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TRUCK 4 TONNE 4x4 BEDFORD MJ
(ALL VARIANTS)

INSTALLATION INSTRUCTIONS

BY COMMAND OF THE DEFENCE COUNCIL

Sponsor:
DGEME(A)

Alvin Whitmore.

Ministry of Defence

Publications Authority:
Vehs & Wpns Br REME
Project No: 7b(1) 2161 (251)
File ref: 7b(1) 2161/AESP/BVP

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AMENDMENT RECORD

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PREFACE

1 The controlling publication authority for this sub-category is:

Vehicles and Weapons Branch REME
Chobham Lane
Chertsey Surrey KT16 OEE

2 All installation instructions as issued are to be recorded on the instruction index provided. Amendments to individual installation instructions are to be recorded on the Instruction Amendment Record. All extant instructions and amendments can be found listed in the main AESP Index.

3 Amendments are identified by marginal side linings.

4 Comments on Instructions are to be forwarded to the appropriate Publication Authority in accordance with AESP 0100-P-011-013.

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TRUCK 4 TONNE 4x4 BEDFORD MJ

(ALL VARIANTS)

INSTALLATION INSTRUCTION NO 1

Sponsor:
DGEME(A)
File ref: D/DGEME/125/1/12

Publications Authority:
Vehicles and Weapons Branch REME
Project No: 7b(1) 2161 (251)
File ref: 7b(1) 2161/AESP/BVP

AMENDMENT RECORD

Amdt	Incorporated by	Date		Amdt	Incorporated by	Date
1				4		
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SUBJECT: Preparation of vehicle to accept NAIAD equipment

(MAE 12-2033)

INTRODUCTION

1 This instruction details the action necessary to prepare the vehicle to accept NAIAD equipment.

ASSOCIATED PUBLICATIONS

2 Nil.

INSTALLATION ILLUSTRATIONS

3

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3	Load space bulkhead drilling	7
4	Location of cable drum	8

IMPLEMENTATION PLAN

Applicability

4 This installation is applicable to Truck Cargo 4x4 Bedford MJ (all variants).

Action required by:

5 Units and establishments holding subject vehicles

- 5.1 When authorised by unit Command HQ demand issue of (Z8 2540-99-735-2343) NAIAD equipment installation kit.
- 5.2 Record installation instruction details in vehicle documents.
- 5.3 On receipt of stores request REME Workshops to embody this installation.

6 Units and establishments embodying this installation

- 6.1 This installation is to be carried out by units authorised to carry out levels 2, 3 and 4 repairs.
- 6.2 Units embodying this installation are to enter completed details in vehicle documents.

Man hour content

- 7 Estimated time: 8 man-hours.

Associated Modifications

- 8 Nil.

EQUIPMENT TOOLS AND STORES

9 Stores required

TABLE INSTALLATION KIT LIST

(Z8 2540-99-735-2343) NAIAD equipment (comprises items 1 to 18)

Item No	COSA Section	Designation	NSN/Part No	Qty per veh
(1)	(2)	(3)	(4)	(5)
1		Detector base plate	FV 970554	1
2		Detector tray sub assy	FV 986045	1
3		Ancillary bracket	FV 986005	1
4		Battery tray sub assy	FV 899908	2
5		Remote alarm box sub assy	FV 970510	1
6		Spacer	FV 986073	16
7		Backing plate	FV 899760	1
8		Cable drum bracket	FV 899704	1
9	G1	Screw M6 x 20	5305-99-122-5361	4
10	G1	Screw M8 x 16	5305-99-122-5365	10
11	G1	Screw M8 x 40	5305-99-122-8667	4
12	G1	Bolt M8 x 60	5306-99-122-6453	8
13	G1	Nut M8	5310-99-122-5296	14
14	G1	Washer M6	5310-99-122-6474	4
15	G1	Washer M8	5310-99-122-6475	36
16	G1	Single coil lockwasher M6	5310-99-137-9232	4
17	G1	Single coil lockwasher M8	5310-99-138-9227	22
18		Muffelite mounting and fixings		8
<u>Stores or suitable equivalent to be obtained locally</u>				
19	Y3	Wire black 9/0.30 mm	6145-99-761-3496	As reqd
20	Y3	Wire brown 9/0.30 mm	6145-99-761-3507	As reqd
21		Plug, DCCU	5995-99-117-7436	1

Note ...

Item 2 is normally supplied assembled with appropriate fasteners to item 1 and item 4 is normally supplied assembled with appropriate fasteners to item 3.

Sequence of operations

Note ..

The item numbers of para 9 are used as references throughout this instruction.

10 Carry out the installation as follows:

Refer to Fig 1

10.1 Drill 10 mm dia holes in parcel shelf as shown.

10.2 Remove rifle stowage clips.

Refer to Fig 2

10.3 Fit detector base plate and detector tray sub assembly (items 1 and 2) to parcel shelf using fixings (items 6, 8, 9, 12, 3, 15 and 17) as shown.

10.4 Fit ancillary bracket and battery tray sub assemblies (items 3 and 4) to parcel shelf using fixings (items 6, 10, 11, 13, 15 and 17) as shown.

10.5 Fit remote alarm box sub assy (item 5) to ancillary bracket (item 3) using fixings (items 12, 13, 15, 17 and 18) as shown. The remote alarm box sub assembly (item 5) will need to have holes drilled in the base to accept the muffleite mountings (item 18).

10.6 Fit DC charging unit fixings (items 10, 15 and 17) to ancillary bracket (item 3) as shown.

Refer to Fig 3

10.7 Drill 10 mm dia holes in load space bulkhead as shown.

Refer to Fig 4

10.8 Fit cable drum bracket and backing plate (items 7 and 8) to load space bulkhead using fixings (items 12, 13, 15 and 17) as shown.

10.9 Route brown feed wire (item 20) from ignition line fuse junction connector and black earth cable (item 19) from ground junction connector from position under dash panel up the inside of the windscreen pillar (RH for RHD, LH for LHD), along inside of roof lining, down rear pillar and across rear parcel shelf to the front of the ancillary bracket (item 5).

10.10 Cut wires to length required and connect DC charging unit plug (item 21).

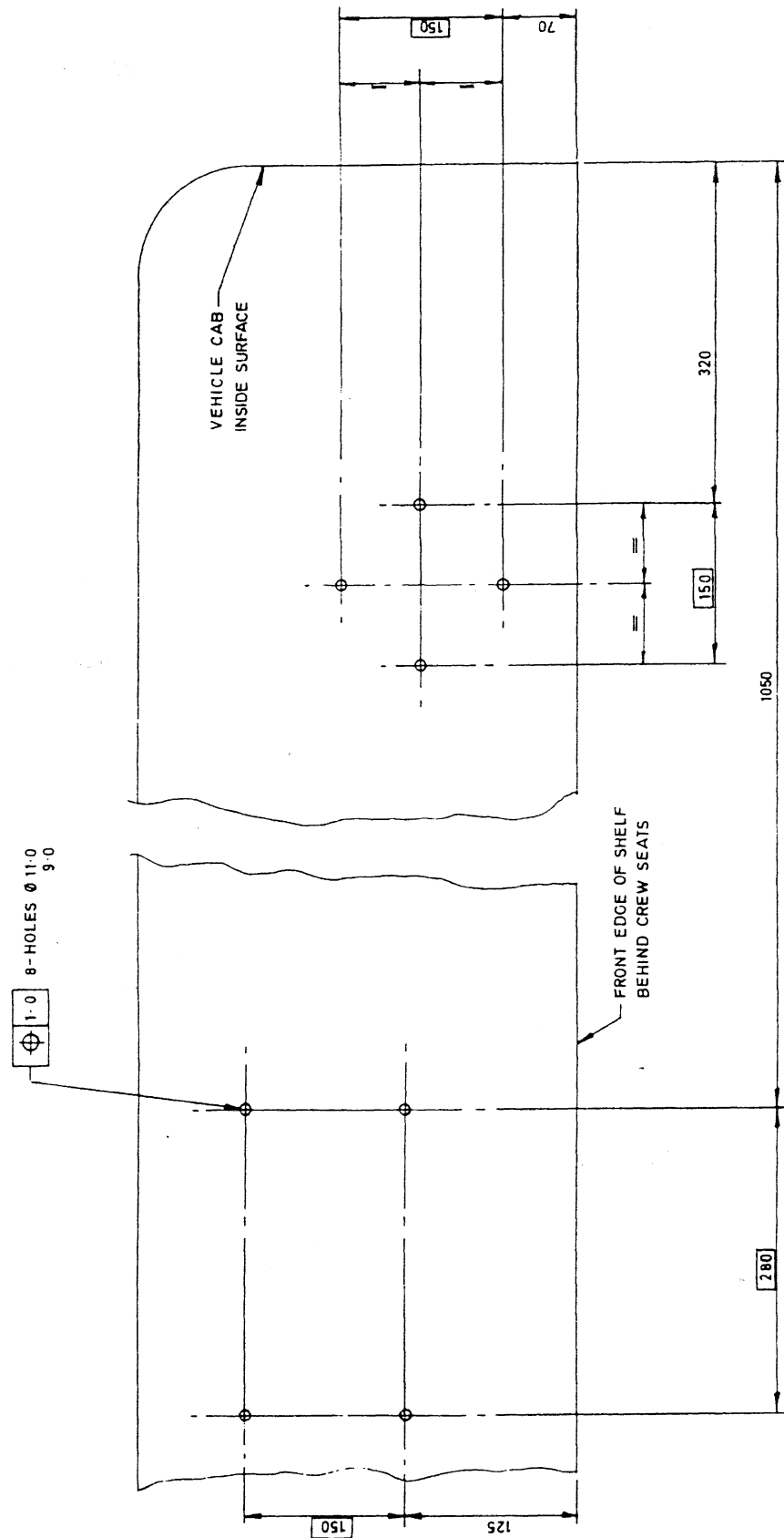
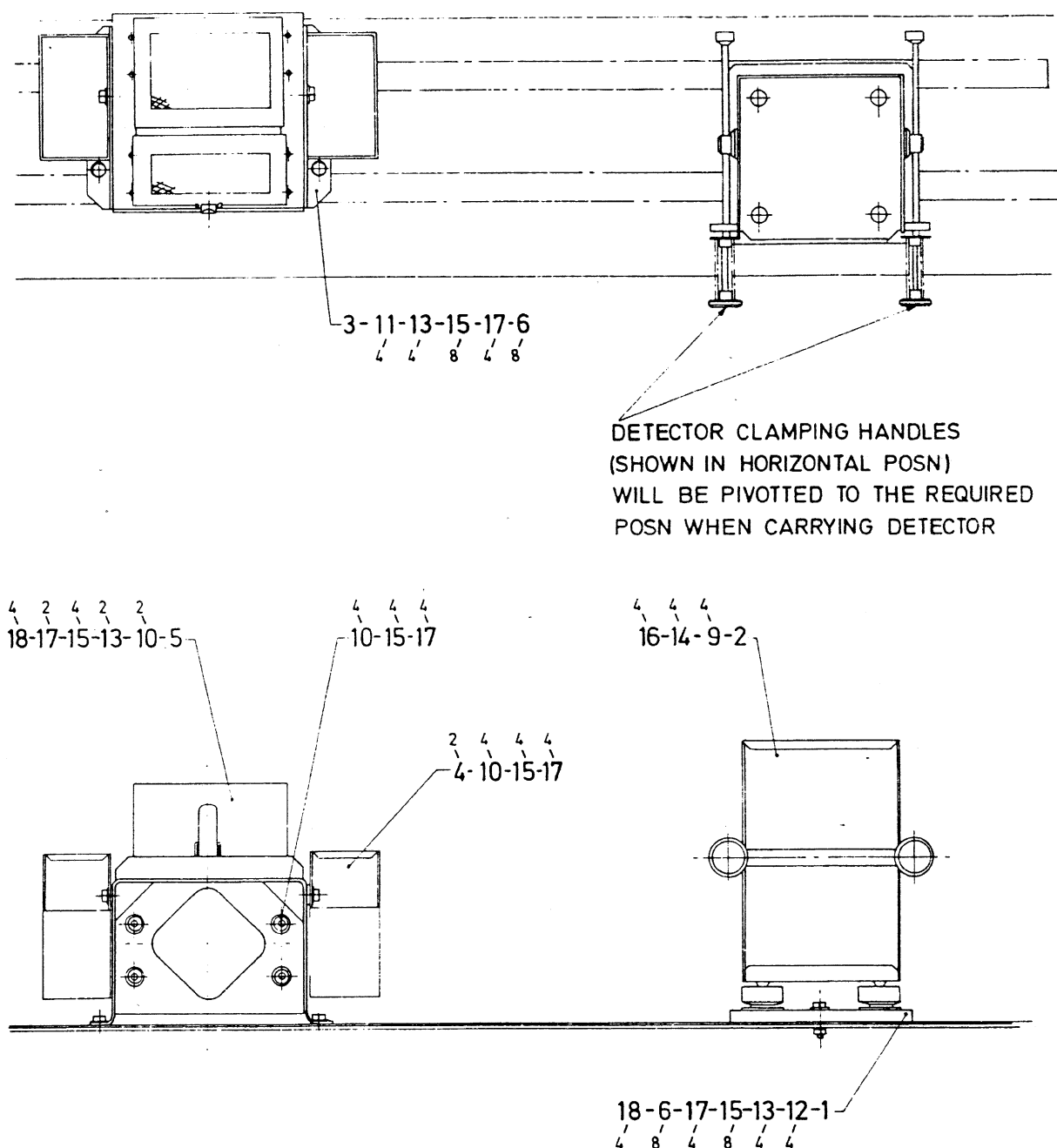


Fig 1 Parcel shelf drilling
(Dimensions in mm)

V7868/1



VIEW FROM FRONT OF VEHICLE

V8133/1

Fig 2 Location of NAIAD equipment

VEH TYPE	X	Y
GENERAL SERVICE	1000	280
CRANE	280	50

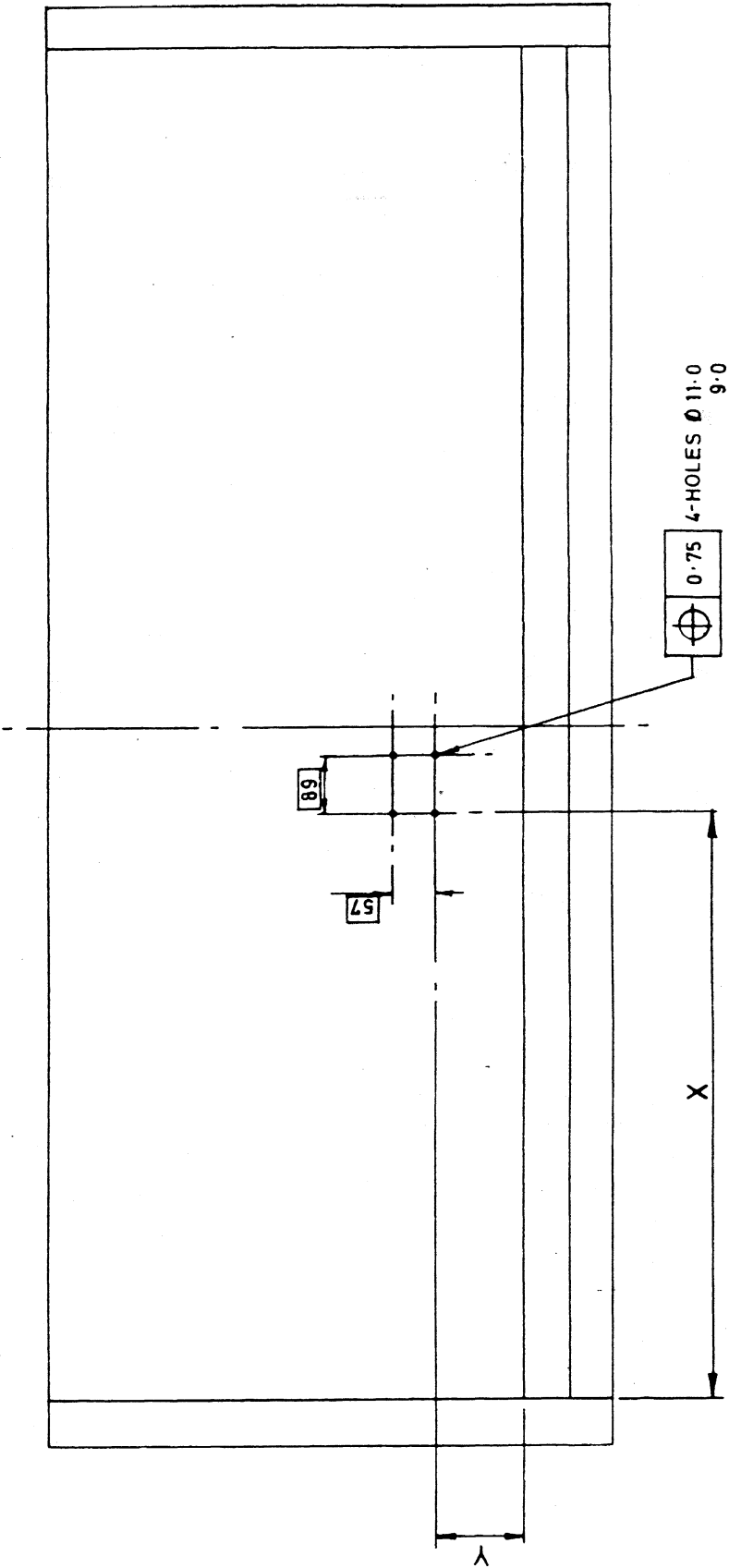


Fig 3 Load space bulkhead drilling
(Dimensions in mm)

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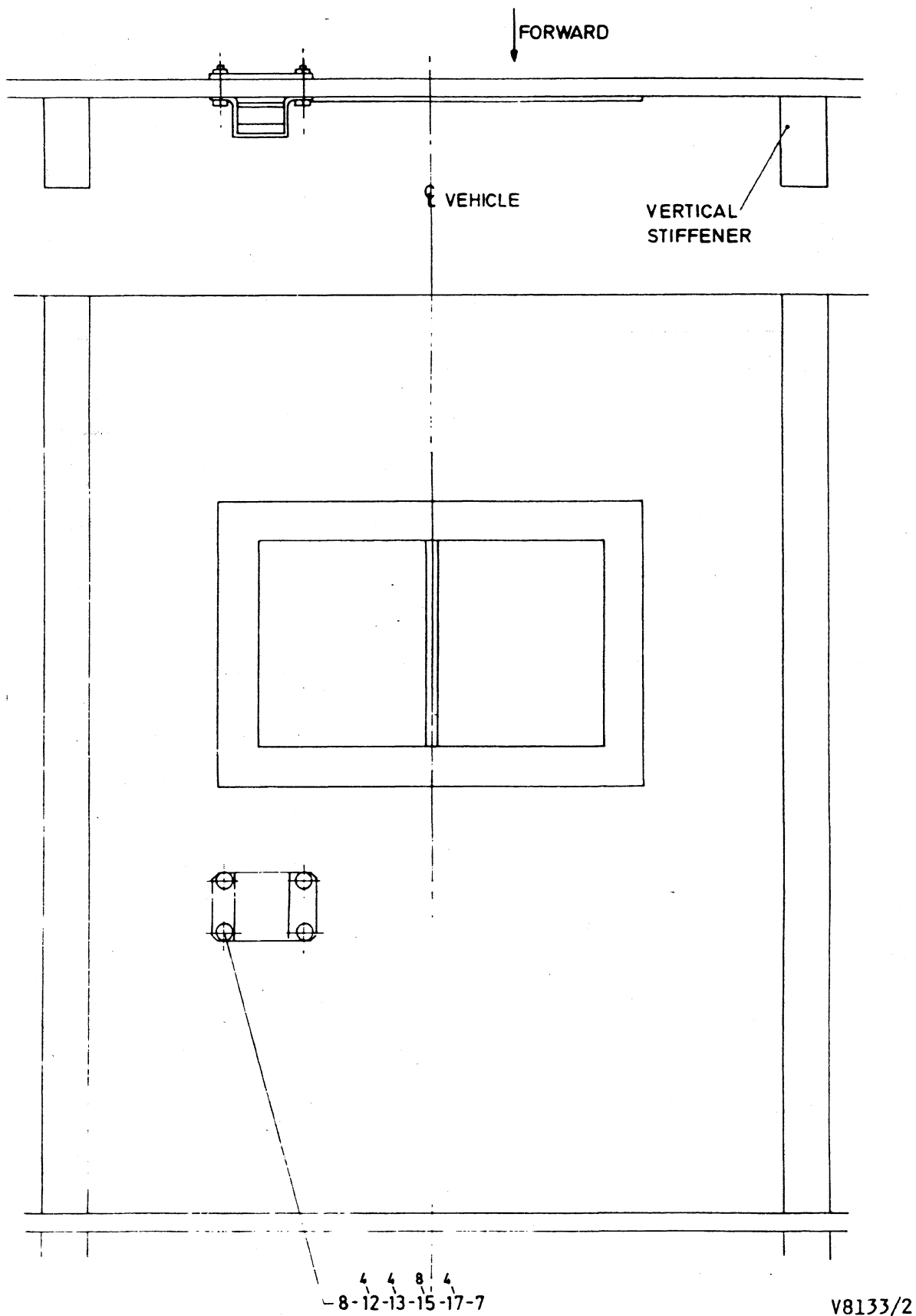


Fig 4 Location of cable drum

TRUCK, 4 TONNE, 4x4, BEDFORD MJ (ALL VARIANTS)

INSTALLATION INSTRUCTION NO 2

Sponsor:
D/DMTSE(RAF)

Publications Authority:
Vehs and Wpns Br REME
Project No: 7b(1)2180(262)
File ref: RAF 3/87

AMENDMENT RECORD

Amdt	Incorporated by	Date		Amdt	Incorporated by	Date
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SUBJECT: Fitting instruction for the BUNCE Type 'K' Snowplough

INTRODUCTION

1 This instruction details the fitting of the 'K' type BUNCE Snowplough to the following Vehicle Asset Codes (VAC).

1.1 2025-3100

1.2 2025-8100

1.3 2026-3100

1.4 2026-8100

1.5 2091-3100

1.6 2091-8100.

ASSOCIATED PUBLICATIONS AND REFERENCES

2 TABLE 1 - ASSOCIATED PUBLICATIONS

Item	Publication References	Title
(1)	(2)	(3)
1	AP 2496E Vol 1	Snow Clearance Equipment for Attachment to RAF Vehicles
2	MAE/9581/16KB	Range of Spares for Snowplough Type K BUNCE 7RS/3830-99-839-7203

INSTALLATION ILLUSTRATIONS

3 Nil.

IMPLEMENTATION PLAN

Applicability

4 This installation is to be fitted to Truck, 4 Tonne, 4x4, Bedford MJ (All variants in para 1).

Action required by:

5 Units and establishments holding subject equipment/vehicles

5.1 When authorised by Unit MT Officer.

5.2 Record installation instruction details in equipment/vehicle documents.

5.3 Units are to manufacture bracketry as per drawing listed in Table 6. (RAF units only see Annex A for drawing demand form, Form Y030/4).

6 Units and establishments embodying this installation

6.1 This installation is to be carried out by holder units.

6.2 Units embodying this installation are to enter details in vehicle documents.

Man—hour content

7 TABLE 2 — ESTIMATED WORK LOAD PER EQUIPMENT

Task	Man—hours	Tradesmen employed
(1)	(2)	(3)
Manufacturing	10	Gen Tech (W)
Dismantling and Preparation	1.5	MT Tech
	1.0	Gen Tech (E)
Assembly	6.0	MT Tech
	2.5	Gen Tech (E)
Testing	1.0	NCO MT Tech

Associated modifications

8 Nil.

EQUIPMENT, TOOLS AND STORES

Handling, unpacking, cleaning

9 No special instruction required.

Stores required

10

10.1 TABLE 4 - INSTALLATION KIT LIST

Item No	Designation	NSN	Qty	Remarks
(1)	(2)	(3)	(4)	(5)
1	Snowplough	7RS/3830-99-839-7203	1	Bunce 'K' type c/w elect/hyd controls VAC 8064-1200

10.2 TABLE 5 - STORES OR SUITABLE EQUIVALENT TO BE OBTAINED LOCALLY

Item	Designation	NSN	Qty	Remarks
1	Bolt 16x120 mm	G1/5306-99-122-8196	8	
2	Bolt 20x50 mm	G1/5306-99-122-8796	4	
3	Bolt 24x50 mm	G1/5306-99-122-8619	2	
4	Washer 16 mm	G1/5310-99-122-8069	16	
5	Washer 20 mm	G1/5310-99-122-8070	8	
6	Washer 24 mm	G1/5310-99-122-8071	4	
7	Nut Nyloc 16 mm	G1/5910-99-136-9905	8	
8	Nut Nyloc 20 mm	G1/5310-99-122-5504	4	
9	Nut Nyloc 24 mm	G1/5310-99-122-5505	2	
10	Connectors PM3	6MT4/5395-99-725-3534	2	
11	Terminals T152	6MT4/5940-99-839-4251	6	
12	Headlamps	6MT3/6220-99-838-8542	2	

10.3 TABLE 6 - STORES TO BE MANUFACTURED

Item	Description	Fig No	Qty	Remarks
(1)	(2)	(3)	(4)	(5)
1	Snowplough Bracketry		1	Drawing No REME 002398
2	Bracket, Additional lighting		1	Drawing No REME 002371
3	Bracket, Joystick		1	Drawing No V8492/1 to 3

Note ...

The materials required to manufacture these items are detailed on the drawings.

Tools and Test Equipment

11 Nil.

DETAILED INSTRUCTIONS

Preparation of the Vehicle

12 Remove l.h. and r.h. gusset plates on the second front crossmember. (These are to be modified as per Drawing No 002398).

13 Ensure that any distortions on the front bumper are rectified prior to fitment of the Snowplough mounting frame.

14 Remove number plate (if fitted to bumper) and relocate in a suitable position.

Fitting Equipment

15 Refit the modified l.h. and r.h. front gusset plates.

16 Fit the Snowplough thrust frame mounting brackets and backplates to the bumper using bolts (G1/5306-99-122-8196 Qty 8), washers (G1/5310-99-122-8069 Qty 16) and nuts Nyloc (G1/5310-99-136-9905 Qty 8).

17 Fit thrust bar mounting bracket to Snowplough mounting bracket using bolts (G1/5306-99-122-8619 Qty 2), washers (G1/5310-99-122-8071 Qty 4) and nuts (G1/5310-99-122-5505 Qty 2).

- 18 Fit thrust bars using bolts (G1/5306-99-122-8769 Qty 4), washer (G1/5310-99-122-8070 Qty 8) and nuts (G1/5310-99-122-5504 Qty 4).
- 19 Mount the joystick holder onto the dashboard top within easy reach of the driver and cut the window sealing rubber as required.
- 20 Drill the horizontal plate on the lighting bracket and fit the headlamps.
- 21 Mount additional lighting bracket to the thrust frame top.
- 22 Mount the Snowplough assembly onto the mounting brackets. Use the bolts and nuts provided in the kit.
- 23 Ensure that the Snowplough thrust frame is a MINIMUM of 10" from ground level.

Fitting the Electrical Components

- 24 Route the power feed cable supplied along the l.h. chassis rail so that the power connector is in front of the radiator grill.
- 25 Secure power cable to chassis rail using tie-wraps at suitable intervals. Do not drill the chassis rail. Connect cable to batteries ensuring correct polarity.
- 26 On GS vehicles the lighting cable on the snowplough is to be fitted with FV pattern connectors. On CL vehicles the lighting cable on the snowplough is to be fitted with Ripault PM3 connectors (6MT4/5395—99—725—3534 Qty 2) and Ripault T152 terminals (6MT4/5940—99—839—4251 Qty 6). Ensure the connectors are correctly wired.
- 27 Disconnect the existing headlamp wiring at the connectors. (Behind the radiator grille on GS vehicles and in the cab behind the footwell side panels on the CL vehicles).
- 28 Connect in the snowplough headlamp connectors.
- 29 Carry out functional check.

Fitting the Blade Assembly

- 30 Fit the blade and 'A' frames to the thrust frame outer lugs and secure with thrust pins and 'R' clips.
- 31 Fit the ram to the top centre bracket on the thrust frame and secure with a ram eye pin and 'R' clip.
- 32 Fit the transit latch guard.
- 33 Replenish the hydraulic reservoir with oil OM 33 (NATO H-576).
- 34 Mount joystick in holder on dashboard.
- 35 Connect to power socket on grille.

- 36 Connect the additional lighting to vehicle.
- 37 Functionally operate the electro/hydraulic system and check for leaks.
- 38 Functionally operate additional lighting.

IMPORTANT NOTICE ...

When the snowplough is attached to the vehicle and the snowplough is not in use the Transit hatch guard is to be used.

ANNEX A

FORM Y 030/4

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REME PUBLICATIONS CENTRE
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WOOLWICH SE18 4QA

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TRUCK, 4 TONNE, 4x4, BEDFORD MJ (ALL VARIANTS)

INSTALLATION INSTRUCTION NO 3

Sponsor:
DGEME (A)

Publications Authority:
Vehs & Wpns Br REME
Project No: 10c(4) 8591(324)
File ref: 10c(4)8591AESP/BVP

AMENDMENT RECORD

Amdt	Incorporated by	Date		Amdt	Incorporated by	Date
1				4		
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SUBJECT: Transfer of Battery Charging Equipment

INTRODUCTION

1 This instruction details the action necessary to carry out the transfer of existing battery charging equipment from Truck 3 Ton, Bedford RL to the subject vehicle. The instruction also details items to be manufactured and modification to the canopy.

ASSOCIATED PUBLICATIONS

2

- 2.1 Complete Equipment Schedule 34183
- 2.2 User Handbook ACN 13973
- 2.3 EMER Wksp G.500
- 2.4 EMER Power J.305

INSTALLATION ILLUSTRATIONS

3

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5	Support tubes — Manufacturing detail	13
6	Clips — Manufacturing detail	14
7	Mounting bracket — Manufacturing detail	15
8	Circuit diagram, power distribution	16
9	Canopy front panel — Modification detail	17
10	Canopy side panels — Modification detail	18

IMPLEMENTATION PLAN

Applicability

4 Transfer of equipment is to be carried out

From: Power Supply Set Truck Mtd Charging 3 Ton 4x4 Mk 3 Bedford RL Code
No: DON E53 4335—3171

To: Truck Cargo 4 ton 4x4 with turbo charged engine Bedford MJP2MO Code
No: 2025—3101

Action required by

5 Units and establishments holding the subject vehicles

- 5.1 When authorised by LS(OR)3 and LS(OR)5
- 5.2 Record installation instruction details in vehicle documents.
- 5.3 If necessary request nominated workshop to demand stores listed in Para 9.2 and Para 9.3 quoting this instruction as authority for the demand, and the registration number of the vehicle.
- 5.4 On receipt of stores request REME/Workshops to embody this installation.

6 Units and establishments embodying this installation

- 6.1 This installation is to be carried out by nominated workshops authorised by EME 5.
- 6.2 Units embodying this installation are to enter completed details in the vehicle documents.

Man hour content

7

TABLE 1 — ESTIMATED WORKLOAD PER EQUIPMENT

Task	Man Hours	Tradesmen employed
Transfer of items from 3 ton Bedford RL, to 4 ton Bedford MJ	10	Vehicle mechanic
Manufacturing (items in Table 3)	8	Metalsmith
Rewiring power panel and transfer Of items	3	Electrician
Provide windows in canopy	8	Textile refitter
Modify side brackets and cable drum mtg	3	Metalsmith

Associated Modification

8 Nil

EQUIPMENT, TOOLS AND STORES

9

9.1 TABLE 2 - TRUCK MOUNTED ITEMS

Item No	Designation	Part No	Qty per veh	Remarks
* 1	Clip		10	See Table 3
* 2	Panel board wiring		1	" " "
3	Panel control	Z9 6130-99-105-5566	4	
4	Frame charging (4 Bus Bar)	Z9 6130-99-105-5622	2	
5	Bracket fire extinguisher	MT1 4210-99-881-7335	2	
6	Plate instruction	Z1 9905-99-949-4702	1	
7	Mounting/Foam extinguisher	Z9 4210-99-105-6419	1	
8	Saddle assy c/w straps	Z9 6130-99-105-6017	2	
9	Cabinet/Drawer assy	FV 201478	2	
10	Ramp Battery Loading	Z9 3990-99-105-5635	1	
11	Bench Battery Charging	FV 201452	2	
12	Carrier Bottles	Z9 6130-99-105-5667	1	
13	Charger Battery (Westinghouse)	Z9 6130-99-105-0445	1	
* 14	Mounting Bracket		2	for item 13
* 15	Support Tube		4	
16	Clamp hose		8	See Table 4
17	Cable Drum	Y3 8130-99-100-6560	1	
18	Carrier Cable drum	Z9 6130-99-105-6106	1	

Note ...

Items marked * are to be manufactured, for details, see Table 3.

9.2

TABLE 3 — STORES TO BE LOCALLY MANUFACTURED

Note ...

Item numbers correspond with those used in Table 2.

Item No	Designation/ Material	NSN/Part No	Qty per veh	Remarks
1	Clip		10	See Fig 6
	Steel strip 30 x 1.2 mm	G2 9515—99—964—7344	2 ft	Prime and paint as per EMER Wksp G500
2	Panel board wiring		1	See Fig 4
	Steel Plate (8 ft sheet)	G2 9515—99—964—7750	1	Prime and paint as per EMER Wksp G 500
	Steel Angle 25 x 25 x 3 mm	G2 9520—99—964—5963	11 ft	
14	Mounting bracket		2	See Fig 7
	Steel bar flat 60 x 6 mm	G2 9510—99—964—6985	7 ft	Prime and paint as per EMER Wksp G 500
15	Support Tube		4	See Fig 5
	Steel tube 38 x 2.6 mm	G2 4710—99—965—0519	14 ft	Prime and paint as per EMER Wksp G 500
	Steel tube 42.8 x 1.6 mm	G2 4710—99—965—0522	1 ft	
	Steel strips 50 x 2.5 mm thk	G2 9515—99—964—7352	2 ft	

9.3

TABLE 4 - STORES TO BE OBTAINED LOCALLY

Item No	Designation	COSA Sect	NSN/Part No	Qty per veh	Remarks
16	Clamp hose	MT1	6730-99-533-2963	8	Items 16 to 20 used with Item 15 support tube.
17	Bolt 5/16 UNF x 3¼ in. lg.	G1	5306-99-941-0306	8	
18	Nut 5/16 UNF	G1	5310-99-526-6212	8	
19	Washer flat 5/16 in.	G1	5310-99-127-7736	8	
20	Washer, lock s/c 5/16 in.	G1	5310-99-941-6655	8	
21	Bolt hex, hd, M10 x 35	G1	5306-99-122-2772	4	
22	Nut M10	G1	5310-99-122-5297	4	
23	Washer flat M10	G1	5310-99-122-6476	4	
24	Washer lock s/c M10	G1	5310-99-138-9228	4	
25	Screw, hex hd M6 x 25	G1	5305-99-122-5362	16	
26	Nut	G1	5310-99-122-5295	16	
27	Washer flat M6	G1	5310-99-122-6474	16	
28	Washer lock SC M6	G1	5310-99-137-9232	16	

DETAILED INSTRUCTIONS

General

10

10.1 Due to the wider MJ Body dimensions and canopy rail structure, some of the transferable items will not fit and these items are to be replaced by the manufactured ones in Table 3. Also the MJ canopy is to be modified with ventilation windows similar to those on the RL. See Figs 9 and 10.

10.2 Where possible make use of existing fasteners. Any damaged or ill fitting ones are to be replaced and new ones provided as necessary from local sources.

10.3 To carry out the transfer of equipment the sequence of operations given below must be followed. Numbers in brackets in text refer to item numbers in Table 2, 3 and 4.

CAUTION ...

During removal of components and wiring from Bedford RL Vehicle; make note of all connections and fasteners to aid re—assembly in the Bedford MJ Vehicle.

11

11.1 Disconnect and remove the complete battery charging equipment with the fasteners from the Bedford 3 ton RL Veh.

11.1.1 Remove canopy from the Bedford MJ Vehicle.

11.2 Manufacture the items in Table 3 and paint them in accordance with EMER Wksp G 500.

11.3 Paint the Bedford MJ floor, benches and any surfaces likely to come into contact with electrolyte from batteries in accordance with EMER Wksp G500 Chap 3.

11.4 Fit the newly manufactured panel board wiring (2), as shown in Fig 1, with all the electrical items transferred and wired in position, see Fig 8. Drill holes through lower lip into bulkhead. Secure panel using clips (1) and items 25, 26, 27 and 28.

11.5 Offer up the 15.6 ft long timber sideboards that support the frames charging (4), make the necessary clearance cut—outs at A, B and C positions, see Fig 2.

11.6 Modify existing brackets or manufacture suitable side support brackets similar to the original design so that the sideboards in Para 11.5 can have their ends attached to the canopy rails.

11.7 Offer up the frames charging (4) and hold them in position.

11.8 Locate the newly manufactured support tubes (15) at positions shown on Fig 2. Ensure that the clip holes are aligned with those in the frames charging (4) then mark off and drill holes for the support tube bases.

11.9 Secure the support tubes (15) in position using items 16, 17, 18, 19 and 20. Ensure that clamp hoses (16) are fitted as shown on Figs 1 and 2.

11.10 Attach the sideboard ends (see Para 11.6) to the canopy rails.

11.11 Attach the frames charging (4) and sideboards to the support tubes (15) using the existing clips and fasteners.

11.12 The panels control (3) should already be connected and attached to the frames charging (4) as shown in Fig 1.

11.13 Fit mounting brackets (14) to charger battery (13). Mark off and drill holes through bulkhead and floor to suit the charger battery mounting position, see Fig 1. Secure the charger battery (13) to the floor using existing fasteners and to the bulkhead using items 21, 22, 23 and 24.

11.14 Connect the charger battery (13) frames charging (4) and all wiring as per circuit diagram Fig 8.

11.15 Connect the chassis earth lead to the chassis, see Fig 2. (note position of wing—nut connector).

11.16 Locate the bench battery charging (11) on both sides as shown in Fig 1 with the cabinet/drawer assemblies (9) underneath and packing strips laid in position beneath the cabinets.

Note ...

Before fitting of l.h. bench, see para 11.24 to establish fitting of Carrier Cable Drum (18).

11.17 Using the benches and cabinets as templates, drill through all fastener positions in floor, body sides and bulkhead.

11.18 Secure the benches battery charging (11) and cabinets drawer assemblies (9) in position using existing fasteners (ensure that the bench leg support plates are fitted beneath floor).

11.19 Fit bracket fire extinguisher (5) in two positions as shown on Fig 1 with their leading edges at dimensions 8½ in. from rear end of vehicle and 2½ in. from top of the wooden sideboard. Secure brackets with qty 5 existing flat head, csk, woodscrews No 10 x ¾ in. long.

11.20 Fit mounting foam/extinguisher (7) as shown in Fig 1 with its leading edges at dimensions 9½ in. from rear of vehicle and 7 in. from body side — secure the mounting in position with Qty 4 existing round headed woodscrews No 10 x ¾ in. long.

11.21 Fit plate instruction (6) as shown in Fig 1 at dimensions 4½ in. from top of body side and 13 in. from rear of vehicle. Use plate as a template to drill 4.5 mm clearance holes. Secure with brass screws hex head M4 x 10 mm, nuts and washers.

11.22 Fit saddle assy, c/w straps (8) as shown in Fig 1 at dimensions 15 in. from rear of vehicle for one wooden block and 15 in. apart for the second wooden block (to suit stowage of the earth spikes and sledge hammer). Secure blocks using existing woodscrews round head No 10 x 2 in. long.

11.23 Fit carrier bottles (12) as shown in Fig 1 with its facing edge at dimensions 7 in. from rear of vehicle, use base as a template to mark hole positions on floor, drill clearance holes through floor and secure the carrier assy in position using existing fasteners.

11.24 Fit carrier cable drum (18) at position shown in Fig 3. If necessary manufacture another top channel bracket so that the carrier can be attached to the underside of the body floor, also ensure that there is a locking device to secure the cable/drum from rotating while vehicle is in motion.

11.25 Modify the Bedford MJ Canopy, see Figs 9 and 10, to provide window vents similar to those on the RL canopy.

11.26 Refit canopy ensuring that all fasteners in contact with canopy are not in a position to foul or cause damage by rubbing.

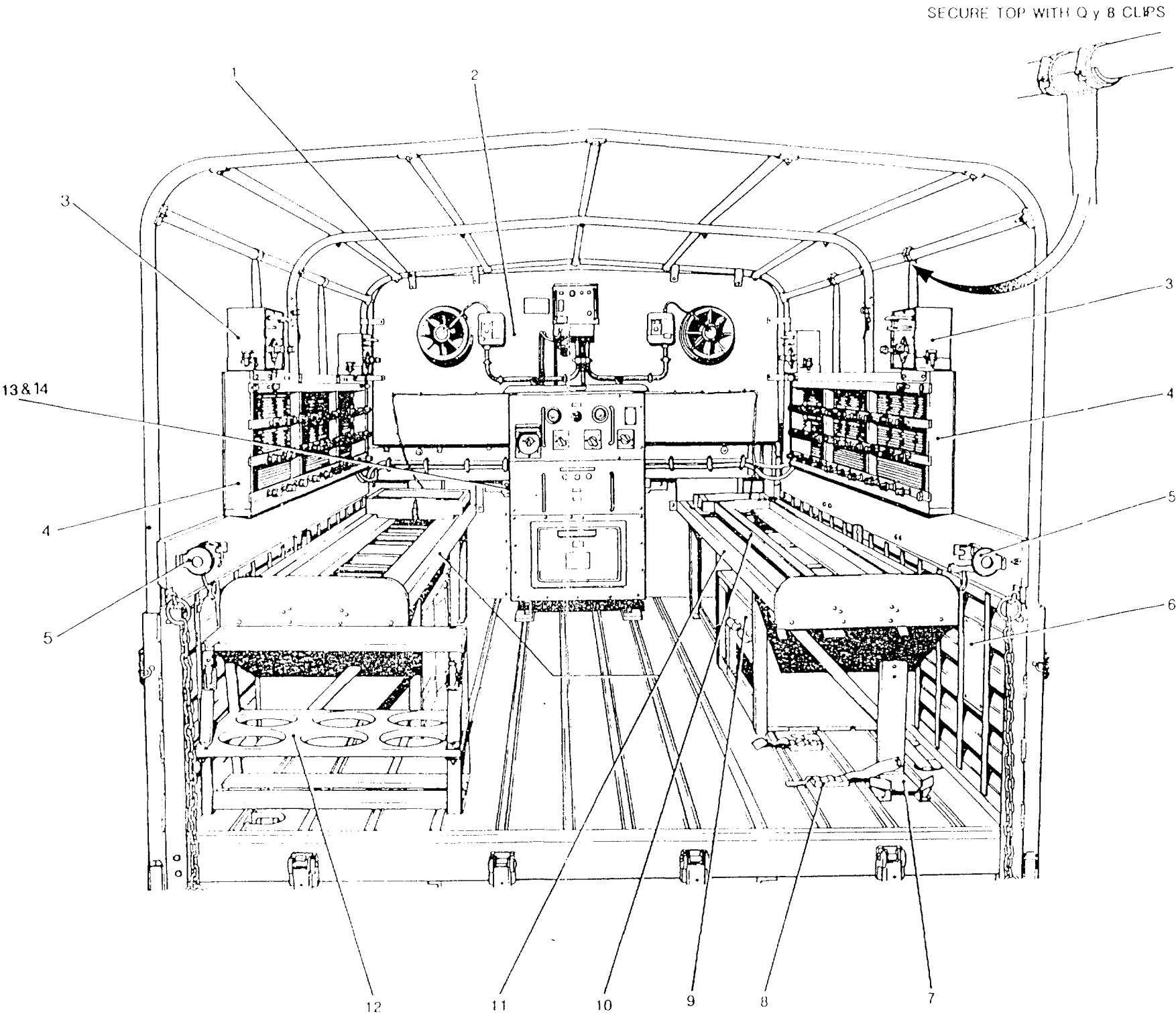


Fig 1

GA of Installation – rear view
(Item numbers as per Table 2)

v9039/7
Fig 1

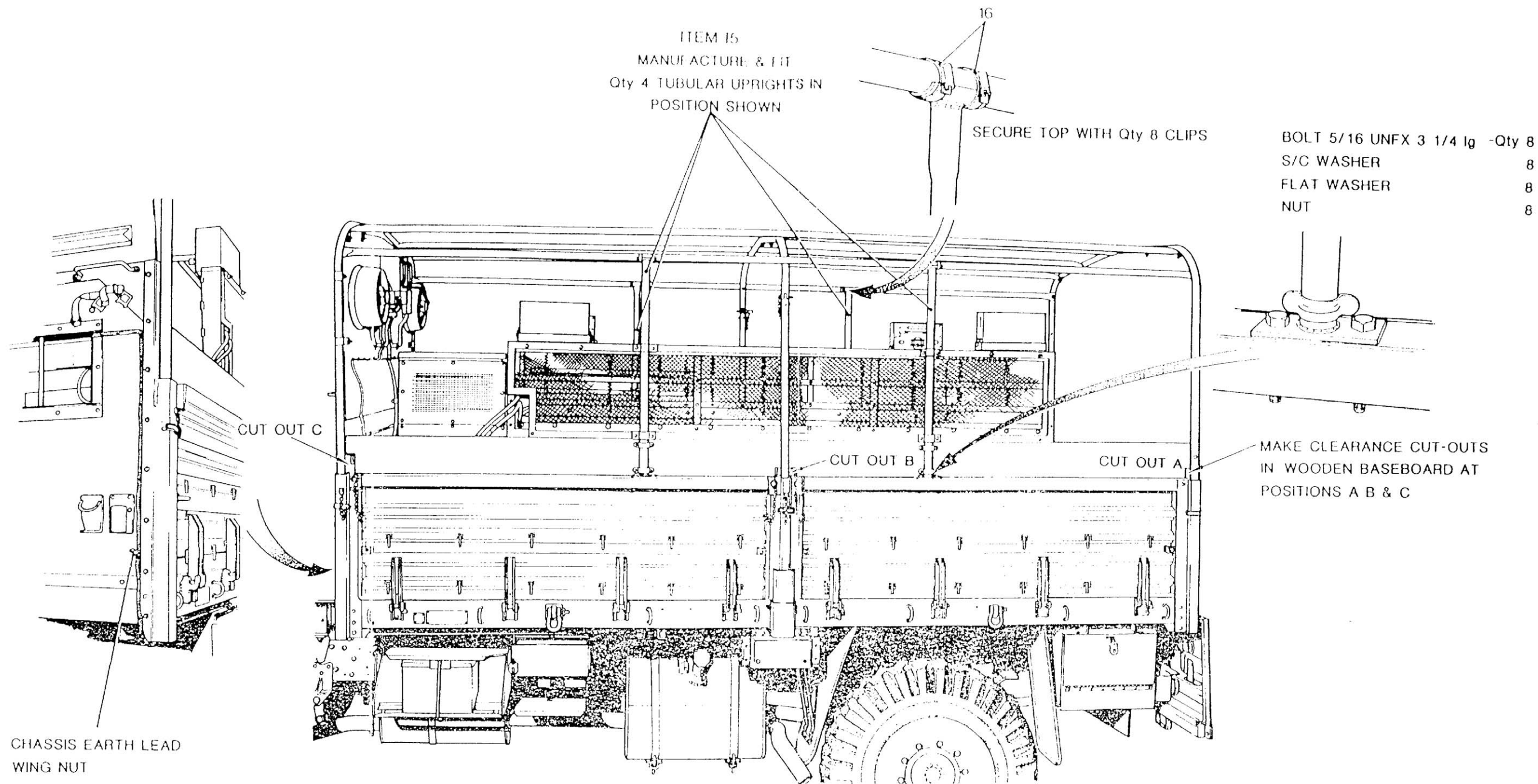


Fig 2

GA of Installation – side view
(Item numbers as per Table 2)

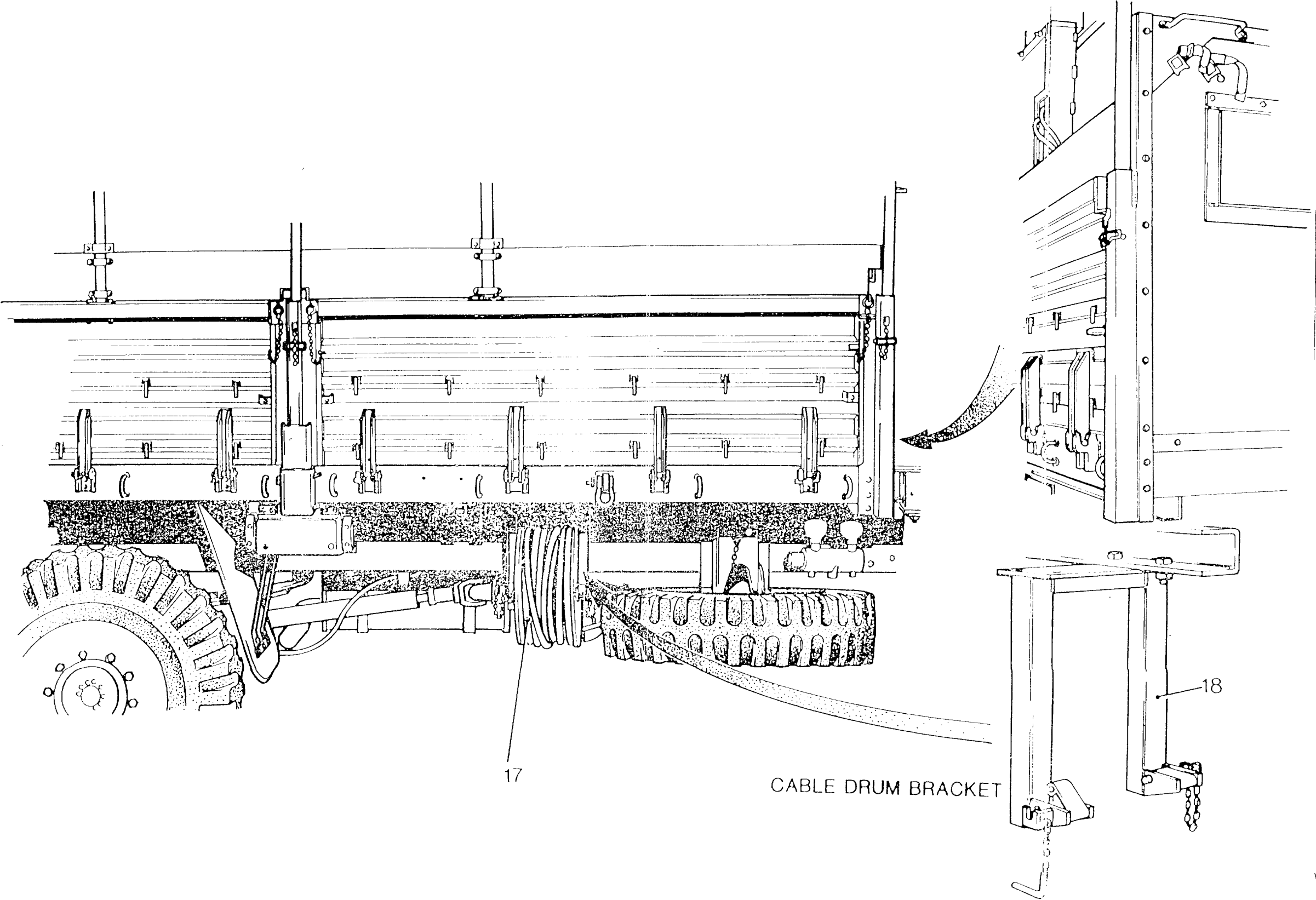


Fig 3

Cable drum/carrier location
(Item numbers as per Table 2)

Fig 3

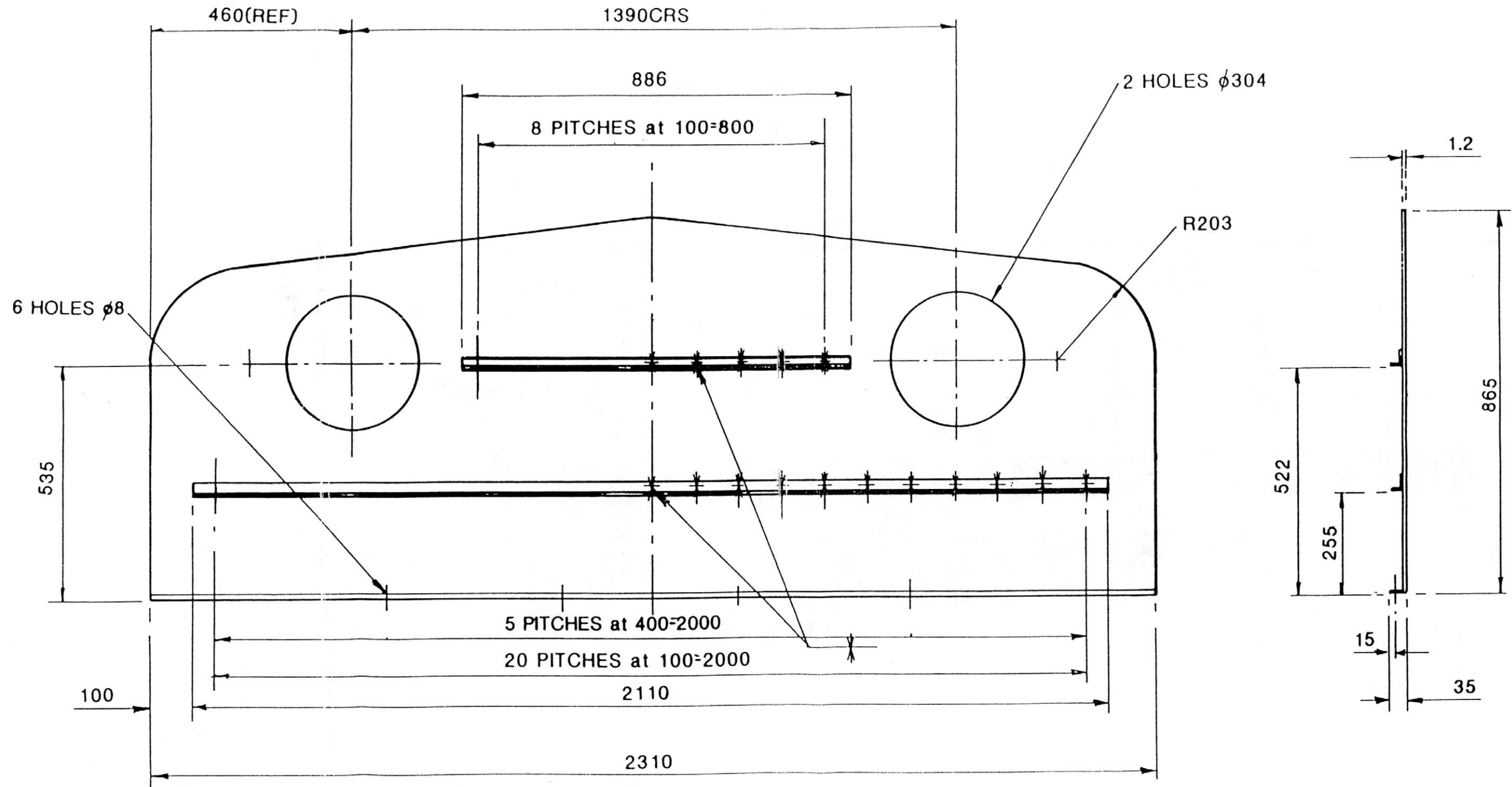
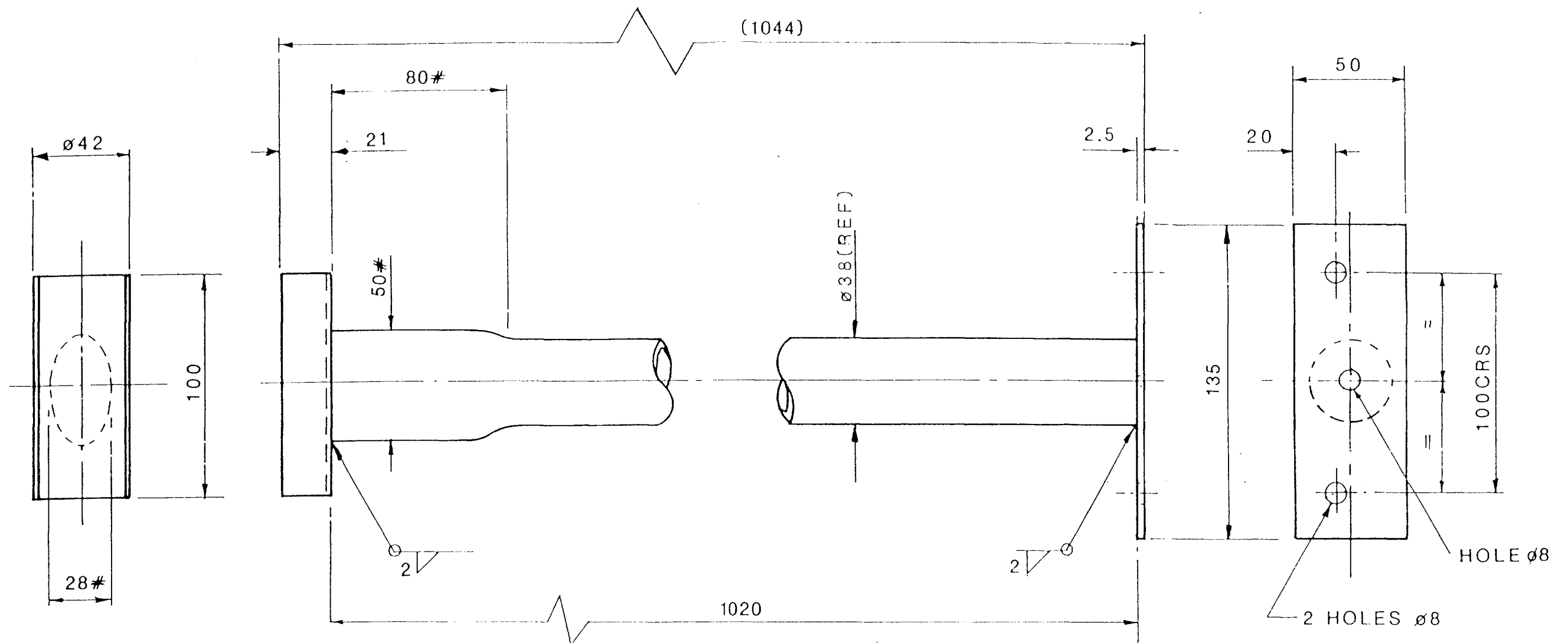


Fig 4

Panel board wiring - manufacturing
(Material - see Table 3)

v9039/4
Fig 4



#SWAGE TUBE TO APPROX. DIMENSIONS SHOWN

Matl.- o42.8x1.6 STEEL TUBE TO BS6323CDS24(4710-99-965-0522)

o38x2.6 STEEL TUBE TO BS6323CDS24(4710-99-965-0519)

STEEL STRIP 2.5Thk. To BS1449 Pt.1(9515-99-964-7352)

WELD TO MVEE SPEC 1031
SYMBOLS TO BS499 PT2 Pt.2

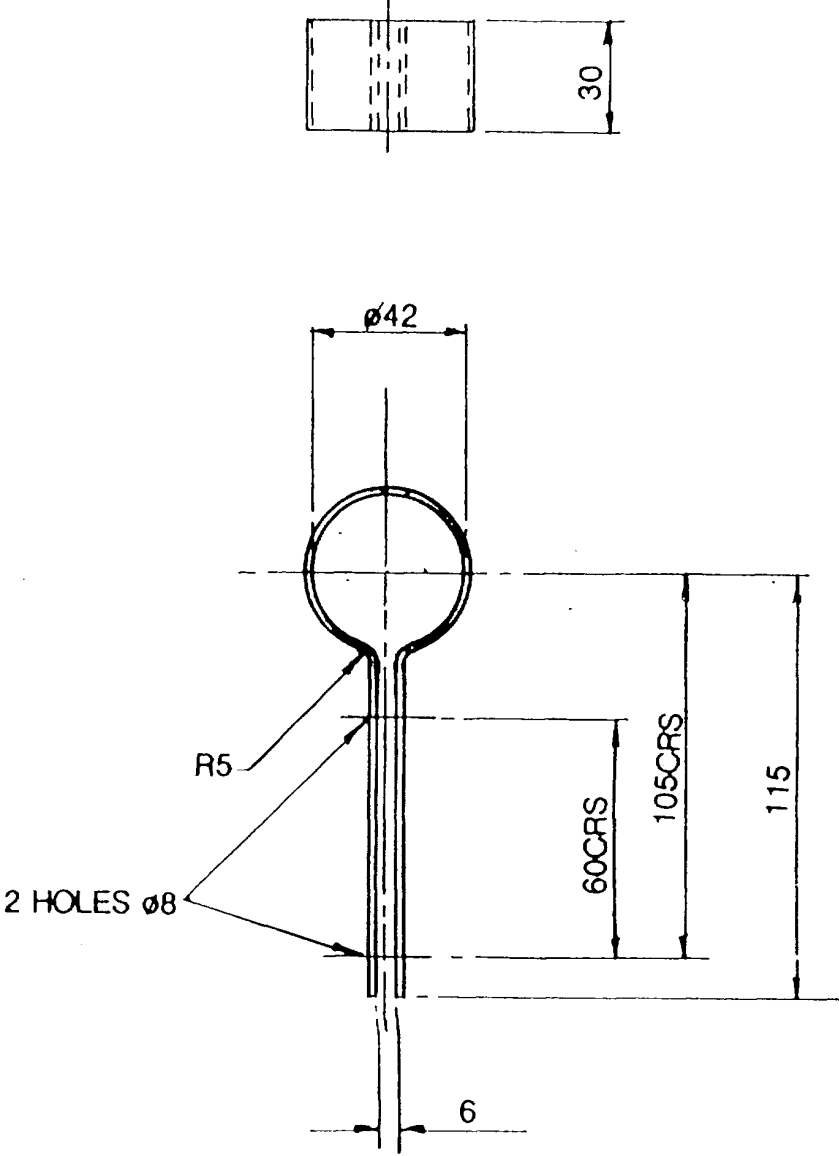
PAINT TO MVEE SPEC 666(DEEP BRONZE GREEN)

V 9039/3

Fig 5

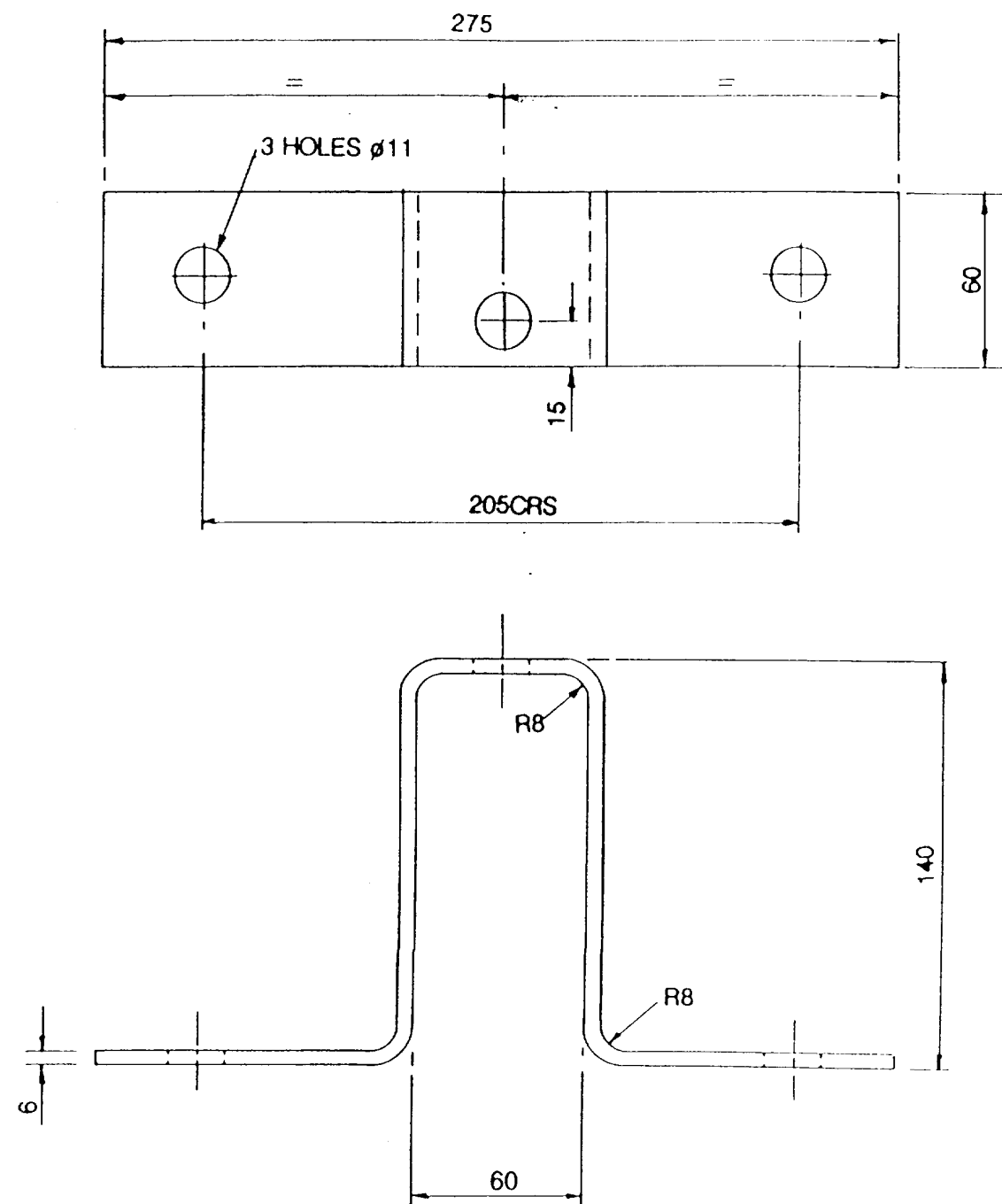
Support tubes – manufacturing detail
(for material etc see Table 3)

Fig 5



V9039/1

Fig 6 Clips manufacturing detail
(for material see Table 3)



V9039/2

Fig 7 Mounting bracket – manufacturing detail
(for material see Table 3)

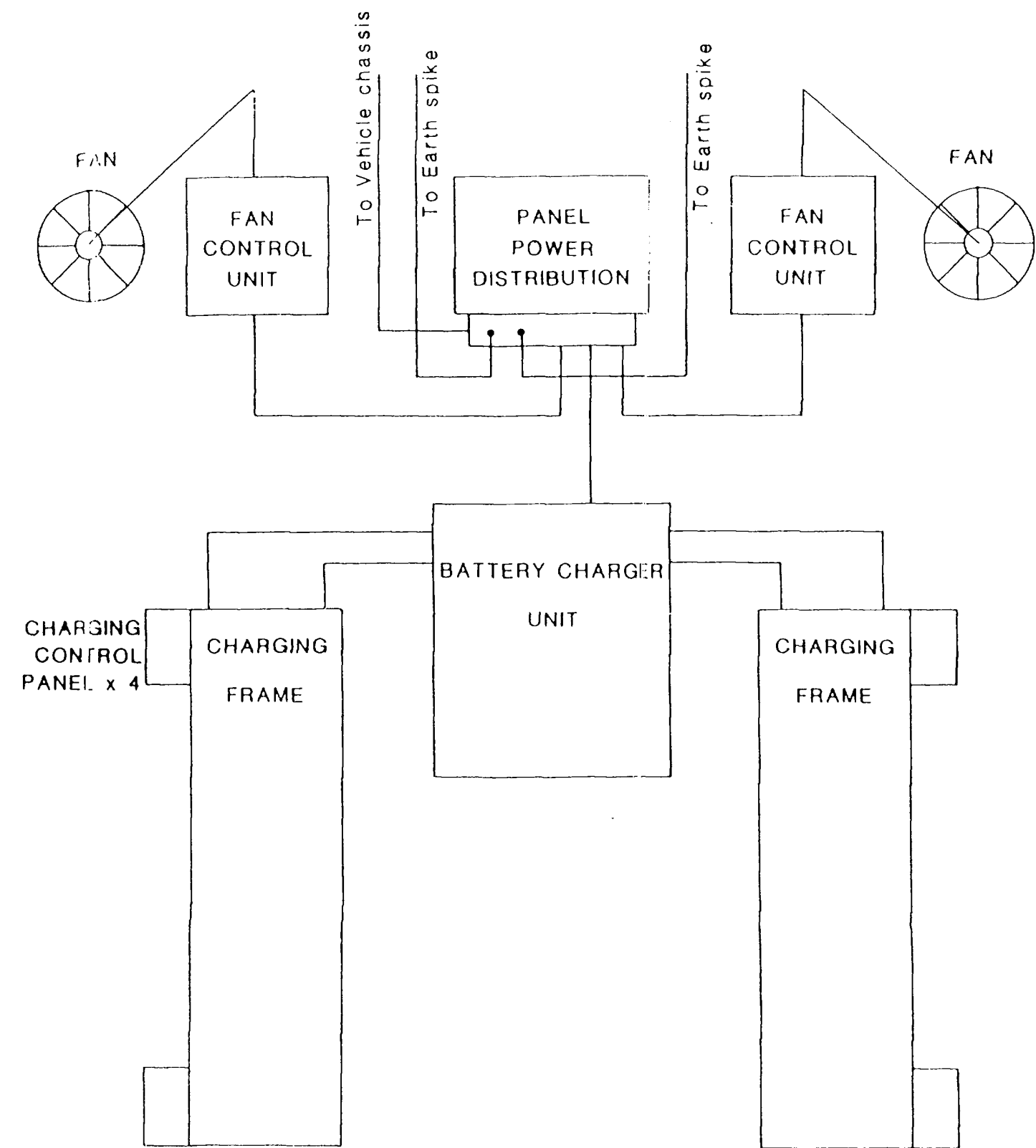


Fig 8

Circuit diagram, power distribution

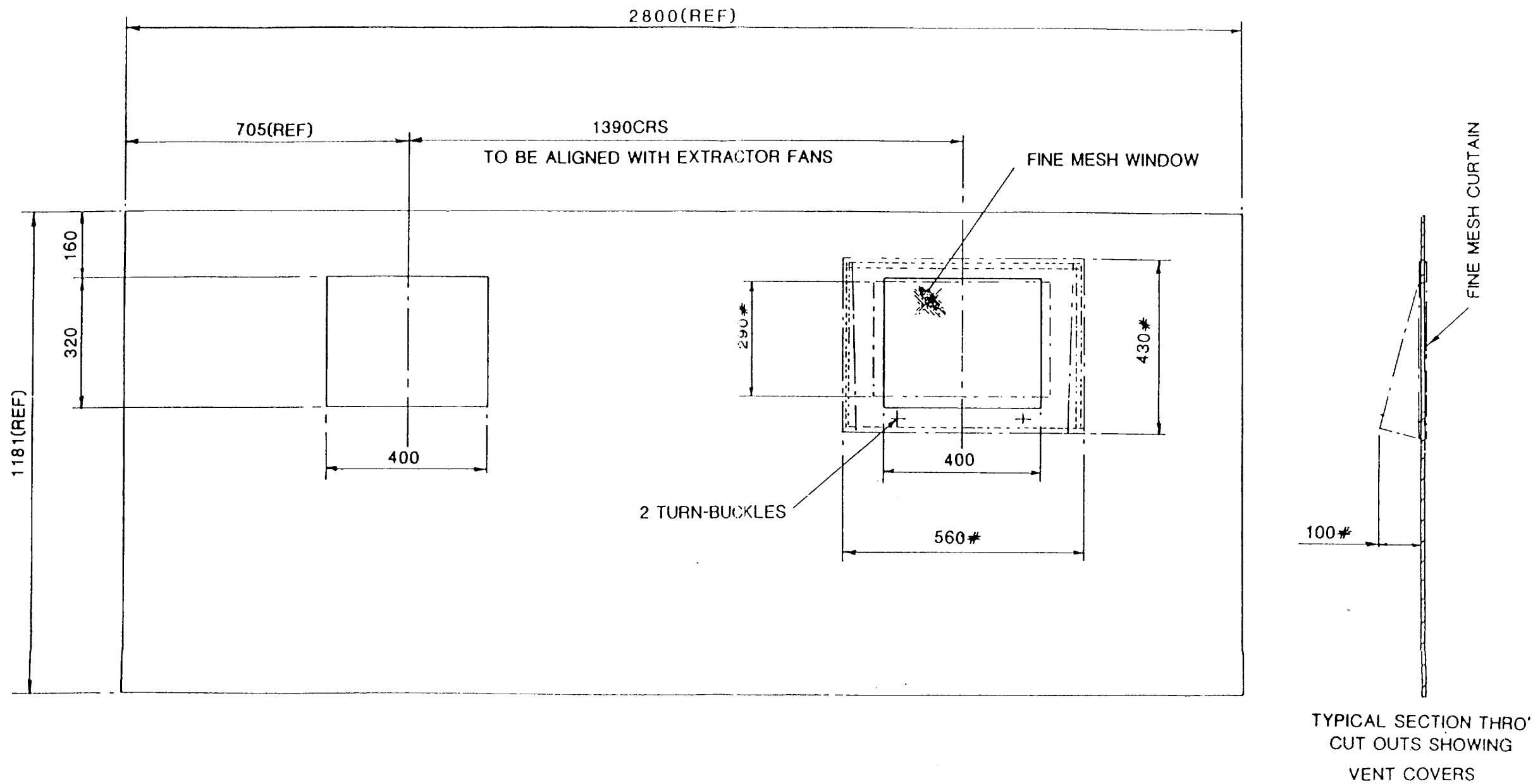


Fig 9
RA19-072311.23/24
Jan 90

Canopy front panel, modification detail

Fig 9
Inst Instr No 3
Page 17

V 9039/5

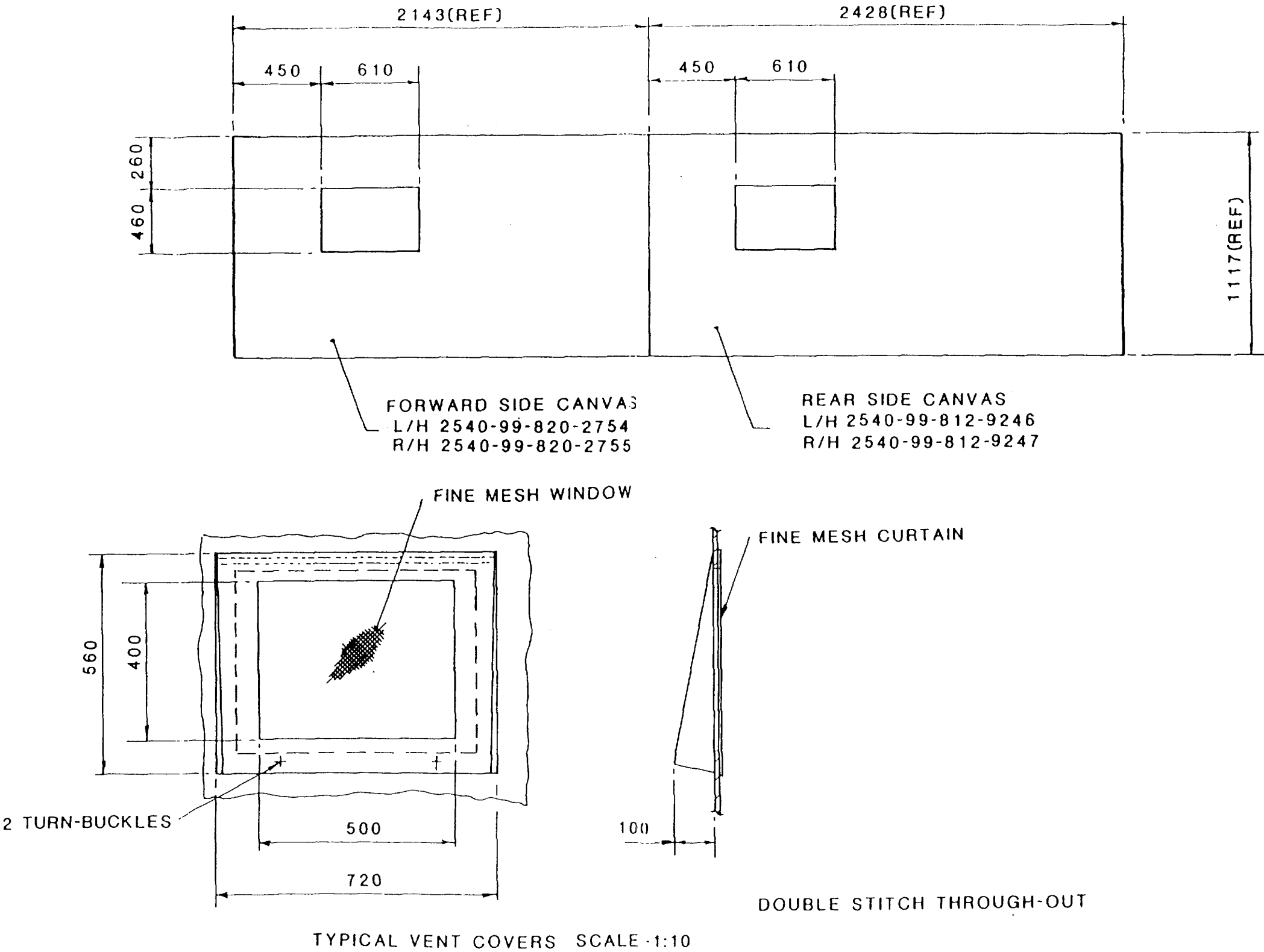


Fig 10
RA19-072311.25/26
Jan 90

Canopy side panels modification detail

V 9039/6
Fig 10
Inst Instr No 3
Page 18

TRUCK 4 TONNE, 4 x 4, BEDFORD MJ (ALL VARIANTS)

INSTALLATION INSTRUCTION No 4

Sponsor:
DGES(A)

Publications Authority:
Vehs & Wpns Br REME
Project No: ES 52c 4094 (156)
File ref: 52c/4094/CAT 4/BVP

AMENDMENT RECORD

Amdt No	Incorporated By (Signature)	Date	Amdt No	Incorporated By (Signature)	Date
1			4		
2			5		
3			6		

SUBJECT: Fitting of MAPSTRUCK Conversion Kits.

INTRODUCTION

1 This instruction details the fitting of the MAPSTRUCK conversion kit to the subject vehicle, to enable the vehicle to carry up to 70000 maps for use by Military Survey.

ASSOCIATED PUBLICATIONS

2 Nil.

INSTALLATION ILLUSTRATIONS

3	Fig	Page
1	G A of Installation	5
2	Front Canopy Hoop	6
3	Centre Canopy Hoop	7
4	Rear Canopy Hoop	8
5	Bottom Location Beam	9
6	Fitting Bottom Location Beam	10
7	Cupboard Module	11
8	Shelf Module	12
9	Location of Modules	13
10	Top Location Beam	14
11	Cabinet Tie Bar	15
12	Fitting Cabinet Tie Bar	16
13	Restraint Straps	17
14	Fitting Restraint Straps	18
15	Catwalk	19
16	Fitting Catwalk	20
17	Side Extension Frame	21
18	Longitudinal Tubes	22

IMPLEMENTATION PLAN**Applicability**

4 This installation is to be fitted to Truck 4 Tonne Bedford MJ (All Variants).

Action required by:

5 Units and establishments holding the subject vehicles.

5.1 When authorised by Military Survey DA.

5.2 Request nominated workshop to demand stores listed in Para 10 quoting this instruction as authority for the demand.

5.3 On receipt of stores request REME/Workshops to embody this instruction.

6 Units and establishments embodying this installation.

6.1 This installation is to be carried out by military survey.

Man hour content

7 Table 1 details the manhour content for installation.

TABLE 1 ESTIMATED WORKLOAD PER EQUIPMENT

Task (1)	Man Hours (2)	Tradesmen Employed (3)
Installation	4	GEO Technician

Associated modifications

8 Nil.

EQUIPMENT, TOOLS AND STORES**Stores required**

9 Table 2 details the components required to carry out this installation.

TABLE 2 INSTALLATION KIT W10 8145-99-562-3197

Item (1)	NSN/MPN (2)	Designation (3)	Qty (4)	Remarks (5)
1	A2-2017-012	Bottom Location Beam	1	
2	A2-2017-013	Top Location Beam	2	
3	A3-2017-053	7 Shelf Module	10	
4	A3-2017-050	Cupboard Module	2	
5	A3-2017-048	Ratchet Restraint Strap Front	2	
6	A3-2017-047	Ratchet Restraint Strap Centre	2	
7	A3-2017-046	Ratchet Restraint Strap Rear	2	
8	A3-2017-044	Support Jacks	10	
9	A3-2017-031	Side Fill In Plates	2	
10	A2-2017-037	R.H. Corner Fill In Plate	1	
11	A2-2017-036	L.H. Corner Fill In Plate	1	
12	A4-2017-054	Tail Board Fill In Plate	2	
13	A2-2017-027	Canopy Hoop Front	1	
14	A2-2017-025	Canopy Hoop Centre	1	
15	A2-2017-026	Canopy Hoop Rear & Extension Frame	1	
16	A3-2017-023	Catwalk	2	
		Bolts & Nuts Catwalk	6	
17	A4-2017-029	Longitudinals - Canopy Frame	4	
18	A3-2017-015	Side Frame Extensions	4	
19	A1-2017-002	Canopy	1	
20	A3-2017-061	Cabinet Tie Bar	4	

Tools and test equipment

10 Nil.

DETAILED INSTRUCTIONS

Sequence of operations - Mapstruck installation

11

NOTES

(1) To install this installation, the sequence of operations given must be followed. Numbers in brackets after part names refer to item numbers in Table 2.

(2) Check the contents of the installation kit against Table 2.

11.1 Lower dropsides and tailgate.

11.2 Fit front canopy hoop (13) into existing sockets in front bulkhead and secure with existing pegs.

11.3 Fit centre canopy hoop (14) into existing sockets in centre posts and secure with existing pegs.

11.4 Fit rear canopy hoop (15) into existing sockets in rear corner posts, with extension frame to rear, and secure with existing pegs.

11.5 Fit bottom location beam (1) into sockets on centre line of floor, ensuring 4 off hooks are located on the underside of the floor socket before tightening with the handle (See Fig 6). Handle to be in line with channel.

11.6 Locate rear lip on modules (3 and 4) onto location beams between guide plates (See Fig 9).

11.7 Fit top location beams (2) across top of lockers, one per bank of six.

11.8 Fit cabinet tie bar (20) to each end of bank of six cabinets, screw adjuster hand tight and secure with 'R' pin. Ensure top and bottom hooks are located in top and bottom location beams (See Fig 12).

11.9 Fit front restraint straps (5) with safety clip hook to top location beam and ratchet hook around side frame of body, one per side. With ratchet handle open, pull loose end of strap to remove slack before finally tensioning strap with ratchet handle. When tensioned, clip ratchet handle closed.

11.10 Fit centre restraint strap (6) with free running double ended strap to top location beams and two fixed length straps to two adjacent floor mounted lashing rings (See Fig 14). Tension as in Para 11.9.

NOTE

Should only six modules be carried, i.e. either front six or rear six, one top location beam is used with both top hooks onto one top location beam.

11.11 Fit rear restraint strap (7) to top location beam and adjacent floor mounted lashing ring (See Fig 14). Tension as in Para 11.9.

11.12 Locate catwalk (16) onto hoop frame along centre line of canopy hoops and secure with two bolts per hoop with locking washer and nut. Ensure that front and rear bolt heads are to exterior face of frame work (See Fig 16).

CAUTION

Do not tighten bolts until framework is complete.

11.13 Locate side extension frames (18) onto pegs on canopy hoops and fit longitudinal tubes (17) to secure hoop frames in position, with locking washers and nuts, to be obtained locally.

11.14 Place canopy roll onto catwalk with 'FRONT' facing front of vehicle. Unfold along catwalk and check position longitudinally. Before unfolding sides and front, fasten restraining straps onto canopy framework (6 total).

11.15 Close dropsides and tailgate.

11.16 Unfold sides, front and rear of canopy ensuring that rolls of excess material are to the sides and rear interior faces.

11.17 Secure canopy with two straps at front bulkhead (one each side). Rope lashing at sides and elastic rope at rear to existing lashing hooks. Close weather flaps at all corners by closing onto velcro and securing with straps.

PUBLICATION AMENDMENTS

12 Nil

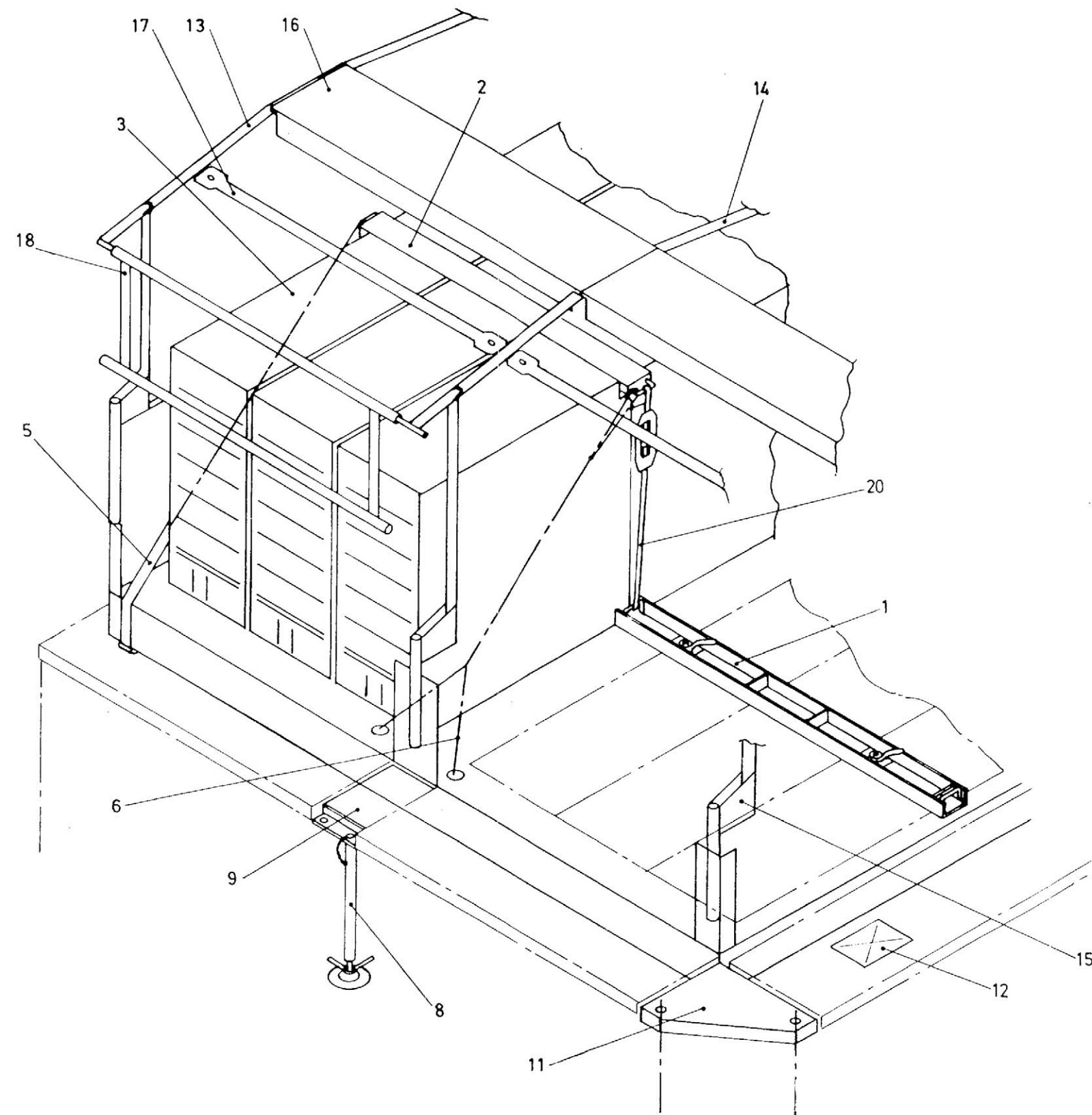


Fig 1 G A of Installation

V11398/1

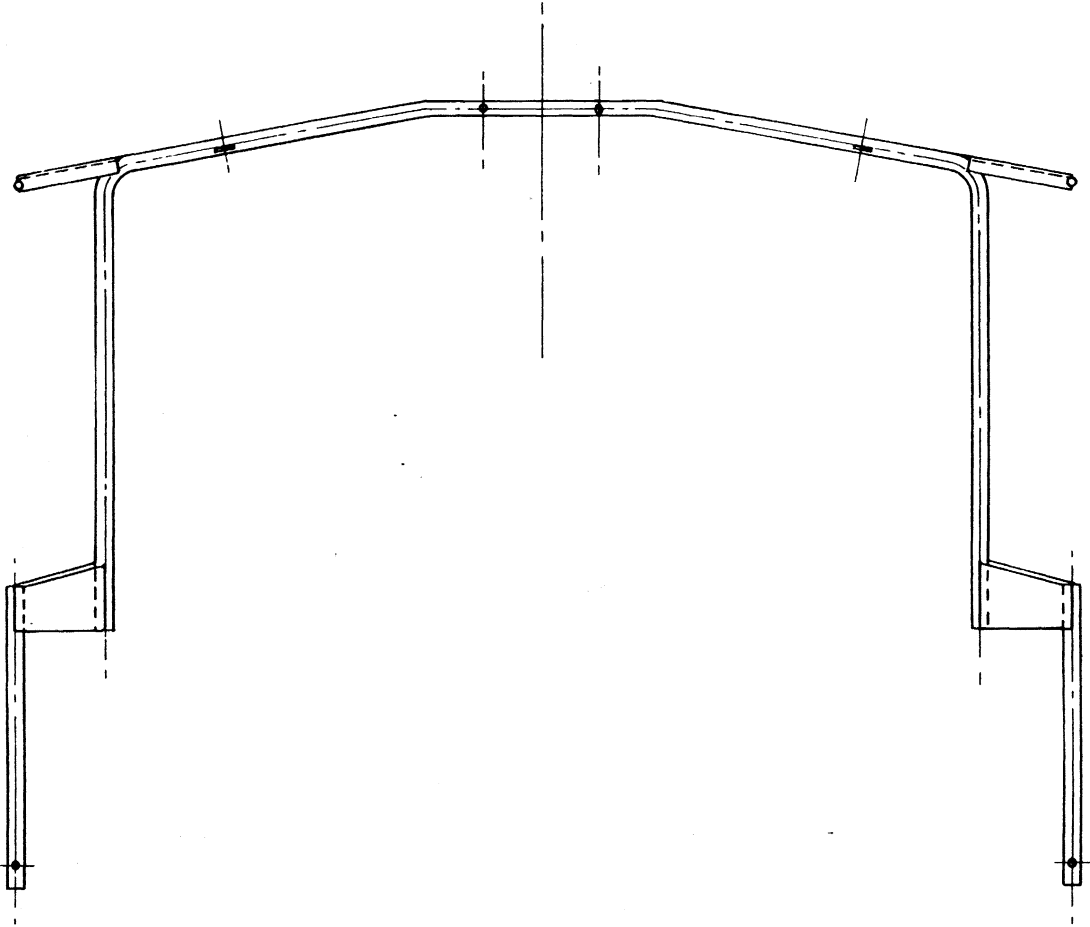


Fig 2 Front Canopy Hoop.

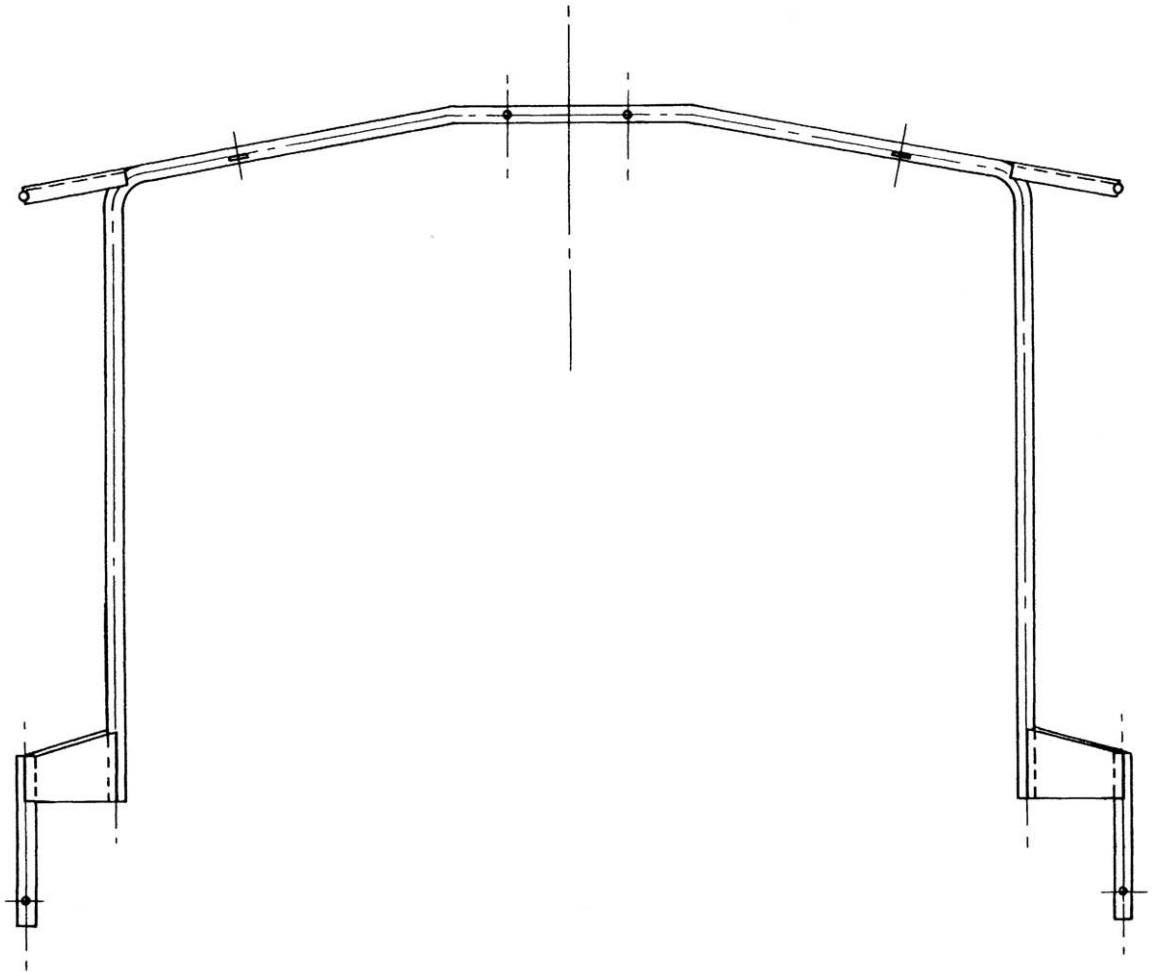


Fig 3 Centre Canopy Hoop.

V11398/12

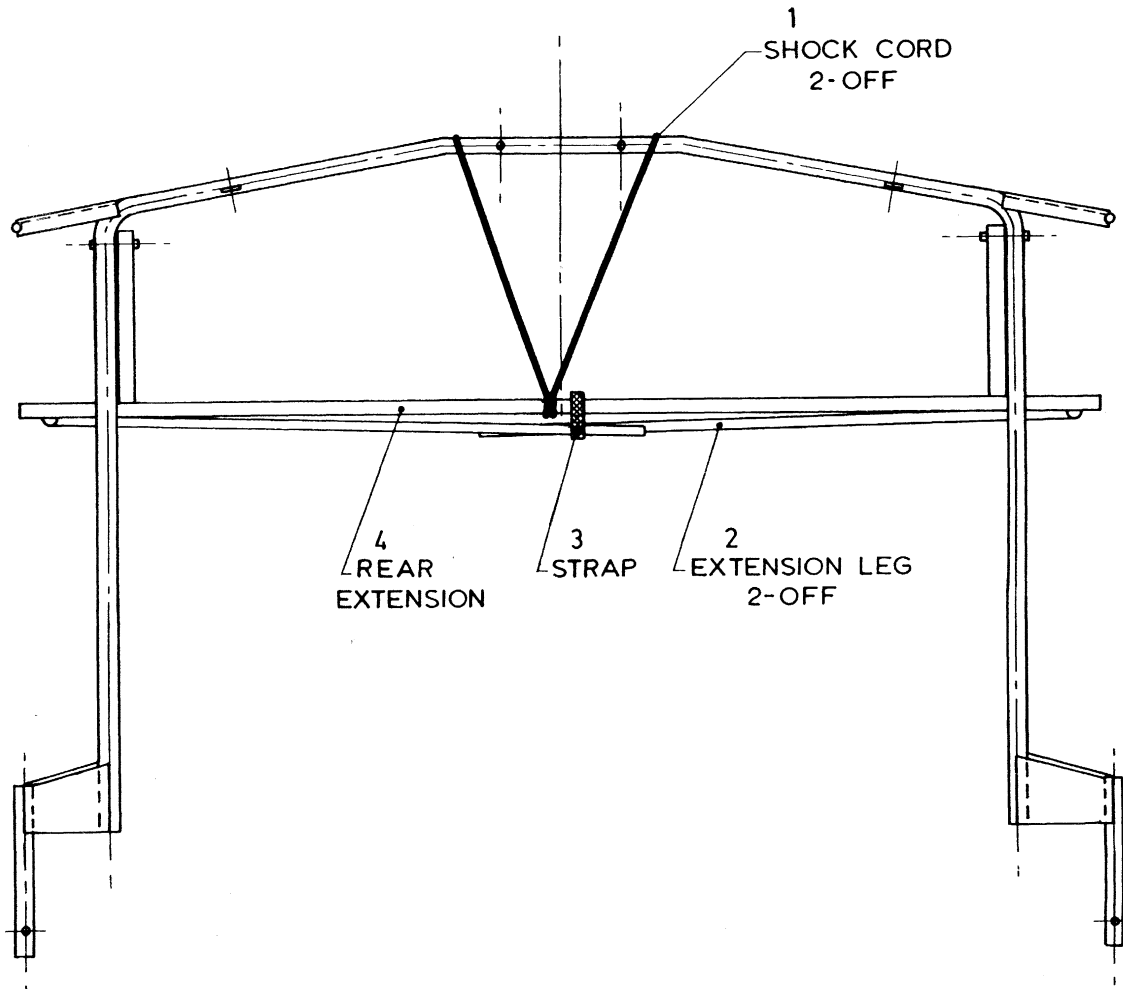
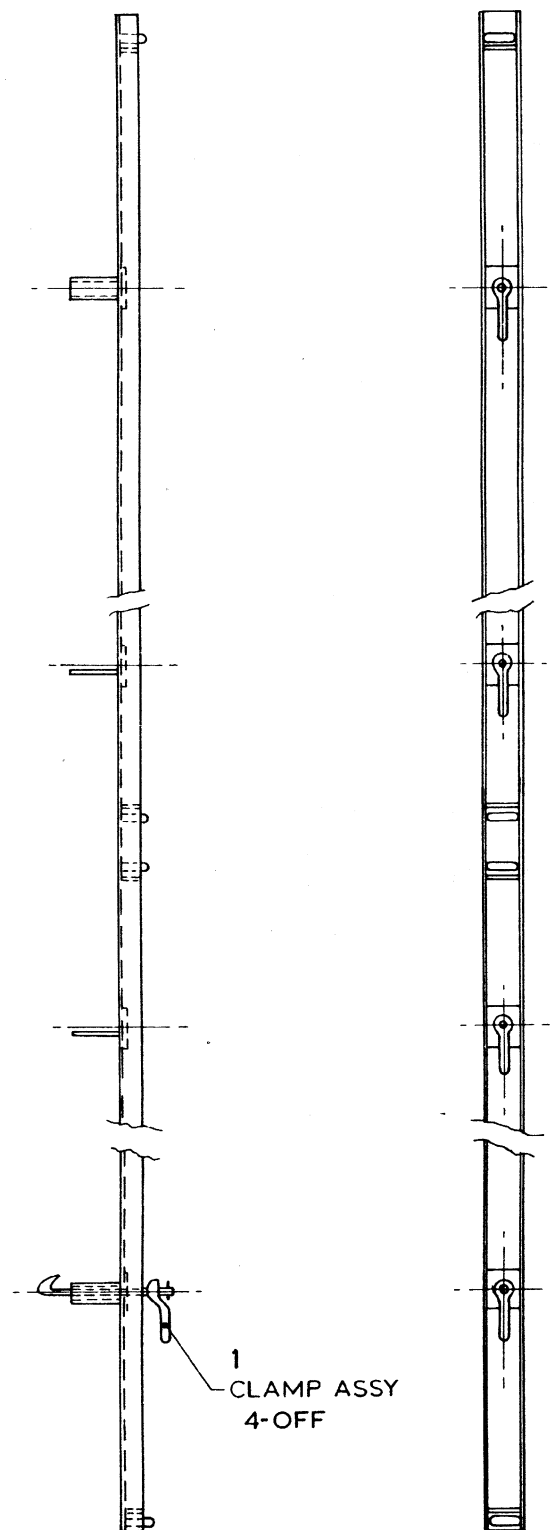


Fig 4 Rear Canopy Hoop

V11398/13



V11398/2

Fig 5 Bottom Location Beam

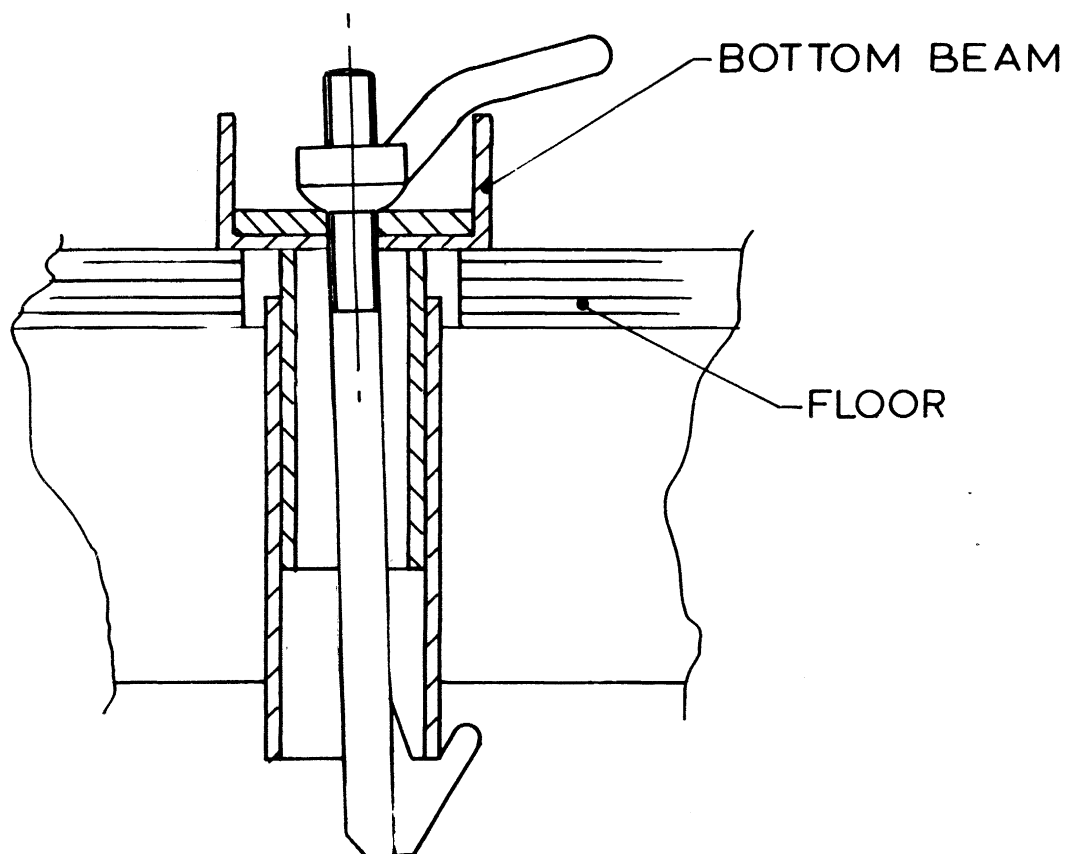


Fig 6 Fitting Bottom Location Beam

V11398/19

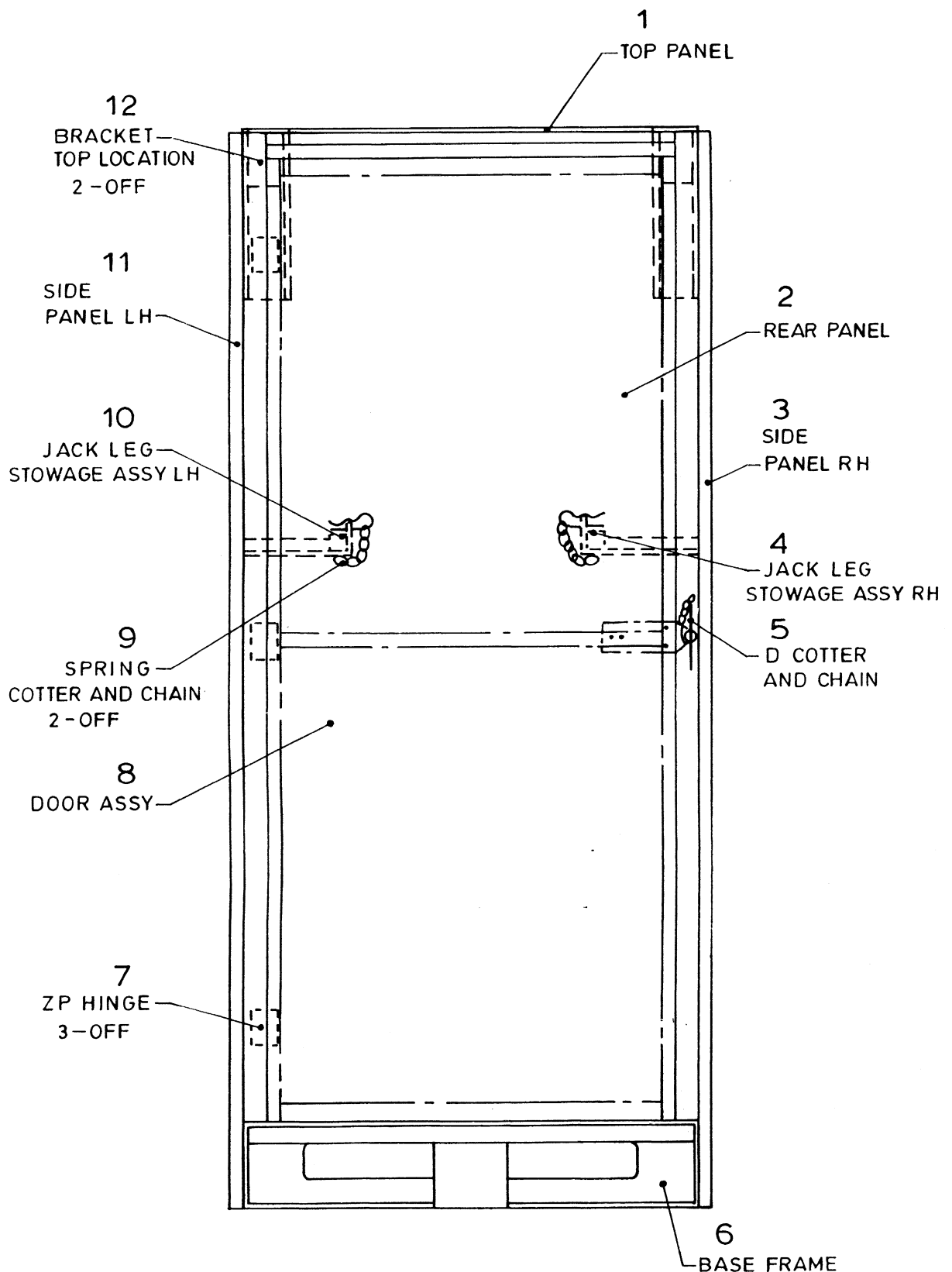


Fig 7 Cupboard Module

V11398/5

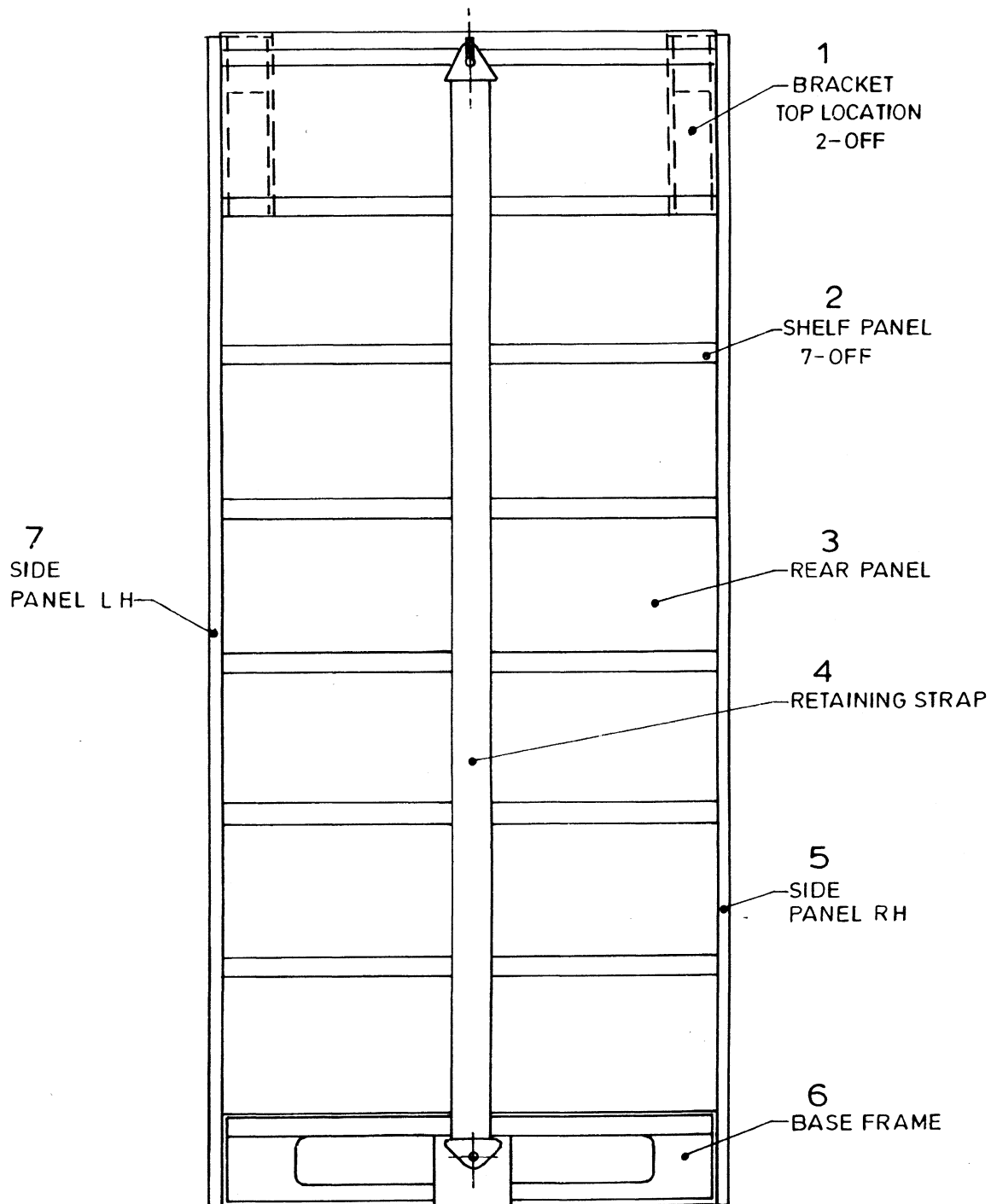
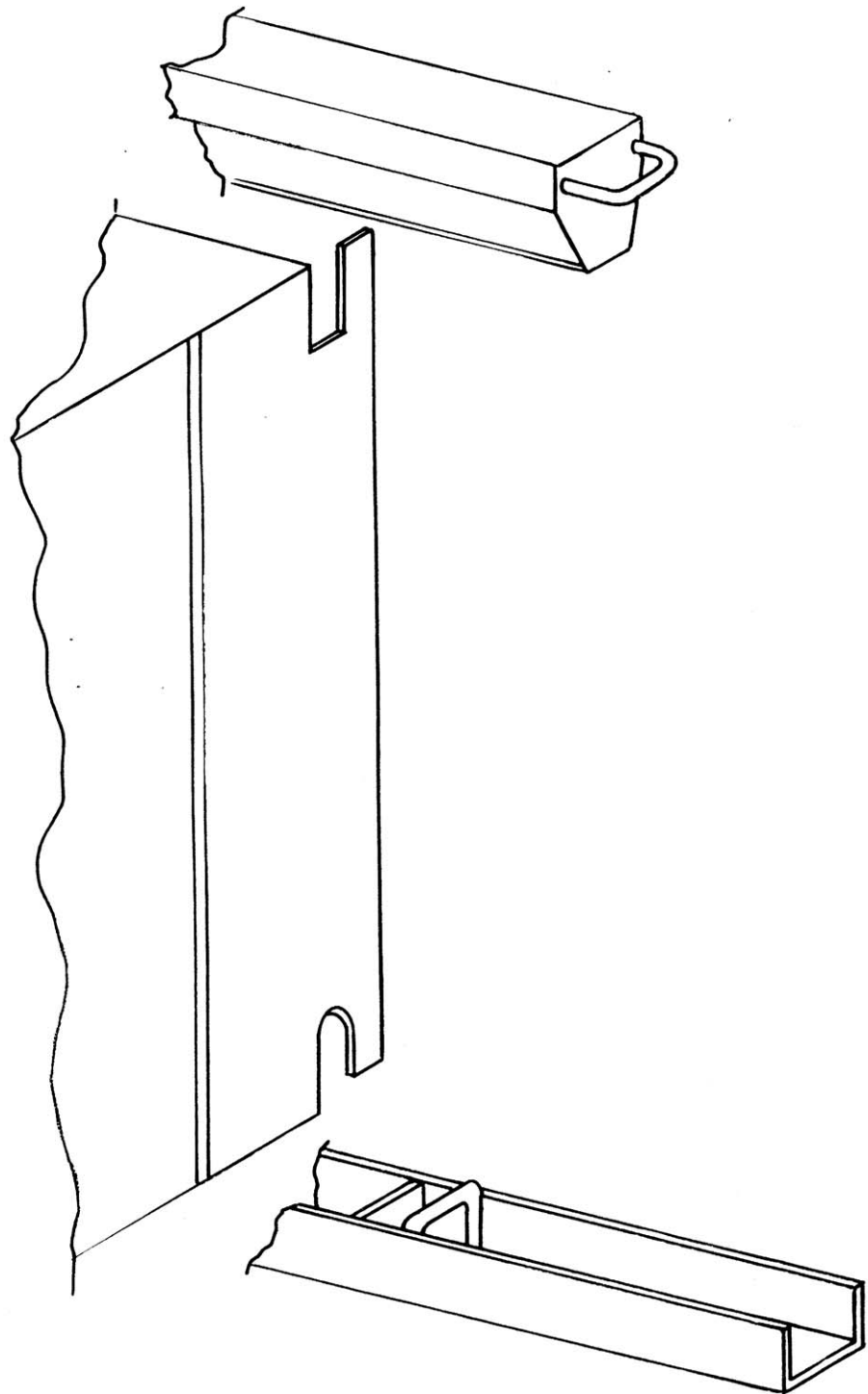


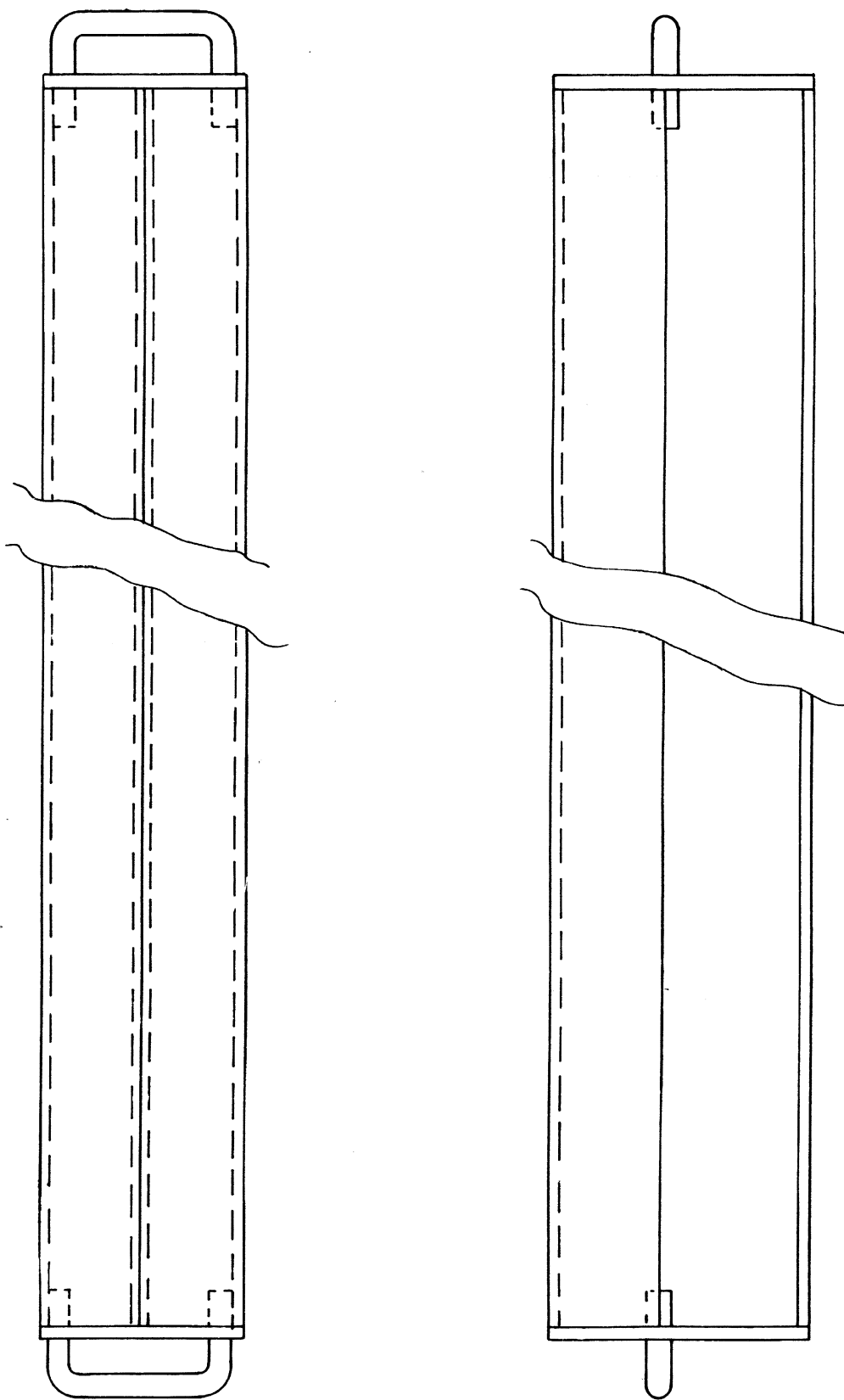
Fig 8 Shelf Module

V11398/4



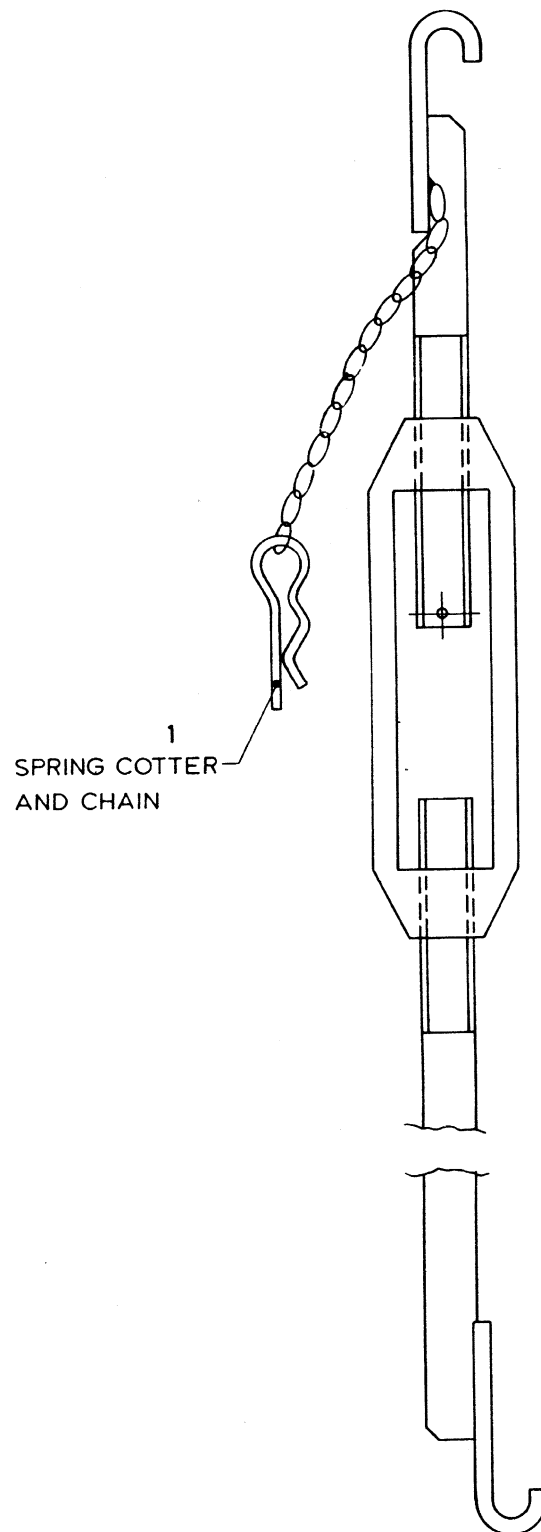
V11398/24

Fig 9 Location of Modules



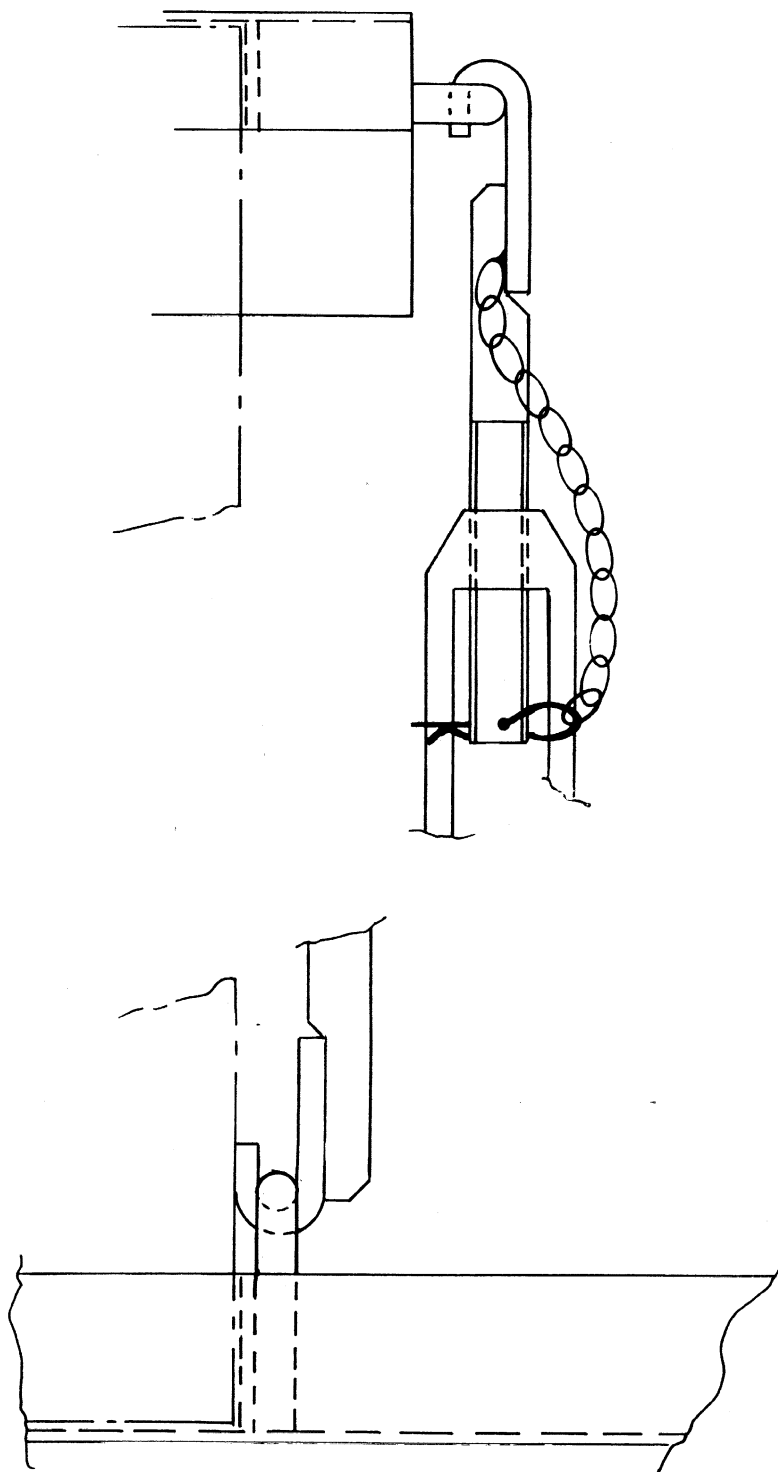
V11398/3

Fig 10 Top Location Beam



V11398/17

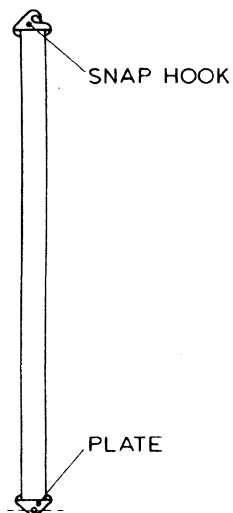
Fig 11 Cabinet Tie Bar



V11398/20

Fig 12 Fitting Cabinet Tie Bar

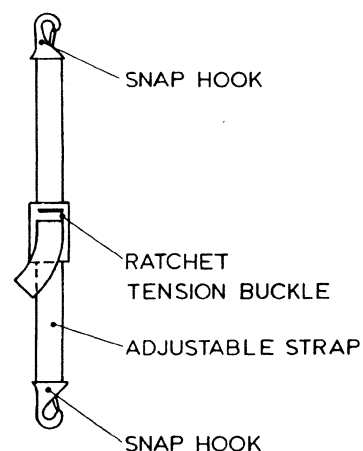
50mm WIDE LOAD RESTRAINT STRAP
CERTIFIED ASSEMBLY STRENGTH 750Kg



10-PER SET

A3- 2017-045

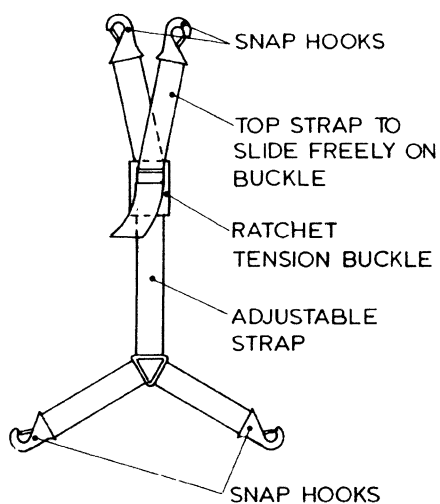
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CERTIFIED ASSEMBLY STRENGTH 1500Kg



2- PER SET

A3-2017-046

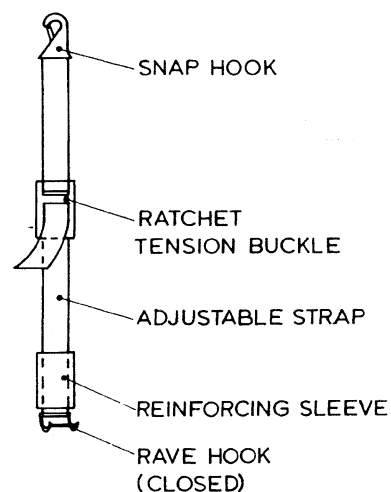
50mm WIDE LOAD RESTRAINT STRAP
CERTIFIED ASSEMBLY STRENGTH 1500Kg



2-PER SET

A3-2017-047

50mm WIDE LOAD RESTRAINT STRAP
CERTIFIED ASSEMBLY STRENGTH 1500Kg

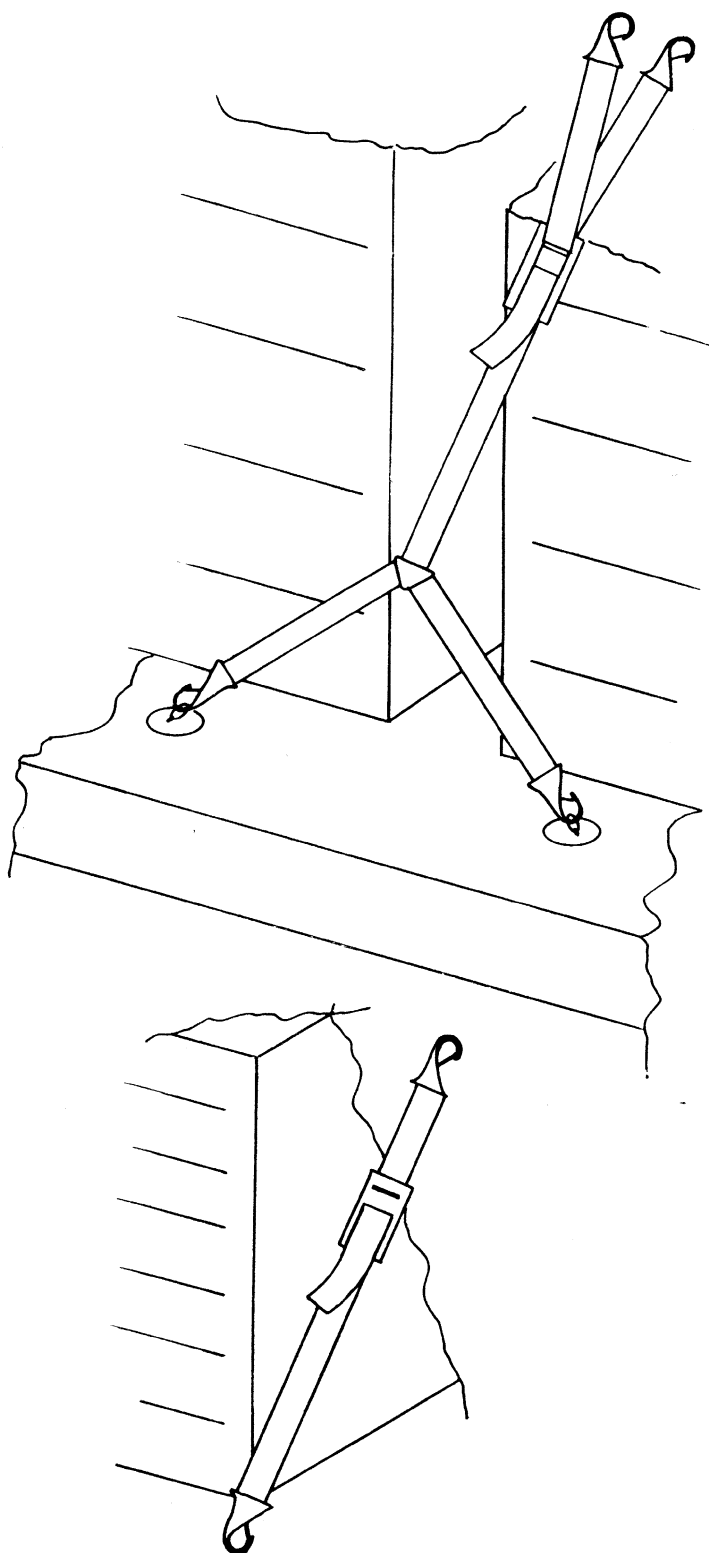


2-PER SET

A3-2017-048

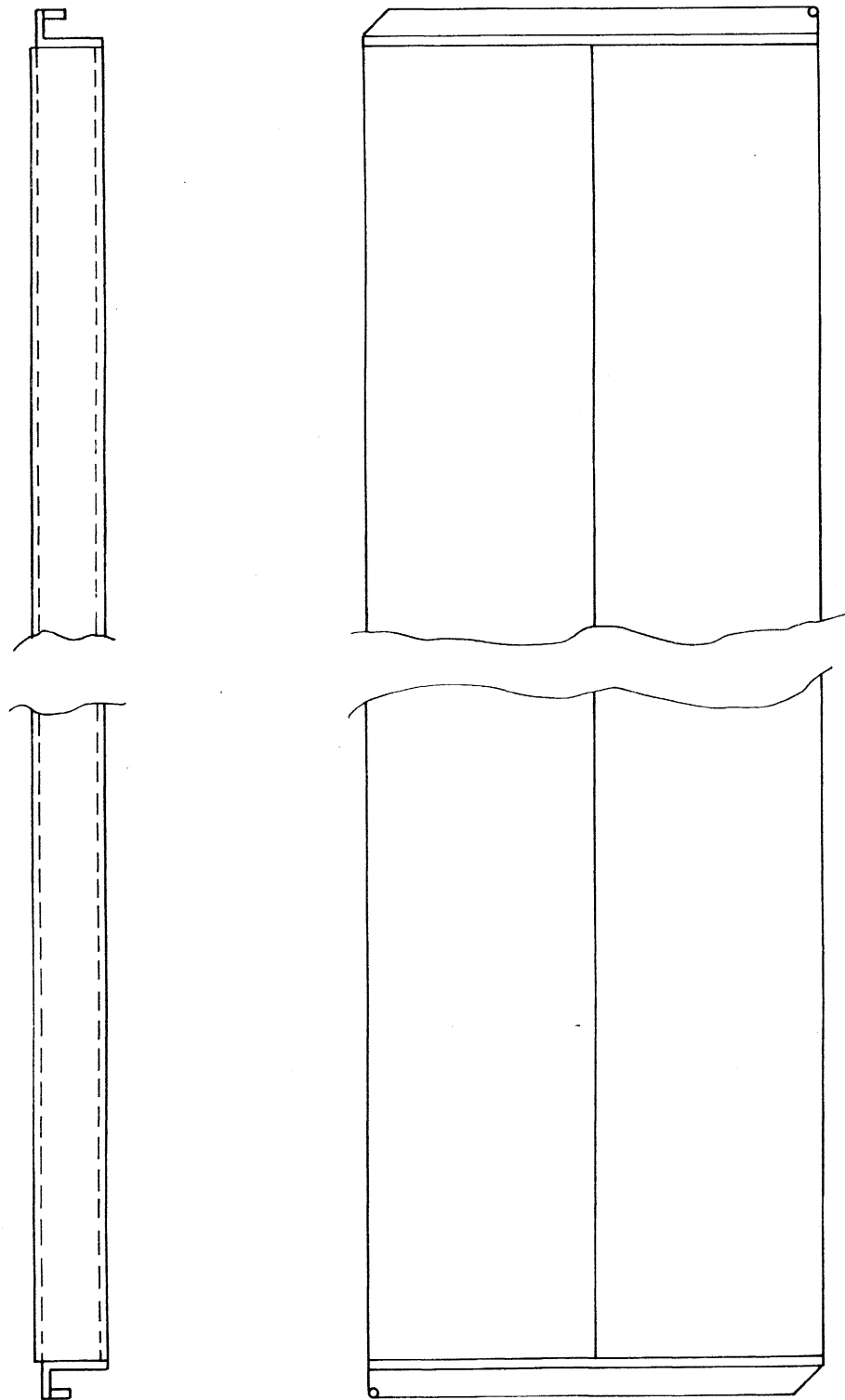
V11398/6

Fig 13 Restraint Straps



V11398/21

Fig 14 Fitting Restraint Straps



V11398/14

Fig 15 Catwalk

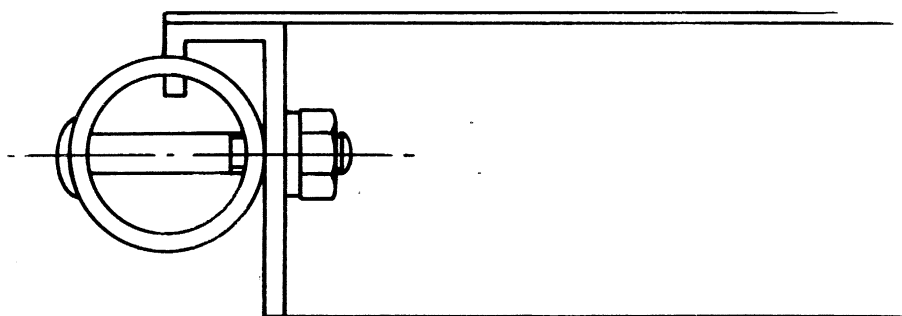
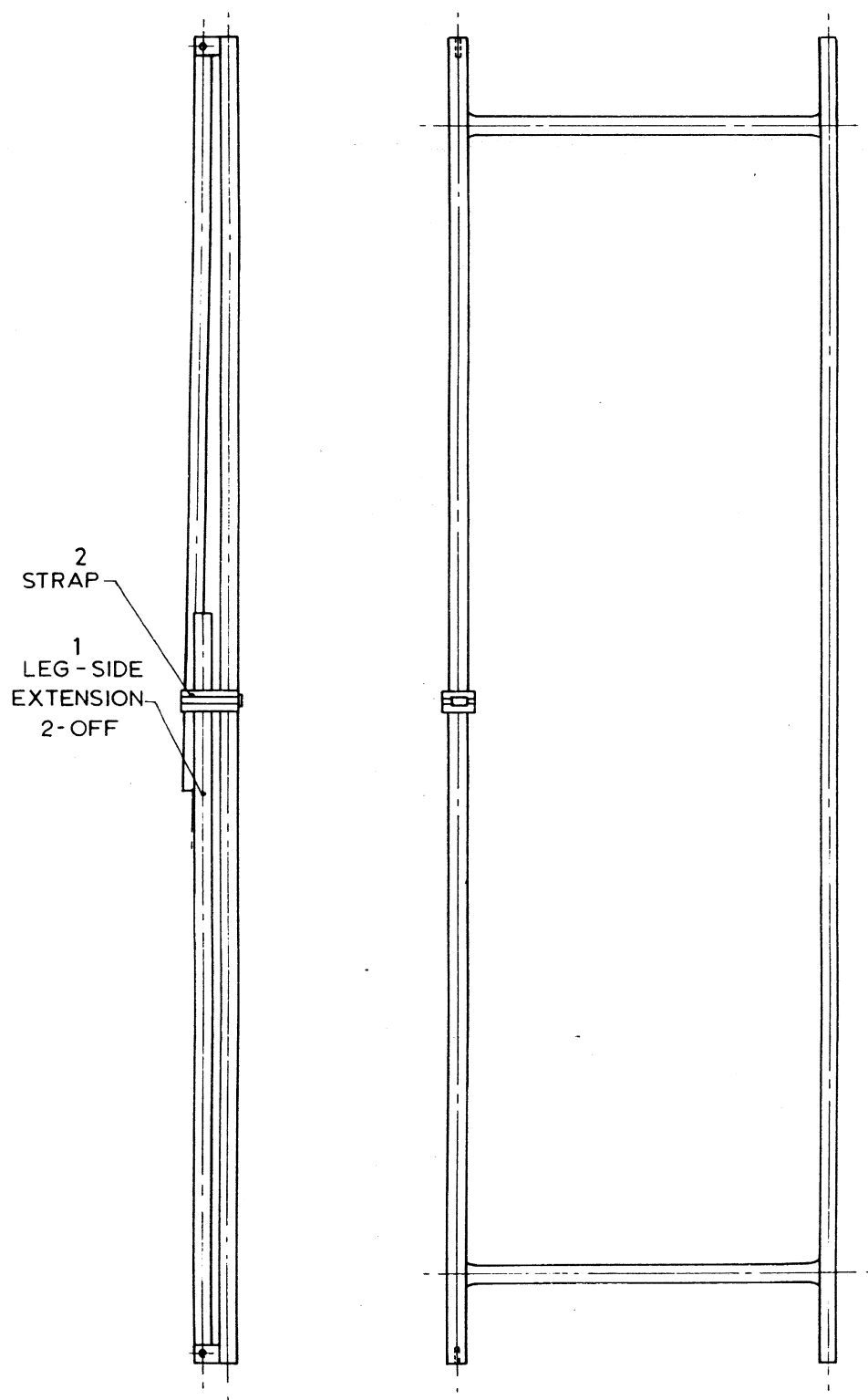


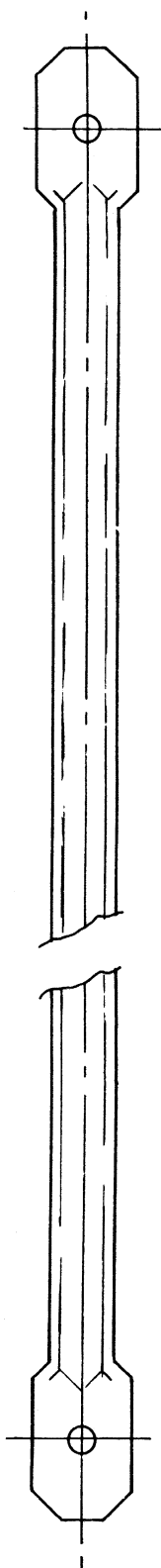
Fig 16 Fitting Catwalk

V11398/22



V11398/16

Fig 17 Side Extension Frame



V11398/15

Fig 18 Longitudinal Tubes

TRUCK 4 TONNE, 4 x 4, BEDFORD MJ (ALL VARIANTS)

INSTALLATION INSTRUCTION No 5

Sponsor:
DGES(A)

Publications Authority:
ATSA Chertsey
Project No: ES52c 4247 (62)
File ref: ES52c 4247/ASST/MPG

AMENDMENT RECORD

Amdt No	Incorporated By (Signature)	Date
1		
2		
3		

Amdt No	Incorporated By (Signature)	Date
4		
5		
6		

SUBJECT: Battlefield Searchlight.

INTRODUCTION

1 This instruction details the fitment of a vehicle mounted generator and searchlight providing battlefield illumination which includes modification to the canopy rails to enable rapid deployment of the searchlight.

RELATED AND ASSOCIATED PUBLICATIONS

2	Publication references	Title
2.1	AESP 2320-H-100-OCTAD	Truck 4 Tonne, 4 x 4, Bedford MJ (All Variants).
2.2	AESP 6115-G-703-OCTAD	Generator Set, Diesel Engine (8/12 kW).
2.3	AESP 6230-S-100-201	Searchlight, Truck Mounted (7 kW).
2.4	JSP 341 Chap 9	Joint Service Road Transport Regulations.

INSTALLATION ILLUSTRATIONS

3

Fig		Page
1	Canopy rail modification	7
2	Tie down and earthing of generator and searchlight.....	11
3	Earth fixture	12
4	Mounting block.....	12

INSTALLATION IMPLEMENTATION PLAN**Action required by****4 Units and establishments holding subject equipments/vehicles.**

4.1 When authorized by LSOR(3), demand stores listed in Table 2, quoting this instruction as authority and the registered number of the vehicle.

4.2 On receipt of stores request REME to embody this installation.

4.3 Record installation instruction details in vehicle documents.

5 Unit and establishments embodying this installation.

5.1 This installation is to be carried out by units authorized to carry out repairs to levels 2, 3 and 4 when requested by holding units.

5.2 Units embodying this installation are to enter completion details in vehicle documents.

Tools

6 Suitable lifting equipment capable of safely lifting a weight of 1530 Kgs (3373 lbs).

Man-hour content

7 To carry out the installation of the searchlight and generator and modification to the canopy rails: Approx 14 hours. To functional test: Approx 1 hour.

TABLE 1 ESTIMATED TIME REQUIRED PER EQUIPMENT

Item No. (1)	Task (2)	Man-hours (3)	Tradesman employed (4)
1	Modification of canopy rails	6	Vehicle Mechanic
2	Fitting of generator	4	Vehicle Mechanic/Vehicle Electrician
3	Fitting of searchlight	4	Vehicle Mechanic/Vehicle Electrician
4	Functional test of installation	1	Vehicle Examiner

Stores required

8

TABLE 2 STORES TO BE DEMANDED

Item No.	DMC	NSN/Part No.	Designation	Qty	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1	6MT	2540-99-812-9340	Rail canopy steel (centre)	1	
2	G1	5309-99-120-3648	Bolt UNF, steel, csk head, 5/16 in. x 3 in.	7	
3	G1	5310-99-947-1263	Washer flat, steel 5/16 in.	7	
4	G1	5310-99-944-0549	Washer lock, steel, single coil 5/16 in.	7	
5	G1	5310-99-941-0925	Nut plain hexagon, UNF, steel, 5/16 in.	7	
6	H2	8305-99-788-0251	Cord elastic	8 m	
7	6MT1	5340-99-801-4463	Pin quick release D-Type	7	
8	X2	6115-99-777-1835	Generator set, diesel engine (8/12 kW), Huntings	1	
9	X1	6230-99-807-1312	Searchlight, 7 kW, Francis	1	
10	X1	6230-99-662-9300	Kit, tie down and earthing	1	Detailed in Table 3

NOTE

In addition to the stores listed in Table 2, a quantity of 35 mm OD, 31 mm ID steel tube, cut into seven 2150 mm lengths are to be manufactured locally to enable the canopy rail alteration to be implemented.

TABLE 3 KIT, TIE DOWN AND EARTHING

Item No.	DMC	NSN/Part No.	Designation	Qty	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1		HCT101106	Lead, electrical (earth)	1	HUNTINGS
2		HCT101107	Lead, electrical (earth)	2	HUNTINGS
3		HCT101110/1	Shim	12	HUNTINGS
4		HCT101110/2	Spacer	4	HUNTINGS
5		HCT101111	Spacer (special)	4	HUNTINGS
6		HCT101112	Back plate	4	HUNTINGS
7	X2	6115-99-786-1067	Mounting block	2	FV2042144
8		C15246	Hold down bracket	2	FRANCIS S/L
9		930828/4	Large D shackle, 1.5T SWL	8	RICKWOOD
10		930828/1	Eye nut M16 thrd, 0.8T SWL	4	RICKWOOD
11		930828/2	Collar eyebolt M16 X 50, 0.8T SWL	4	RICKWOOD
12		930828/3	Ratchet loadbinder, olive 5000 kg B.S	8	RICKWOOD
13	G1	5305-99-122-8672	Screw Stl hex hd M10 X 50 zinc plated	8	
14	G1	5305-99-122-4913	Screw Stl hex hd M12 X 30 zinc plated	8	
15	G1	5305-99-122-8676	Screw Stl hex hd M12 X 40 zinc plated	1	
16	G1	5306-99-122-2812	Screw Stl hex hd M16 X 55 zinc plated	4	
17	G1	5306-99-122-2830	Screw Stl hex hd M20 x 100 zinc plated	4	
18	G1	5310-99-138-9228	Washer lock S/C Stl M10 zinc plated	8	
19	G1	5310-99-138-9229	Washer lock S/C Stl M12 zinc plated	1	
20	G1	5310-99-138-9230	Washer lock S/C Stl M16 zinc plated	4	
21	G1	5310-99-138-9231	Washer lock SIC Stl M20 zinc plated	4	
22	G1	5310-99-122-6476	Washer flat Stl M10 (Form A) zinc plated	4	
23	G1	5310-99-122-6477	Washer flat Stl M12 (Form C) zinc plated	9	
24	G1	5310-99-122-3038	Washer flat Stl M16 (Form C) zinc plated	8	

(continued)

TABLE 3 KIT, TIE DOWN AND EARTHING (continued)

Item No.	DMC	NSN/Part No.	Designation	Qty	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
25	G1	5310-99-122-3040	Washer flat Stl M20 (Form C) zinc plated	8	ND14633E
26	G1	5310-99-977-4932	Washer Int tooth Stl M12 zinc plated	4	
27	G1	5310-99-122-5304	Nut thin hex Stl M12 zinc plated	1	
28	G1	5310-99-122-5298	Nut plain hex Stl M12 zinc plated	1	
29	G1	5310-99-122-5502	Nut locking thick (nyloc) M12 Stl Z/C BS	4	
30	G1	5310-99-136-9905	Nut locking thick (nyloc) M16 Stl Z/C BS	4	
31	G1	5310-99-122-5306	Nut plain Stl hex M20 zinc plated	4	
32		XG-220 Def/Stan 91-8	Grease graphite, lubricating conducting	As req	

DETAILED INSTRUCTIONS

9 The following instructions have been divided into three main tasks.

Preparation

10

10.1 Park the vehicle on a suitable level surface. Apply the vehicle parking brakes.

10.2 Remove the vehicle canopy from superstructure.

Modification of canopy rails (Task 1)

11 The item numbers in the following instruction refer to Fig 1.

11.1 Dismantle canopy rails (1 and 5).

11.2 Refit rear hoop (5) at original centre hoop position.

11.3 Refit centre hoop (1) at original rear hoop position. Ensure that the two quick release pins securing the upright posts to the cross rail are fitted facing inwards.

11.4 Drill a 8 mm hole 90 degrees to the flat formed end in the seven rear rails, the hole centre being 325 mm from the tubular end of the rail (4).

11.5 Drill a 12 mm hole parallel to the flat formed end of the rear rails, the hole centre being 127 mm from the tubular end of the rail.

11.6 Remove a 70 mm length from the end of the rear rails (4).

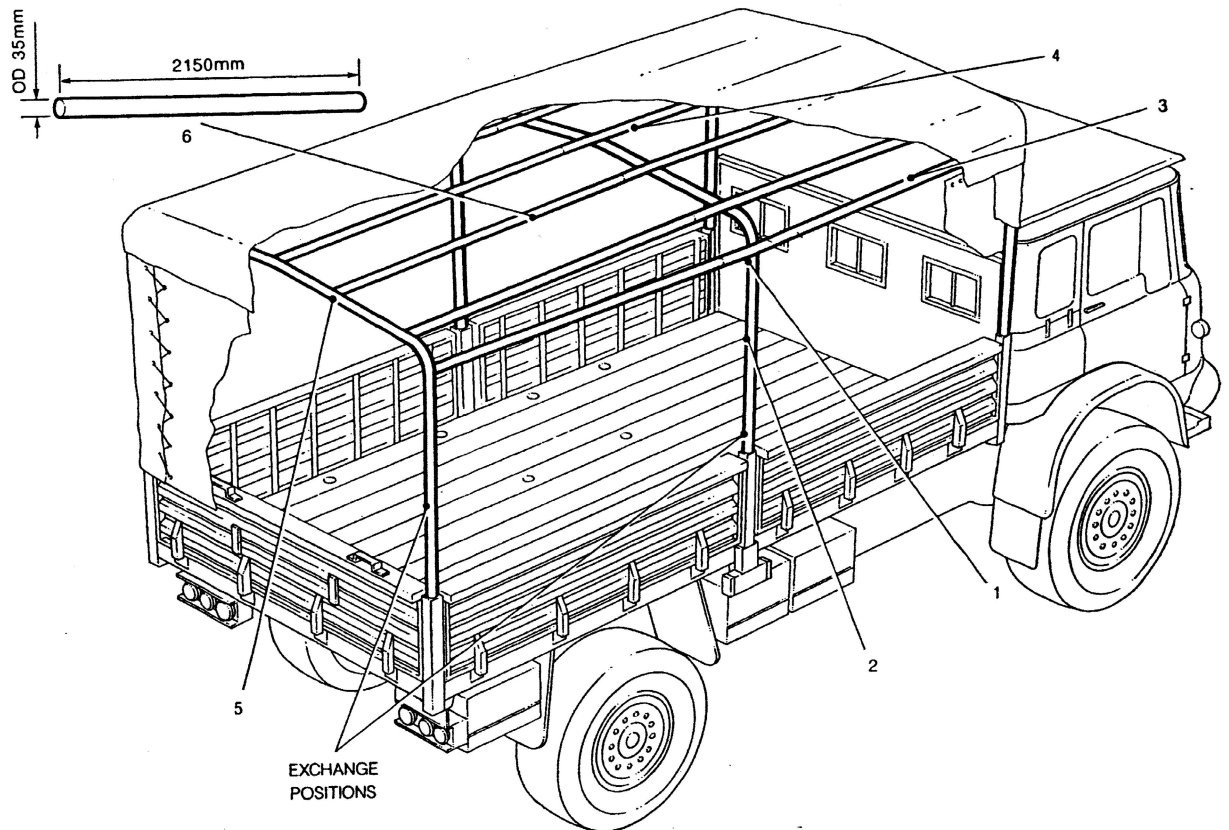
11.7 Fit the seven 2150 mm lengths of 35 mm OD (6) tubing over the end of the rear rails. Fit the rear rails to the rear hoop using the original fasteners.

11.8 Replace the hemp cord along the lower edge of the rear side canopies with elasticated cord.

11.9 Ensure that seven 2150 mm (6) tubular sections are fully forward connecting the front and rear rails as one. Fit the seven quick release pins into the 12 mm holes, in order to prevent movement of the joined sections.

NOTE

Grease may need to be applied to the joint to assist ease of assembly and separation.



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- | | |
|------------------------|---------------------------|
| 1 Centre hoop rail | 4 Original rear rails |
| 2 Side upright rail | 5 Rear hoop rail |
| 3 Front rails 40 mm ID | 6 New rear rails 35 mm OD |

Fig 1 Canopy rail modification

Install Generator (Task 2)

12 The item numbers used in Table 3 are used as reference throughout the following instruction:

- 12.1 Remove the D-shackles on the load bed as detailed in Fig 2, to accommodate the generator.
- 12.2 In the space left by the D-shackle, place a special spacer (5), a normal spacer (4), and shim (3) as necessary to bring level with load bed when bolted down as in Fig 4.
- 12.3 Using a suitable lifting device, lift the generator onto the load bed in the position shown in Fig 2.

WARNING

HEAVY EQUIPMENT. RELEVANT SAFETY PRECAUTIONS MUST BE OBSERVED WHEN LIFTING THE GENERATOR, - APPROX WEIGHT 1530 KGS (3373 LBS).

- 12.4 Secure the mounting block (7) to the generator using four bolts (13), four lock washers (18) and four flat washer (22). Tighten the bolts to a torque of 58 Nm (43 lb/ft).
- 12.5 Secure the generator and mounting block to the load bed with bolt (17), washers plain (25), washer lock (21) and nut (31). Tighten both sides to a torque of 150 Nm (110 lb/ft).
- 12.6 Fit D-shackles (9) to the existing D-shackles on the load bed as shown in Fig 2.
- 12.7 Secure each corner of the generator with the ratchet straps (12).

Install Searchlight (Task 3)

13 The item numbers used in Table 3 are used as reference throughout the following instruction.

- 13.1 Remove the two D-shackles from the load bed as detailed in Fig 2.
- 13.2 In the space left by the D-shackle, place a special spacer (5), a normal spacer (4), and shim (3) as necessary to bring level with load bed when bolted down as in Fig 4.
- 13.3 Secure the hold down bracket (8) to the side of the searchlight using four bolts (14) and washers (23). Repeat on opposite side.
- 13.4 Using a suitable lifting device, lift the searchlight onto the load bed. Ensure the bolt holes in the hold down bracket are aligned with the spacer bolt holes.

CAUTION

EQUIPMENT DAMAGE. Searchlight must be handled with care. Approx weight is 465 kgs (1025 lbs).

- 13.5 Secure the searchlight to the load bed using bolt (17), washers plain (25), washers lock (21) and nut (31). Tighten to a torque of 150 Nm (110 lb/ft). Repeat on the opposite side.
- 13.6 Fit eyebolts (16) to each corner of the searchlight (Fig 2), secure using nuts (30).
- 13.7 Fit D-shackles (9) to the existing D-shackles on the load bed as shown in Fig 2.
- 13.8 Secure each corner of the searchlight with the ratchet straps (12).

Earthing

14 The item numbers in Table 3 are used as reference throughout the following instruction:

- 14.1 To secure earth straps to vehicle chassis as detailed in Fig 2 and 3, proceed as follows:
 - 14.1.1 Scrape paint clear approx 5 mm all around edge of the hole.
 - 14.1.2 Smear all items with graphite grease (32).
 - 14.1.3 Position bolt (15) with washer (26) through the chassis and secure with thin nut (27).
 - 14.1.4 Place onto bolt in the following order the washer (26), earth lead (1), washer (26), earth lead (2), washer (26), washer lock (19) and secure with nut (28) as detailed in Fig 3.
 - 14.1.5 Connect the other ends of the earth straps to the designated points on the searchlight and the generator respectively.

WARNING

HIGH VOLTAGE. THE VOLTAGES GENERATED BY THIS EQUIPMENT ARE POTENTIALLY LETHAL, THE EQUIPMENT MUST BE PROPERLY EARTHED BEFORE ATTEMPTING TO OPERATE THE GENERATOR SET.

Installation Inspection

CAUTION

EQUIPMENT DAMAGE. Before attempting to use any of this equipment the relevant AESP operating instructions listed in Para 2 should be referred to.

15 The installation must be inspected and approved by a Vehicle Examiner or other suitably qualified personnel and a functional test carried out.

WARNING

TOXIC FUMES. THE EXHAUST EXTRACTOR THAT IS PROVIDED WITH THE GENERATOR SET MUST BE USED TO EXTRACT EXHAUST FUMES AWAY FROM THE VEHICLE WHEN OPERATING THE GENERATOR.

Transit Locking Arrangement

16 Preparation for transit and deployment of locking system:

- 16.1 Release the leather retention straps on the sides of the support crutch and allow the locking plate to swing downwards, release the pan brake and align the searchlight to the rear facing position. Working from one side, compress the plunger levers and locate the locking plate in its transit position, release the levers and allow the bolts to mate with their housings. Repeat on the other side.
- 16.2 Set the searchlight in its horizontal position. Identify the fixed eyebolts at the front and rear of the searchlight and their opposite numbers front and rear of the base unit. Using the webbing straps provided connect each pair of eyebolts together and tighten.
- 16.3 Make sure all items of loose equipment have been stowed and that the remote control cable and handset has been coiled, tied in its location.

16.4 Check that the searchlight tie down system is secure. The webbing straps at each corner of the base must be under tension.

17 To prepare the searchlight for use, reverse this procedure.

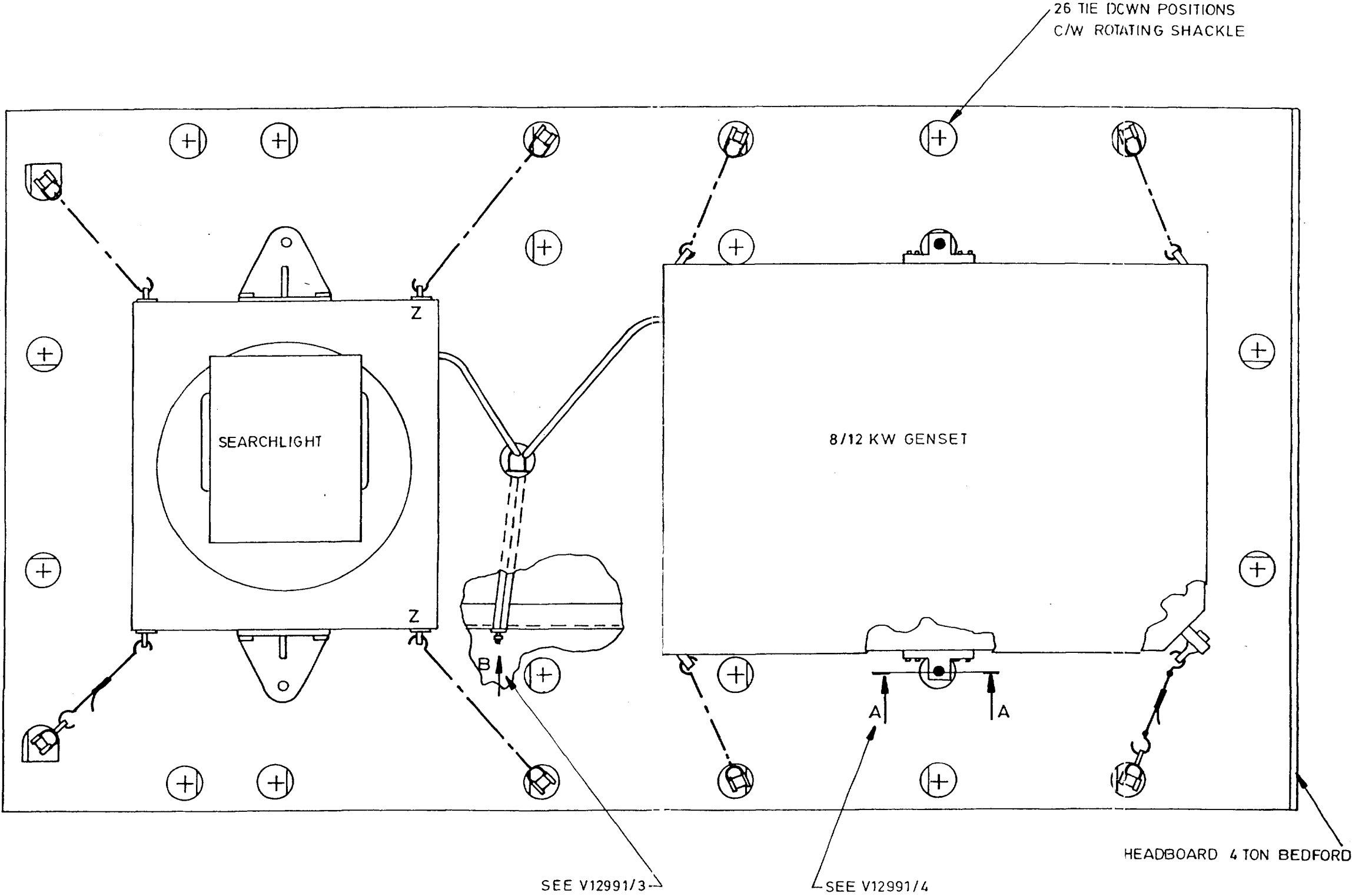
EFFECT ON WEIGHT

18 The weight of the installation is approx 2.5 Tonne increasing the gross vehicle weight with the installation kit embodied to approx 7.4 Tonne.

RECOVERY ASPECTS

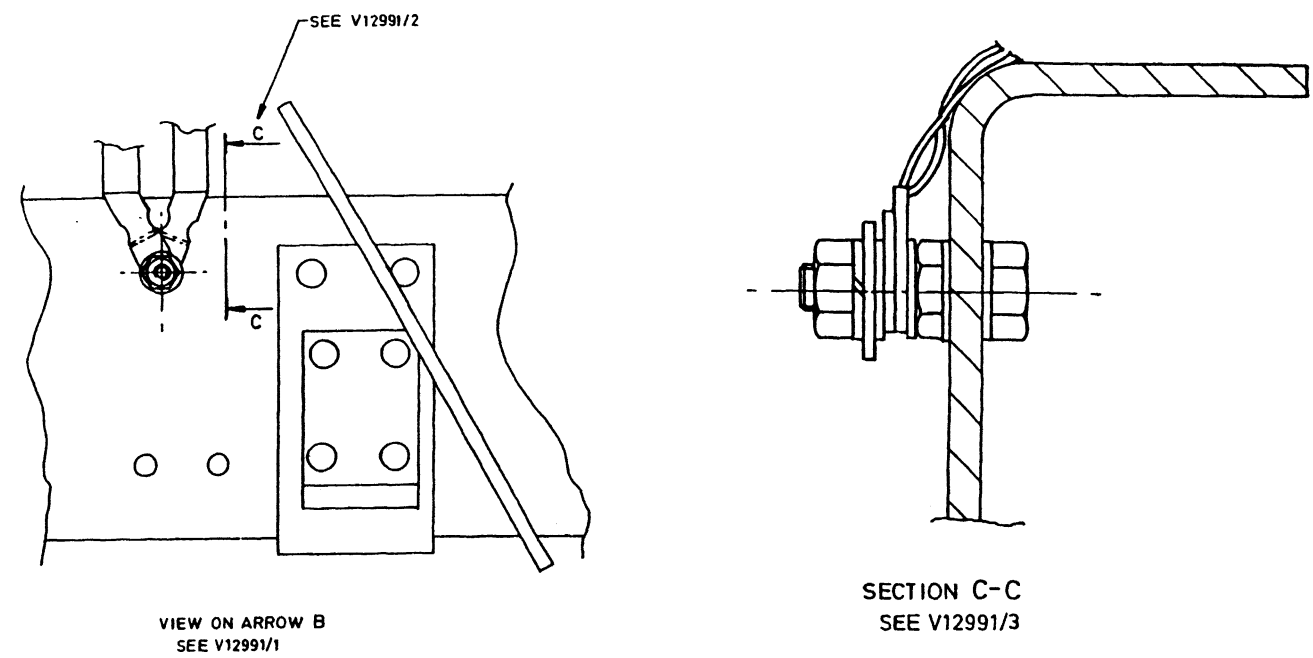
19 Due to the vehicle being in a permanent laden state:

19.1 Recovery procedures contained in JSP 341 must be adhered to; Chap 9 , Para 09262(a), states; The towing vehicle is to be of the same or a greater weight category than the disabled vehicle and towing speeds reduced accordingly.



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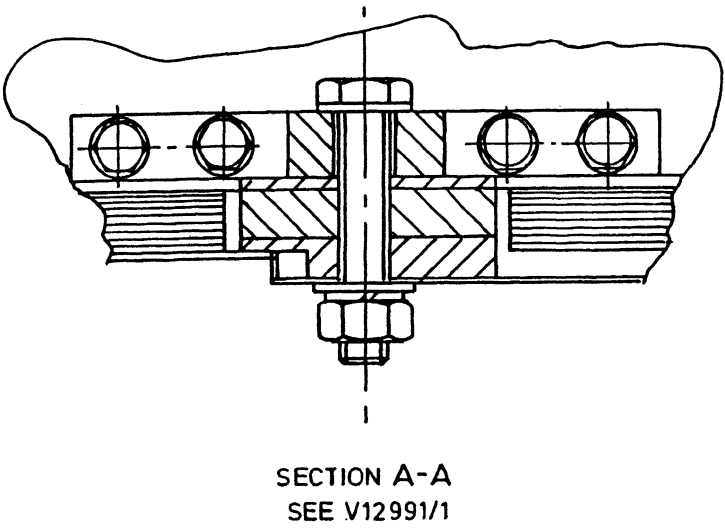
Fig 2 Tie down and earthing gen set and searchlight



V12991/3

V12991/2

Fig 3 Earth Fixture



V12991/4

Fig 4 Mounting Block

TRUCK 4 TONNE, 4 x 4, BEDFORD MJ (ALL VARIANTS)

INSTALLATION INSTRUCTION No 6

Sponsor:
DGES(A)

Publications Authority:
ATSA Chertsey
Project No: ES52c 4344(119)
File ref: BVP

AMENDMENT RECORD

Amdt No	Incorporated By (Signature)	Date	Amdt No	Incorporated By (Signature)	Date
1	I. Davidge	7/5/97	4		
2	GRC Boyle	23/11/98	5		
3	GRC Boyle	4/10/99	6		

SUBJECT: UBRE mounted on Bedford Truck Cargo Bulk Fuel MJ 4 Tonne.

INTRODUCTION

1 This instruction details the fitment of Unit Bulk Refuelling Equipment (UBRE) to the cargo bed of a Bedford MJ 4 Tonne equipment asset code (EAC) 2204-3100 and 2204-8100. The purpose of the equipment is to provide a mobile refuelling facility for use at Unit level. This instruction covers three configuration options: one tank one fuel; two tanks one fuel; and two tanks two fuel.

ASSOCIATED PUBLICATIONS

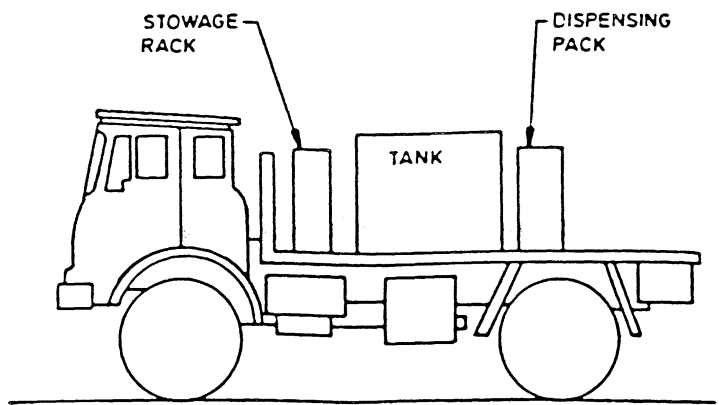
2

- | | | |
|-----|-----------------------|--|
| 2.1 | AESP 4390-C-100 Octad | Unit Bulk Refuelling Equipment (UBRE). |
| 2.2 | AESP 2320-A-100 Octad | Gas Freeing, Cleaning, Examination and Repair of Trucks Tanker Fuel, Trucks Fuel Servicing and Unit Bulk Refuelling Equipment. |
| 2.3 | JSP 317 | Joint Services Safety Regulations for the Storage and Handling of Fuels and Lubricants. |

INSTALLATION ILLUSTRATIONS

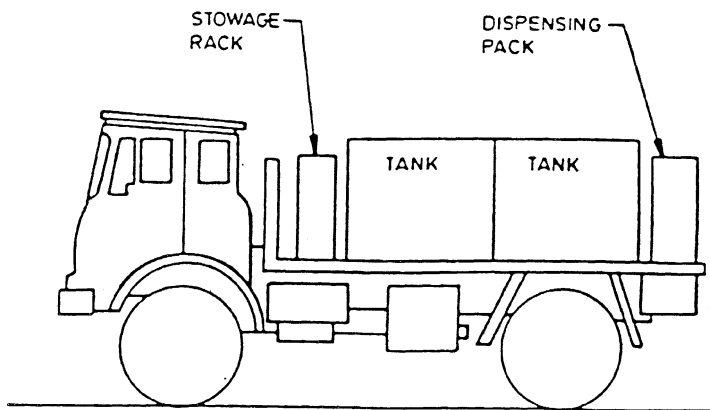
3	Fig	Page
1	One tank one fuel configuration	2
2	Two tank one fuel configuration	2
3	Two tank two fuel configuration	2
4	J-bolt fixing	6

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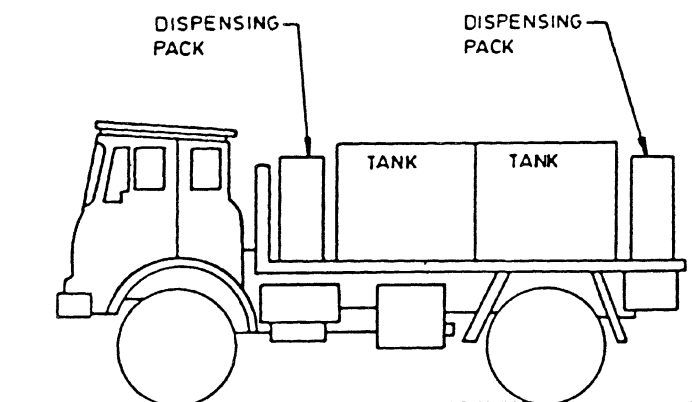
V13356/1

Fig 1 One tank one fuel configuration



V13356/2

Fig 2 Two tank one fuel configuration



V13356/3

Fig 3 Two tank two fuel configuration

INSTALLATION IMPLEMENTATION PLAN

Applicability

4 In order to comply with petroleum carrying vehicle regulations, this kit must only be fitted to Truck Cargo Bulk Fuel MJ 4 Tonne Equipment Asset Code (EAC) 2204-3100 and 2204-8100; this kit must not be fitted to any other variant. All the following installations can be fitted to the subject vehicles, providing they have a normal rear body (flat platform or canopy).

5 For the purposes of this document the right hand side is that viewed from the rear of the vehicle looking towards the tail board.

Action required by:

6

6.1 Units and establishments holding subject equipments/vehicles.

6.1.1 Where a need is identified for a UBRE to be fitted to a Bedford MJ 4 Tonne, demand the stores from either Table 2, 3, or 4, depending on the type of configuration required.

6.1.2 On receipt of stores, request REME to embody this installation.

6.1.3 Record installation instruction details in the vehicle documents.

6.2 Unit and establishments embodying this installation.

6.2.1 Carry out the installation as detailed in these instructions.

6.2.2 Record the completion details of this installation in the vehicle documents.

Man-hour content

7 To carry out the installation should take approximately 17 man-hours.

TABLE 1 ESTIMATED TIME REQUIRED PER EQUIPMENT

Item No. (1)	Task (2)	Man-hours (3)	Tradesman employed (4)
1	Preparation.	2	Vehicle Mechanic.
2	Assembly.	14	Vehicle Mechanic.
3	Testing.	1	Petrol Operator.

STORES TOOLS AND TEST EQUIPMENT

Handling, unpacking and cleaning

8 The detailed instructions (Para 11 onwards) detail how to lift the UBRE onto the Bedford MJ 4 Tonne load bed. This must be done using lifting equipment capable of lifting up to 500 kg (1102 lbs). These instructions assume that a fork lift truck (FLT) is used.

9 All traces of paint must be removed from the J-bolt threads, prior to installation.

Stores required

10

TABLE 2 STORES REQUIRED TO EMBODY ONE TANK ONE FUEL INSTALLATION

Item No. (1)	DMC (2)	NSN/Part No. (3)	Designation (4)	Qty per eqpt (5)	Remarks (6)
1	W7	4930-99-207-0099	Tank assembly, liquid dispensing.	1	
2	W7	4930-99-207-0100	Dispensing pack.	1	
3	W7	4930-99-207-0103	Channel mounting r.h	1	
4	W7	4930-99-207-0104	Channel mounting l.h	1	
5	W7	4930-99-207-0102	Manifold assembly.	1	
6	W7	4930-99-207-4202	Ancillaries kit.	1	
7	W7	4930-99-207-4201	Hose assembly, suction.	1	
8	W7	4930-99-207-0101	Rack stowage.	1	

TABLE 3 STORES REQUIRED TO EMBODY TWO TANK ONE FUEL INSTALLATION

Item No. (1)	DMC (2)	NSN/Part No. (3)	Designation (4)	Qty per eqpt (5)	Remarks (6)
1	W7	4930-99-207-0099	Tank assembly, liquid dispensing.	2	
2	W7	4930-99-207-0100	Dispensing pack.	1	
3	W7	4930-99-207-0103	Channel mounting r.h	1	
4	W7	4930-99-207-0104	Channel mounting l.h	1	
5	W7	4930-99-207-0102	Manifold assembly.	1	
6	W7	4930-99-207-4202	Ancillaries kit.	1	
7	W7	4930-99-207-4201	Hose assembly, suction.	1	
8	W7	4930-99-207-0101	Rack stowage.	1	

TABLE 4 STORES REQUIRED TO EMBODY TWO TANK TWO FUEL INSTALLATION

Item No. (1)	DMC (2)	NSN/Part No. (3)	Designation (4)	Qty per eqpt (5)	Remarks (6)
1	W7	4930-99-207-0099	Tank assembly, liquid dispensing.	2	
2	W7	4930-99-207-0100	Dispensing pack.	2	
3	W7	4930-99-207-0103	Channel mounting r.h	1	
4	W7	4930-99-207-0104	Channel mounting l.h	1	
5	W7	4930-99-207-0102	Manifold assembly.	2	
6	W7	4930-99-207-4202	Ancillaries kit.	1	
7	W7	4930-99-207-4201	Hose assembly, suction.	2	
8	W7	4930-99-207-7794	Kit mounting twin dispensing pack.	1	

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DETAILED INSTRUCTIONS

11 The following procedures detail the steps to be taken in order to fit the UBRE onto the back of the vehicle.

Preparation

Load bed preparation

12 The load bed must be stripped down to a flat platform prior to fitting the UBRE. This procedure is identical for all three UBRE configurations:

- 12.1 Position the vehicle on firm, level ground and apply the parking brake.
- 12.2 Remove the vehicle canopy.
- 12.3 Remove the vehicle canopy frame.
- 12.4 Remove the dropsides and dropside stanchions.

NOTE

The tailgate can be left, if desired, to provide a platform for the operator as well as a suitable location for safety signs. If this is to be the case, then the two rearmost dropside stanchions should be left fitted.

Fitting the channel assemblies.

13 The channel assemblies must be mounted onto the load bed to provide a base for the UBRE to be mounted onto. The left and right hand channels are not interchangeable. This procedure is identical for all three UBRE configurations:

- 13.1 Ensure that the hinged locating plates are correctly positioned on the channel assemblies so that they can locate over the side mounted lashing points on the vehicle load platform. The lashing points on the floor platform must be free and the D-shackles (lashing eyes) facing the front of the vehicle.
- 13.2 Place the channels in position on the load bed ensuring that the ends marked 'FRONT' are placed nearest the cab. This will ensure that the lashing hooks will line up with the floor mounted lashing points. Check that the channels are square to the platform and are parallel to each other.
- 13.3 Engage the hooks into the floor mounted lashing points and tighten to 40 Nm (30 lbf ft). Do not over-tighten.

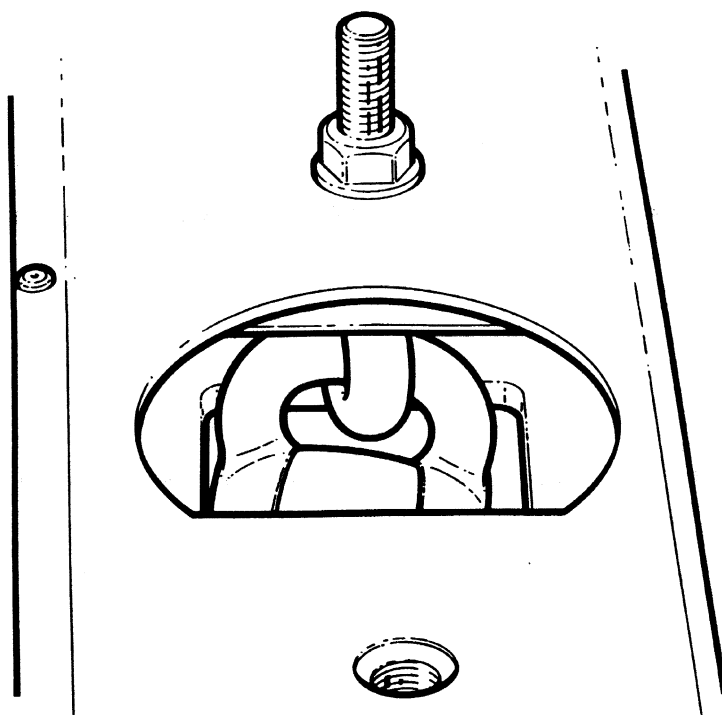


Fig 4 J-bolt fixing

V13286/4

One tank, one fuel configuration

14 In order to fit the one tank one fuel configuration, the following procedure (Paras 15 to 19) must be followed.

Fitting the stowage rack

15 The stowage rack is the first component of the UBRE to be fitted to the vehicle and must be located at the headboard end, as follows:

15.1 Fit mounting brackets to the four mounting pads on the rack. Ensure that bonding strips are assembled with the brackets.

15.2 Ensure that the lower sliding tier is secured in the closed position and the top tier enclosure panel is facing to the right. Engage the right hand fork into the fork lift tunnel until it is three quarters engaged.

WARNING

LOAD DISTRIBUTION. THERE MUST NOT BE AN EXCESS OF WEIGHT IN THE TOP TIER WHEN LIFTING THE RACK. IF THE LOWER TIER CONTAINS NO EQUIPMENT THE TOP TIER MUST BE EMPTIED.

15.3 Fully raise the forks and tilt the FLT mast head backwards. Ensure that the lateral shift is to the left.

15.4 Offer up the stowage rack slightly to the left of its correct position on the load bed. Tilt the FLT mast head forward and lower the forks until the rack is just clear of the channels. Traverse to the right until the feet of the rack are over their respective mounting points on the channels. Lower the rack onto the channels and withdraw the forks.

15.5 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 45 Nm (35 lbf ft), ensuring that the flat and spring washers are fitted.

Filling the tank assembly.

16 The fuel tank must now be fitted to the channel assemblies, as follows:

16.1 Fit the mounting brackets to the tank mounting pads. Ensure that bonding strips are assembled with the brackets.

16.2 Approaching from the bottom loading valve side, engage the forks three quarters of the way into the tunnels of the tank. Tilt the FLT mast head backwards and raise the forks fully, ensuring that the lateral shift is to the left.

16.3 Approach the vehicle just to the left of the stowage rack, tilt the FLT mast forward and lower the forks until the tank is just clear of the channels. Traverse to the right until the location holes line up on the far channel. Lower the tank onto the channels and withdraw the FLT forks.

16.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 65 Nm (50 lbf ft), ensuring that the flat and spring washers are fitted.

Fitting the dispensing pack

17 In order to fit the dispensing pack, proceed as follows:

17.1 Fit the mounting brackets to the units mounting pads. Ensure that bonding strips are assembled with the brackets.

17.2 Approach from the pump set end and engage the right hand fork three quarters into the tunnel. Tilt the FLT mast head backwards and fully raise the forks, ensuring that the lateral shift is to the left.

17.3 Approach the vehicle just to the left of the second tank, tilt the FLT mast forward and lower the forks until the dispensing pack is just clear of the channels. Traverse to the right until the location holes line up with the mounting points on the channels. Lower the dispensing pack onto the channels and withdraw the FLT forks.

17.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 45 Nm (35 lbf ft), ensuring that the flat and spring washers are fitted.

WARNING

EXPLOSION HAZARD. THE EQUIPMENT MUST BE CONNECTED TO THE CHASSIS EARTH POINT USING THE BONDING LEAD.

Fitting the suction hose

18 In order to fit the suction hose, proceed as follows:

18.1 Fit the short hose to the tank, checking that the hose unit pegs engage with the tank unit slots. Turn the handle clockwise approximately 120 degrees.

18.2 Using the same technique, fit the hose manifold to the pump set inlet.

18.3 The longer hose must then be blanked off using a blanking cap.

Ancillaries

19 The ancillaries kit should be stored in the stowage rack until required for use.

Two tank, one fuel configuration

20 In order to fit the two tank one fuel configuration, the following procedure (Paras 21 to 25) must be followed.

Fitting the stowage rack

21 The stowage rack is the first component of the UBRE to be fitted to the vehicle and must be located at the headboard end, as follows:

21.1 Fit the mounting brackets to the four mounting pads on the rack. Ensure that bonding strips are assembled with the brackets.

21.2 Ensure that the lower sliding tier is secured in the closed position and the top tier enclosure panel is facing to the right. Engage the right hand fork into the fork lift tunnel until it is three quarters engaged.

WARNING

LOAD DISTRIBUTION. THERE MUST NOT BE AN EXCESS OF WEIGHT IN THE TOP TIER WHEN LIFTING THE RACK. IF THE LOWER TIER CONTAINS NO EQUIPMENT THE TOP TIER MUST BE EMPTIED.

21.3 Fully raise the forks and tilt the FLT mast head backwards. Ensure that the lateral shift is to the left.

21.4 Offer up the stowage rack slightly to the left of its correct position on the load bed. Tilt the FLT mast head forward and lower the forks until the rack is just clear of the channels. Traverse to the right until the feet of the rack are over their respective mounting points on the channels. Lower the rack onto the channels and withdraw the forks.

21.5 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 45 Nm (35 lbf ft), ensuring that the flat and spring washers are fitted.

Fitting the tank assemblies

22 The two fuel tanks must now be fitted to the channels assemblies, as follows:

22.1 Fit the mounting brackets to the tank mounting pads. On the forward tank the rear bracket locates with the rear holes on the pad and on the rear tank, location of the rear bracket is with the forward holes of the pad. Ensure that bonding strips are assembled with the brackets.

22.2 Approaching from the bottom loading valve side, engage the forks three quarters of the way into the tunnels of the tank. Tilt the FLT mast head backwards and raise the forks fully, ensuring that the lateral shift is to the left.

22.3 Approach the vehicle just to the left of the stowage rack, tilt the FLT mast forward and lower the forks until the tank is just clear of the channels. Traverse to the right until the location holes line up on the far channel. Lower the tank onto the channels and withdraw the forks.

22.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 65 Nm (50 lbf ft), ensuring that the flat and spring washers are fitted.

22.5 Repeat the sequence of operations for the second tank.

Fitting the dispensing pack

23 In order to fit the dispensing pack, proceed as follows:

23.1 Fit the mounting brackets to the units mounting pads. Ensure that bonding strips are assembled with the brackets.

23.2 Approach from the pump set and engage the right hand fork three quarters into the tunnel. Tilt the FLT mast head backwards and fully raise the forks, ensuring that the lateral shift is to the left.

23.3 Approach the vehicle just to the left of the second tank, tilt the FLT mast forward and lower the forks until the dispensing pack is just clear of the channels. Traverse to the right until the location holes line up with the mounting points on the channels. Lower the dispensing pack onto the channels and withdraw the forks.

23.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 45 Nm (35 lbf ft), ensuring that the flat and spring washers are fitted.

WARNING

EXPLOSION HAZARD. THE EQUIPMENT MUST BE CONNECTED TO THE CHASSIS EARTH POINT USING THE BONDING LEAD.

Fitting the suction hoses

24 In order to fit the suction hoses, proceed as follows:

24.1 Fit the short hose to the rear tank, checking that the hose unit pegs engage with the tank unit slots. Turn the handle clockwise approximately 120 degrees.

24.2 Using the same technique, fit the hose manifold to the pump set inlet and then the longer hose to the front tank.

Ancillaries

25 The ancillaries kit should be stored in the stowage rack until required for use. Two tank, two fuel configuration

26 In order to fit the two tank two fuel configuration, the following procedure (Paras 27 to 31) must be followed.

Fitting the first dispensing pack

27 The first dispensing pack is the first UBRE component to be fitted to the vehicle, and must be located at the headboard end, as follows:

27.1 Fit the modified mounting brackets and bonding strips to the dispensing pack.

27.2 Approach from the hose reel end of the dispensing pack and engage the FLT right hand fork three quarters into the tunnel. Tilt the FLT mast head backwards and fully raise the forks, ensuring that the lateral shift is to the left.

27.3 Approach the vehicle from the right, and offer up the dispensing pack slightly to the left of its correct position on the load bed. Tilt the FLT mast head forward and lower the forks until the rack is just clear of the channels. Traverse to the right until the location holes line up with the mounting points on the channels. Lower the dispensing pack onto the channels and withdraw the forks.

27.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 45 Nm (35 lbf ft), ensuring that the flat and spring washers are fitted.

WARNING

EXPLOSION HAZARD. THE EQUIPMENT MUST BE CONNECTED TO THE CHASSIS EARTH POINT USING THE BONDING LEAD.

Fitting the tank assemblies,

28 The two fuel tanks must now be fitted to the channel assemblies, as follows:

28.1 Fit the mounting brackets to the tank mounting pads. On the forward tank the rear bracket locates with the rear holes on the pad and on the rear tank, location of the rear bracket is with the forward holes of the pad. Ensure that bonding strips are assembled with the brackets.

28.2 Approaching from the bottom loading valve side, engage the forks three quarters of the way into the tunnels of the tank. Tilt the FLT mast head backwards and raise the forks fully, ensuring that the lateral shift is to the left.

28.3 Approach the vehicle just to the left of the stowage rack, tilt the FLT mast forward and lower the forks until the tank is just clear of the channels. Traverse to the right until the location holes line up on the far channel. Lower the tank onto the channels and withdraw the forks.

28.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque 65 Nm (50 lbf ft), ensuring that the flat and spring washers are fitted.

28.5 Repeat the sequence of operations for the second tank, ensuring it is mounted with its outlet valve on the opposite side of the platform from that of the first tank.

Fitting the second dispensing pack

29 In order to fit the second dispensing pack, proceed as follows:

29.1 Fit the mounting brackets to the units mounting pads. Ensure that bonding strips are assembled with the brackets.

29.2 Approach from the pump set end and engage the right hand fork three quarters into the tunnel. Tilt the FLT mast head backwards and fully raise the forks, ensuring that the lateral shift is to the left.

29.3 Approach the vehicle just to the left of the second tank, tilt the FLT mast forward and lower the forks until the dispensing pack is just clear of the channels. Traverse to the right until the location holes line up with the mounting points on the channels. Lower the dispensing pack onto the channels and withdraw the forks.

29.4 Ensure that all the brackets are aligned with the equipment and the mounting channels. Bolt the unit down to a torque of 45 Nm (35 lbf ft), ensuring that the flat and spring washers are fitted.

WARNING

EXPLOSION HAZARD. THE EQUIPMENT MUST BE CONNECTED TO THE CHASSIS EARTH POINT USING THE BONDING LEAD.

Fitting the suction hoses

30 In order to fit the suction hoses, proceed as follows:

30.1 Fit a blanking cap to the shorter hose of the suction hose assembly.

30.2 Connect the remaining hose between the rear dispensing pack inlet and the forward tank, by engaging the slots and turning through 120 degrees. Lash the hose in position with the tank strap.

- 30.3 Repeat for the second hose assembly to connect the forward dispensing pack to the rear tank.

NOTE

The blanking cap may be fitted to the upper branch of the suction hose manifold. The long hose will then mate with the lower branch through the mounting bracket:

Ancillaries

- 31 Due to the removal of the stowage rack, stowage for the manifold assembly, kit ancillaries and fuel/oil cans is not possible on the vehicle in this configuration.

Testing after embodiment

- 32 The installation must be fully examined, tested and certified in accordance with Chap 7 of AESP 2320-A-100-522.

EFFECT ON WEIGHT

- 33 The vehicles weight will increase as a result of this installation. With the tanks empty, and without jerricans, oil drums, camouflage nets, etc, the weight of each configuration is:

- 33.1 One tank one fuel configuration - 1.2 Tonnes (approximately).
- 33.2 Two tank one fuel configuration - 1.5 Tonnes (approximately).
- 33.3 Two tank two fuel configuration - 2 Tonnes (approximately).

