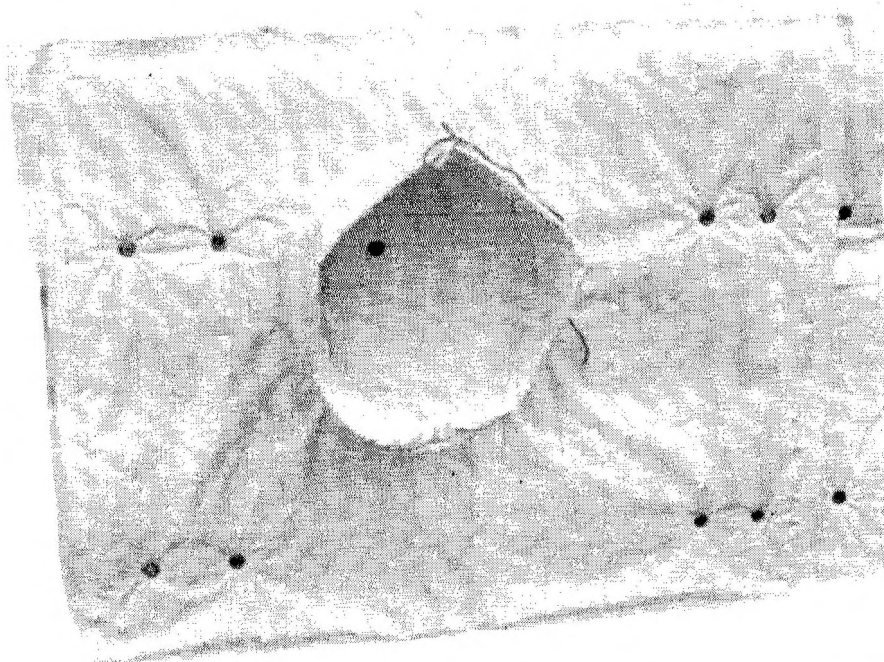


Figure 69: ECU Insulation panel (Typical arrangement) (J11/8340-99-727-5236)

STRIKING**CAUTION**

EQUIPMENT DAMAGE. Wet PVC cover 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. In cases where the PVC cover has to be packed wet it must be removed from the packing, washed and dried as soon as practically possible.

78. Striking the shelter is the reverse of the pitching procedure, noted the following key points:
- 78.1. Close all doors and windows
 - 78.2. Remove and stow all ground pegs, they are a trip hazard and could damage the covers.
 - 78.3. Remove and stow all loose parts i.e. Ground Sheet, Overstraps, End Guy ropes etc
79. The Bag Tent Poles (J11/8340-99-155-6630) stows Qty 24 Universal Member, 6ft (Poles) (J11/8340-99-132-0006) and Qty 5 Universal Member, 3ft (Poles) (J11/8340-99-132-0007).

FOLDING

80. Folding and packing of PVC cover is to be carried out using the following process:

Shelter cover end

81. To fold the shelter end, proceed as follows:
- 81.1. Lay out PVC cover with outer side uppermost and brush off as much dirt and debris as possible.
 - 81.2. Fold in half to centre of door opening.
 - 81.3. Fold the top and side in to form a square and then fold in half.
 - 81.4. Fold twice to make a strip approximately 1 m (3 ft.) wide.
 - 81.5. Finally, roll to form the smallest possible bundle.

Shelter cover roof and wall

82. To fold shelter panels, proceed as follows:
- 82.1. Lay out PVC cover with outer side uppermost and brush off as much dirt and debris as possible.
 - 82.2. Fold the sides to the centre.
 - 82.3. Fold once more in the same manner.
 - 82.4. Fold the walls to the ridge.
 - 82.5. Finally, roll to form the smallest possible bundle.

Insulation panels

83. To fold the insulation roof panels lay the sheet flat on the floor and fold the long side in half and then in half again making them 25% of the original length. Then roll up from one end into the smallest package possible.

84. The end wall panels are to be folded in half and half again. These are quite small and do not need rolling.

PACKING

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

85. To pack the shelter, proceed as follows:
- 85.1. Place the folded shelter PVC cover in the Valise with the straps.
 - 85.2. Place the shelter frame components and the tent pins in the bags provided.
 - 85.3. Place the rolled insulation panels in the insulation valise.

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CHAPTER 3
MAINTENANCE INSTRUCTIONS
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Introduction

86. 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 PVC covers

87. Common causes or damage to covers are as follows:

- 87.1. Burns - due to careless smoking or siting shelters near braziers or incinerators.
- 87.2. 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 PVC cover at any point. Gangways are essential in case of fire.
- 87.3. Tears in the sod-cloth can be caused by walking on it if there are sharp stones or rubble beneath, or if sharp rubble is used to ballast the shelter.
- 87.4. Damage to the fabric may occur as a result of folding PVC cover when wet, or on ground contaminated by oil etc.
- 87.5. 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 PVC cover. PVC cover 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 PVC cover. Grease and fats will also become a fire hazard unless cleaned.
- 87.6. Grease or oil on the hands or clothing of personnel handling or using the tentage will cause damage if in contact with the PVC cover.
- 87.7. Care must be exercised when loading or unloading tentage into or from vehicles to avoid damage from contact with projections on the vehicle as well as slip, trip and fall.
- 87.8. In overseas theatres, where native flora and fauna may damage the PVC cover, regular checks should be carried out.
- 87.9. When joining a number of shelters together, care should be taken to avoid abnormal stress being placed on the PVC cover.
- 87.10. 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.

Repairs to PVC Covers

NOTE: The glue utilised is contact adhesive which is solvent based, only use the glue in a ventilated environment and use the appropriate PPE.

88. The PVC patch used must cover the fabric by at least 5 cm beyond the limit of the tear to offer an equivalent strength. For damage to the main PVC cover, a single repair to the external face of the main cover is sufficient, unless the tear is particularly large (>20cm). Shape the patch as required if damage occurs on a complex area of the cover or at a joint.

89. Surface Preparation:

- 89.1. Carefully clean the PVC surface around the tear and dry thoroughly prior to applying adhesive. Use fine rasp or sandpaper to lightly roughen the area where patch is to be applied, roughen under surface of patch in the same manner. Ensure repair area is kept dry until adhesive has set.
- 89.2. Support the PVC cover against a flat surface to allow the patch to be securely applied.

90. Gluing:

- 90.1. Apply adhesive in a thin, consistent layer to both the patch and the area where the patch is to be applied to ensure positive bonding of the two elements. Apply adhesive from the middle of the patch outwards. Ensure adhesive is applied to the correct side of the patch so that the visible face matches the PVC cover colour Fig 71.
- 90.2. Affix the PVC cover patch to the external canvas and apply careful pressure to remove any bubbles or air pockets with roller Fig 72.
- 90.3. Leave to set for two hours before moving the cover.

Serial (1)	Item (2)	D of Q:	DMC	NSN (3)
0	Repair Kit	Each	J11	8340-99-362-8303
1	HH-66 Vinyl Cement - Tube 100ml	Tube		
2	Black adhesive tape	Each		
3	Triangular File	Each		
4	Standard Fabric - Green Grey	m2		
5	OFCS Textile Fabric - Green Green	m2		
6	Floor Textile Fabric - Green	m2		
7	Fly Screen Material	m2		
8	Sanding Paper	Each		
9	Cutter 18 mm	Each		
10	Plastic Box	Each		
11	Repair Instruction Sheet	Each		
12	Safety Data Sheets	Each		

Table 2: PVC Cover Repair Kit

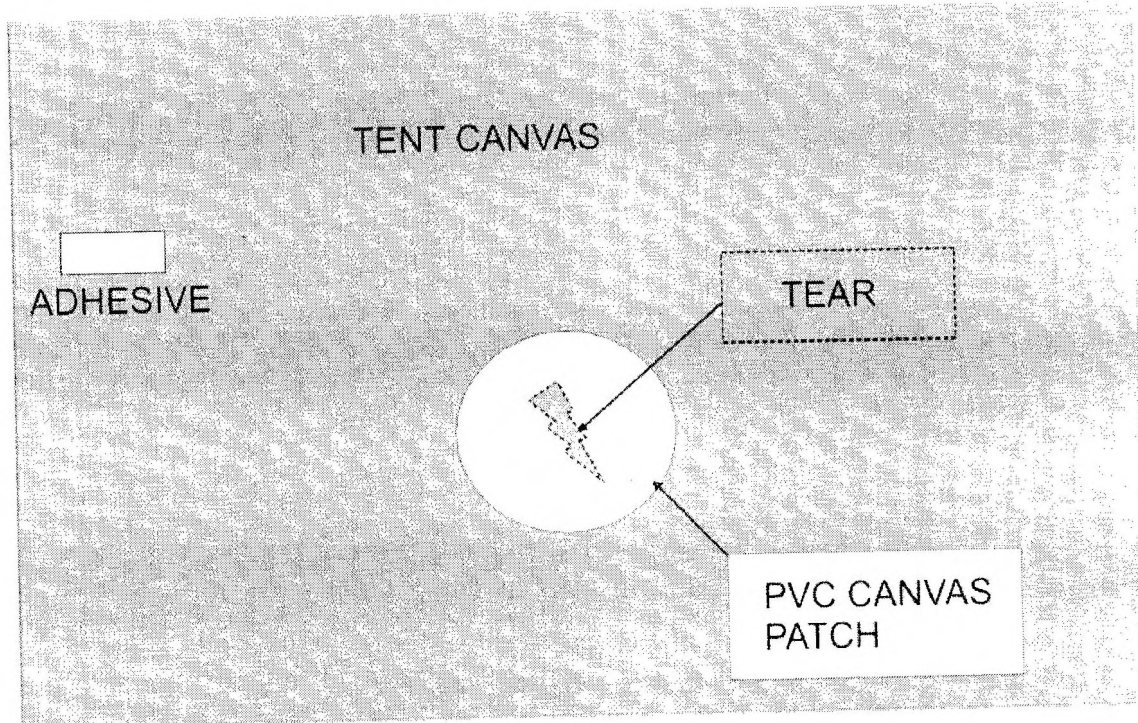


Figure 70: PVC Cover Repair, spreading of glue



Figure 71: Glue application

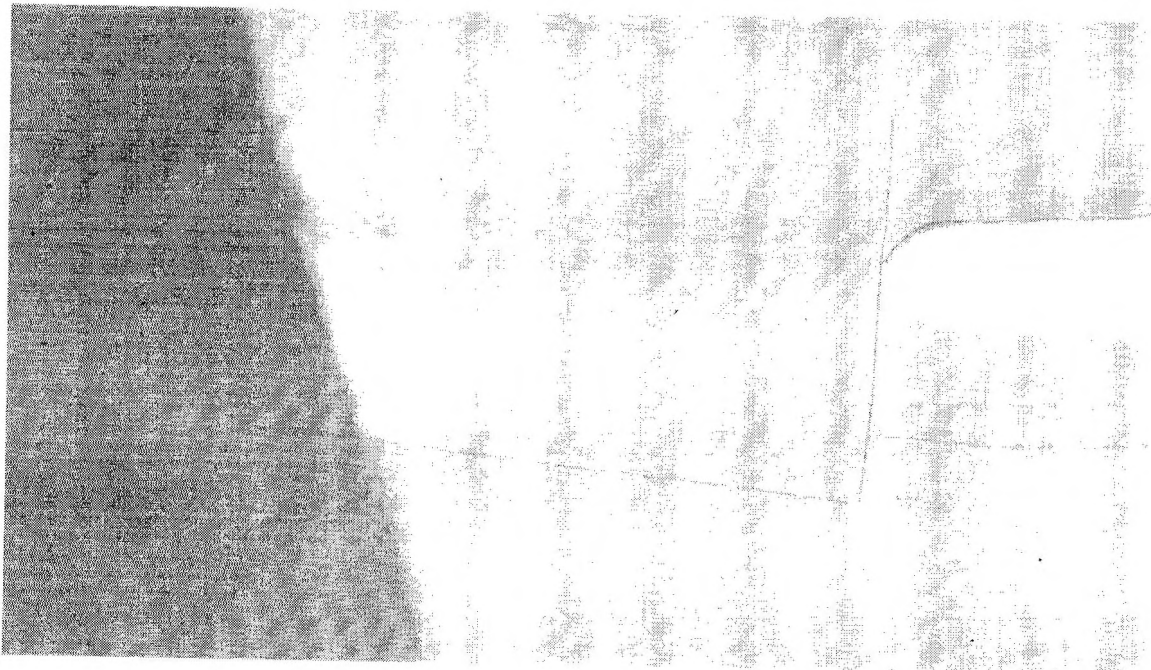


Figure 72: Completed Repair

EFFECTS OF DAMP

91. PVC cover can be subjected to mould growth, whilst this can generally be cleaned off some forms of mould are hazardous to health.
92. All PVC cover must be thoroughly dry before storing. Stacks should be examined periodically, and any damp or suspect cover removed and examined immediately.
93. Storehouses employed for storing tentage should be inspected regularly for any sources of water ingress.
94. Shelter weather lines and ropes should be dry before storing.

DAMAGE TO POLES AND BRACKETS

95. Common causes of damage to shelter poles are as follows:
 - 95.1. 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.
 - 95.2. 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.
 - 95.3. 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.
 - 95.4. Excessive loading to the roof such as snow, sand and other debris. Personnel should never climb on or over any shelters.

DAMAGE TO INSULATION**CAUTIONS**

EQUIPMENT DAMAGE. Rips and tears must be repaired immediately to maintain the insulation integrity.

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

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

Table 3: Insulation repair kit

97. To carry out a repair on the insulation fabric outer cover proceed as follows:
- 97.1. 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.
 - 97.2. 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.
98. To carry out a repair on the insulation inner material proceed as follows:
- 98.1. 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.
 - 98.2. 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.
99. Repairs that require a patch larger than supplied in the repair kit will require the panel to be replaced.
100. Where damage to the eyelets has occurred, this will require the panel to be replaced.

Personal Protective Equipment (PPE) JSP 437

101. Table 4 details some of the NATO Stock Numbers (NSNs) of suitable Personal Protective Equipment (PPE) for personnel when carrying out repairs.

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
	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	

Table 4: PPE

GUIDANCE FOR CONDITIONING ITC/GS TENTAGE SYSTEMS

102. **PVC Cover** – Users must periodically inspect their tentage on the condition based approach for service life outlined below. The new PVC tent provides fire protection, however at any point should users be concerned with the level of fire protection or firefighting systems being applied to their deployed tent systems they must raise it through the chain of command.

103. **Existing Cotton Canvas Tentage.** Users must periodically inspect their tentage on the condition based approach for service life outlined below. At any point should users be concerned with the level of fire protection or firefighting systems being applied to their deployed tent systems they must raise it through the chain of command.

104. **Current General Service (GS) Cotton Canvas, including ITC Canvas.** The condition of the canvas is key, when the material becomes thin and worn it begins to lose its fire-retardant properties. OI 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 GS canvas is 4 years of continuous use, however OI have tested 30-year-old samples and found them to achieve the required standard. The material characteristics degrade when the wearing factors are combined, the actual service life of 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.

105. The GS canvas retains its fire-retardant properties as long as the material remains intact:

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

105.2. There must be no open tears in the fabric.

105.3. There must be no holes in the fabric.

106. **Current General Service (GS) in service Insulation.** The condition of the insulation is critical. The GS current in service insulation must be in good condition. The minimum deployed life for 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 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.

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

106.2. There must be no damage to the inner layer.

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

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

106.5. The insulation must be attached to the tent frame by all points specified within this AESP.

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

106.7. The insulation outer layer is a protective layer and some minor damage may be acceptable. Materials included within the repair kit (J11/8340-99-839-8761) are to be used in accordance with manufacturer's instructions.

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