



Ministry  
of Defence

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Ref: FOI2018/07360

E-mail: [ISS-SecretariatGpMbx@mod.gov.uk](mailto:ISS-SecretariatGpMbx@mod.gov.uk)

2 July 2018

Dear [REDACTED],

Thank you for your email of 2 June 2018 requesting the following information:

*“in order to install clansman and other communication equipment in an ex MOD sourced Ferret (FV701), could i please request the follow publication please.*

*5800-f-121-412”*

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

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

The information you have requested can be found enclosed as an attachment with this letter.

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

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail [CIO-FOI-IR@mod.gov.uk](mailto:CIO-FOI-IR@mod.gov.uk)). Please note that any request for an internal review should be made within 40 working days of the date of this response.

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Yours sincerely,

ISS Secretariat

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COMMAND, CONTROL, COMMUNICATION AND INFORMATION (C<sup>3</sup>I)

INSTALLATION IN WHEELED VEHICLE FERRET FV 701

This publication contains information covering the requirements at Levels 2 and 3

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Ministry of Defence

Sponsor: DGEME  
File ref: D/DGEME/198/50 EME 8c  
(Disk ref: EB/A/AX/10 - 2A0974)  
Publication Authority: Electronics  
Branch REME

Comments on the contents of this publication should be submitted in accordance with AESP 0100-P-011-013.

## CONDITIONS OF RELEASE

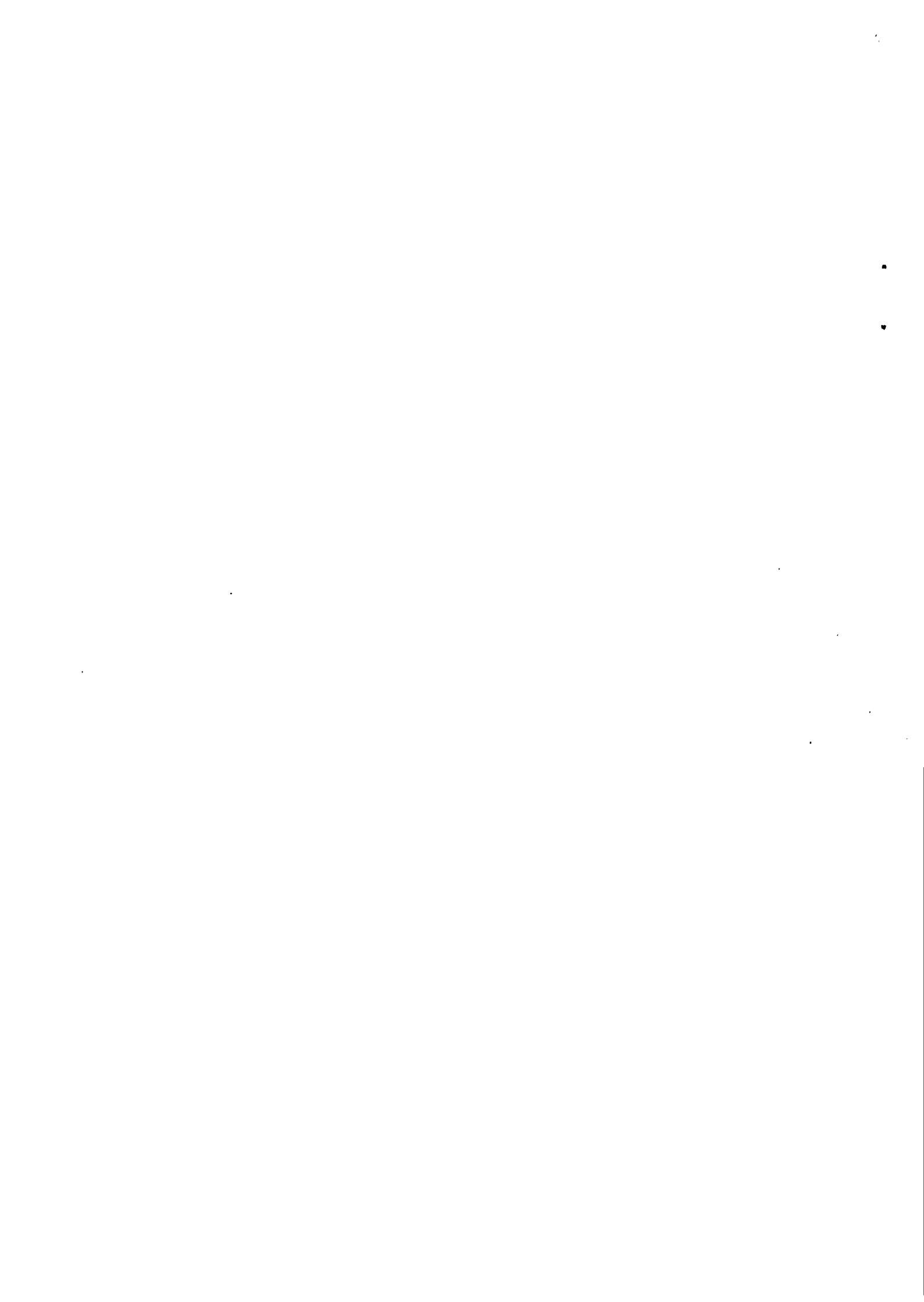
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AMENDMENT RECORD

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Chapters

COMPLETE INSTALLATION INSTRUCTIONS

- 1-0 Introduction
- 1-C01 Installation of Radio Station UK/VRC 353 and UK/PRC 320  
(Clansman Basic Harness Fitted) in 'A' and 'B' Set positions  
respectively

CES BRICK INSTALLATION INSTRUCTIONS

- 2-B1 Installation of Basic Clansman Radio Control Harness (CRCH)
- 2-B2 Installation of Radio Station UK/VRC 353
- 2-B3 Installation of Radio Station UK/PRC 351/2
- 2-B4 Installation of Radio Station UK/VRC 320
- 2-B5 Installation of Radio Station UK/VRC 321

PREFACEINTRODUCTION

The subject matter of this publication may be affected by Defence Council Instructions (DCIs), Standing Operating Procedures (SOPs) or by Local Regulations (LRs). When any such Instruction, Procedure or Regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED PUBLICATIONS

The octad plan for the subject equipment consists of the publications shown below. All references are prefixed with the first eight digits of this publication reference.

CATEGORIES AND INFORMATION LEVELS															
Level	Category	4			5				6	7		8			
		1	2	3	1	2	3	4		1	2	1	2		
		1	User/Operator	*	*	*	*	*		*	*	*	*	*	*
2	Unit Maintenance	*	*	*	412	*	*	*	*	*	*	*	*	*	+
3	Field Maintenance	*	*	*	412	*	*	*	*	*	*	*	*	*	+
4	Base Maintenance	*	*	*	*	*	*	*	*	*	*	*	*	*	+

- |     |                                      |     |                             |
|-----|--------------------------------------|-----|-----------------------------|
| 1.0 | Purpose & Planning Information       | 5.3 | Inspection Standards        |
| 2.0 | Operating Information                | 5.4 | Calibration Procedures      |
| 3.0 | Technical Description                | 6.0 | Maintenance Schedules       |
| 4.1 | Installation Instructions            | 7.1 | Illustrated Parts Catalogue |
| 4.2 | Preparation for Special Environments | 7.2 | Commercial Parts Lists      |
| 5.1 | Failure Diagnosis                    | 8.1 | Modification Instructions   |
| 5.2 | Repair Instructions                  | 8.2 | General Instructions        |

\* Not published

+ Published as and when required

Note ...

Reference is to be made to AESP 5800-A-001-013 to ensure the availability of the listed publications.

LIST OF ABBREVIATIONS

AAFL	-	Amplifier, Audio Frequency, Loudspeaker
ARFAT	-	Adaptor, Radio Frequency, Antenna Tuning
ASB	-	Audio Splitter Box
CB2	-	Crew Box, 2-set
CB3	-	Crew Box, 3-st
CBF	-	Commander's Box Fixed
CBF(D)	-	Commander's Box Fixed (Digital)
CES	-	Complete Equipment Schedule
Comms Inst	-	Communications Installations
CPU	-	Commander's Personal Unit
CSSH	-	CLANSMAN Secure Speech Harness
C <sup>3</sup> I	-	Command, Control, Communication and Information
DB	-	Driver's Box
DCCU	-	DC Charging Unit
DMU	-	Digital Master Unit
IBHA	-	Interconnecting Box Harness Adaptor
IB3	-	Interconnecting Box 3-radio
IC	-	Intercommunication
IK/IKEE	-	Installation Kit/Installation Kit Electronic Equipment
LSV	-	Loudspeaker Vehicle
PDB	-	Power Distribution Box



WARNINGS...CADMIUM PLATING

- (1) THE EQUIPMENT COVERED BY THIS PUBLICATION CONTAINS COMPONENTS INCORPORATING CADMIUM PLATED MATERIAL WHICH IS A POTENTIAL SAFETY HAZARD. THIS MATERIAL, IN ITSELF, IS SAFE EXCEPT IN CIRCUMSTANCES WHEN IT IS HEATED, CORRODED OR WORKED. POTENTIAL HAZARDS ARISE WHEN:
- (1.1) CADMIUM PLATED MATERIAL OR COMPONENTS ARE FIELD ETC, AND THE RESULTING DUST IS INHALED.
- (1.2) TOXIC FUMES ARE INHALED WHEN CADMIUM IS HEATED.
- (1.3) CADMIUM SALTS FORMED AS A RESULT OF CORROSION ARE ABSORBED INTO THE BODY TISSUES THROUGH THE SKIN, MOUTH OR WOUND.

FURTHER INFORMATION ON THE HANDLING AND DISPOSAL OF CADMIUM PLATED MATERIALS IS GIVEN IN EMER MANAGEMENT S 262.

BATTERY EXPLOSION

- (2) TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN DISCONNECTING BATTERY POWER LEADS FROM EQUIPMENT, ENSURE ISOLATION OF ALL BATTERIES BY SWITCHING OFF THE VEHICLE MASTER SWITCH. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN DISCONNECTING, REMOVE THE TERMINAL FROM THE EARTH (NEGATIVE) POST BEFORE REMOVING THE SUPPLY TERMINAL.

PERSONAL SAFETY

- (3) ANY UNTERMINATED CABLE ASSEMBLIES MUST HAVE THEIR FREE ENDS SECURELY STOWED TO PREVENT POSSIBLE INJURY TO PERSONNEL RIDING IN THE VEHICLE.
- (4) THERE ARE NO HANDRAILS ON THE VEHICLE ROOF. DUE CARE SHOULD BE TAKEN WHEN WORKING ON THE ROOF TO AVOID FALLING.

SOLVENTS

- (5) WHEN WORKING WITH SOLVENTS (DEGREASING AGENTS) ENSURE THAT THE VEHICLE AND WORKING AREA ARE ADEQUATELY VENTILATED.

CAUTIONS...

- (1) The earth bonding is an essential part of the installation. Poor bonding will degrade the performance, leading to reduced working range, increased susceptibility to radio frequency interference and erosion of TEMPEST integrity. All electrical bonding points (leads electrical, braids, braid contact areas, screws, tapped holes etc) must be free from paint and degreased using an approved solvent. This also applies to the raised metal rings of the harness control boxes' base belting.

Cautions (continued)

- (2) Cable routings and the separation of cables carrying power, plain language and encrypted signals must be strictly observed to avoid changes to the TEMPEST profile.
- (3) Do not allow the mast stays to fall onto the edge of the stowage frame, or any other solid object, as the outer tube of the stay could be damaged and prevent it being extended.

ASSOCIATED PUBLICATIONS

7 The following publications are associated with this installation:

<u>Code No.</u>	<u>TYPE</u>	<u>TITLE</u>
Management S 262	EMER	Handling and disposal of cadmium plated materials.
Comms Inst A 009	EMER	Instr No. 5 use of fastenings in military vehicles.
Comms Inst Z 203	EMER	CLANSMAN harness cable repairs.
Tels C 743	EMER	CLANSMAN audio accessories.
Tels L 800	EMER	CLANSMAN radio control harness.
Tels M 617	EMER	Harness installation test set.
61655	UHB	Test Set, condition, CLANSMAN radios.
61656	UHB	Test Set, radio audio ancillaries.
61253	UHB	Radio Station, UK/VRC 321.
61393	UHB	Radio Station, UK/VRC 353.
61128	UHB	Radio Station 351/2.
61123	UHB	Radio Station UK/PRC 320.
61172	UHB	CLANSMAN Radio Control Harness.

# **RESUSCITATION**

## **TREATMENT OF THE NON-BREATHING CASUALTY**

### **NOTICE**

The inclusion of the emergency resuscitation placard (MOD Form 656) in Military Technical Publications has been discontinued.

This notice is to be retained in the publication until removed by amendment instruction.



Chapter 1-0

INTRODUCTION TO INSTALLATION INSTRUCTIONS

INTRODUCTION

1 Command, Control, Communications and Information (C<sup>3</sup>I) installations consist of different configurations of communications and electronic equipment installed in FERRET vehicles. Each variant is intended for a particular operational role, and it is this which determines the content, layout of the the installation, and the way in which it functions.

2 Each of the following chapters, 1-C01 etc, contains a complete equipment schedule (CES) 'brick' diagram showing which of the CES bricks described in Chapter 2 are to be installed. A complete listing of the equipment included in each CES brick is contained in the appropriate sub-chapter. The locations of the various items are indicated by the accompanying location diagrams.

3 For information concerning the FERRET vehicle, reference should be made to the following publication:

<u>Code No.</u>	<u>Type</u>	<u>Title</u>
WHEELED VEHICLES V620 - V629.	EMER	Scout car, FERRET, MK 1-5.

END



WHEELED VEHICLE FERRET FV701  
CHAPTER 1- C01  
COMPLETE INSTALLATION INSTRUCTION

SUBJECT: Installation of Radio Station UK/VRC 353 and  
UK/PRC 320 (Clansman Basic Harness Fitted)  
in 'A' and 'B' Set positions respectively.

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	2	Location diagram	5
	3	Interconnecting diagram	6



GENERAL INFORMATION

INTRODUCTION

1 This instruction details the installation of a UK/VRC 353 in the 'A' radio position and a UK/PRC 320 in the 'B' radio position of the FV701 MK1/1, MK1/2 or MK1/3.

2 Before this installation can be carried out the Basic Clansman Control Harness should have been fitted in accordance with Brick Installation Instruction No. B1 of this AESP.

3 Four CES bricks are required, Installation Kit (I/K) UK/VRC 353 in Ferret FV701, I/K UK/PRC 320 in Ferret FV701 and Qty 2 I/K Co-axial Outlet in Ferret FV701.

4 Specific installation instructions for the 'A' set UK/VRC 353 plus co-axial outlet and the 'B' set UK/PRC 320 plus co-axial outlet are given in Brick Installation Instructions B2 and B4 of this AESP respectively.

ASSOCIATED PUBLICATIONS

5 The following publications are associated with this installation:

- (1) CES No. 44830/2 Installation Kit, Radio Station UK/VRC 353 in FV701
- (2) CES No. 44880/1 Installation Kit, Radio Station UK/PRC 320 in FV701
- (3) CES No. 44689 Installation Kit, Co-axial Outlet
- (4) EMER Communications Installations K 677 Clansman Radio Control Harness in Wheeled Vehicle FV701 Ferret
- (5) EMER Communications Installations A 009 Instr No. 5
- (6) EMER Wheeled Vehicles V 620-629
- (7) EMER Communications Installations Z 203
- (8) Tels and Radar Technical Folder TF/Tels 1.81, Issue 1
- (9) User Handbook Army Code No. 61393
- (10) User Handbook Army Code No. 61123

INSTALLATION

6 Ensure full compliance with CES Brick Installations B1, B2 and B4 given in this AESP. All necessary information and/or references are included in the aforementioned instructions to install, test and maintain the revised complete installation.

7 A block diagram (CES Installation Kits), location diagram and interconnecting diagram are given in this instruction for clarification purposes.

FURTHER INFORMATION

8 If further information is required regarding this installation, application should be made to:

Commanding Officer  
Electronics Branch REME  
Leigh Sinton Road  
MALVERN  
Worcs WR14 1LL

giving all relevant details and quoting AESP 5800-F-121-412, Inst Instr No. C01.

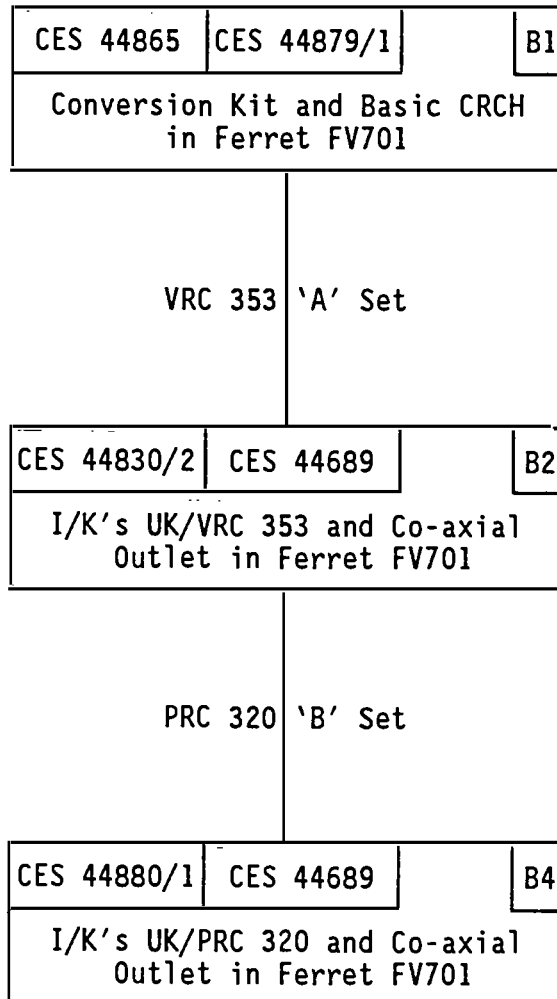
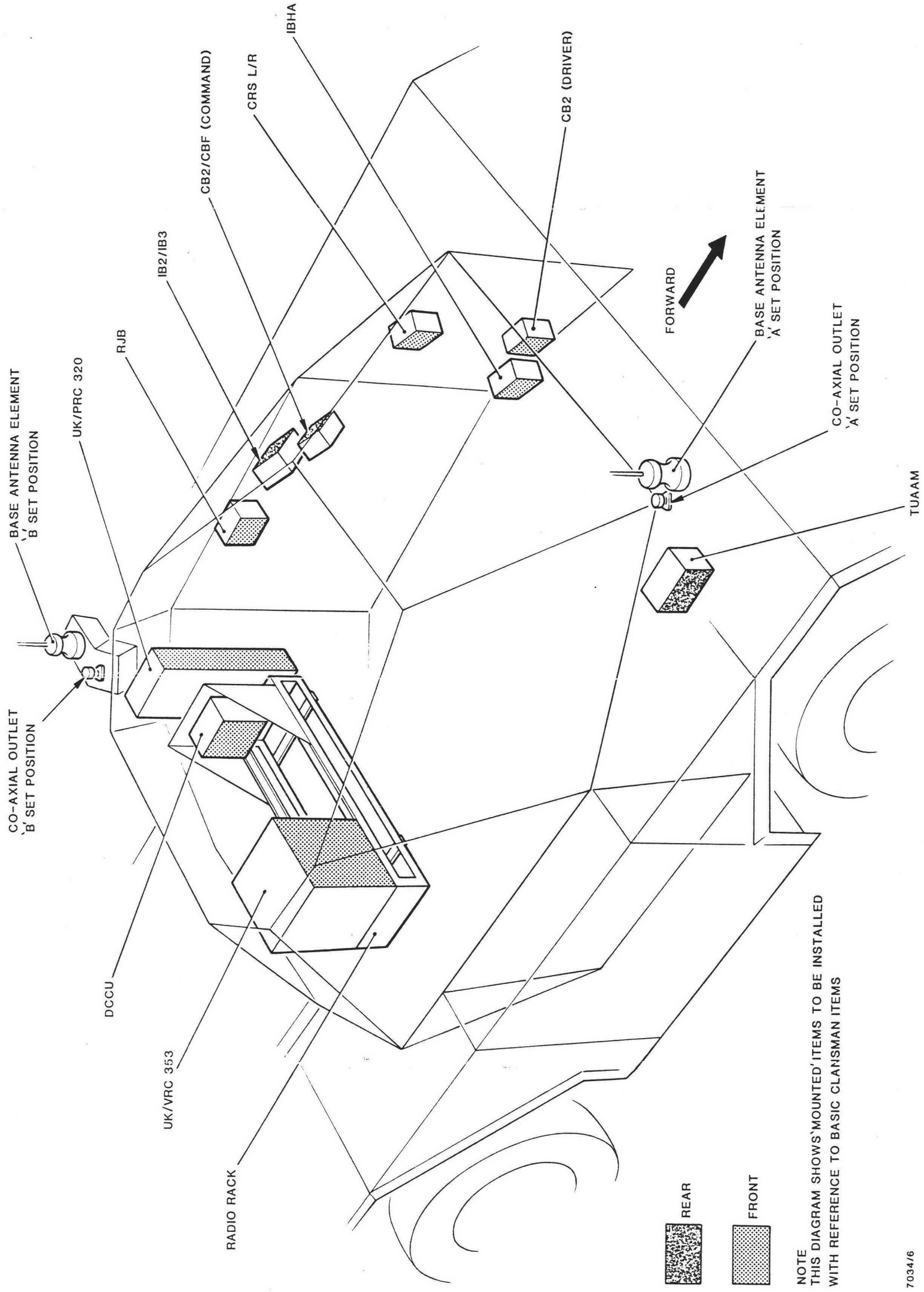


Fig 1 Block diagram, CES installation kits



Location Diagram

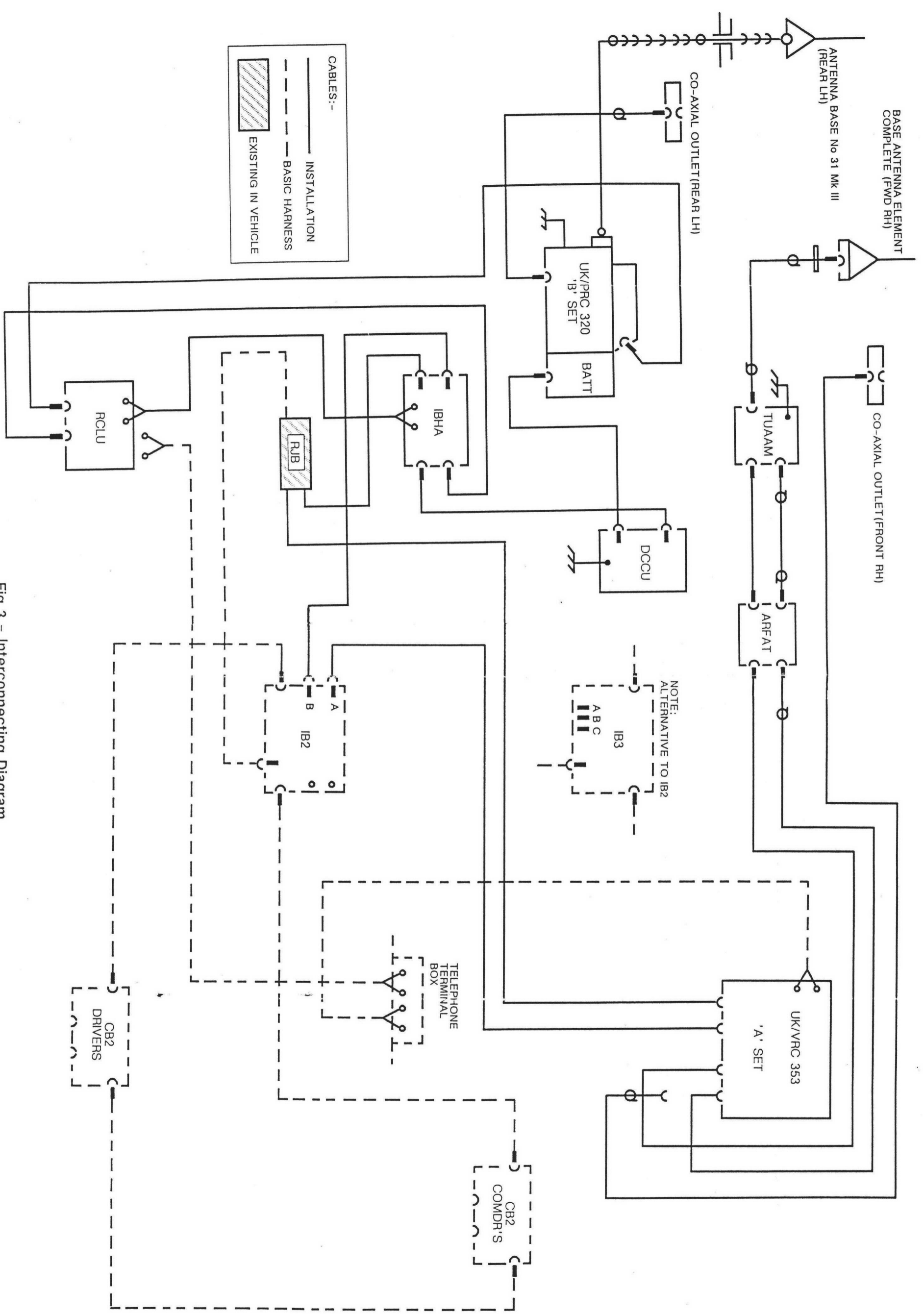


Fig 3 - Interconnecting Diagram

WHEELED VEHICLE FERRET FV701

CHAPTER 2 - B1

CES BRICK INSTALLATION INSTRUCTION

SUBJECT: Installation of Basic Clansman Radio Control Harness (CRCH)

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- 1 Introduction
  - 2 Estimated time required
  - 3 Action required by
  - 4 Stores, tools and test equipment
  - 5 Associated publications
  - 6 Information
- INSTALLATION
- Warnings
  - Caution
  - 7 General notes
  - 12 Preparation of vehicle
  - 13 Conversion kit installation
  - 14 Basic Clansman harness installation
  - 15 Function checks
  - 16 Permissible repairs
  - 17 Redundant items

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- 2 Item list - basic clansman radio control harness
- 3 Fixing details

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Fig

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- 2 'B' set position antenna base and co-axial outlet cover plates diagram
- 3 'A' set position antenna base and co-axial outlet cover plates diagram
- 4 Universal mounting plate, IB2/IB3 and CB2/CBF locations diagram
- 5 Radio rack mounting diagram
- 6 Base belt fixing
- 7 Equipment location with clip and cable routing diagram
- 8 Interconnection block diagram

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GENERAL INFORMATION

INTRODUCTION

1 This instruction details the installation of the Conversion Kit and the Basic Clansman Radio Control Harness (CRCH) into a Ferret FV701 MK1/1, MK1/2 or MK2/3. The purpose of the Conversion Kit is to enable a Clansman Harness to be fitted into a Ferret previously fitted with a Larkspur Harness without the need for vehicle modifications. The (CRCH) is a system of interconnected control, junction and control boxes into which various Clansman radio sets may be connected and physical arrangement of the various harness items. Interconnections between the items are made by cable assemblies which are arranged in a ring-main configuration. A system of common plugs and sockets with various lengths of connecting cable is employed.

ESTIMATED TIME REQUIRED

2			
	(1)	Installation of Conversion Kit	2 man hours
	(2)	Installation of Clansman basic harness	3 man hours
	(3)	Preparation of vehicle	NIL man hours
	(4)	Modifications	3 man hours
	(5)	Manufacture	NIL man hours

ACTION REQUIRED BY

- 3
- 3.1 Units affected When instructions have been received through staff channels demand the stores and upon receipt, request REME to install the equipment.
- 3.2 REME and Royal Signals authorized to carry out Unit, Field and Base (REME only) repairs.
- 3.2.1 Install the equipment as detailed.
- 3.2.2 Endorse the vehicle log book, AB 413 (revised) with the installation details.

STORES, TOOLS AND TEST EQUIPMENT

- 4
- 4.1 Stores to be demanded
- |     |   |       |
|-----|---|-------|
| (1) | CES 44865 (Z1/5820-99-965-6990) Conversion Kit in FV 701 Ferret                             | Qty 1 |
| (2) | CES 44879/1 (Z1/5820-99-965-8638) Basic Clansman Radio Control Harness Kit in FV 107 Ferret | Qty 1 |
- 4.2 Stores to be obtained locally
- |     |  |       |
|-----|--|-------|
| (1) | FV964639/15 Cable Clip (Fig 7)                         | Qty 1 |
| (2) | FV964639/41 Cable Clip (Fig 7)                         | Qty 1 |
| (3) | 9330-99-943-4858 Cable Strapping Plastic Strip (Fig 7) | Qty 1 |
| (4) | 5325-99-913-8823 Stud Positive Lock (Fig 7)            | Qty 1 |
- 4.3 Stores to be manufactured
- Nil.

4.4 Special tools

Nil.

4.5 Test equipment

- |   |       |
|---|-------|
| (1) Z4/6625-99-620-3595 Clansman Harness Installation Test Set (HITS)       | Qty 1 |
| (2) Z4/6625-99-620-3592 Test Kit Condition Clansman Radio (TKC)             | Qty 1 |
| (3) Z4/6625-99-620-3593 Test Set Audio for Radio Audio Accessories (TSARAA) | Qty 1 |
| (4) Z4/6625-99-105-7049 Multimeter, Set CT498A (AVO)                        | Qty 1 |
| (5) Z4/6625-99-786-5771 Test Set Bond Resistance DT 109                     | Qty 1 |

ASSOCIATED PUBLICATIONS

5

- (1) CES No. 44865 Conversion Kit in FV 701 Ferret.
- (2) CES No. 44879/1 Basic Clansman Radio Control Harness Kit in FV701 Ferret.
- (3) EMER Tels L800-809 Clansman Radio Control Harness
- (4) EMER Communications Installations K 677 Clansman Radio Control Harness in Wheeled Vehicle FV701 Ferret.
- (5) EMER Communications Installations A 009 Instr No. 5
- (6) EMER Wheeled Vehicles V 620-629.
- (7) EMER Communications Installations Z 203
- (8) Tels and Radar Technical Folder TF/Tels. 1.81, Issue 1

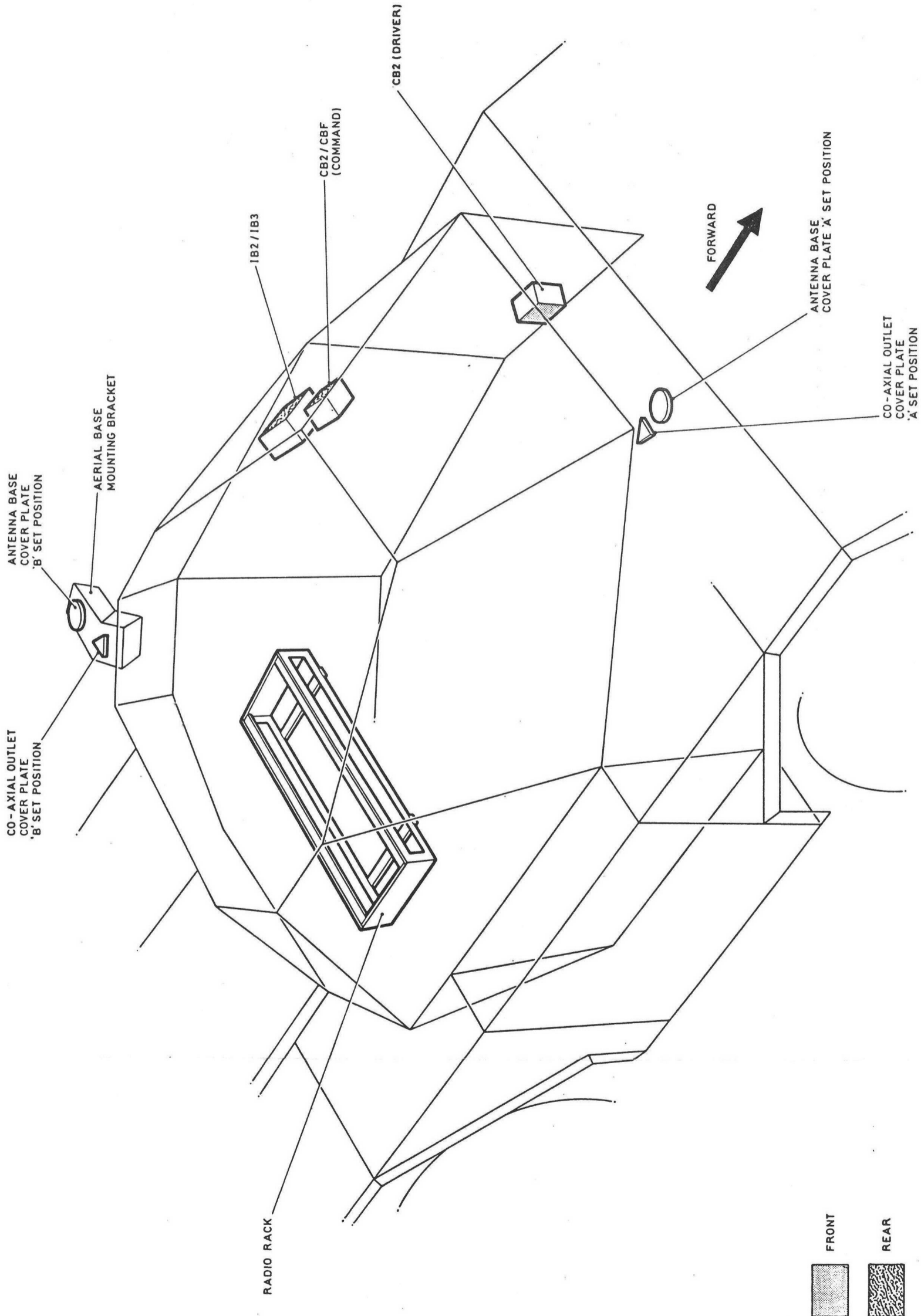
INFORMATION

6 If further information is required regarding this installation application should be made to:

Commanding Officer  
Electronics Branch REME  
Leigh Sinton Road  
MALVERN  
Worcs WR14 1LL

Giving all relevant details and quoting AESP 5800-F-121-412 Inst Instr No. B1, Chapter 2.





NOTE  
THIS DIAGRAM SHOWS 'MOUNTED' ITEMS TO BE INSTALLED  
EXISTING ITEMS ARE NOT SHOWN

Location diagram

## INSTALLATION

### WARNINGS ...

- (1) BEFORE WORK IS COMMENCED ENSURE THAT THE VEHICLE MASTER SWITCH IS IN THE OFF POSITION AND THE VEHICLE BATTERIES ARE DISCONNECTED. (A CONVENIENT POINT IS THE NEGATIVE TERMINAL ON A BATTERY).
- (2) ALL UNTERMINATED CABLE ASSEMBLIES MUST HAVE THEIR UNTERMINATED ENDS SECURELY STOWED TO PREVENT POSSIBLE INJURY TO PERSONS RIDING IN THE VEHICLE.

### CAUTION ...

Good earth contacts are an essential part of the installation. Poor bonding will degrade the performance leading to reduced operational range and susceptibility to r.f. interference (RFI). All earth bonding points, harness braids, screws, tapped holes and braid contact areas must be free from paint and grease using an approved solvent.

### GENERAL NOTES

7 Figs 1 to 6 inclusive locate and show fitting details of the various installation items. Fig 7 is a clip and cable routing diagram and Fig 8 an interconnection block diagram for the basic Clansman harness.

8 Reference in the text to items in Tables 1 and 2 is made by inserting the item number, in brackets, after the item title unless otherwise stated. Table 3 lists the operations for the main items and the fixings required to install them. Reference to Table 2 cable assembly item numbers are shown on location diagrams where applicable.

9 Reference to left-hand side (l.h.s) and right-hand side (r.h.s) of the vehicle is made with respect to the driver facing forward.

10 EMER Comms Inst A 009 Misc Instr No. 5; The Use of Fastenings in Communications Installations in Military Vehicles, gives information on the correct use of washers and fastenings.

11 Unless otherwise stated, all holes are existing and are detailed in Cat 302, Chap 1, Fig 1.

### PREPARATION OF VEHICLE

#### 12

##### 12.1

The Clansman Radio Control Harness, described in this installation may be fitted into the MK1/1, MK1/2 and MK1/3 vehicles.

##### 12.2 Modifications

12.2.1 Ensure that the vehicle is modified in accordance with EMER Wheel Vehicles V 627 up to and including Mod Instr No. 133.

12.2.2 Ensure that the modification detailed in Comms Inst K 677 Mod Instr No. 4 has been carried out.

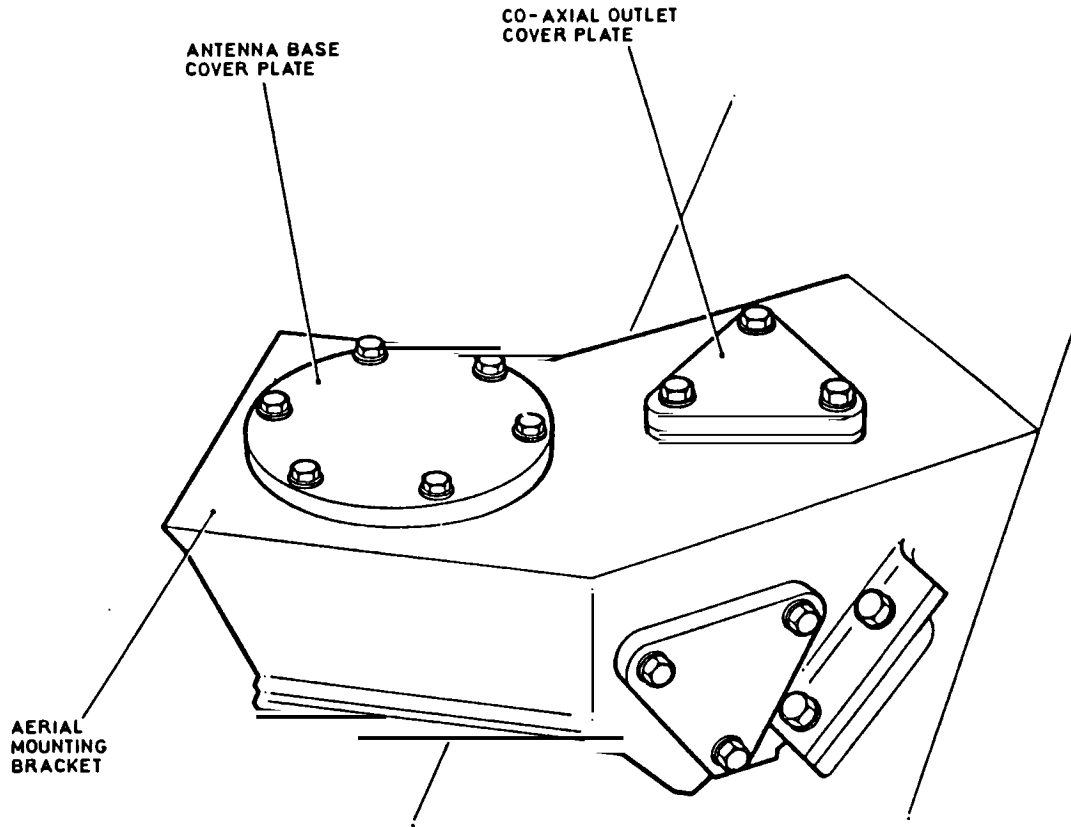


Fig 2 'B' set position antenna base and co-axial outlet cover plates diagram

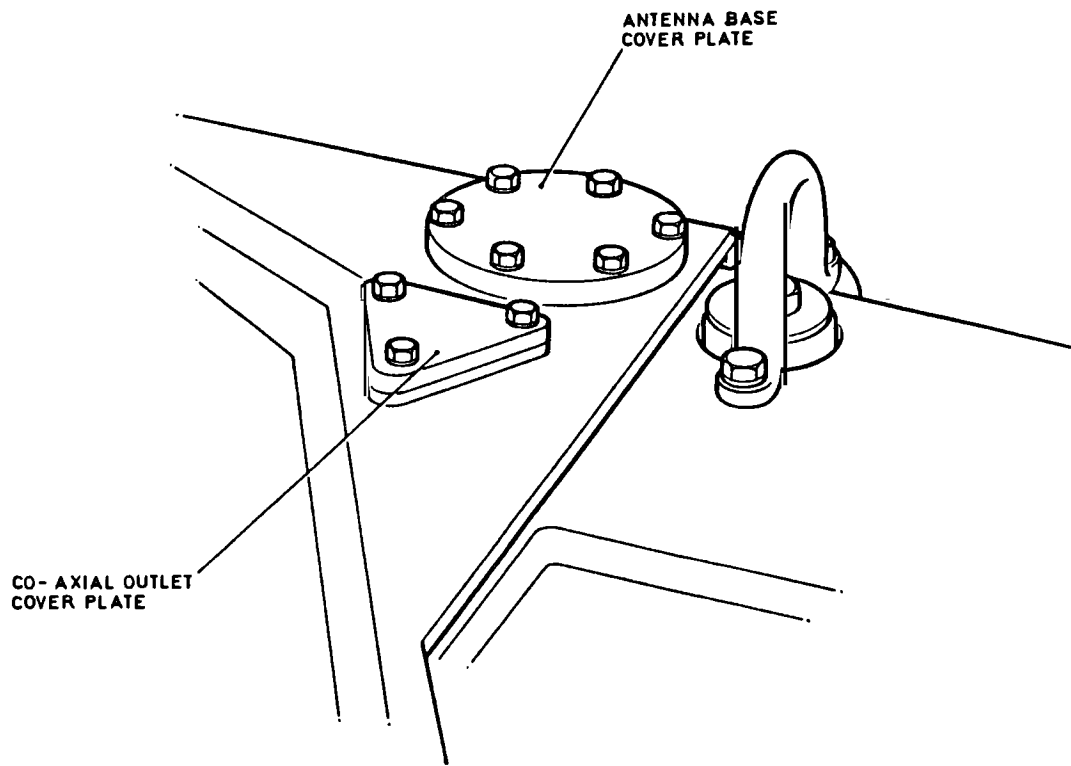


Fig 3 'A' set position antenna base and co-axial outlet cover plates diagram



CONVERSION KIT INSTALLATION

13 During the following procedures, reference should be made to Table 1 for item numbers, in brackets, after the item titles. The operations for the main items and the fixings required to install them are listed in Table 3.

13.1 Aerial base mounting bracket

Fit the aerial base mount bracket (1) to the external rear l.h.s. as per Fig 2 and Table 3, operation, 1.

13.1.1 Locate the four bracket fixing holes in the external rear l.h.s.

13.1.2 Secure the bracket in position using four screws (17) and washers (21 and 24). If the mounting bracket fouls the securing stud or fillet weld, remove the stud and/or file the mounting bracket to give suitable clearance.

13.2 Co-axial outlet cover plates ('A' and 'B' set positions)

Fit the co-axial outlet cover plates (4) in the 'A' and 'B' set positions as per Figs 2 and 3 and Table 3, operation 2.

13.2.1 Locate the 'A' set position (external forward r.h.s.) four fixing holes.

13.2.2 Secure a cover plate (4) and a gasket (6) in the 'A' set position (Fig 2) using four screws (14) and washers (20 and 23).

13.2.3 Locate the 'B' set position (external rear l.h.s.) four fixing holes.

13.2.4 Secure a cover plate (4) and a gasket (6) in the 'B' set position (Fig 3) using four screws (14) and washers (20 and 23).

13.3 Antenna base cover plates ('A' and 'B' set positions)

Fit the antenna base cover plates (3) in the 'A' and 'B' set positions as per Figs 2 and 3 and Table 3, operation 3.

13.3.1 Locate the 'A' set position (external forward r.h.s.) six fixing holes.

13.3.2 Secure an antenna base cover plate (3) and a gasket (5) in the 'A' set position (Fig 2) using six screws (13) and washers (19 and 22).

13.3.3 Locate the 'B' set position (external rear l.h.s.) six fixing holes.

13.3.4 Secure an antenna base cover plate (3) and a gasket (5) in the 'B' set position (Fig 3) using six screws (12) and washers (19) and (22).

### 13.4 Universal mounting plate

Fit the mounting plate (10) in the internal forward l.h.s. position as per Fig 4 and Table 3, operation 4.

13.4.1 Locate the plate four fixing holes in the internal forward l.h.s. (See Cat 302, Chap 1, Fig 3).

13.4.2 Secure the plate in position using four screws (15) and washers (20 and 23).

### 13.5 Mounting plate for CB2/CBF

Fit the mounting plate (7) in the internal l.h.s. roof position as per Fig 4 and Table 3, operation 5.

13.5.1 Remove windscreen wiper cable plug mounting bracket and securing bolt located on l.h.s. forward turret hatch. Retain nut, discard bolt and washers.

13.5.2 Remove second bolt from front l.h.s. of turret hatch. Retain nut, discard bolt and washers.

13.5.3 Locate the two fixing holes in the roof bosses on the l.h.s. forward of turret hatch. (See Cat 302, Chap 1, Fig 5).

13.5.4 Secure the mounting plate in position using two screws (18) washers (25) and retained nuts. Do not tighten rear nut at this stage.

13.5.5 Remove the forward mounting screw from the assembly mounting plate and fit windscreen wiper cable plug mounting bracket to reverse of mounting plate. Tighten nut fully.

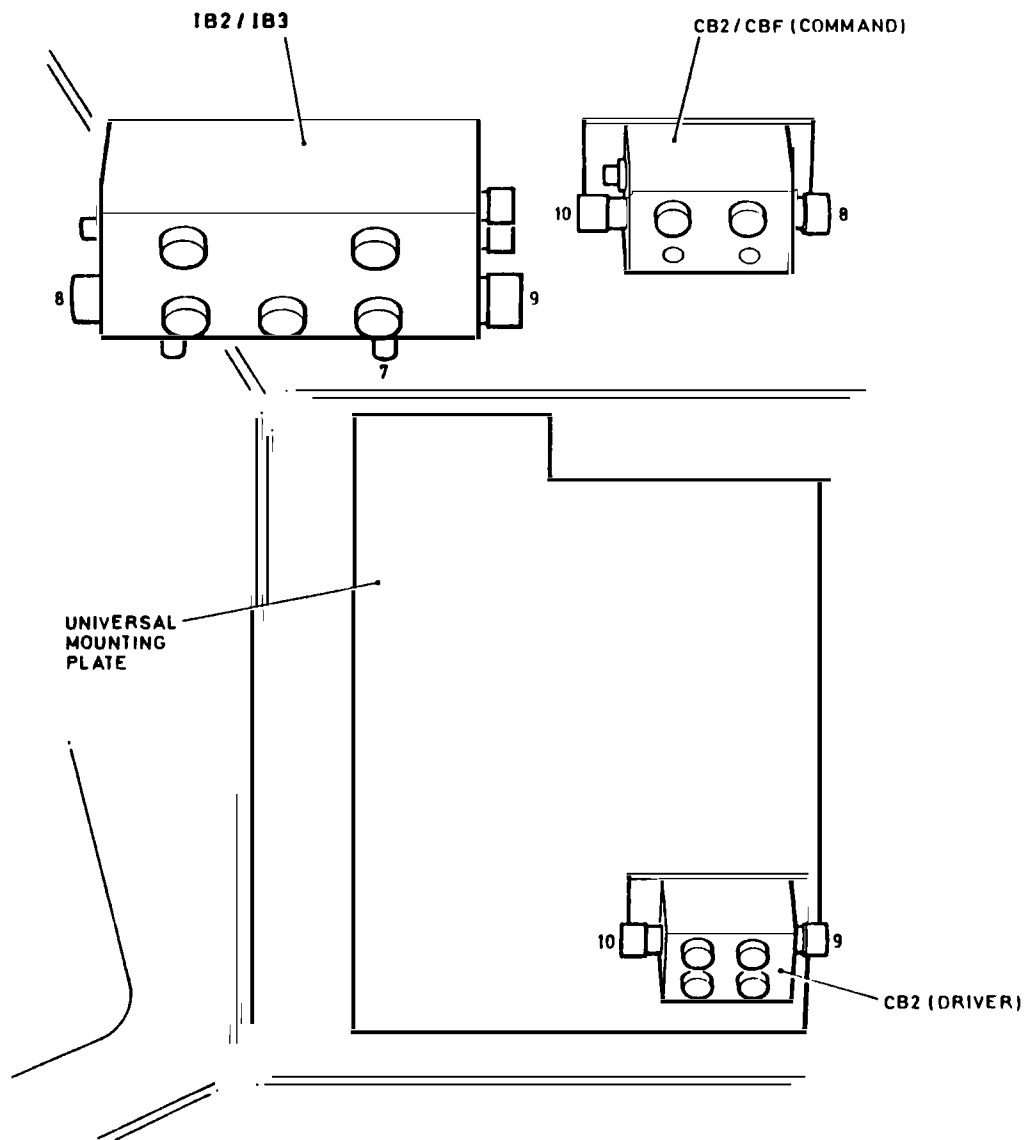
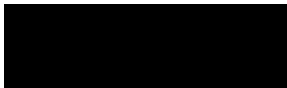


Fig 4 Universal mounting plate, IB2/IB3 and CB2/CBF locations diagram



13.6 Radio rack

Fit the radio rack (8) to the rear shelf as per Fig 5 and Table 3, operation 6.

13.6.1 Slacken wingnut and remove the sliding cover tray from the rear shelf.

13.6.2 Secure the radio rack (8) to the cover tray using four spacers (9), screws (16), washers (20 and 23) and nuts (11)

13.6.3 Replace cover tray with radio rack in the rear shelf and secure with the wing nut.

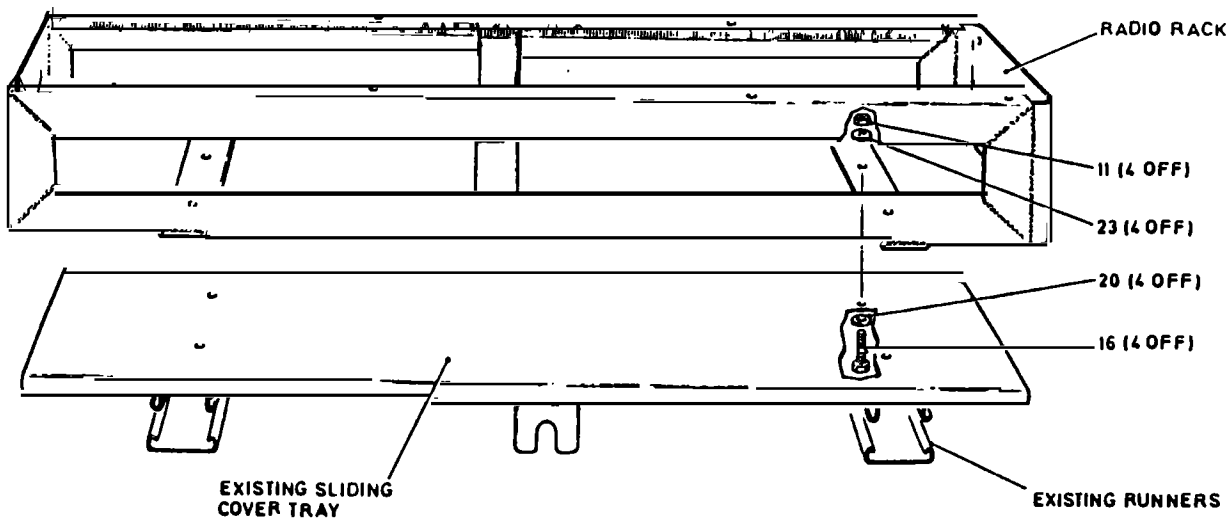


Fig 5 Radio rack mounting diagram

BASIC CLANSMAN HARNESS INSTALLATION

14 During the following procedures, reference should be made to Table 2 for item numbers, in brackets, after the item titles. The operations for the main items and the fixings required to install them are listed in Table 3.

14.1

Clansman harness boxes should be fitted to Ferret in accordance with Fig 6. The backing nut shown either:

14.1.1 Prevents the harness box vibrating against its mounting bracket

OR

14.1.2 Prevents the insulation being compressed when the box is being secured.

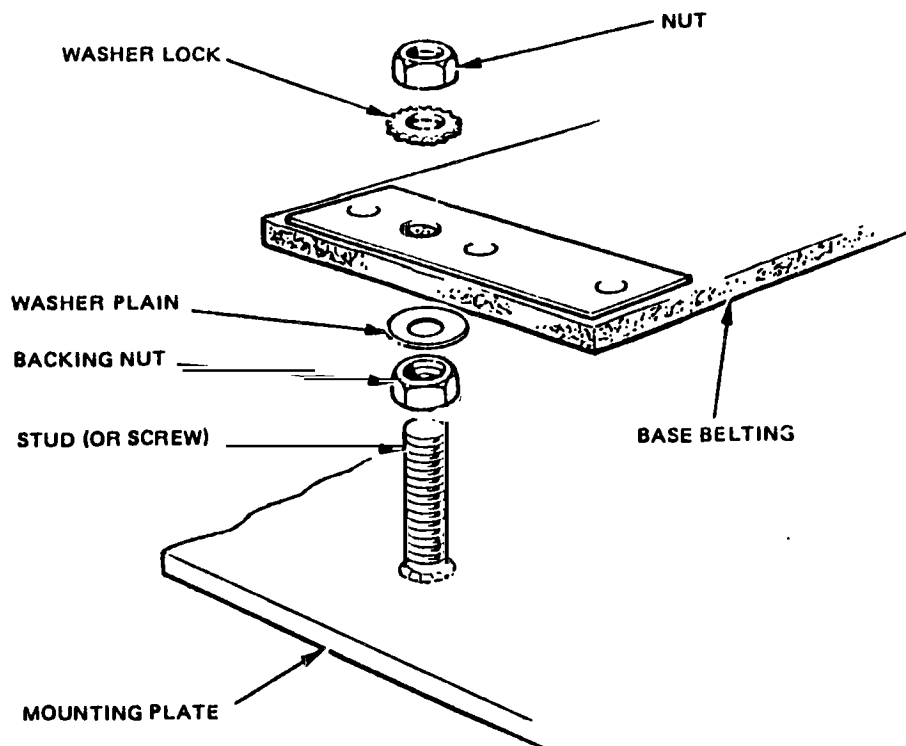


Fig 6 Base belt fixing



#### 14.2 Crew box 2 radio (command) CB2/CBF

Fit the CB2/CBF (2 or 1) to the mounting plate installed in Sub Para 13.5 as per Fig 4.

14.2.1 Locate the two fixing holes in the mounting plate.

14.2.2 Secure the CB2/CBF in position using two nuts and shakeproof washers supplied with mounting plate (7).

Note ...

CB2 clamps between the nuts.

#### 14.3 Mounting plate for IB2/IB3

Fit the mounting plate (6) on the forward l.h. side as per Fig 4 and Table 3, operation 7.

14.3.1 Locate the four fixing holes in the forward l.h.s.

14.3.2 Secure the mounting plate in position using four screws (14) and washers (20 and 23).

#### 14.4 Interconnecting box 3 radio IB2/IB3

Fit the IB2/IB3 (4 or 5) on the mounting plate installed in Sub Para 14.3 as per Fig 4 and Table 3, operation 8.

14.4.1 Locate the four fixings holes in the mounting plate.

14.4.2 Secure the IB2/IB3 in position using four screws (15) and washers (20 and 23).

#### 14.5 Crew box 2 radio (driver) CB2

Fit the CB2 (2) on the universal mounting plate as per Fig 4 and Table 3, operation 9.

14.5.1 Locate the two fixing holes in the mounting plate universal.

14.5.2 Secure the CB2 in position using two screws (15) and washers (20 and 23).

#### 14.6 Headset holder assembly

Fit the headset holder assembly (3) to the top r.h.s. securing point of IB2/IB3 as per Fig 4 using existing fixings.

#### 14.7 Cables assemblies

14.7.1 Remove cable guards to assist in the routeing of cable assemblies as per Figs 7 and 8.

14.7.2 Secure using existing cable clips, at a maximum pitch of 450 mm, and fit cable ties (obtained locally) where appropriate. (See CAT 302, Chap 1, Fig 1).

14.7.3 Stow excessive lengths of cable behind the universal mounting plate.

14.7.4 Ensure all elbows of cable assemblies, when connected to their appropriate harness box, are at 45 degrees to the surface to which the box is mounted.

14.7.5 Replaced all cable guards if no further installations are to be carried out.

### FUNCTION CHECKS

15

15.1 Visually inspect the complete harness installation ensuring all connections have been correctly made and all cables are securely clipped.

15.2 Check all earth bonding points ..... see CAUTION immediately before Para 7.

15.3 Using Test Set Bond Resistance DT 109, check that individual earth bonding joints do not exceed 2 milliohms and resistance between the appropriate harness item earth and vehicle earth terminal does not exceed 25 milliohms.

15.4 Switch the battery master switch to ON.

15.5 Connect headsets to the CB2 and CB2/CBF positions.

15.6 On the IB2/IB3, set the Clansman Harness switch to ON.

15.7 Carry out a functional test of the system, checking that the intercommunication (IC) facility is working at both positions.

15.8 If the system is not functioning correctly use the test equipment listed in Sub Para 4.5 to help locate the failure.

15.9 The harness should also be checked using the Harness Installation Test Set (HITS) to prove the serviceability of functions, connectors and cables.

15.10 All installations are subject to a certain level of electrical interference, therefore tests of vehicle intercom should be carried out with:

15.10.1 Vehicle stationary with engine running at varying speeds from idling to max r.p.m.

15.10.2 Vehicle travelling at varying speeds to ensure that the level of interference is acceptable.

15.11 Radio Interference Tests (RFI) may be carried out using the procedure detailed in Chapter 8 of Tels and Radar Technical Folder TF/Tels.1.81, Issue 1, dated May 81.

PERMISSIBLE REPAIRS

16 Cable assemblies should be repaired in accordance with EMER Comms Inst Z 203. Individual items suspected of having failed should be substituted by known serviceable items as detailed in the Maintenance Instructions.

REDUNDANT ITEMS

17 Return to G1098 stores the two bolts and washers removed in Sub Para 13.5 for disposal.

TABLE 1 ITEM LIST - CONVERSION KIT

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Aerial Base Mounting Bracket	FV849298	1	Fig 4
2	Bush	FV895974	1	Fitted to vehicle access hole for Item 1
3	Cover Plate, Antenna Base	FV759883	2	Figs 4 and 5
4	Cover Plate, Co-axial	FV760408	2	Figs 4 and 5
5	Gasket	P No 61364	2	Fitted with Item 3
6	Gasket	FV705989	2	Fitted with Item 4
7	Mounting Plate (CB2/CBF)	FV989794	1	Fig 6
8	Radio Rack	FV849278	1	Fig 3
9	Spacer	FV989955	4	Fitted with Item 8
10	Universal Mounting Plate	FV895973	1	Fig 6
	<u>Fixings</u>			
11	Nut 5/16 in. UNF Steel Hex Hd	G1/5310-99-941-0925	4	Fixings detailed in Table 3
12	Screw 1/4 in. UNC x 3/4 in. Hex Hd	G1/5305-99-941-0687	6	Fixings detailed in Table 3
13	Screw 1/4 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0513	6	Fixings detailed in Table 3
14	Screw 5/16 in. UNC x 1/2 in. Hex Hd	G1/5305-99-941-0523	12	Fixings detailed in Table 3
15	Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0525	10	Fixings detailed in Table 3
16	Screw 5/16 in. UNF x 1 1/4 in. Hex Hd	G1/5305-99-941-0529	4	Fixings detailed in Table 3
17	Screw 3/8 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0539	4	Fixings detailed in Table 3
18	Screw 3/8 in. UNF x 1 1/2 in. Hex Hd	G1/5305-99-941-0545	2	Fixings detailed in Table 3
19	Washer 1/4 in. Flat	G1/5310-99-120-4032	12	Fixings detailed in Table 3
20	Washer 5/16 in. Flat	G1/5310-99-941-8608	26	Fixings detailed in Table 3
21	Washer 3/8 in. Flat	G1/5310-99-941-8635	4	Fixings detailed in Table 3

(Continued)

TABLE 1 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
22	Washer 0.261 Lock Shakeproof	G1/5310-99-100-6945	12	Fixings detailed in Table 3
23	Washer 0.326 Lock Shakeproof	G1/5310-99-101-0187	26	Fixings detailed in Table 3
24	Washer 0.389 Lock Shakeproof	G1/5310-99-012-9583	4	Fixings detailed in Table 3
25	Washer 3/8in. Lock Shakeproof	G1/5310-99-101-3379	2	Fixings detailed in Table 3

TABLE 2 ITEM LIST - BASIC CLANSMAN RADIO CONTROL HARNESS

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Command Box Fixed (CBF)	Z1/5895-99-117-4909	1	Alternative to Item 2
2	Crew Box 2 Radio (CB2)	Z1/5895-99-117-4911	2	Fig 6
3	Headset Holder Assembly FV964277	-	1	Fitted with Item 4 or 5
4	Interconnecting Box (IB2)	Z1/5820-99-117-6250	1	Fig 6
5	Interconnecting Box (IB3)	Z1/5820-99-117-6110	1	Alternative to Item 4
6	Mounting Plate Assembly (IB2/IB3) FV896106	-	1	Fig 6
<u>Cable Assemblies</u>				
7	2 - Conductor 1410 mm FV745779/31	5995-99-966-0002	1	RJB to IB2/IB3
8	12 - Point 915 mm FV2050181/26	-	1	IB2/IB3 to CB2/CDF (Command)
9	12 - Point 1310 mm FV745757/135	5995-99-966-0004	1	IB2/IB3 to CB2 (Driver)
10	12 - Point 1270 mm FV2050181/27	-	1	CB2/CBF (Command) to CB2 (Driver)
<u>Fixings</u>				
11	Screw 5/16 in. UNF x 1/2 in. Hex Hd	G1/5305-99-941-0523	4	Fixings detailed in Table 3
12	Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0525	8	Fixings detailed in Table 3
13	Washer 5/16 in. Flat	G1/5310-99-941-8608	12	Fixings detailed in Table 3
14	Washer 0.326 Lock Shakeproof	G1/5310-99-101-0187	12	Fixings detailed in Table 3
<u>Stowed Items</u>				
15	Adaptor Ring for AGR	Z1/5965-99-622-5438	2	Used with Item 17
16	Audio Extension Lead 10 Metres (AEL)	Y2/5820-99-117-6142	1	For remote user
17	Audio Gear Respirator (AGR)	Z1/5965-99-622-5437	2	Embodiment loan item
18	Cable Assembly Switch Electrical	Z42/5965-99-620-5667	3	Embodiment loan item

(Continued)

TABLE 2 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
19	Cable Reel and Brackets Complete	2590-99-820-2779	2	For remote user
20	Case Antenna Element	5965-99-637-0806	2	Stowage for loose items
21	Commanders Personal Unit (CPU)	5820-99-117-5043	1	Embodiment loan item
22	Cover Microphone	Z42/5965-99-620-5673	2	For use with Item 25
23	Handset Remote Control (HSR)	5965-99-620-5670	2	Embodiment loan item
24	Bag Ancillaries	5820-99-621-9028	1	For stowage of loose items
25	Headset Microphone (AGS)	5965-99-620-5668	1	Embodiment loan item
26	Helmet Headset Electrical 'A' Vehicles (AGH)	5965-99-620-3251	2	Embodiment loan item
27	D10 Cable 880 yds	8130-99-115-8152	2	For remote user

TABLE 3 FIXING DETAILS  
OPERATIONS

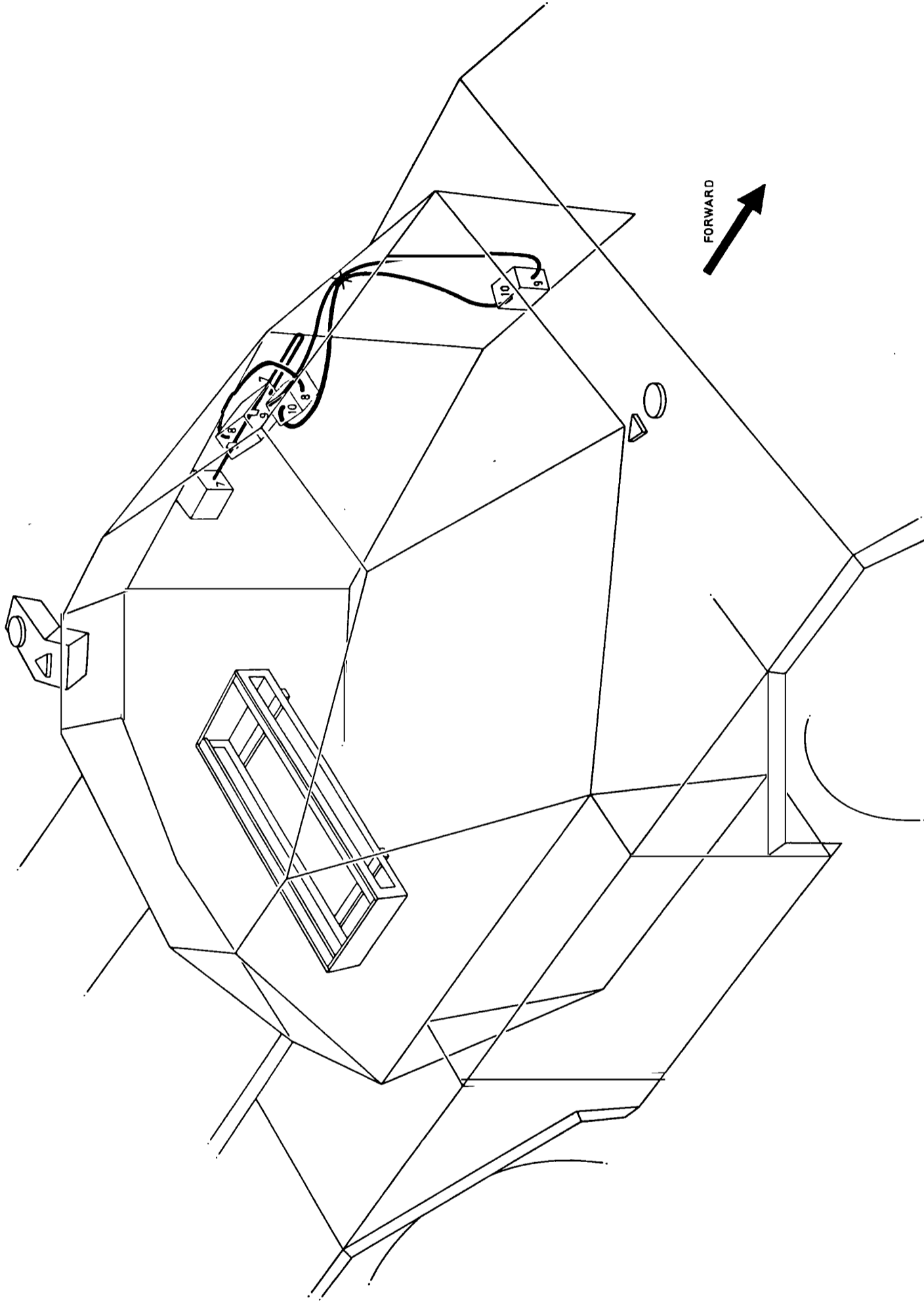
- 1 Aerial Base Mounting Bracket - exterior rear l.h.s.
- 2 Co-axial Outlet Cover Plate - exterior forward r.h.s. and rear l.h.s.
- 3 Antenna base Cover Plates - exterior forward r.h.s. and rear l.h.s.
- 4 Universal Mounting Plate - interior forward l.h.s.
- 5 Mounting Plate for CB2/CB3 - interior l.h.s. roof
- 6 Radio Rack - rear shelf
- 7 Mounting plate for IB2/IB3 - interior l.h.s.
- 8 Interconnecting Box 3 - Radio IB2/IB3 - interior l.h.s.
- 9 Crew Box 2 Radio CB2 (driver) - Universal mounting plate

Designation (1)	Catalogue No./NSN (2)	Operation No.												
		1	2	3	4	5	6	7	8	9				
Nut 5/16 in. UNF Steel Hex Hd	G1/5310-99-941-0925						4							
Screw 1/4 in. UNC x 3/4 in. Hex Hd	G1/5305-99-941-0687			6										
Screw 1/4 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0513			6										
Screw 5/16 in. UNF x 1/2 in. Hex Hd	G1/5305-99-941-0523		8											
Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0525											4		2
Screw 5/16 in. UNF x 1 1/4 in. Hex Hd	G1/5305-99-941-0529						4							
Screw 3/8 in. UNF x 3/4 in. Hex Hd	G1/5205-99-941-0539										4			
Screw 3/8 in. UNF x 1 1/2 in. Hex Hd	G1/5305-99-941-0545	4												
Washer 1/4 in. Flat	G1/5310-99-120-4032									2				
Washer 5/16 in. Flat	G1/5310-99-941-8608													
Washer 3/8 in. Flat	G1/5310-99-941-8635					12			4			4	4	2
Washer 0.261 Lock Shakeproof	G1/5310-99-100-6945	4												
Washer 0.326 Lock Shakeproof	G1/5310-99-101-0187					12								
Washer 0.389 Lock Shakeproof	G1/5310-99-912-9583		8									4	4	2
Washer 3/8 in. Lock Shakeproof	G1/5310-99-101-3379	4								2				



ROUTING/CONNECTIONS CHART

<u>Table 2</u> <u>Ref No.</u>	<u>FV No.</u>	<u>Cable</u> <u>Type</u>	<u>Route/Connection</u>
7	745779/31	2 - conductor	RJB to IB2/IB3 skt (28 V)
8	2050181/26	12 - point	IB2/IB3 harness skt to CB2/CBF (cmd) harness skt
9	745757/135	12 - point	IB2/IB3 harness skt TO CB2 (driver) harness skt
10	2050181/27	12 - point	CB2/CBF (cmd) harness skt to CB2 (driver) harness skt




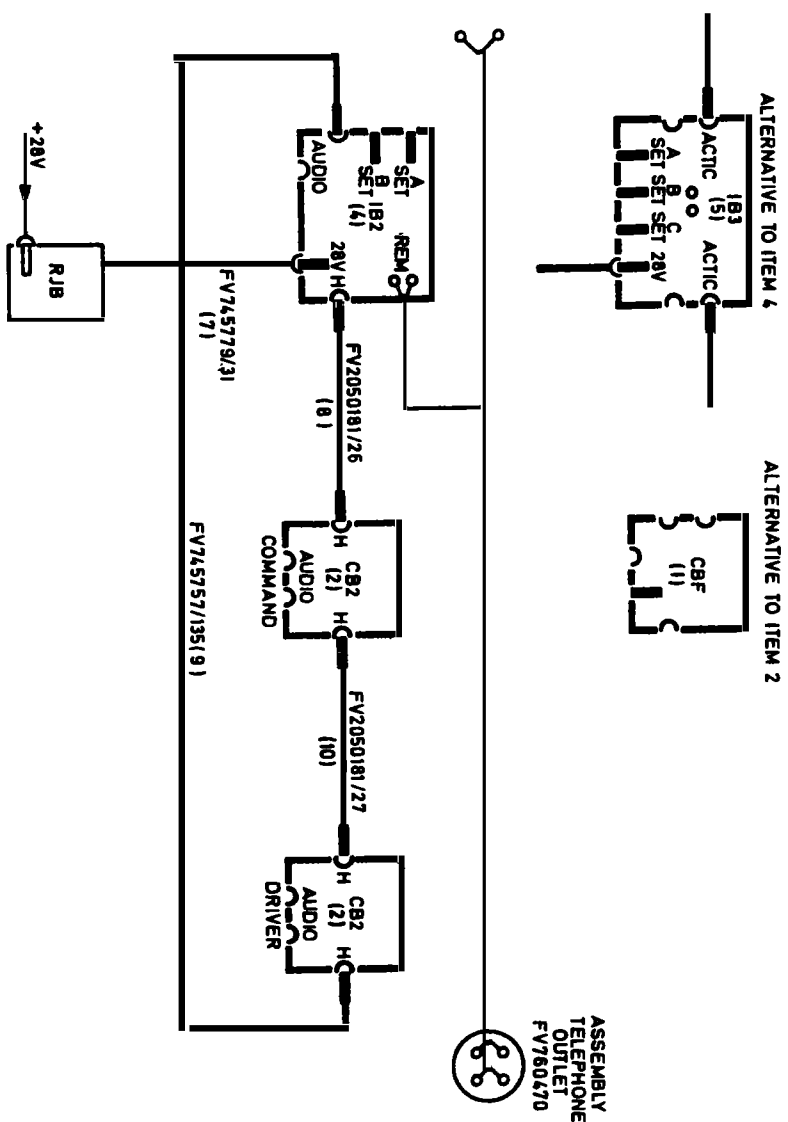
- NOTES
1. NUMBERS DEPICT THE ROUTING AND CONNECTIONS OF CABLES TO BE INSTALLED
  2.  DEPICT EXISTING CABLE CLIPS
  3. X DEPICT CABLE STRAPPING PLASTIC STRIP AND POSITIVE LOCK
  4. ROUTING CHART ON OPPOSITE PAGE

Fig 7

Equipment location, with clip and cable routing diagram



- NOTES
- 1 THICK LINES INDICATE NEW ITEMS
  - 2 THIN LINES INDICATE EXISTING ITEMS
  - 3 CB2/CBF - FORWARD L.H.S.
  - 4 CB2-(DRIVER)-UNIVERSAL MOUNTING PLATE
  - 5 1B2/1B3 - FORWARD L.H.S.
  - 6 NUMBERS IN BRACKETS DENOTE TABLE 2 ITEM NUMBER

Fig 8 Interconnection block diagram  
END

WHEELED VEHICLE FERRET FV701

CHAPTER 2 - B2

CES BRICK INSTALLATION INSTRUCTION

SUBJECT:                    Installation of Radio Station UK/VRC 353  
(Clansman Basic Harness Fitted)

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GENERAL INFORMATION

INTRODUCTION

1 This instruction details the installation of the Installation Kit for Radio Station UK/VRC 353 into a FV701 Ferret MK1/1, MK1/2 or MK2/3. The Kit comprises an ARFAT, TUAAM, VHF Antenna Base Assembly and elements, mountings and fittings to be installed into the existing Clansman Basic Harness. The requirements of the vehicle installation are met by the selection and physical arrangement of the various harness items. Interconnections between the items are made by cable assemblies which are arranged in a ring-main configuration. A system of common plugs and sockets with various lengths of connecting cable is employed.

ESTIMATED TIME REQUIRED

2			
(1)	Installation of CES No. 44830/2 brick	3	man hours
(2)	Installation of CES No. 44689 brick	1	man hours
(3)	Preparation of vehicle	NIL	man hours
(4)	Modifications	NIL	man hours
(5)	Manufacture	NIL	man hours

ACTION REQUIRED BY

- 3
- 3.1 Units affected When instructions have been received through staff channels demand the stores and upon receipt, request REME to install the equipment.
- 3.2 REME and Royal Signals authorized to carry out Unit, Field and Base (REME only) repairs.
- 3.2.1 Install the equipment as detailed.
- 3.2.2 Endorse the vehicle log book, AB 413 (revised) with the installation details.

STORES, TOOLS AND TEST EQUIPMENT

- 4
- 4.1 Stores to be demanded
- |     |   |       |
|-----|---|-------|
| (1) | Z1/5820-99-965-6421 Installation Kit, Radio Station UK/VRC 353 in FV701 Ferret. | Qty 1 |
| (2) | FV759689 Installation Kit, Co-axial Outlet.                                     | Qty 1 |
- 4.2 Stores to be obtained locally
- |     |                                |       |
|-----|--------------------------------|-------|
| (1) | FV964639/16 Cable Clip (Fig 9) | Qty 3 |
| (2) | FV964639/17 Cable Clip (Fig 9) | Qty 1 |
| (3) | FV964639/18 Cable Clip (Fig 9) | Qty 4 |
| (4) | FV964639/29 Cable Clip (Fig 9) | Qty 2 |
| (5) | FV964631/31 Cable Clip (Fig 9) | Qty 2 |
- 4.3 Stores to be manufactured
- Nil.

4.4 Special tools

Nil.

4.5 Test equipment

- |   |       |
|---|-------|
| (1) Z4/6625-99-620-3595 Clansman Harness Installation Test Set (HITS)       | Qty 1 |
| (2) Z4/6625-99-620-3592 Test Kit Condition Clansman Radio (TKC)             | Qty 1 |
| (3) Z4/6625-99-620-3593 Test Set Audio for Radio Audio Accessories (TSARAA) | Qty 1 |
| (4) Z4/6625-99-105-7049 Multimeter, Set CT498A (AVO)                        | Qty 1 |
| (5) Z4/6625-99-786-5771 Test Set Bond Resistance DT 109                     | Qty 1 |

ASSOCIATED PUBLICATIONS

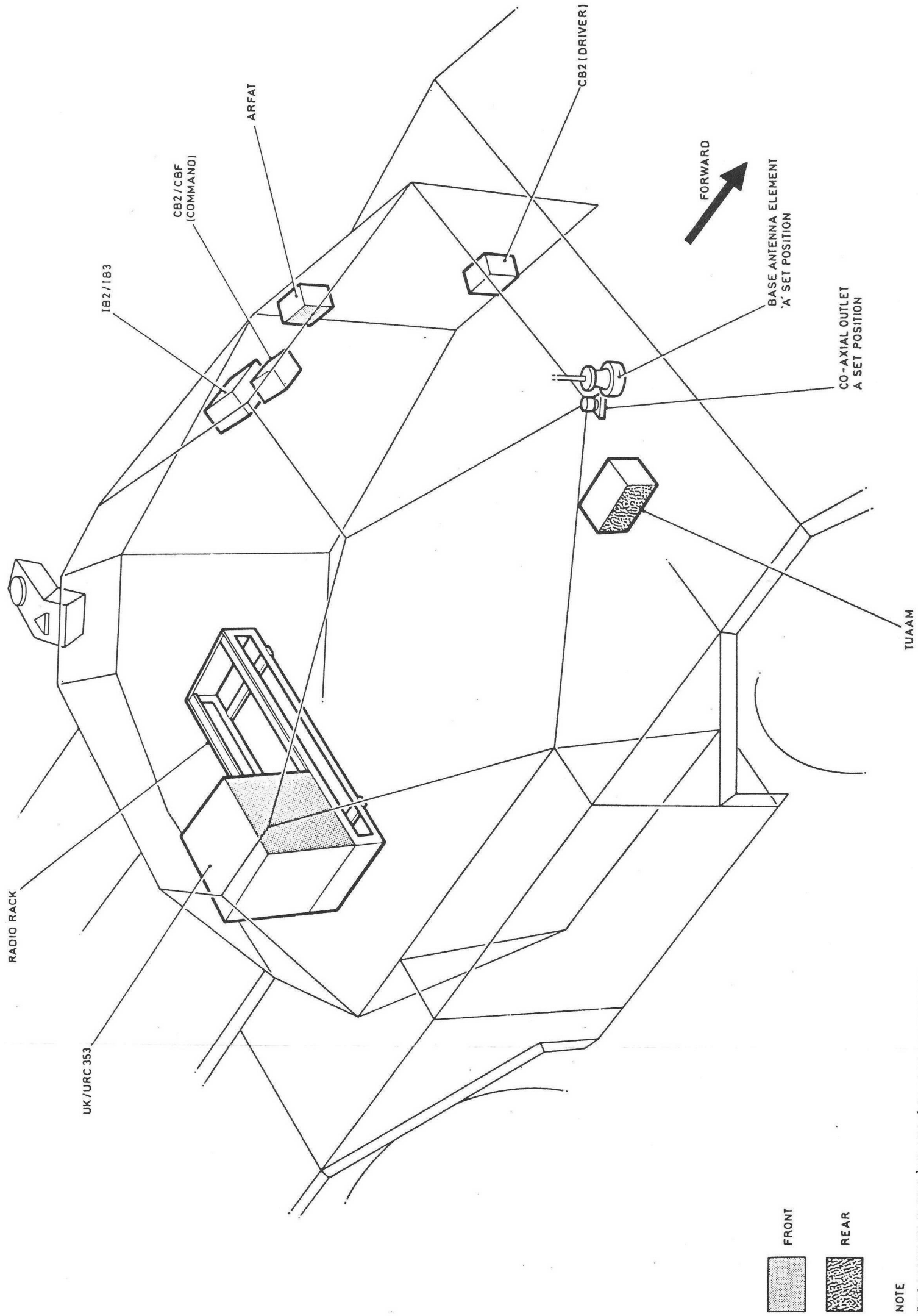
- 5
- (1) CES No. 44830/2 Installation Kit, Radio Station UK/VRC 353 FV701 in Ferret
  - (2) CES No. 44689 Installation Kit, Co-axial Outlet
  - (3) Emer Tels 210-219 Clansman VHF Antenna System
  - (4) EMER Communications Installations K 677 Clansman Radio Control Harness in Wheeled Vehicle FV701 Ferret
  - (5) EMER Communications Installations A 009 Instr No. 5
  - (6) EMER Wheeled Vehicles V 620-629
  - (7) EMER Communications Installations Z 203
  - (8) Tels and Radar Technical Folder TF/Tels 1.81, Issue 1
  - (9) User Handbook Army Code No. 61393

INFORMATION

6 If further information is required regarding this installation application should be made to:

Commanding Officer  
Electronics Branch REME  
Leigh Sinton Road  
MALVERN  
Worcs WR14 1LL

Giving all relevant details and quoting AESP 5800-F-121-412 Inst Instr No. B2, Chapter 2.



Location diagram

Fig 1

INSTALLATION

WARNINGS ...

- (1) BEFORE WORK IS COMMENCED ENSURE THAT THE VEHICLE MASTER SWITCH IS IN THE OFF POSITION AND THE VEHICLE BATTERIES ARE DISCONNECTED. (A CONVENIENT POINT IS THE NEGATIVE TERMINAL ON A BATTERY).
- (2) ALL UNTERMINATED CABLE ASSEMBLIES MUST HAVE THEIR UNTERMINATED ENDS SECURELY STOWED TO PREVENT POSSIBLE INJURY TO PERSONS RIDING IN THE VEHICLE.

CAUTION ...

Good earth contacts are an essential part of the installation. Poor bonding will degrade the performance leading to reduced operational range and susceptibility to r.f. interference (RFI). All earth bonding points, harness braids, screws, tapped holes and braid contact areas must be free from paint and grease using an approved solvent.

GENERAL NOTES

7 Figs 1 to 8 inclusive locate and show fitting details of the various installation items. Fig 9 is a clip and cable diagram and Fig 10 an interconnection block diagram for the UK/VRC 353 installation.

8 Reference in the text to items in Table 1 is made by inserting the item number, in brackets, after the item title unless otherwise stated. Table 2 lists the operations for the main items and the fixings required to install them. Table 3 lists the items to install the co-axial outlet if a remote antenna is to be used with the installation. Reference to Table 1 cable assembly item numbers are shown on location diagrams as applicable.

9 Reference to left-hand side (l.h.s.) and right-hand side (r.h.s.) of the vehicle is made with respect to the driver facing forward.

10 EMER Comms Inst A 009 Misc Instr No. 5; The Use of Fastenings in Communication Installations in Military Vehicles, gives information on the correct use of washers and fastenings.

11 Unless otherwise stated, all holes are existing and are detailed in Cat 302, Chap 2, Fig 1.

PREPARATION OF VEHICLE

12

12.1 Existing installations

With reference to the appropriate Comms Inst EMER remove both existing radio set kit and Larkspur radio control harness, retaining all fixings for possible future use.

12.2 Modifications

Nil



UK/PRC 353 INSTALLATION

13 During the following procedures, reference should be made to Table 1 for item numbers, in brackets, after the item titles. The operations for the main items and the fixings required to install them are listed in Table 2.

13.1 Impact mounting plate assembly

Fit the impact mounting plate assembly to the radio rack ('A' set position) as per Fig 2 and Table 2, operation 1.

13.1.1 Secure shock mounts (11) in position on the impact mounting plate (10) using sixteen screws (27), washers (31 and 35) and nuts (23).

13.1.2 Secure the earth braid (13) to the front r.h.s. of the plate using screw (29).

13.1.3 Secure the mounting bars (7 and 8) in position on the shock mounts using four screws (26), washers (30 and 34) and nuts (22).

13.1.4 Remove the sliding cover tray from the radio rack by releasing the wing nut.

13.1.5 Secure the impact mounting plate assembly in position on the radio rack using four screws (29), washers (33 and 37) and nuts (25).

13.1.6 Secure the sliding cover tray in position on the radio rack using the wing nut.

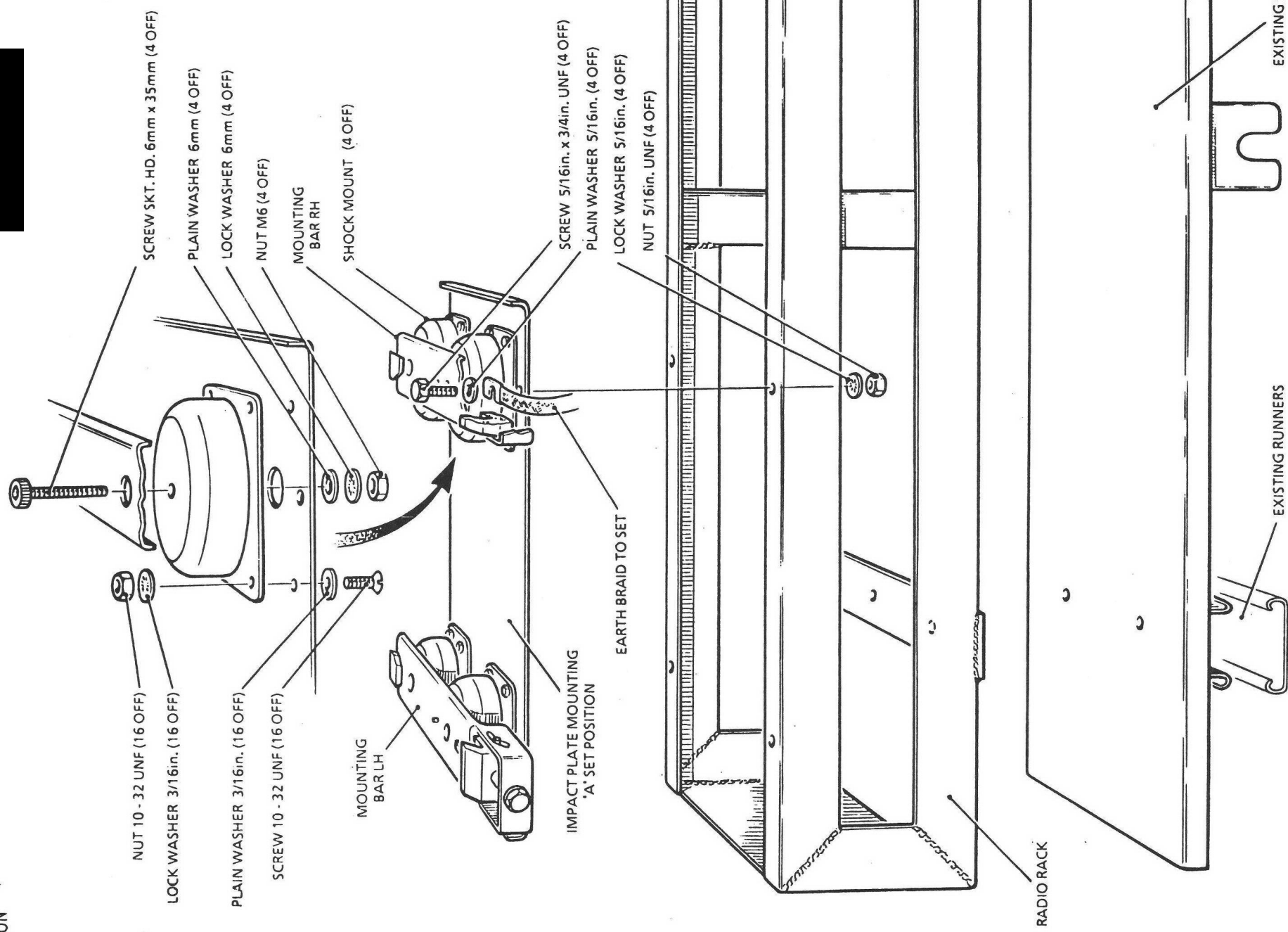


Fig 2

Radio rack and set mounting position diagram

13.2 Plate assembly

Fit the plate assembly (9) to the interior forward r.h.s. ('A' set position) as per Figs 3 and 4, Table 2, operation 2.

13.2.1 Locate the four fixing holes on the interior forward r.h.s. (See Cat 302, Chap 1, Fig 4).

13.2.2 Secure the plate in position using four rubber bushings (5 and 6) screws (28) and washers (33 and 37), with the earth braid (13) connected to the bottom l.h.s. fixing screw.

13.3 Tuning unit automatic antenna matching (TUAAM)

Fit the TUAAM (12) to the plate assembly (9) installed in Sub Para 13.2 as per Figs 3 and 4, Table 2, operation 3.

13.3.1 Assemble the rubber bushings (5 and 6) on the TUAAM (12) as detailed in Fig 5.

13.3.2 Position the TUAAM (12) over the studs on the plate and secure in position using washers (32 and 36) and nuts (24).

13.3.3 Connect the free end of the earth braid (13) fitted in Sub Para 13.2.2 to the earth terminal on the TUAAM.

13.3.4 Connect one end of cable assembly RF (14) to SKT 3 on the TUAAM.

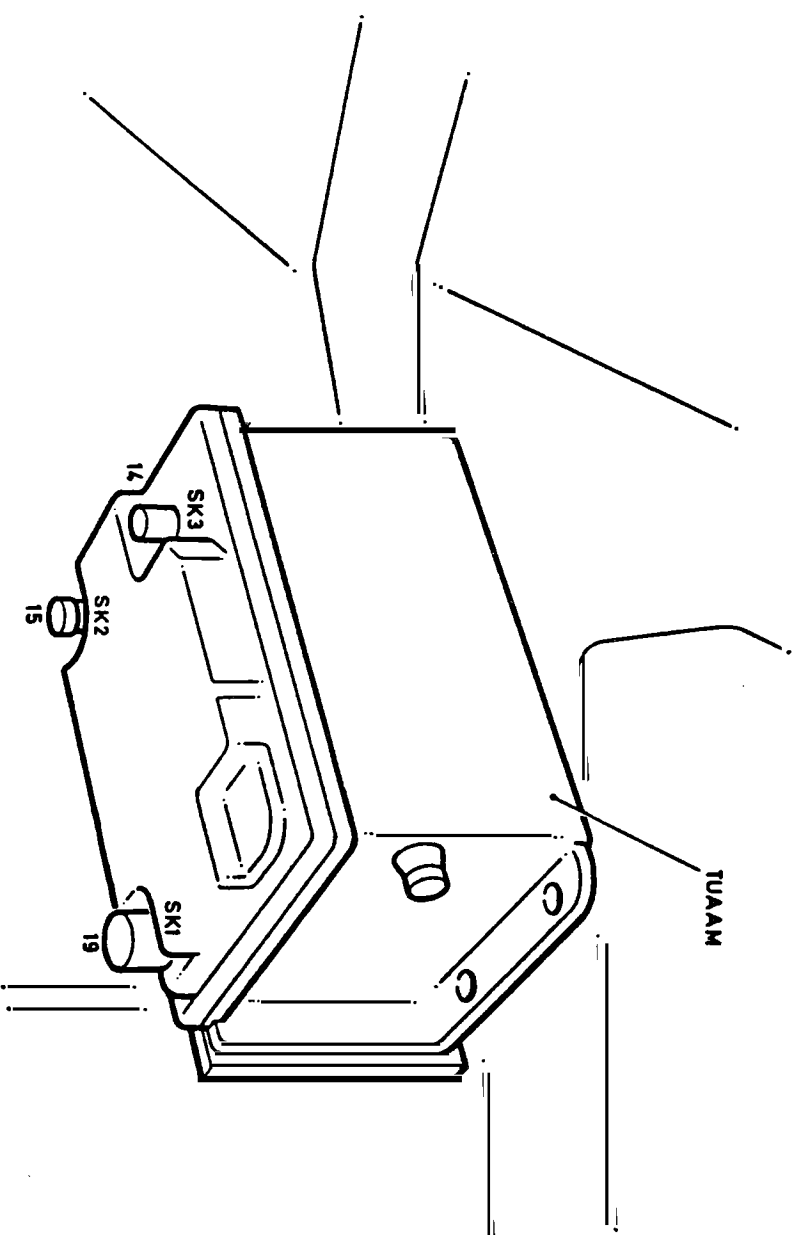


Fig 3 TUAAM location diagram

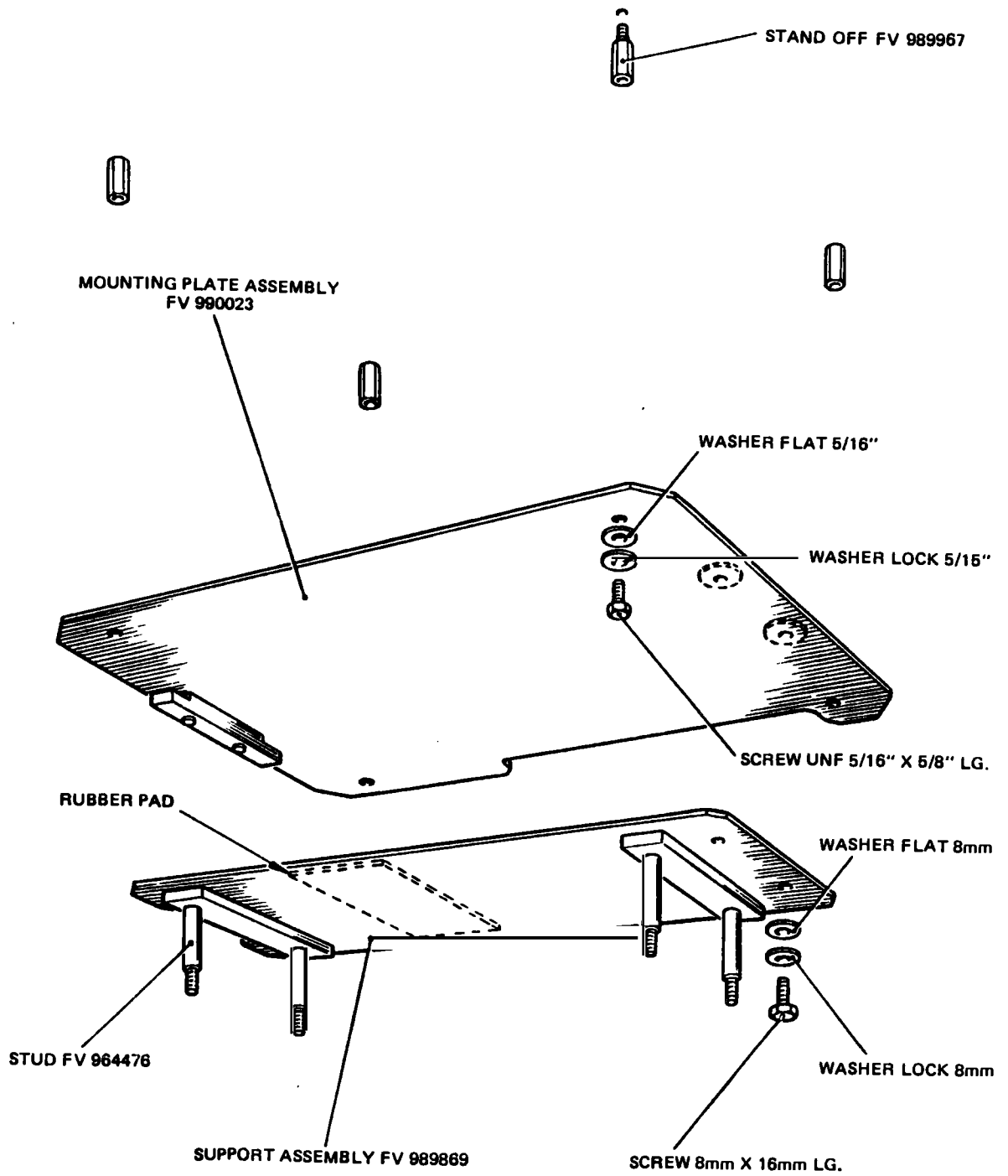
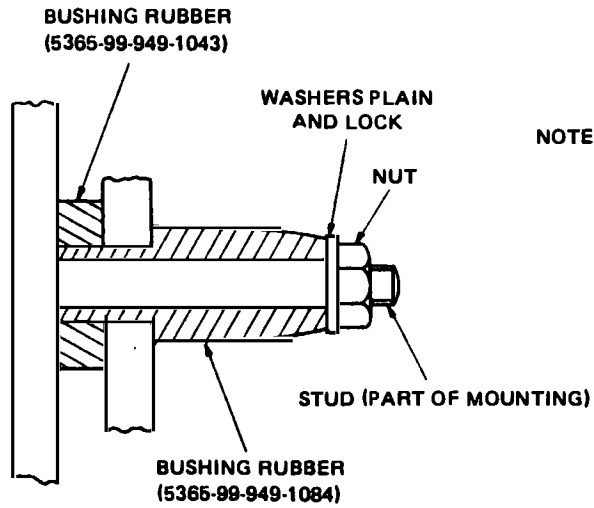


Fig 4 TUAAM mounting bracket



NOTE  
TIGHTEN NUT SUFFICIENTLY TO  
BRING WASHER TO BEAR HARD ON  
SHOULDER OF STUD.

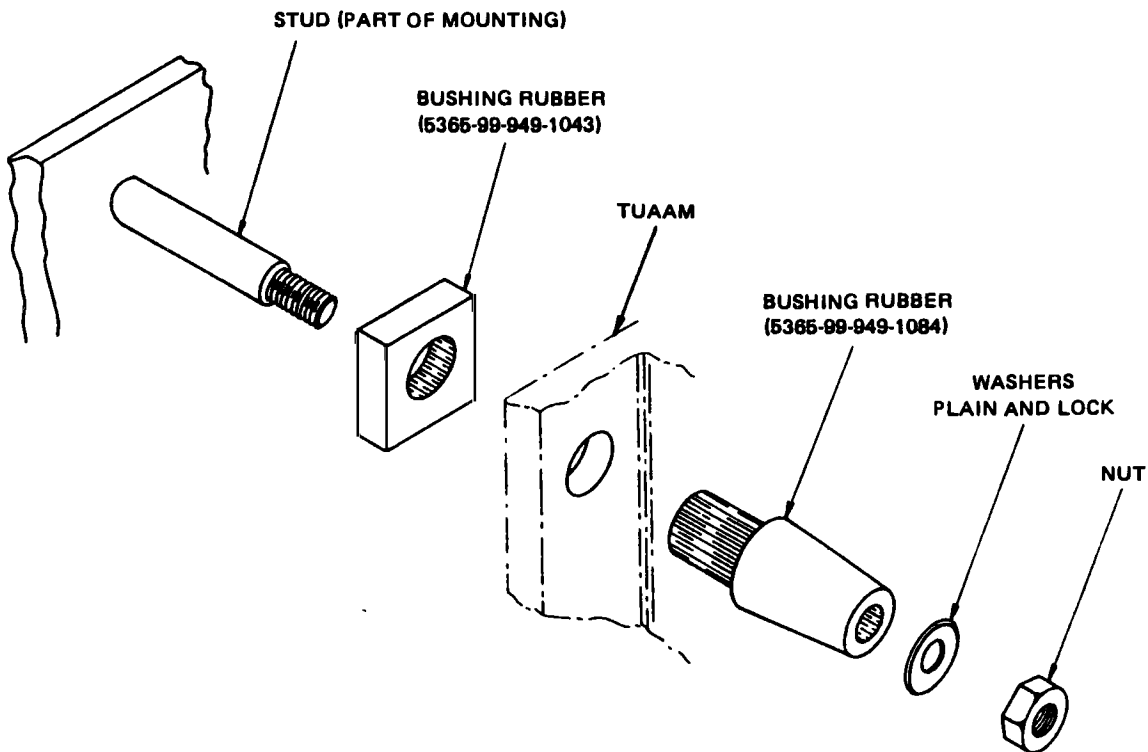


Fig 5 TUAAM bushes

13.4 Adaptor r.f. antenna tuning (ARFAT)

Fit the ARFAT (3) to the universal mounting plate as per Fig 6 and Table 2, operation 4.

13.4.1 Locate the two fixing holes on the universal mounting plate.

13.4.2 Secure the ARFAT (3) in position on the plate using two screws (28) and washers (33 and 37).

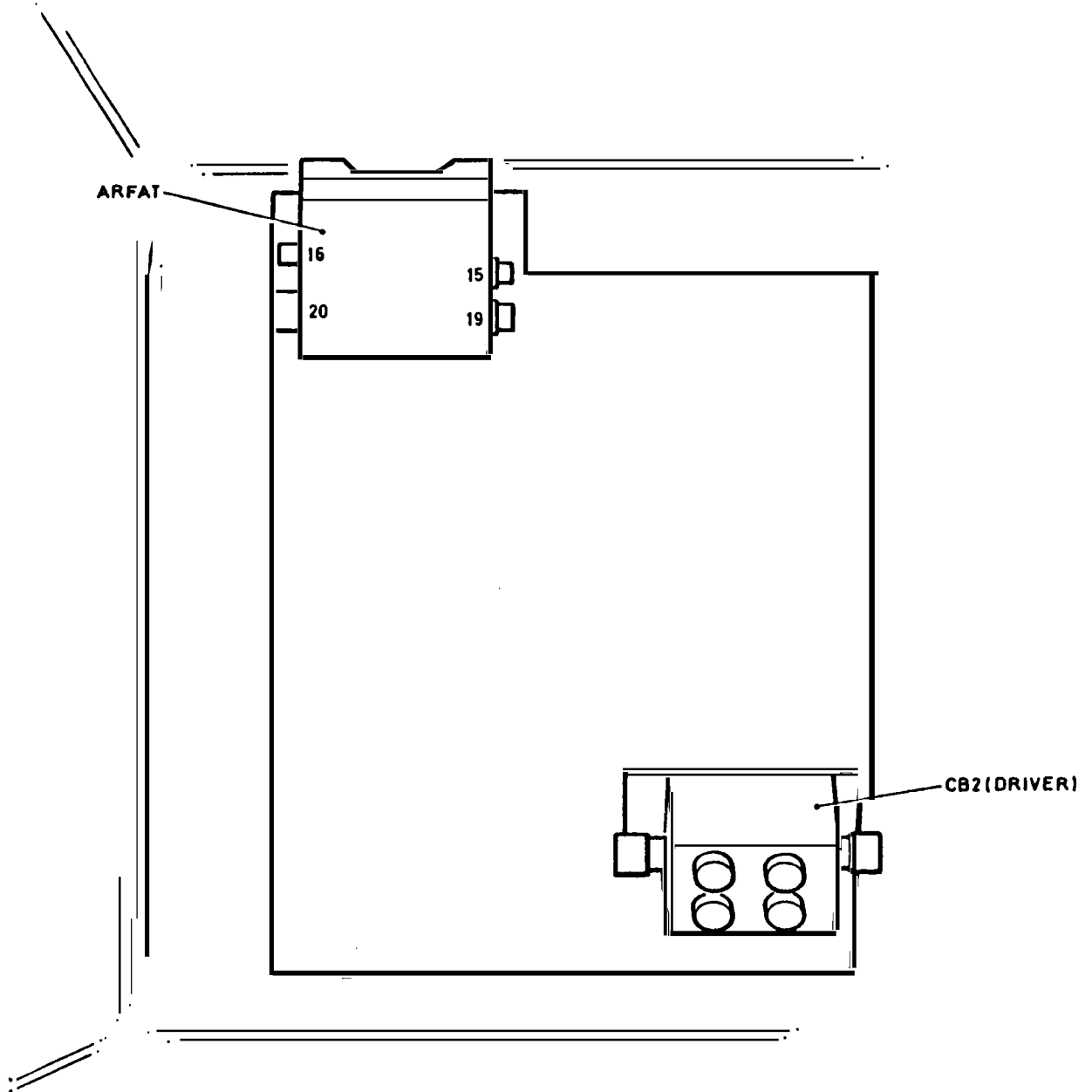


Fig 6 ARFAT location diagram

### 13.5 Base antenna element

Fit the base antenna element (4) to the forward r.h.s. exterior ('A' set position) as per Fig 7 and Table 2, operation 5.

13.5.1 Remove, and retain for possible future use, the fixings, cover plate and gasket at the antenna base 'A' set position (Fig 1).

13.5.2 Fit one of the gaskets supplied with the base antenna element over the screw holes and cable aperture in the vehicle body.

13.5.3 Feed the straight end of cable assembly RF (14) fitted in Sub Sub Para 13.3.4 from inside the vehicle out through the centre hole of the antenna base position.

13.5.4 Assemble the base antenna element (4) in a similar manner as shown in Fig 7 and connect the co-axial BNC socket of cable assembly (14) to the base. Secure the assembly in position using three bolts (21) and washers (32 and 36).

13.5.5 Fit antenna elements (1 and 2) to the antenna element and secure using integral fixings.

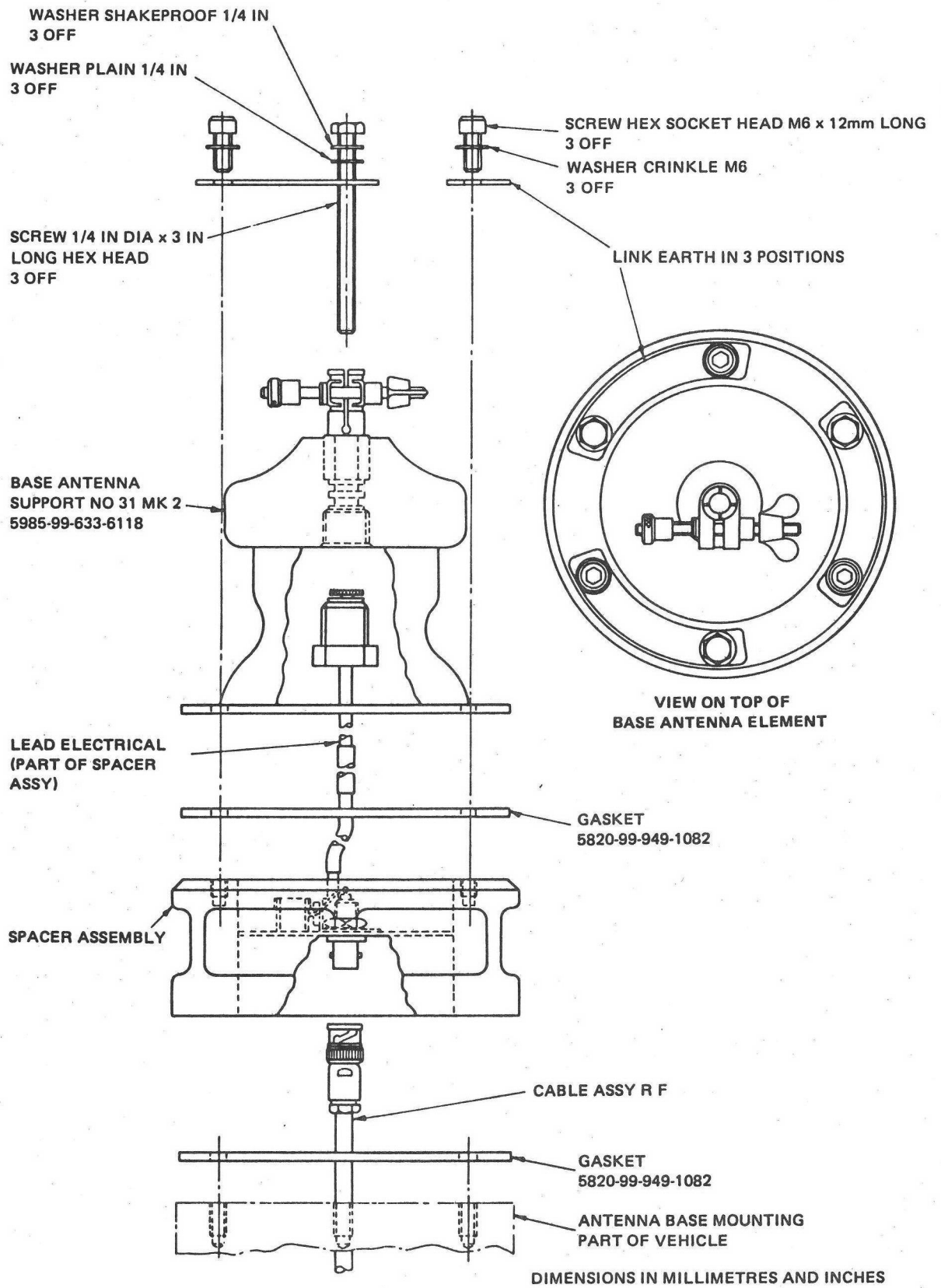


Fig 7 Antenna base assembly diagram



### 13.6 Co-axial outlet

A co-axial outlet position is provided (Fig 1), on MK II vehicles only, in the 'A' set position to allow a remote antenna to be used with the installation. Fit the co-axial outlet on the forward r.h.s. exterior as per Fig 8. Numbers in brackets after item title refer to item numbers in Table 3.

13.6.1 Remove and retain for possible future use the cover plate, gasket and fixings.

13.6.2 Position a gasket (5) over the three securing holes.

13.6.3 Assemble a co-axial outlet as detailed in Fig 8.

13.6.4 Feed the straight end of cable assembly (1) out through the centre hole and connect to the co-axial adaptor (3).

13.6.5 Place the co-axial outlet (4) over the gasket, ensuring that the holes in the shell, gasket, and roof are aligned. Secure using two screws (7) and washers (8 and 9).

13.6.6 Place the securing eye of the captive cover (2) over the remaining hole in the shell and secure using the remaining screw (7) and washer (9).

13.6.7 Fit the protective cap over the top of the outlet shell.

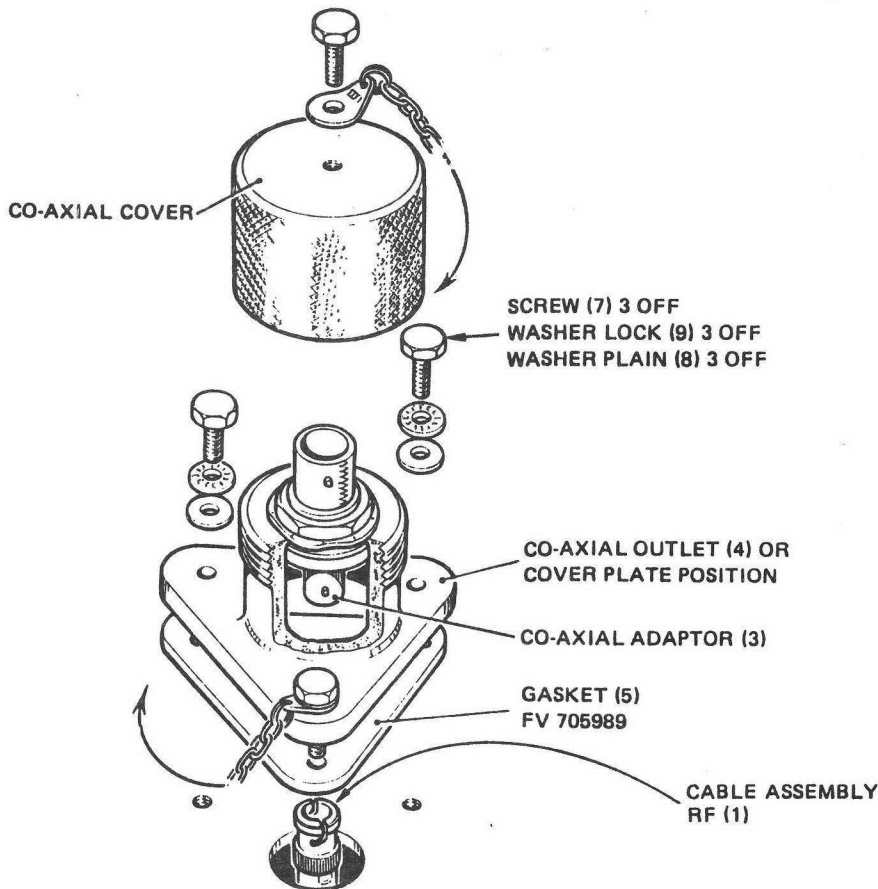


Fig 8 Co-axial assembly diagram

### 13.7 Cable assemblies

13.7.1 Remove cable guards to assist in the routeing of cable assemblies as per Figs 9 and 10.

13.7.2 Secure using cable clips, at a maximum pitch of 450 mm and fit cable ties (obtained locally) where appropriate.

13.7.3 Stow excessive lengths of cable behind the universal mounting plate.

13.7.4 Ensure all elbows of cable assemblies, when connected to their appropriate harness box, are at 45 degrees to the surface which the box is mounted.

13.7.5 Replaced all cable guards if no further installations are to be carried out.

### FUNCTION CHECKS

#### 14

14.1 Visually inspect the complete harness installation ensuring all connections have been correctly made and all cables are securely clipped.

14.2 Check all earth bonding points ..... see CAUTION immediately before Para 7.

14.3 Using Test Set Bond Resistance DT 109, check that individual earth bonding joints do not exceed 2 milliohms and resistance between the appropriate harness item earth and vehicle earth terminal does not exceed 25 milliohms.

14.4 Switch the battery master switch to ON.

14.5 Connect headsets to the CB2 and CB2/CBF positions.

14.6 On the IB2/IB3, set Clansman Harness switch to ON.

14.7 Carry out a functional test of the UK/VRC 353 as described in User Handbook Army Code No. 61393. Check that the intercommunication (IC) facility is working at all positions.

14.8 If the system is not functioning correctly, use the test equipment listed in Para 4.5 to help locate the failure.

14.9 The harness should also be checked using the Harness Installation Test Set (HITS) to prove the serviceability of functions, connectors and cables.

14.10 All installations are subject to a certain level of electrical interference, therefore tests of vehicle intercom should be carried out with:

14.10.1 Vehicle stationary with engine running at varying speeds from idling to max r.p.m.

14.10.2 Vehicle travelling at varying speeds to ensure that the level of interference is acceptable.

14.11 If the performance of the installed radio is suspect it should be checked using the Condition Test Set (see Sub Sub Para 4.5.2); this enables the installer to check the radio after it has been installed in the vehicle - see Tels and Radar Branch Technical Folder TF/Tels/1/81 Issue dtd May 81 Chapter 3, Paras 301 to 303 and Chapter 5 Paras, 501 to 507 and 562 to 574. Chapter 8, Paras 801 to 804 gives details of Radio Interference Tests (RFI) which may be carried out using the Condition Test Set.

PERMISSIBLE REPAIRS

15 Cable assemblies should be repaired in accordance with EMER Comms Inst Z 203. Individual items suspected of having failed should be substituted by known serviceable items as detailed in the Maintenance Instructions.

REDUNDANT ITEMS

16

- |  |       |
|--|-------|
| (1) FV639761 Antenna cover plate         | Qty 1 |
| (2) - Gasket                             | Qty 1 |
| (3) FV756596 Co-axial outlet cover plate | Qty 1 |
| (4) FV705989 Gasket                      | Qty 1 |

17 Items (1) and (3) (Para 16) are to be retained for possible future use. Items (2) and (3) (Para 16) are to be disposed of/discarded as per unit procedure.

TABLE 1 ITEM LIST - RADIO STATION UK/VRC 353

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Antenna Element	5985-99-630-8456	1	Fitted to Item 4
2	Antenna Element	5985-99-630-8457	1	Fitted to Item 4
3	Adaptor RF Antenna Tuning (ARFAT)	5820-99-630-6465	1	Fig 6
4	Base, Antenna Element	5985-99-630-6495	2	Fig 7
5	Bushing Rubber	Z1/5340-99-949-1084	4	Fitted with Items 9 and 13
6	Bushing Rubber	Z1/5365-99-949-1043	4	Fitted with Items 9 and 13
7	Carrier Module (Bars Mounting) RH	5820-99-661-6077	1	Fitted on Item 11
8	Carrier Module (Bars Mounting) LH	5820-99-661-6078	1	Fitted on Item 11
9	Plate Assembly (TUAAM)	-	1	Fig 4
10	Plate Mounting, Impact	SD/C 235654	1	Fitted on Radio Rack
11	Shock Mount, Type 1010	ZA 47008	4	Fitted to Item 10
12	Tuning Unit, Automatic Antenna Matching (TUAAM)	Z1/5821-99-630-6156	1	Fig 3
<u>Cable Assemblies</u>				
13	Earth Braid	2458 mm FV166727/3	2	For TUAAM and UK/VRC 353
14	Radio Frequency	435 mm FV745829/1	1	TUAAM to Antenna base
15	Radio Frequency	2135 mm FV745811/83	1	ARFAT to TUAAM
16	Radio Frequency	2670 mm FV745811/82	1	UK/VRC 353 to ARFAT
17	2 - Point	2060 mm FV943775/2	1	UK/VRC 353 to RJB
18	6 - Point	3290 mm FV745731/68	1	UK/VCR 353 to IB2
19	6 - Point	2515 mm FV75837/33	1	TUAAM to ARFAT (Control Lead)
20	12 - Point	2760 mm FV745757/131	1	UK/VRC 353 to ARFAT

(Continued)

TABLE 1 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
<u>Fixings</u>				
21	Bolt 1/4 in. UNC x 2 3/4 in. Hex Hd	G1/5306-99-941-0289	3	Fixings detailed in Table 2
22	Nut 6 mm	G1/5310-99-135-0787	4	Fixings detailed in Table 2
23	Nut 10 - 32 UNF	G1/5310-99-941-2419	16	Fixings detailed in Table 2
24	Nut 1/4 in. UNF	G1/5310-99-941-0924	4	Fixings detailed in Table 2
25	Nut 5/16 in. UNF	G1/5310-99-941-0925	4	Fixings detailed in Table 2
26	Screw M6 x 30 mm Skt Hd	G1/5305-99-135-1375	4	Fixings detailed in Table 2
27	Screw 10 - 32 UNF x 1/2 in. C'sk Hd	G1/5305-99-941-1738	16	Fixings detailed in Table 2
28	Screw 5/16 in. UNF x 5/8 in. Hex Hd	G1/5305-99-941-0524	6	Fixings detailed in Table 2
29	Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0525	4	Fixings detailed in Table 2
30	Washer M6 Flat	G1/5310-99-122-6474	4	Fixings detailed in Table 2
31	Washer 3/16 in. Flat	G1/5310-99-941-8179	16	Fixings detailed in Table 2
32	Washer 1/4 in. Flat	G1/5310-99-120-4032	7	Fixings detailed in Table 2
33	Washer 5/16 in. Flat	G1/5310-99-941-8608	10	Fixings detailed in Table 2
34	Washer 6 mm Lock Shakeproof	G1/5310-99-135-9301	4	Fixings detailed in Table 2
35	Washer 3/16 in. Lock Shakeproof	G1/5310-99-914-0112	16	Fixings detailed in Table 2
36	Washer 1/4 in. Lock Shakeproof	G1/5310-99-100-6945	7	Fixings detailed in Table 2
37	Washer 5/16 in. Lock Shakeproof	G1/5310-99-101-0187	10	Fixings detailed in Table 2

TABLE 2 FIXING DETAILS

OPERATIONS

- 1 Radio tray - Radio rack
- 2 Plate Assembly (TUAAM) - Forward r.h.s.
- 3 TUAAM - Plate assembly
- 4 ARFAT - Universal mounting plate
- 5 Base Antenna Element - 'A' set position, forward r.h.s. exterior

Designation (1)	Catalogue No./NSN (2)	Operation No.				
		1	2	3	4	5
Bolt 1/4 in. UNC x 2 3/4 in. Hex Hd	G1/5306-99-941-0289					3
Nut 6 mm	G1/5310-99-135-0787	4				
Nut 10 - 32 UNF	G1/5310-99-941-2419	16				
Nut 1/4 in. UNF	G1/5310-99-941-0924		4			
Nut 5/16 in. UNF	G1/5310-99-941-0925	4				
Screw M6 x 30 mm Skt Hd	G1/5305-99-135-1375	4				
Screw 10-32 UNF x 1/2 in. C'sk Hd	G1/5305-99-941-1738	16				
Screw 5/16 in UNF x 5/8 in. Hex Hd	G1/5305-99-941-0524		4		2	
Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0525	4				
Washer M6 Flat	G1/5310-99-122-6474	4				
Washer 3/16 in. Flat	G1/5310-99-941-8179	16				
Washer 1/4 in. Flat	G1/5310-99-120-4032			4		3
Washer 5/16 in. Flat	G1/5310-99-941-8608	4	4		2	
Washer 6 mm Lock Shakeproof	G1/5310-99-135-9301	4				
Washer 3/16 Lock Shakeproof	G1/5310-99-914-0112	16		4		
Washer 1/4 Lock Shakeproof	G1/5310-99-100-6945			4		3
Washer 5/16 Lock Shakeproof	G1/5310-99-101-0187	4	4		2	



TABLE 3 ITEM LIST - CO-AXIAL OUTLET

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Cable Assembly R.F.	FV745829/18	1	
2	Captive Cover	5995-99-045-8305	1	
3	Co-axial Adaptor (Bulkhead Mounting)		1	
4	Co-axial Outlet Shell	FV759688	1	
5	Gasket	FV705989	1	
6	Nut 5/16 - 24 UNF	5310-99-941-0925	3	Alternative to Item 7
7	Screw 5/16 - 18 UNC x 7/8 in. Hex Hd	5305-99-941-0699	3	Alternative to Item 6
8	Washer 5/16 Flat I/D	5310-99-941-8608	3	
9	Washer 5/16 Lock Shakeproof	5310-99-101-0187	3	

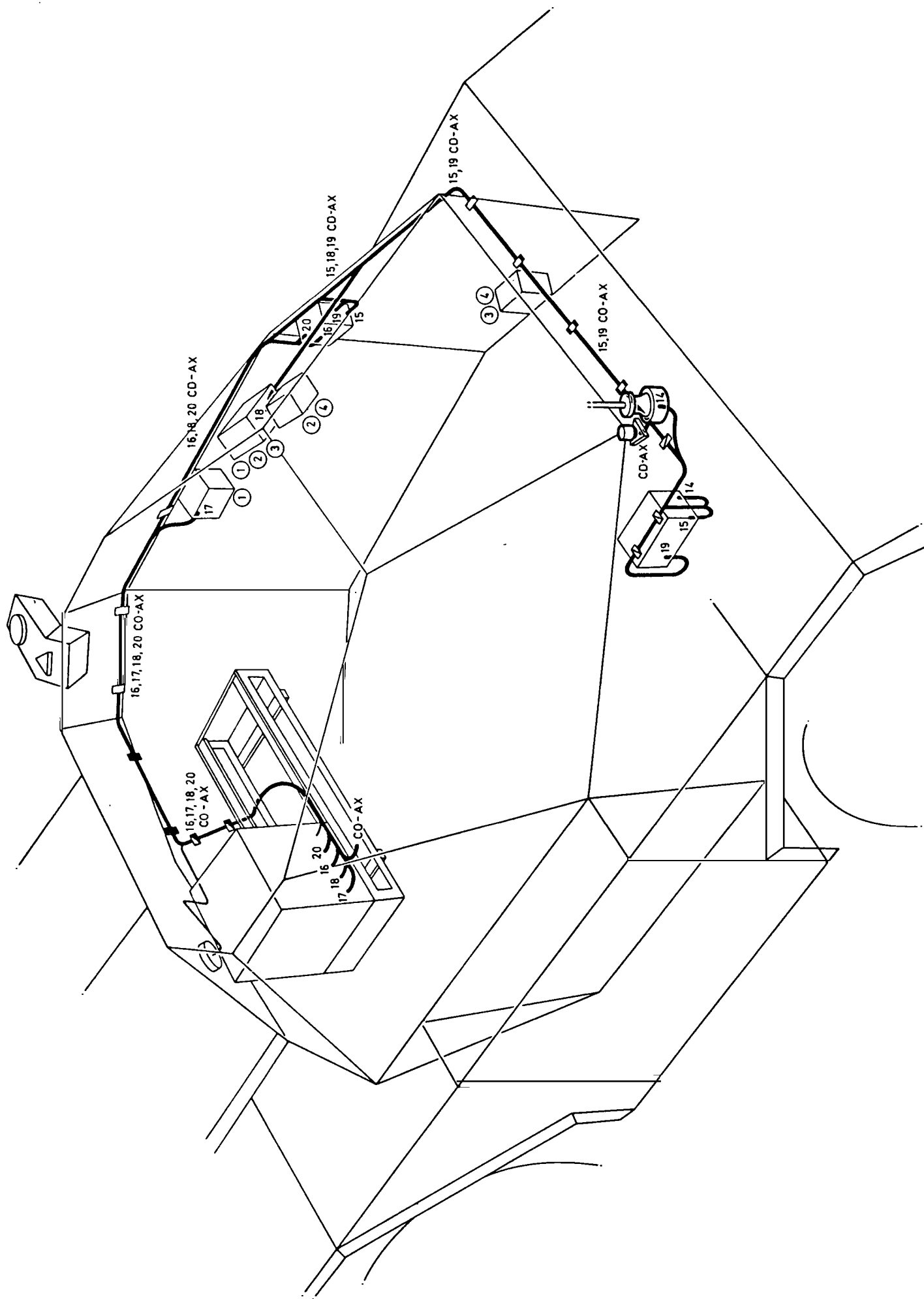


ROUTING/CONNECTIONS CHART

<u>Ref No.</u>	<u>FV No.</u>	<u>Cable Type</u>	<u>Route/Connection</u>
1E	745779/31	2 - conductor	RJB to IB2/IB3 (28 V)
2E	2050181/26	12 - point	IB2/IB3 to CB2/CBF (cmd)
3E	745757/135	12 - point	IB2/IB3 to CB2 (driver)
4E	2050181/27	12 - point	CB2/CBF (cmd) to CB2 (driver)
13	166727/3	Earth braid	TUAM and UK/VRC 353
14	745829/1	Radio frequency	TUAM skt 3 to Antenna Base
15	745811/83	Radio frequency	ARFAT to TUAM skt 2
16	745811/82	Radio frequency	UK/VRC 353 to ARFAT
17	943775/2	2 - point	UK/VRC 353 to RJB
18	745731/68	6 - point	UK/VRC 353 to IB2
19	745837/33	6 - point	TUAM skt 1 to ARFAT
20	745757/131	12 - point	UK/VRC 353 to ARFAT

Note ...

Suffix E denotes existing cable

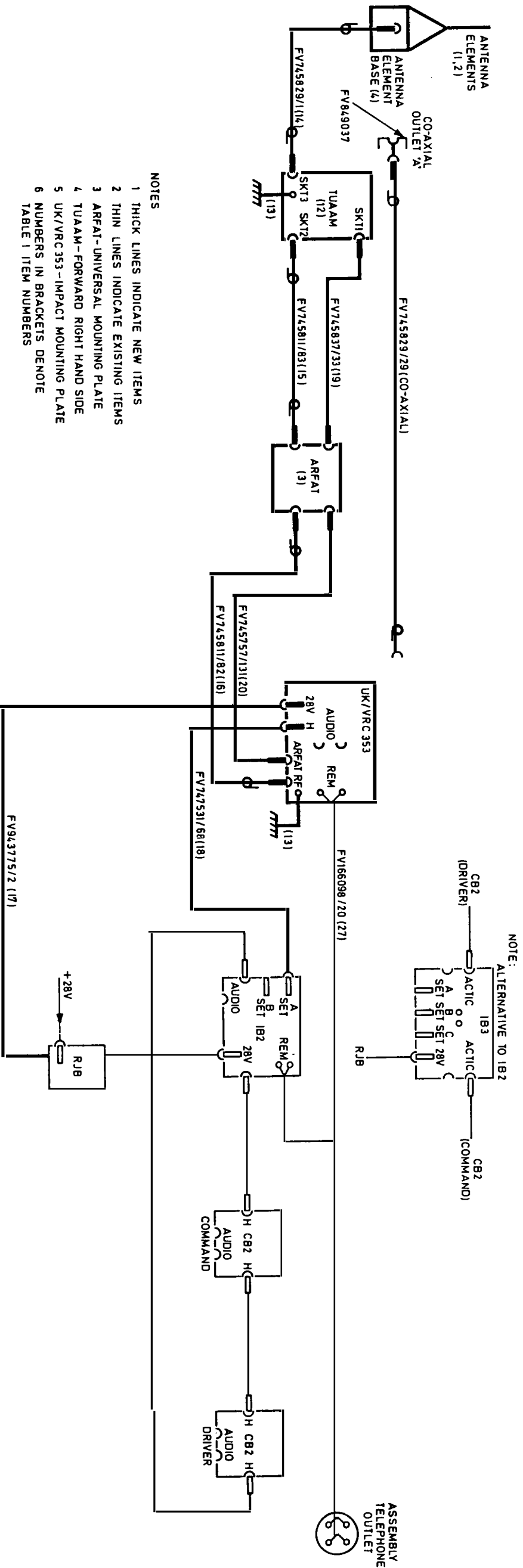


NOTES

1. CIRCLED NUMBERS DEPICT CONNECTIONS TO BE MADE BY EXISTING CABLES
2. PLAIN NUMBERS DEPICT THE ROUTING AND CONNECTIONS OF CABLES TO BE INSTALLED AS PER TABLE 1
3. ■ EXISTING CABLE CLIPS
4. □ CABLE CLIP FV964639/18
5. ▨ CABLE CLIP FV964639/31
6. ▩ CABLE CLIP FV964639/29
7. ▭ CABLE CLIP FV964639/17
8. ▮ CABLE CLIP FV964639/16

Fig 9

Equipment location, with clip and cable routing diagram



- NOTES
- 1 THICK LINES INDICATE NEW ITEMS
  - 2 THIN LINES INDICATE EXISTING ITEMS
  - 3 ARFAT- UNIVERSAL MOUNTING PLATE
  - 4 TUAM- FORWARD RIGHT HAND SIDE
  - 5 UK/VRC353- IMPACT MOUNTING PLATE
  - 6 NUMBERS IN BRACKETS DENOTE TABLE 1 ITEM NUMBERS

Interconnection block diagram

WHEELED VEHICLE FERRET FV701

CHAPTER 2 - B3

CES BRICK INSTALLATION INSTRUCTION

SUBJECT: Installation of Radio Station UK/PRC 351/2  
(Clansman Basic Harness Fitted)

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GENERAL INFORMATION

INTRODUCTION

1 This instruction details the installation of the Installation Kit for Radio Station UK/PRC 351 into a FV701 Ferret MK1/1, MK1/2 and MK2/3. The Kit comprises an IBHA, Initiate Box, TUAAM, Battery Support Assembly, Antenna Base Assembly and elements, mountings and fittings to be installed into the existing Clansman Basic Harness. The requirement of the vehicle installation are met by the selection and physical arrangement of the various harness items. Interconnections between the items are made by cable assemblies which are arranged in a ring-main configuration. A system of common plugs and sockets with various lengths of connecting cable is employed.

ESTIMATED TIME REQUIRED

2

(1) Installation of CES No. 44842/1 brick	3	man hours
(2) Installation of CES No. 44689 brick	1	man hours
(3) Preparation of vehicle	1	man hours
(4) Modifications	1	man hours
(5) Manufacture	NIL	man hours

ACTION REQUIRED BY

- 3
- 3.1 Units affected When instructions have been received through staff channels demand the stores and upon receipt, request REME to install the equipment.
- 3.2 REME and Royal Signals authorized to carry out Unit, Field and Base (REME only) repairs.
- 3.2.1 Install the equipment as detailed.
- 3.2.2 Endorse the vehicle log book, AB 413 (revised) with the installation details.

STORES, TOOLS AND TEST EQUIPMENT

- 4
- 4.1 Stores to be demanded
- |  |       |
|--|-------|
| (1) Z1/5820-99-965-6402 Installation Kit, Radio Station UK/PRC 351, in FV701 Ferret. | Qty 1 |
| (2) FV759689 Installation Kit, Co-axial Outlet                                       | Qty 1 |
- 4.2 Stores to be obtained locally
- |                                     |       |
|-------------------------------------|-------|
| (1) FV964639/16 Cable Clip (Fig 10) | Qty 1 |
| (2) FV964639/18 Cable Clip (Fig 10) | Qty 4 |
| (3) FV964639/29 Cable Clip (Fig 10) | Qty 1 |
- 4.3 Stores to be manufactured
- Nil.

4.4 Special tools

N11.

4.5 Test equipment

(1) Z4/6625-99-620-3595 Clansman Harness Installation Test Set (HITS)	Qty 1
(2) Z4/6625-99-620-3592 Test Kit Condition Clansman Radio (TKC)	Qty 1
(3) Z4/6625-99-620-3593 Test Audio for Radio Audio Accessories (TSARAA)	Qty 1
(4) Z4/6625-99-105-7049 Multimeter, Set CT498A (AV0)	Qty 1
(5) Z4/6625-99-786-5771 Test Set Bond Resistance DT 109	Qty 1

ASSOCIATED PUBLICATIONS

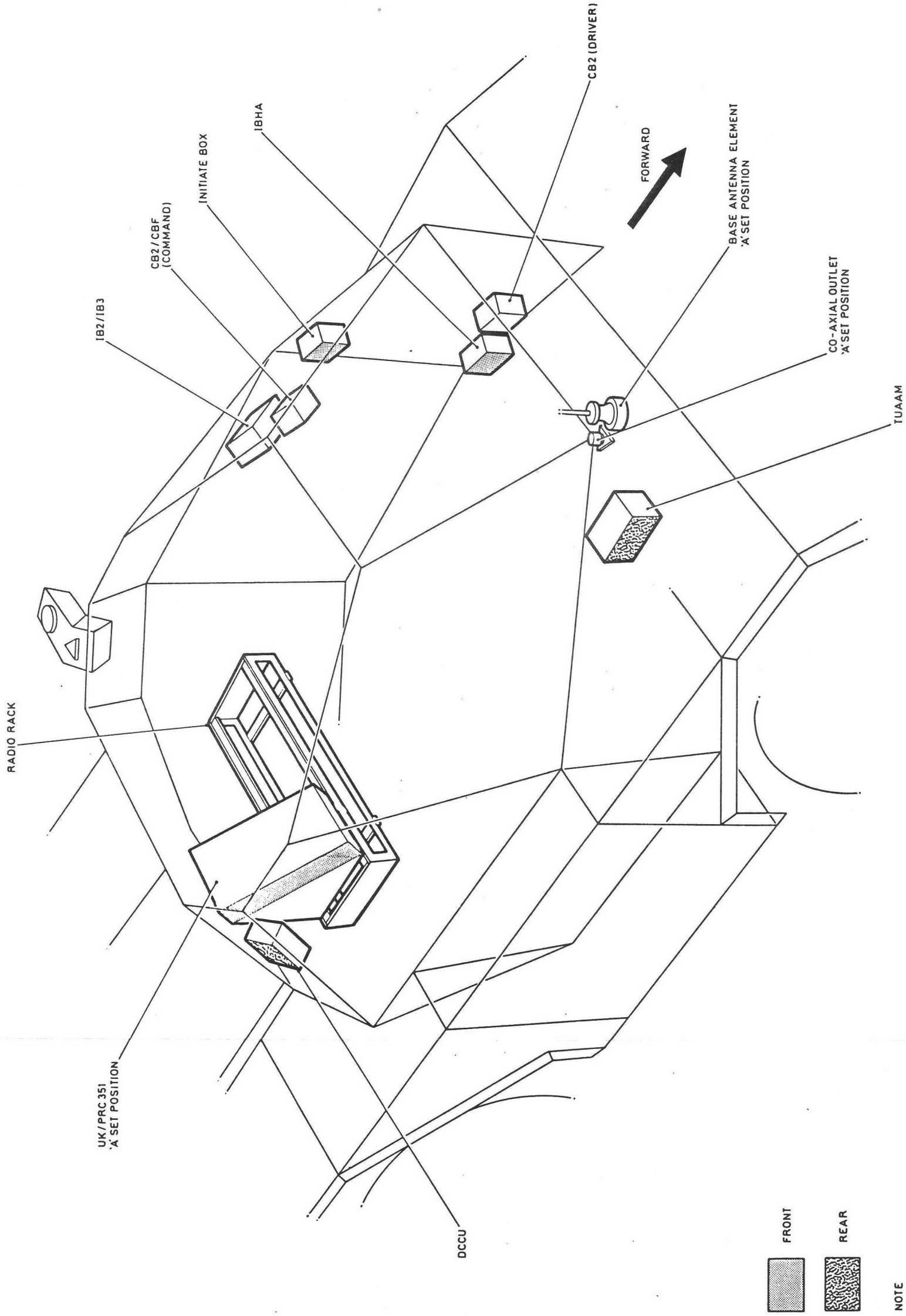
- 5
- (1) CES No. 44842/1 Installation Kit, Radio Station PRC 351 in FV701 Ferret
  - (2) CES No. 44689 Installation Kit, Co-axial Outlet
  - (3) EMER Tels 210-219 Clansman VHF Antenna System
  - (4) EMER Communications Installations K 677 Clansman Radio Control Harness in Wheeled Vehicle FV701 Ferret
  - (5) EMER Communications Installations A 009 Instr No. 5
  - (6) EMER Wheeled Vehicles V 620-629
  - (7) EMER Communications Installation Z 203
  - (8) Tels and Radar Technical Folder TF/Tels 1.81, Issue 1
  - (9) User Handbook Army Code No. 61128

INFORMATION

- 6 If further information is required regarding this installation application should be made to:

Commanding Officer  
Electronics Branch REME  
Leigh Sinton Road  
MALVERN  
Worcs WR14 1LL

Giving all relevant details and quoting AESP 5800-F-121-412 Inst Instr No. B3, Chapter 2.



NOTE  
THIS DIAGRAM SHOWS MOUNTED ITEMS TO BE INSTALLED WITH REFERENCE TO BASIC CLANSMAN ITEMS

INSTALLATION

WARNINGS ...

- (1) BEFORE WORK IS COMMENCED ENSURE THAT THE VEHICLE MASTER SWITCH IS IN THE OFF POSITION AND THE VEHICLE BATTERIES ARE DISCONNECTED. (A CONVENIENT POINT IS THE NEGATIVE TERMINAL ON A BATTERY).
- (2) ALL UNTERMINATED CABLE ASSEMBLIES MUST HAVE THEIR UNTERMINATED ENDS SECURELY STOWED TO PREVENT POSSIBLE INJURY TO PERSONS RIDING IN THE VEHICLE.

CAUTION ...

Good earth contacts are an essential part of the installation. Poor bonding will degrade the performance leading to reduced operational range and susceptibility to r.f. interference (RFI). All earth bonding points, harness braids, screws, tapped holes and braid contact areas must be free from paint and grease using an approved solvent.

GENERAL NOTES

7 Figs 1 to 9 inclusive locate and show fitting details of the various installation items. Fig 10 is a clip and cable routing diagram and Fig 11 an interconnection block diagram for the basic Clansman harness.

8 Reference in the text to items in Table 1 is made by inserting the item number, in brackets, after the item title unless otherwise stated. Table 2 lists the operations for the main items and the fixings required to install them. Table 3 lists the items to install the co-axial outlet if a remote antenna is to be used with the installation. Reference to Table 1 cable assembly item numbers are shown on location diagrams as applicable.

9 Reference to left-hand side (l.h.s.) and right-hand side (r.h.s.) of the vehicle is made with respect to the driver facing forward.

10 EMER Comms Inst A 009 Misc Instr No. 5; The Use of Fastenings in Communications Installations in Military Vehicles, gives information on the correct use of washers and fastenings.

11 Unless otherwise stated, all holes are existing and are detailed in Cat 302, Chap 1, Fig 1.



PREPARATION OF VEHICLE

12

12.1 Existing installations

With reference to the appropriate Comms Inst EMER remove both existing radio set kit and Larkspur radio control harness, retaining all fixings for possible future use.

12.2 Modifications

Ensure that the modification detailed in Comms Inst K677 Mod Instr No 2 has been carried out.

UK/PRC 351/2 INSTALLATION

13 During the following procedures, reference should be made to Table 1 for item numbers, in brackets, after the item titles. The operations for the main items and the fixings required to install them are listed in Table 2.

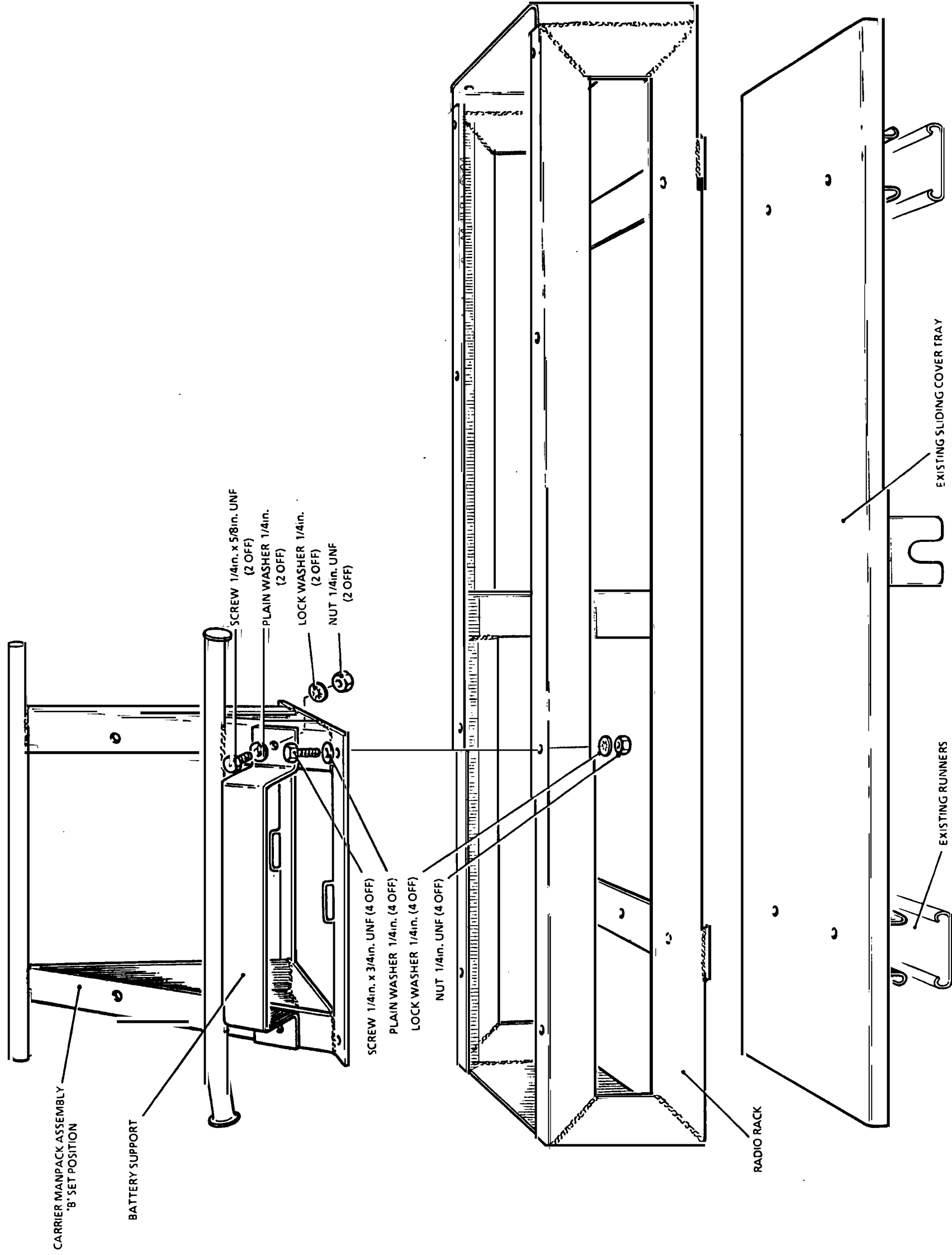
13.1 Carrier manpack assembly

Fit the carrier manpack assembly (7) to the radio rack as per Fig 2 and Table 2, operation 1.

13.1.1 Remove the sliding cover tray from the radio rack by releasing the wing nut.

13.1.2 Secure the carrier manpack in the 'A' set position on the radio rack using the four screws (29), washers (31 and 33) and nuts (27).

13.1.3 Secure the battery support assembly (4) in position on the carrier manpack assembly (7) using two screws (28), washers (31 and 33) and nuts (27).



Radio rack and set mounting positions diagram

13.2 Mounting plate assembly

Fit the mounting plate assembly (11) to the rear r.h. corner turret as per Fig 3 and Table 2, operation 2.

13.2.1 Locate the two fixing holes at the rear r.h. corner of turret. (See Cat 302, Chap 1, Fig 7).

13.2.2 Secure the plate assembly (11) in position using screws (28) and washers (33), with the earth braid (14) connected to the l.h.s. fixing screw.

13.3 Direct current charging unit (DCCU)

Fit the DCCU (8) to the mounting plate assembly (11) installed in Sub Para 13.2 as per Figs 3 and 4 Table 2, operation 3.

13.3.1 Assemble the rubber bushings (5 and 6) on the DCCU as detailed in Fig 5.

13.3.2 Position the DCCU over the studs on the plate assembly and secure using four washers (31 and 33) and nuts (27).

13.3.3 Connect the free end of the earth braid (14) fitted in Sub Para 13.2.2 to the earth terminal on the DCCU.

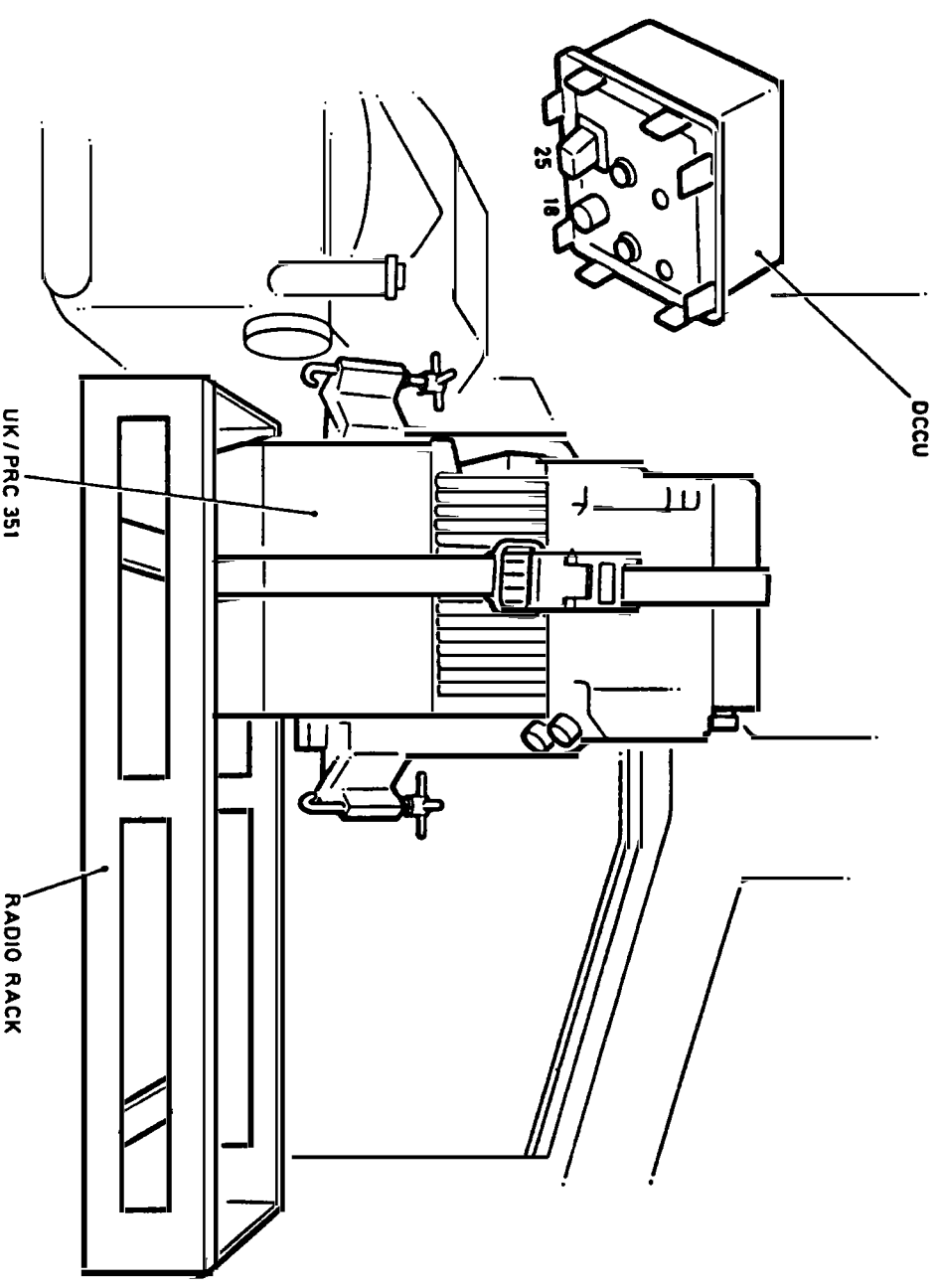
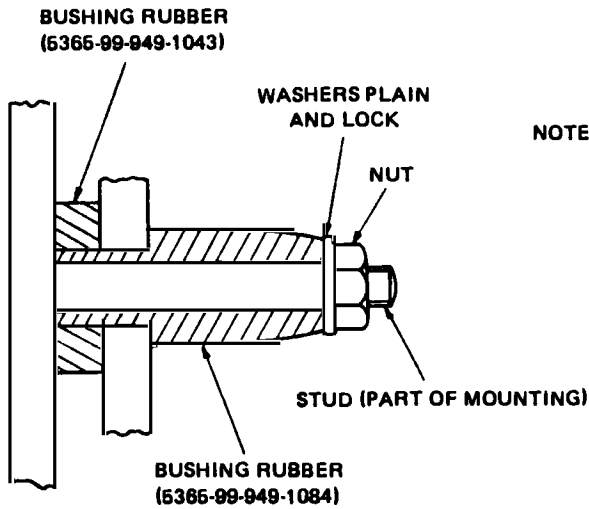
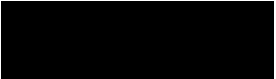


Fig 3 DCCU location diagram



NOTE  
TIGHTEN NUT SUFFICIENTLY TO  
BRING WASHER TO BEAR HARD ON  
SHOULDER OF STUD.

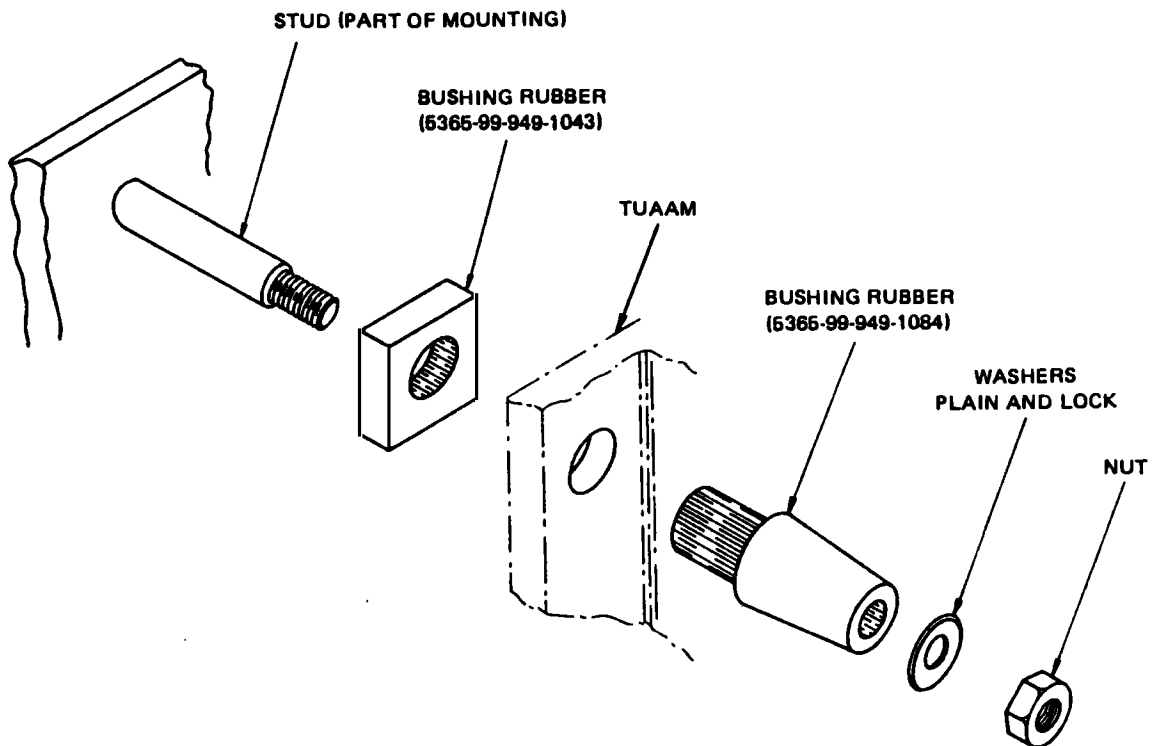


Fig 4 DCCU/TUAAM bushes



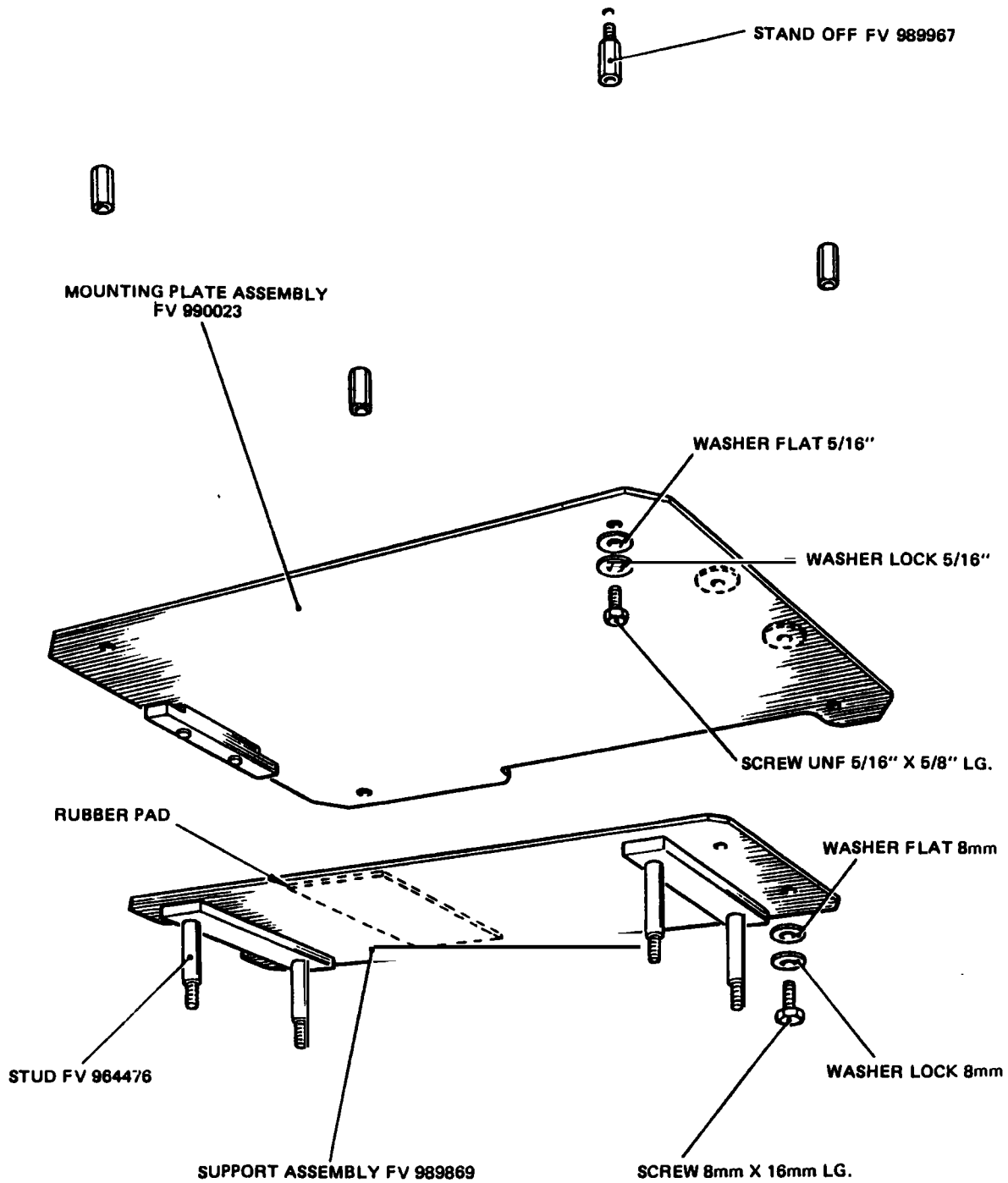


Fig 5 TUAAM mounting bracket

### 13.4 Plate assembly

Fit the plate assembly (12) to the interior forward r.h.s. ('A' set position) as per Figs 5 and 6 and Table 2, operation 4.

13.4.1 Locate the four fixing holes on the interior forward r.h.s. (See Cat 302, Chap 1, Fig 4).

13.4.2 Secure the plate in position using screws (30) and washers (32 and 34), with the earth braid (14) connected to the bottom l.h.s. fixing screw.

### 13.5 Tuning unit automatic antenna matching (TUAAM)

Fit the TUAAM (13) to the plate assembly (12) installed in Sub Para 13.4 as per Figs 5 and 6 and Table 2, operation 5.

13.5.1 Assemble the rubber bushings (6 and 7) on the TUAAM as detailed in Fig 4.

13.5.2 Position the TUAAM (13) over the studs on the plate assembly and secure using four washers (31 and 33) and nuts (27).

13.5.3 Connect the free end of the earth braid (14) fitted in Sub Sub Para 13.4.2 to the earth terminal on the TUAAM.

13.5.4 Connect one end of the cable assembly RF (15) to SKT 3 on the TUAAM.

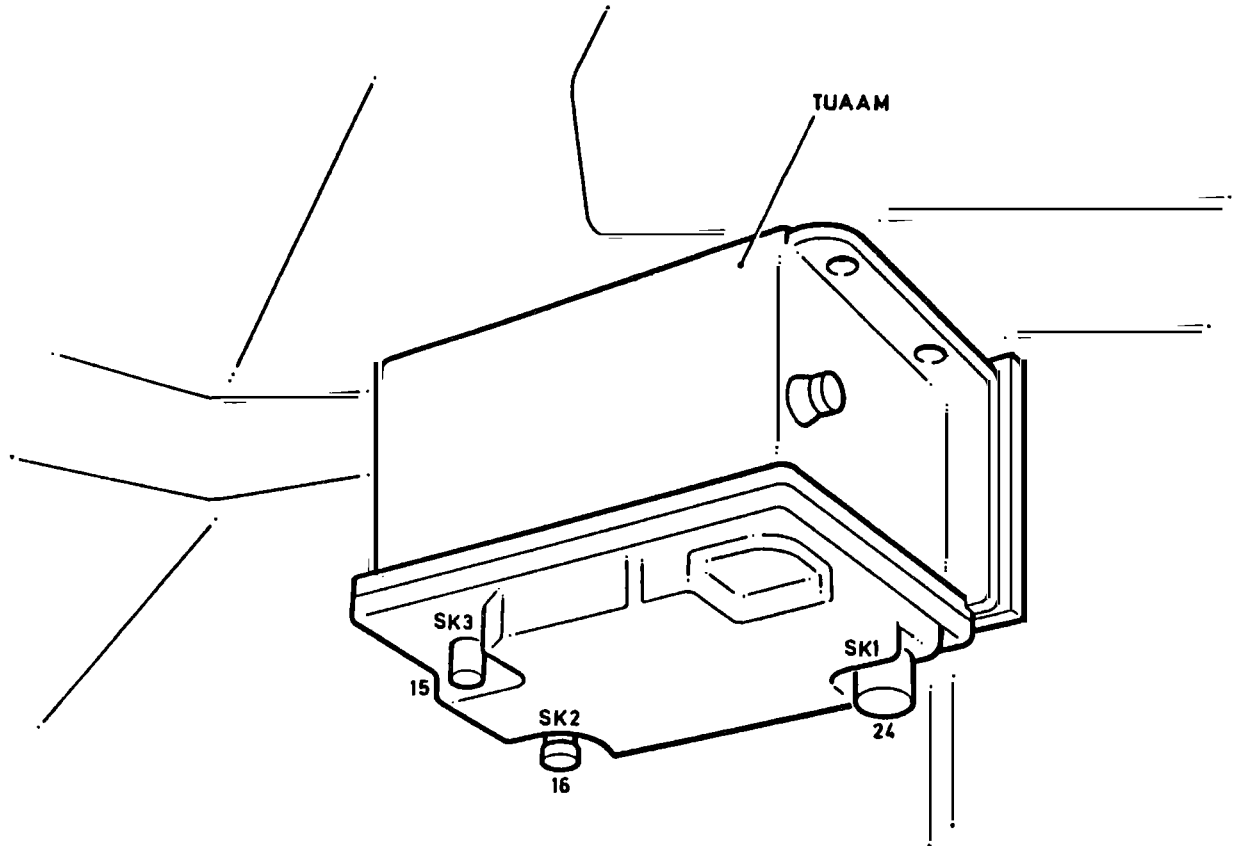


Fig 6 TUAAM location diagram

### 13.6 Interconnecting box harness adaptor (IBHA)

Fit the IBHA (10) to the universal mounting plate as per Fig 7 and Table 2, operation 6.

13.6.1 Locate the two fixing holes on the universal mounting plate.

13.6.2 Secure the IBHA (10) in position on the plate using two screws (30) and washers (32 and 34).

### 13.7 Initiate box

Fit the initiate box (9) to the universal mounting plate as per Fig 7 and Table 2, operation 7.

13.7.1 Locate the two fixing holes on the universal mounting plate.

13.7.2 Secure the initiate (9) on the plate using two screws (30) and washers (32 and 34).

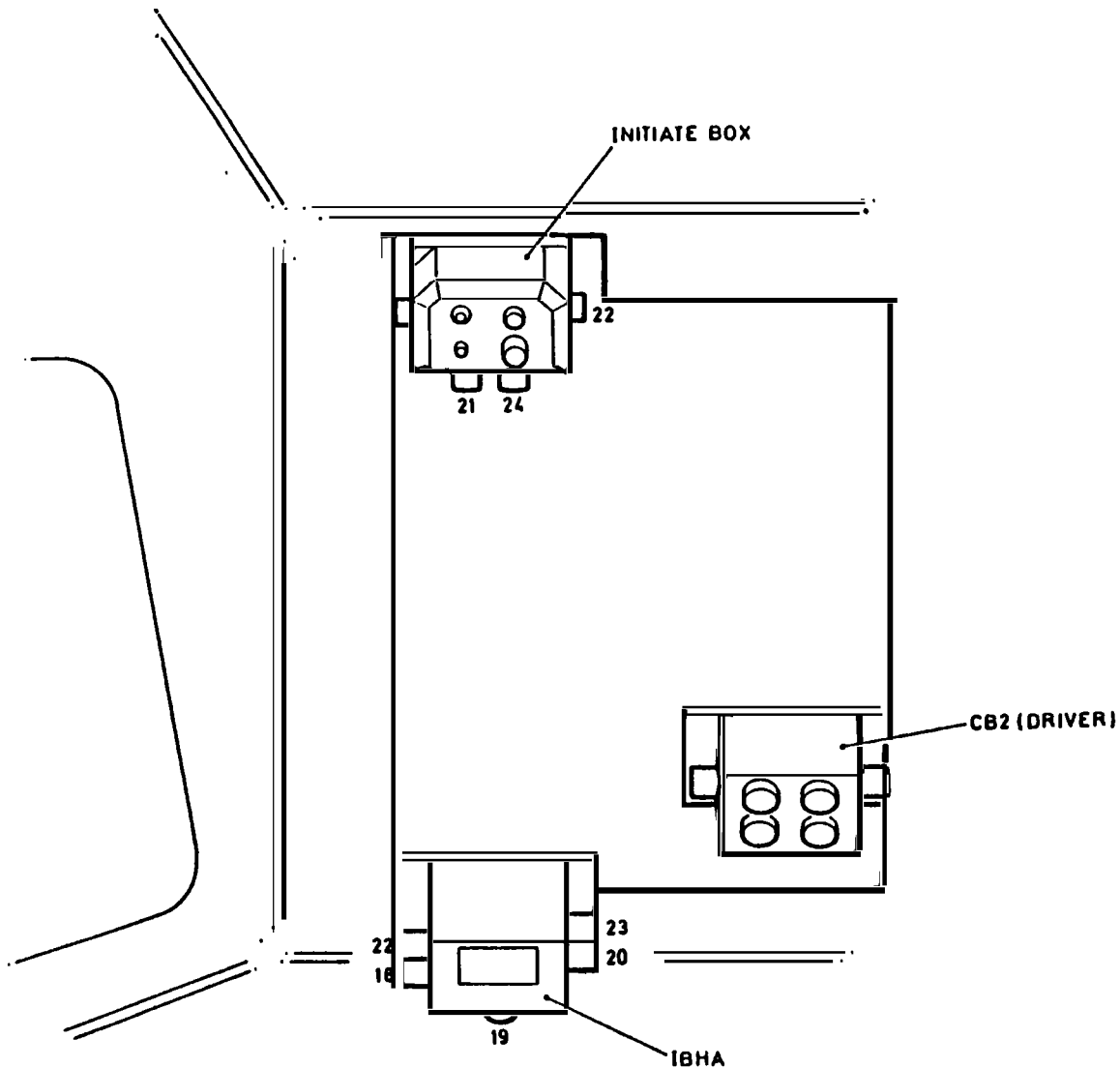


Fig 7 IBHA and initiate box locations diagram

### 13.8 Co-axial outlet

A co-axial outlet position is provided, on MK II vehicles only, in the 'A' set position to allow a remote antenna to be used with the installation. Fit the co-axial outlet on the forward r.h.s. exterior as per Fig 8. Numbers in brackets after item title refer to item numbers in Table 3.

13.8.1 Remove and retain for possible future use the cover plate, gasket and fixings.

13.8.2 Position a gasket (5) over the three securing holes.

13.8.3 Assemble a co-axial outlet as detailed in Fig 8.

13.8.4 Feed the straight end of cable assembly (1) out through the centre hole and connect to the co-axial adaptor (3).

13.8.5 Place the co-axial (4) over the gasket, ensuring that the holes in the shell, gasket, and roof are aligned. Secure two screws (7) and washers (8 and 9).

13.8.6 Place the securing eye of the captive cover (2) over the remaining hole in the shell and secure using the remaining screw (7) and washer (9).

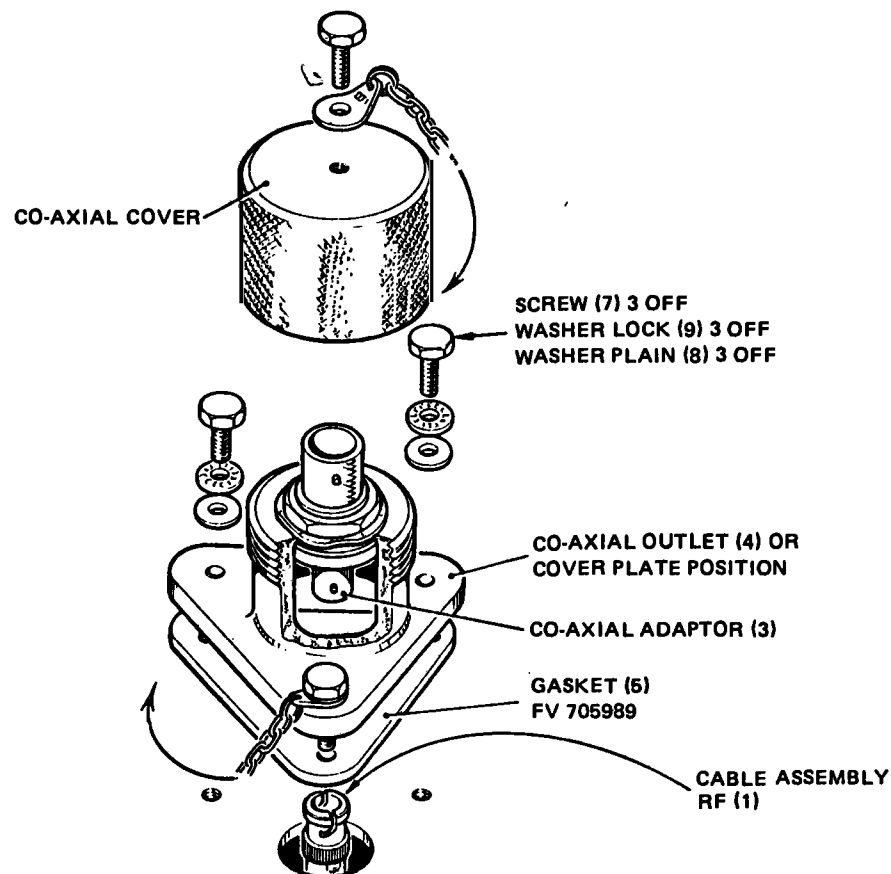


Fig 8 Co-axial outlet assembly diagram



### 13.9 Base antenna element

Fit the base antenna element (3) to the forward r.h.s. exterior ('A' set position) as per Figs 1 and 9 and Table 2, operation 8.

13.9.1 Remove, and retain for possible future use, the fixings, cover plate and gasket at the antenna base 'A' set position.

13.9.2 Fit one of the gaskets supplied with the base antenna element over the screw holes and cable aperture in the vehicle body.

13.9.3 Feed the straight end of cable assembly RF (15) fitted in Sub Sub Para 13.5.4 from inside the vehicle out through the centre hole of the antenna base position.

13.9.4 Assemble the base antenna element (3) in a similar manner as shown in Fig 9 and connect the co-axial BNC socket of cable assembly (15) to the base. Leave the assembly in position using three bolts (26) and washers (31 and 33).

13.9.5 Fit antenna elements (1 and 2) to the antenna element and secure using integral fixings.

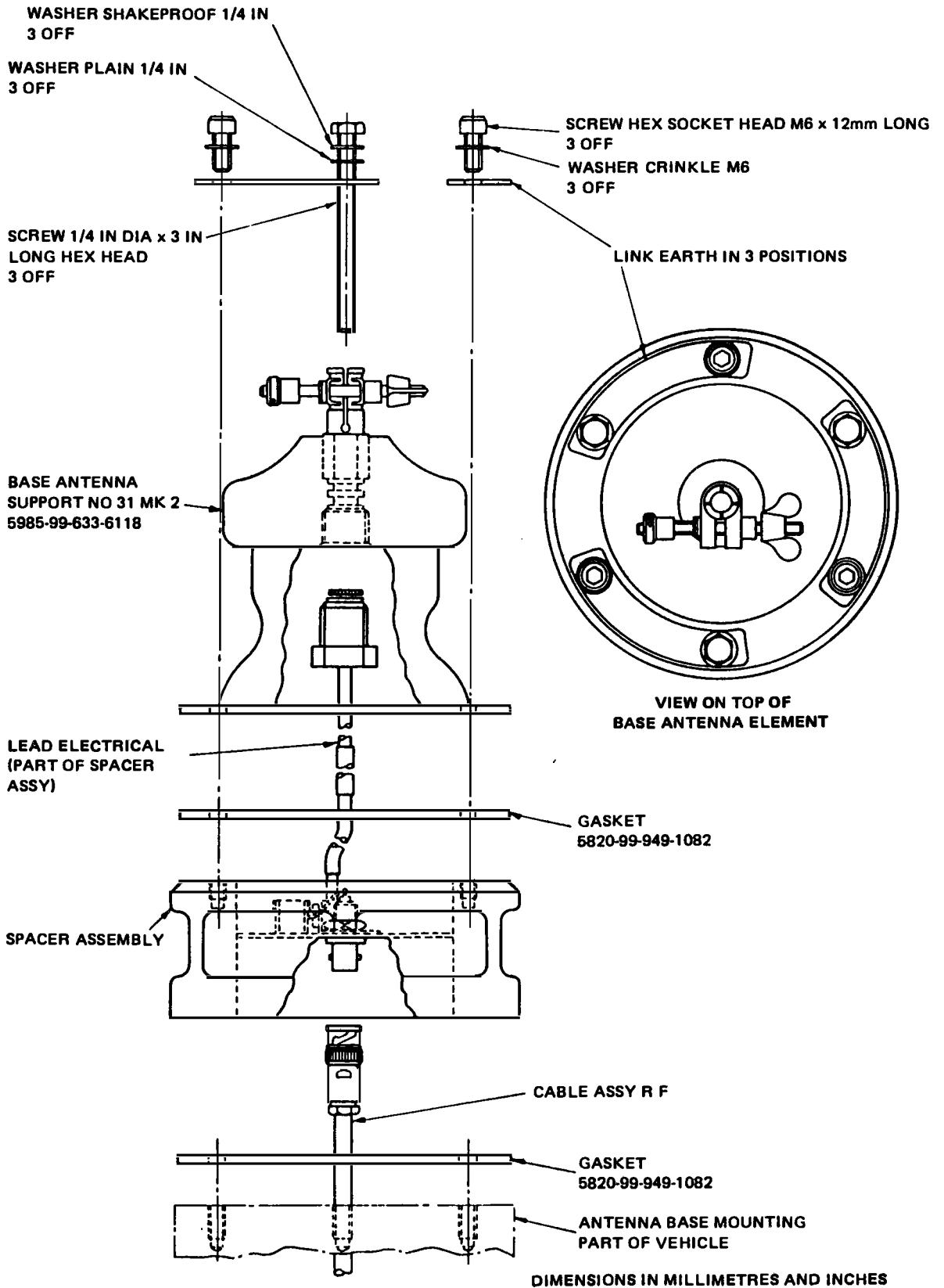


Fig 9 Antenna base assembly diagram

### 13.10 Cable assemblies

13.10.1 Remove cable guards to assist in the routing of cable assemblies as per Figs 10 and 11.

13.10.2 Secure using cable clips, at a maximum pitch of 450 mm and fit cable ties (obtained locally) where appropriate.

13.10.3 Stow excessive lengths of cable behind the universal mounting plate.

13.10.4 Ensure all elbows of cable assemblies, when connected to their appropriate harness box, are at 45 degrees to the surface to which the box is mounted.

13.10.5 Replace all cable guards if no further installations are to be carried out.

### FUNCTION CHECKS

#### 14

14.1 Visually inspect the complete harness installation ensuring all connections have been correctly made and all cables are securely clipped.

14.2 Check all earth bonding points ..... see CAUTION immediately before Para 7.

14.3 Using Test Set Bond Resistance DT 109, check that individual earth bonding joints do not exceed 2 milliohms and resistance between the appropriate harness item earth and vehicle earth terminal does not exceed 25 milliohms.

14.4 Switch the battery master switch to ON.

14.5 Connect headsets to the CB2 and CB2/CBF positions.

14.6 On the IB2/IB3, set the Clansman Harness switch to ON.

14.7 Carry out a functional test of the UK/PRC 351/2 as described in User Handbook Army Code No. 61128. Check that the intercommunication (IC) facility is working at both positions.

14.8 If the system is not functioning correctly use the test equipment listed in Sub Para 4.5 to help locate the failure.

14.9 The harness should also be checked using the Harness Installation Test Set (HITS) to prove the serviceability of functions, connectors and cables.

14.10 All installations are subject to a certain level of electrical interference, therefore tests of vehicle intercom should be carried out with:

14.10.1 Vehicle stationary with engine running at varying speeds from idling to max r.p.m.

14.10.2 Vehicle travelling at varying speeds to ensure that the level of interference is acceptable.

14.11 Radio Interference Tests (RFI) may be carried out using the procedure detailed in Chapter 8 of Tels and Radar Technical Folder TF/Tels.1.81, Issue 1, dated May 81.

PERMISSIBLE REPAIRS

15 Cable assemblies should be repaired in accordance with EMER Comms Inst Z 203. Individual items suspected of having failed should be substituted by known serviceable items as detailed in the Maintenance Instructions.

REDUNDANT ITEMS

16

- |  |       |
|--|-------|
| (1) FV639761 Antenna cover plate         | Qty 1 |
| (2) - Gasket                             | Qty 1 |
| (3) FV756596 Co-axial outlet cover plate | Qty 1 |
| (4) FV705989 Gasket                      | Qty 1 |

17 Items (1) and (3) (Para 16) are to be retained for possible future use. Items (2) and (4) (Para 16) are to be disposed of/discarded as per unit procedure.

TABLE 1 ITEM LIST - RADIO STATION UK/VRC 351/2

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Antenna Element	5985-99-630-8456	1	Fitted to Item 3
2	Antenna Element	5985-99-630-8457	1	Fitted to Item 1
3	Base, Antenna Element	5985-99-630-6495	1	Exterior forward r.h.s.
4	Battery Support Assembly	FV895689	1	Fitted to Item 7
5	Bushing, Rubber	5340-99-949-1084	12	Fitted on Items 8, 11, 12 and 13
6	Bushing, Rubber	5365-99-949-1043	12	Fitted on Items 8, 11, 12 and 13
7	Carrier Manpack Assembly	FV989839	1	Fig 2
8	Direct Current Charging Unit (DCCU)	6130-99-117-0450	1	Fig 3
9	Initiate Box	5820-99-630-6488	1	Fig 7
10	Interconnecting Box Harness Adaptor (IBHA)	5820-99-117-6249	1	Fig 7
11	Mounting Plate Assembly (DCCU)	FV990158	1	Fig 3
12	Plate Assembly (TUAAM)	FV895727	1	Fig 5
13	Tuning Unit Automatic Antenna Matching (TUAAM)	5820-099-630-6156	1	Fig 6
<u>Cable assemblies</u>				
14	Earth Braid	FV166727/3	2	For DCCU and UK/PRC 351
15	Radio Frequency	435 mm FV745829/1	1	TUAAM to antenna base
16	Radio Frequency	4725 mm FV745811/86	1	TUAAM UK/PRC 351
17	Not Used			
18	2 - Connector	3750 mm FV943760/19	1	IBHA to DCCU
19	2 - Connector	3670 mm FV167997/38	1	IBHA to UK/PRC 351
20	2 - Connector	2060 mm FV943775/15	1	IBHA to RJB
21	6 - Connector	2670 mm FV943756/4	1	Initiate box to UK/PRC 351

(Continued)

TABLE 1 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
22	6 - Connector 990 mm	FV745817/39 Z42/5995-99-655-0653	1	Initiate box to IBHA
23	6 - Connector 1755 mm	FV945774/11 Z42/5995-99-655-0696	1	IBHA to IB2/IB3
24	6 - Connector 2820 mm	FV745837/34 Z42/5995-99-965-8600	1	TUAAM to initiate box
25	Lead Special Purpose 1500 mm	- FV745826/9	1	UK/PRC 351 battery to DCCU
<u>Fixings</u>				
26	Bolt 1/4 in. UNF x 5/8 in. Hex Hd	G1/5306-99-941-0289	3	Fixings detailed in Table 2
27	Nut 1/4 in. UNF Hex Hd	G1/5310-99-941-0924	14	Fixings detailed in Table 2
28	Screw 1/4 in. UNF x 5/8 in. Hex Hd	G1/5305-99-941-0512	4	Fixings detailed in Table 2
29	Screw 1/4 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0513	4	Fixings detailed in Table 2
30	Screw 5/16 in. UNF x 5/8 in. Hex Hd	G1/5305-99-941-0524	8	Fixings detailed in Table 2
31	Washer 1/4 in. Flat	G1/5310-99-120-4032	17	Fixings detailed in Table 2
32	Washer 5/16 in. Flat	G1/5310-99-941-8608	8	Fixings detailed in Table 2
33	Washer 1/4 in. Lock Shakeproof	G1/5310-99-100-6945	19	Fixings detailed in Table 2
34	Washer 5/16 in. Lock Shakeproof	G1/5310-99-101-0187	8	Fixings detailed in Table 2



TABLE 3 ITEM LIST - CO-AXIAL OUTLET

Item No. (1)	Designation (2)	Item No./NSN (3)	Qty (4)	Remarks (5)
1	Cable Assembly R.F.	FV745829/18	1	
2	Captive Cover	5995-99-045-8305	1	
3	Co-axial Adaptor (Bulkhead Mounting)		1	
4	Co-axial Outlet Shell	FV759688	1	
5	Gasket	FV705989	1	
6	Nut 5/16 - 24 UNF	5310-99-941-0925	3	Alternative to Item 7
7	Screw 5/16 - 18 UNC x 7/8 in. Hex Hd	5305-99-941-0699	3	Alternative to Item 6
8	Washer 5/16 Flat I/D	5310-99-941-8608	3	
9	Washer 5/16 Lock Shakeproof	5310-99-101-0187	3	

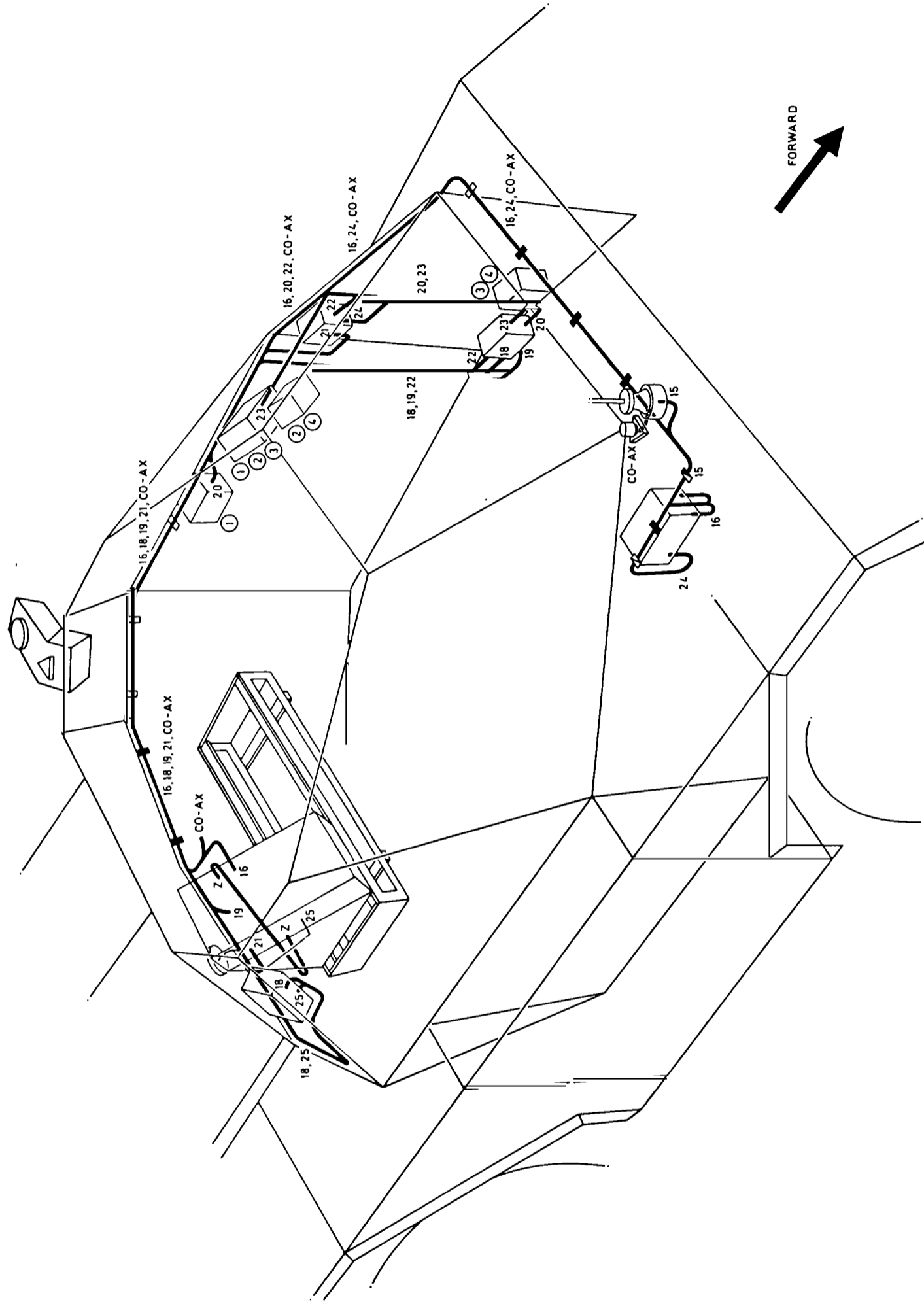


ROUTING/CONNECTIONS CHART

<u>Ref No.</u>	<u>FV No.</u>	<u>Cable Type</u>	<u>Route/Connection</u>
1E	745779/31	2 conductor	RJB to IB2/IB3 skt (28 V)
2E	2050181/26	12 - point	IB2/IB3 harness skt to CB2/CBF (Cmd) harness skt
3E	745757/135	12 - point	IB2/IB3 harness skt to CB2 (driver) harness skt
4E	2050181/27	12 - point	CB2/CBF (cmd) harness skt to CB2 (driver) harness skt
14	166727/3	Earth braid	TUAM and UK/PRC 351
15	745829/1	Radio frequency	TUAM skt 3 to antenna base
16	745811/86	Radio frequency	TUAM skt 2 UK/PRC 351
17	Not Used		
18	943760/19	2 - connector	IBHA to DCCU
19	167997/38	2 - connector	IBHA to UK/PRC 351
20	943775/15	2 - connector	IBHA to RJB
21	943756/4	6 - connector	Initiate box to UK/PRC 351
22	745817/39	6 - connector	Initiate box to IBHA
23	943774/11	6 - connector	IBHA to IB2/IB3
24	745837/34	6 - connector	TUAM skt 1 initiate box
25	745826/9	Lead special purpose	UK/PRC 351 battery to DCCU

Note ...

Suffix E denotes existing cable

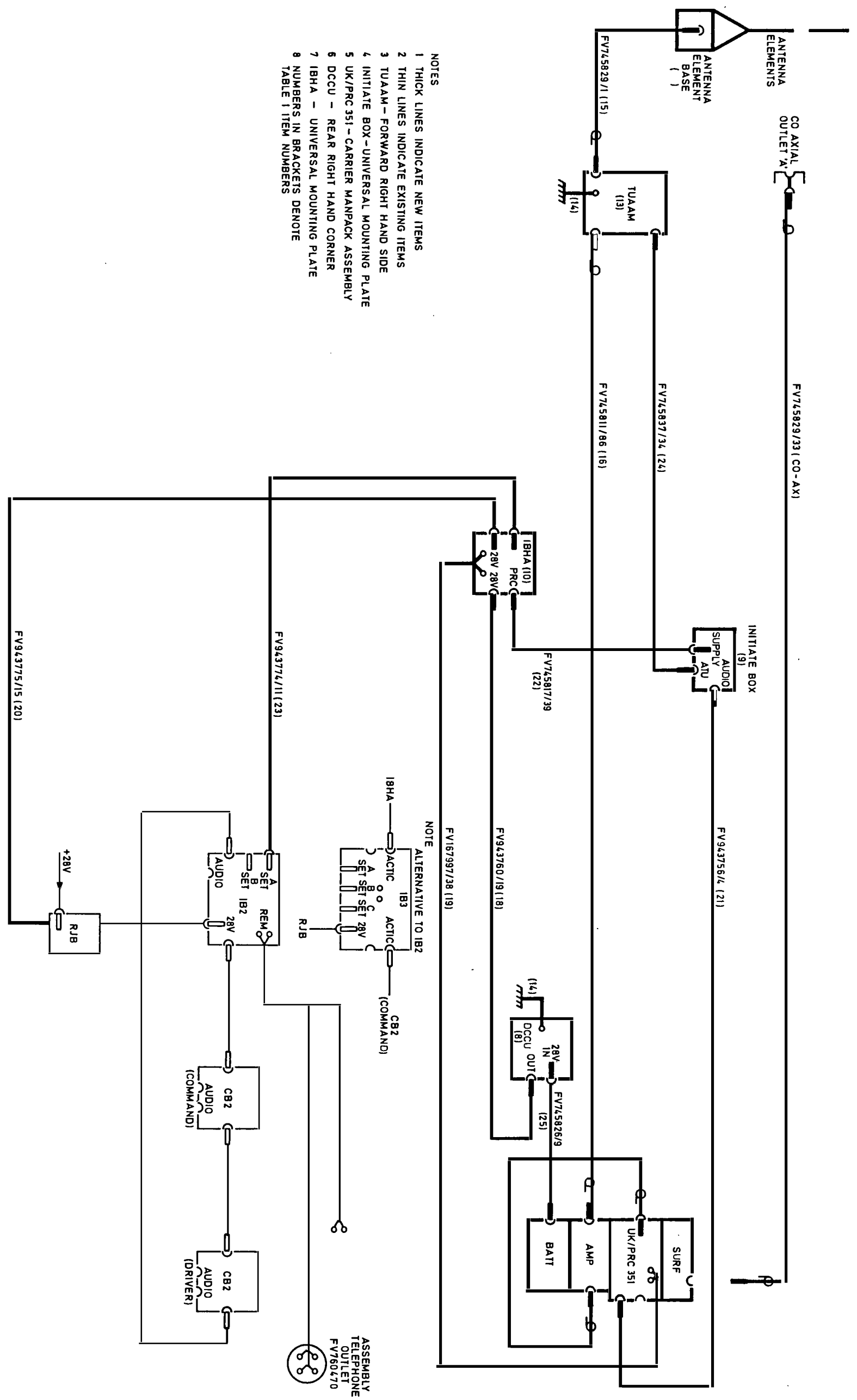


NOTES

1. CIRCLED NUMBERS DEPICT CONNECTIONS TO BE MADE BY EXISTING CABLES
2. PLAIN NUMBERS DEPICT THE ROUTING AND CONNECTIONS OF CABLES TO BE INSTALLED AS PER TABLE 1
3. Z DEPICTS UK/PRC 351 TO AMP CABLE ASSEMBLY
4.  EXISTING CABLE CLIPS
5.  CABLE CLIPS FV964639/18
6.  CABLE CLIPS FV964639/16
7.  CABLE CLIPS FV964639/29

Fig 7

Equipment location, with clip and cable routing diagram



- NOTES
- 1 THICK LINES INDICATE NEW ITEMS
  - 2 THIN LINES INDICATE EXISTING ITEMS
  - 3 TUAAAM - FORWARD RIGHT HAND SIDE
  - 4 INITIATE BOX - UNIVERSAL MOUNTING PLATE
  - 5 UK/PRC 351 - CARRIER MANPACK ASSEMBLY
  - 6 DCCU - REAR RIGHT HAND CORNER
  - 7 IBHA - UNIVERSAL MOUNTING PLATE
  - 8 NUMBERS IN BRACKETS DENOTE TABLE ITEM NUMBERS

Fig 8 Interconnection block diagram

END

WHEELED VEHICLE FERRET FV701

CHAPTER 2 - B4

CES BRICK INSTALLATION INSTRUCTION

SUBJECT: Installation of Radio Station UK/VRC 320  
(Clansman Basic Harness Fitted)

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GENERAL INFORMATION

INTRODUCTION

1 This instruction details the installation of the Installation Kit for Radio Station UK/VRC 320 in a FV701 Ferret MK1/1, MK1/2 or MK2/3. The Kit comprises a DCCU, CRS L/R, IBHA, Antenna Base Assembly and elements mountings and fittings to be installed into the existing Clansman Basic Harness. The requirements of the vehicle installation are met by the selection and physical arrangement of the various harness items. Interconnections between the items are made by cable assemblies which are arranged in a ring-main configuration. A system of common plugs and sockets with various lengths of connecting cable is employed.

ESTIMATED TIME REQUIRED

2		
(1)	Installation of CES No. 44880/1 brick	3 man hours
(2)	Installation of CES No. 44689 brick	1 man hours
(3)	Preparation of vehicle	1 man hours
(4)	Modifications	1.5 man hours
(5)	Manufacture	NIL man hours

ACTION REQUIRED BY

- 3
- 3.1 Units affected When instructions have been received through staff channels demand the stores and upon receipt, request REME to install the equipment.
- 3.2 REME and Royal Signals authorized to carry out Unit, Field and Base (REME only) repairs.
- 3.2.1 Install the equipment as detailed.
- 3.2.2 Endorse the vehicle log book, AB 413 (revised) with the installation details.

STORES, TOOLS AND TEST EQUIPMENT

- 4
- 4.1 Stores to be demanded
- |     |   |       |
|-----|---|-------|
| (1) | Z99/5820-99-966-7045 Installation Kit, Radio Station UK/VRC 320 in FV701 Ferret | Qty 1 |
| (2) | FV759689 Installation Kit, Co-axial Outlet                                      | Qty 1 |
- 4.2 Stores to be obtained locally
- |  |                                |       |
|--|--------------------------------|-------|
|  | FV964639/18 Cable Clip (Fig 7) | Qty 4 |
|--|--------------------------------|-------|
- 4.3 Stores to be manufactured
- Nil.

4.4 Special tools

Nil.

4.5 Test equipment

	Qty	1
(1) Z4/6625-99-620-3595 Clansman Harness Installation Test Set (HITS)	Qty	1
(2) Z4/6625-99-620-3592 Test Kit Condition Clansman Radio (TKC)	Qty	1
(3) Z4/6625-99-620-3593 Test Set Audio for Radio Audio Accessories (TSARAA)	Qty	1
(4) Z4/6625-99-105-7049 Multimeter, Set CT498A (AVO)	Qty	1
(5) Z4/6625-99-786-5771 Test Set Bond Resistance DT 109	Qty	1

ASSOCIATED PUBLICATIONS

5

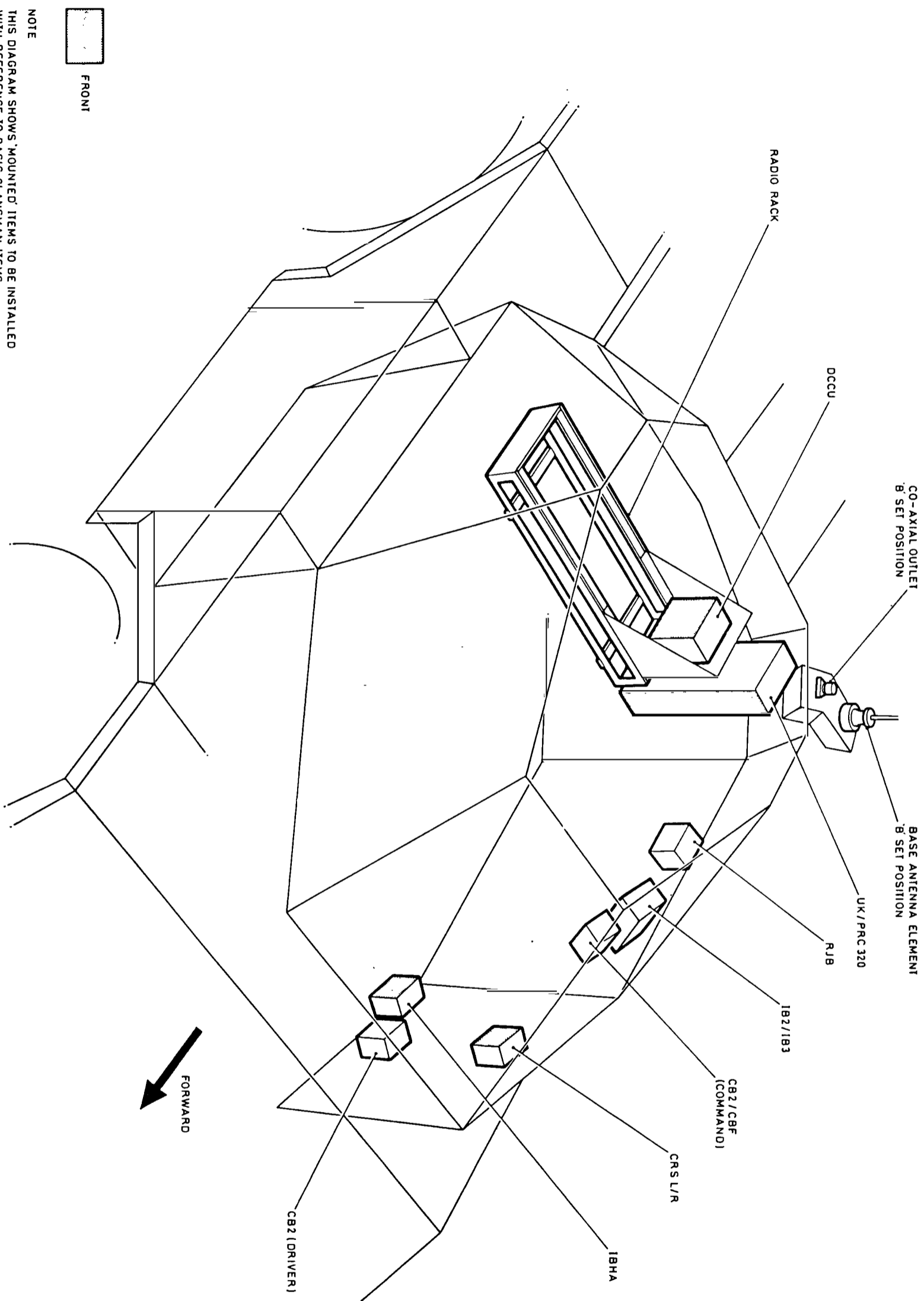
- (1) CES No. 44880/1 Installation Kit, Radio Station VRC 320 in FV701 Ferret
- (2) CES No. 44689 Installation Kit, Co-axial Outlet
- (3) Emer Tels 210-219 Clansman VHF Antenna System
- (4) EMER Communications Installations K 677 Clansman Radio Control Harness in Wheeled Vehicle FV701 Ferret
- (5) EMER Communications Installations A 009 Instr No. 5
- (6) EMER Wheeled Vehicles V 620-629
- (7) EMER Communications Installations Z 203
- (8) Tels and Radar Technical Folder TF/Tels.1.81, Issue 1
- (9) User Handbook Code No. 61123

INFORMATION

6 If further information is required regarding this installation application should be made to:

Commanding Officer  
Electronics Branch REME  
Leigh Sinton Road  
MALVERN  
Worcs WR14 1LL

Giving all relevant details and quoting AESP 5800-F-121-412 Inst Instr No. B4, Chapter 2.



Location diagram

INSTALLATION

WARNINGS ...

- (1) BEFORE WORK IS COMMENCED ENSURE THAT THE VEHICLE MASTER SWITCH IS IN THE OFF POSITION AND THE VEHICLE BATTERIES ARE DISCONNECTED. (A CONVENIENT POINT IS THE NEGATIVE TERMINAL ON A BATTERY).
- (2) ALL UNTERMINATED CABLE ASSEMBLIES MUST HAVE THEIR UNTERMINATED ENDS SECURELY STOWED TO PREVENT POSSIBLE INJURY TO PERSONS RIDING IN THE VEHICLE.

CAUTION ...

Good earth contacts are an essential part of the installation. Poor bonding will degrade the performance leading to reduced operational range and susceptibility to r.f. interference (RFI). All earth bonding points, harness braids, screws, tapped holes and braid contact areas must be free from paint and grease using an approved solvent.

GENERAL NOTES

7 Figs 1 to 6 inclusive locate and show fitting details of the various installation items. Fig 7 is a clip and cable routing diagram and Fig 8 an interconnection block diagram for the UK/VRC 320 installation.

8 Reference in the text to items in Table 1 is made by inserting the item number, in brackets, after the item title unless otherwise stated. Table 2 lists the operations for the main items and the fixings required to install them. Table 3 lists the items to install the co-axial outlet if a remote antenna is to be used with the installation. Reference to Table 1 cable assembly item numbers are shown on location diagrams as applicable.

9 Reference to left-hand side (l.h.s.) and right-hand side (r.h.s.) of the vehicle is made with respect to the driver facing forward.

10 EMER Comms Inst A 009 Misc Instr No. 5; The Use of Fastenings in Communication Installations in Military Vehicles, gives information on the correct use of washers and fastenings.

11 Unless otherwise stated, all holes are existing and are detailed in Cat 302, Chap 1, Fig 1.



PREPARATION OF VEHICLE

12

12.1 Existing installations

With reference to the appropriate Comms Inst EMER remove both existing radio set kit and Larkspur radio control harness, retaining all fixings for possible future use.

12.2 Modifications

Ensure that the modification detailed in Comms Inst K677 Mod Instr. No. 3 has been carried out.

UK/PRC 320 ('B' POSITION) INSTALLATION

13

13.1 Radio rack mountings

Fit the mountings to the radio rack as per Fig 2 and Table 2, operation 1.

13.1.1 Secure the mounting frame (14) in position on the radio rack using four screws (29), washers (32 and 34) and nuts (28), with an earth braid (18) connected to the bottom r.h.s. screw.

13.1.2 Secure the mounting bracket assembly (13) in position on the mounting frame (14) using four screws (29), washers (32 and 34) and nuts (28), with an earth braid (19) connected to the top r.h.s. screw.

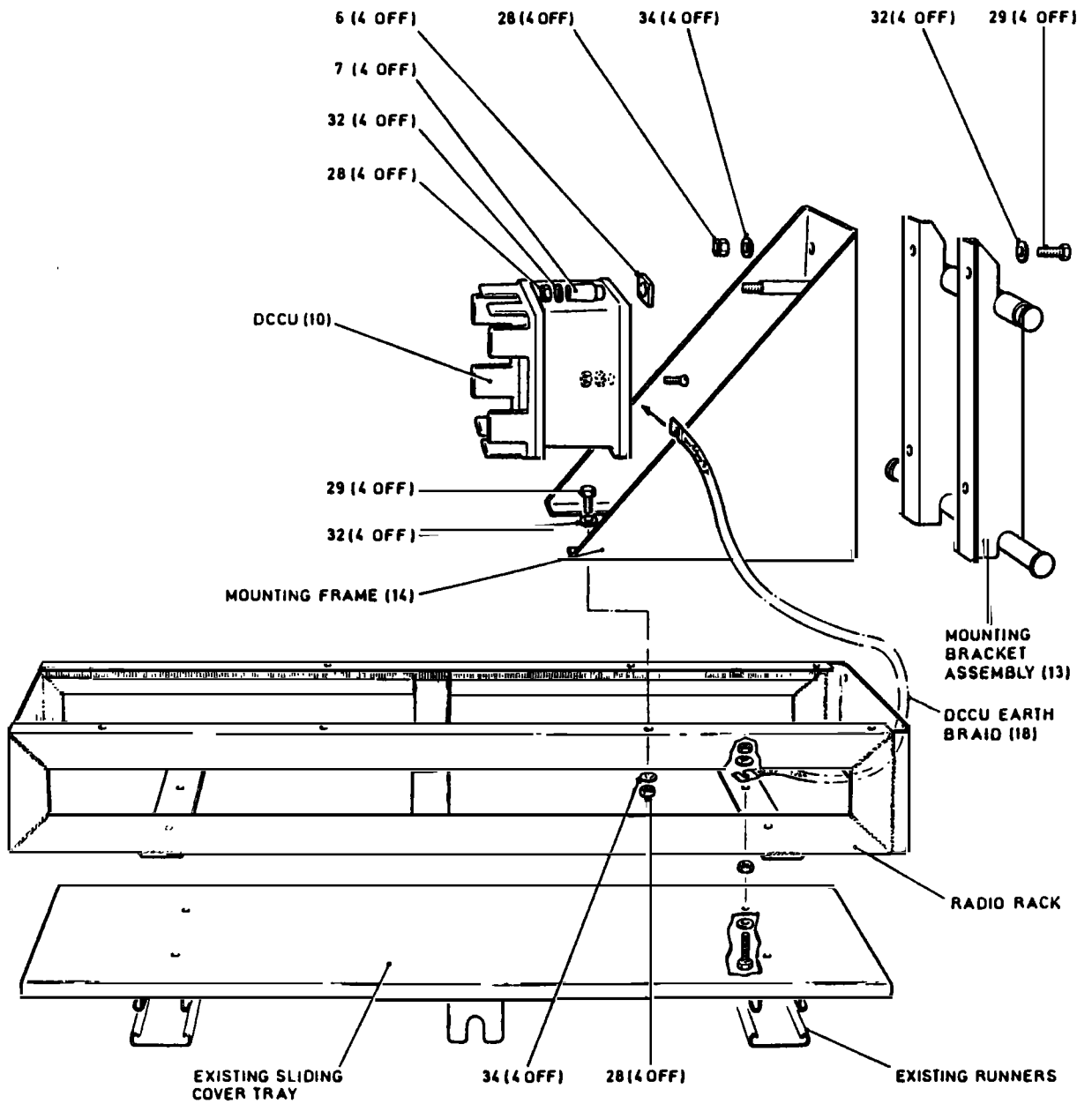
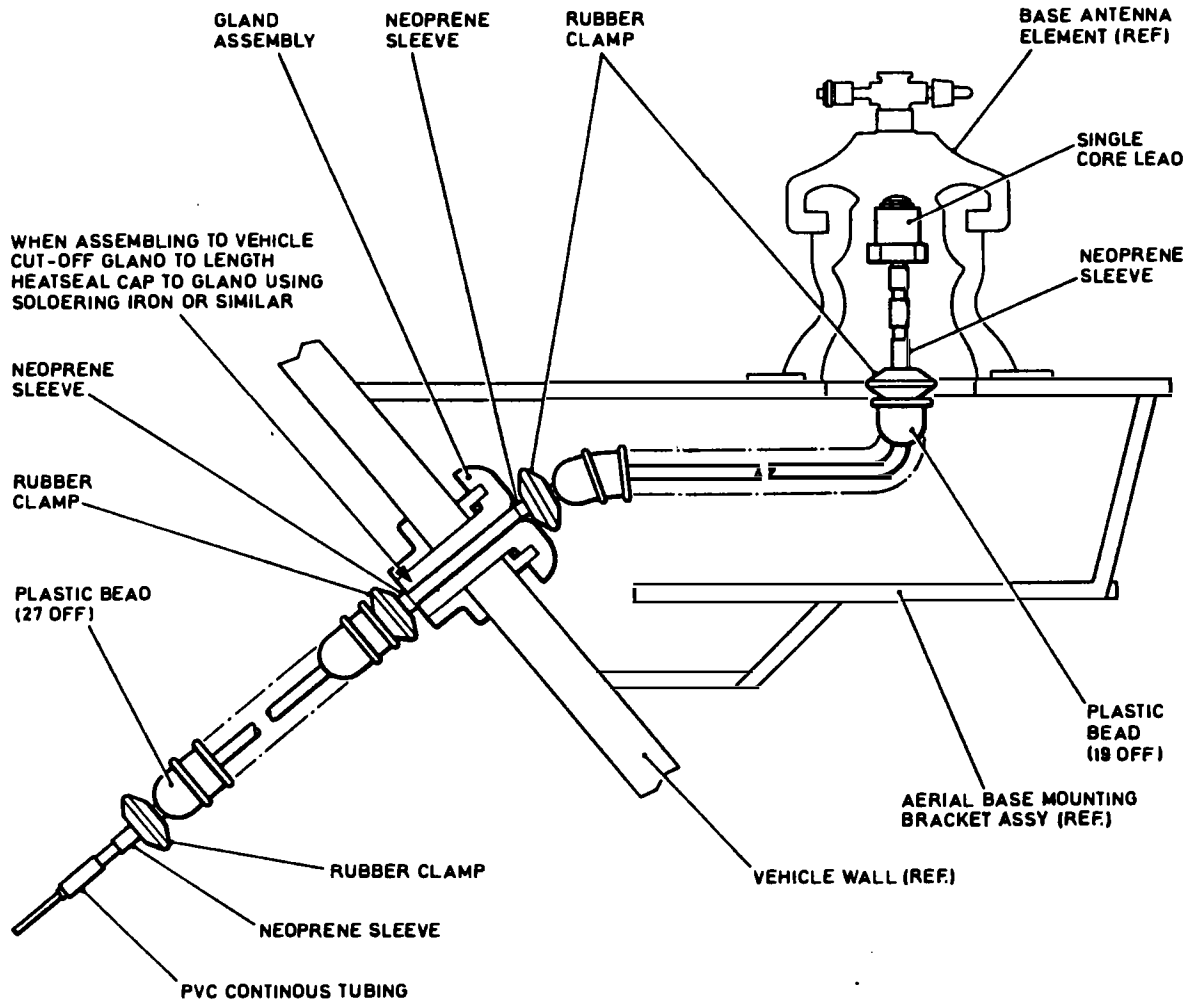


Fig 2 Radio rack and set mounting positions diagram



**NOTES**

1. BASE ANTENNA ELEMENT AND AERIAL BASE MOUNTING BRACKET ASSY. SHOWN SIMPLIFIED FOR CLARITY
2. FIT IDENT AND RETAINING NEOPRENE SLEEVES IN APPROXIMATE POSITIONS SHOWN
3. HARNESS TO BE ASSEMBLED AND TESTED IN ACCORDANCE WITH MVEE SPEC 773

Fig 3 Antenna base cable assembly sequence

13.2 Base antenna element

Fit the base antenna element (4) to the rear l.h.s. exterior ('B' set position) as per Figs 3 and 4 and Table 2, operation 2.

13.2.1 Remove and retain for possible future use, the fixings, cover plate and gasket at the antenna base 'B' set position.

13.2.2 With reference to Fig 4 attach one end of cable (21) to the base antenna support using the nut gland and washer set.

13.2.3 Place a gasket supplied with the base antenna element over the antenna base position and align the holes. Push the male part of the gland assembly (11) into the centre hole.

13.2.4 Fit the female part of the gland over the protruding end of the male part. Cut off the male part flush with the female part and seal the two parts together with a soldering iron.

13.2.5 Feed the free end of cable (21) through the gland, position the base antenna support and secure using six screws (29) and washers (32 and 34).

13.2.6 With reference to Fig 3 complete the assembly of the harness from inside the vehicle.

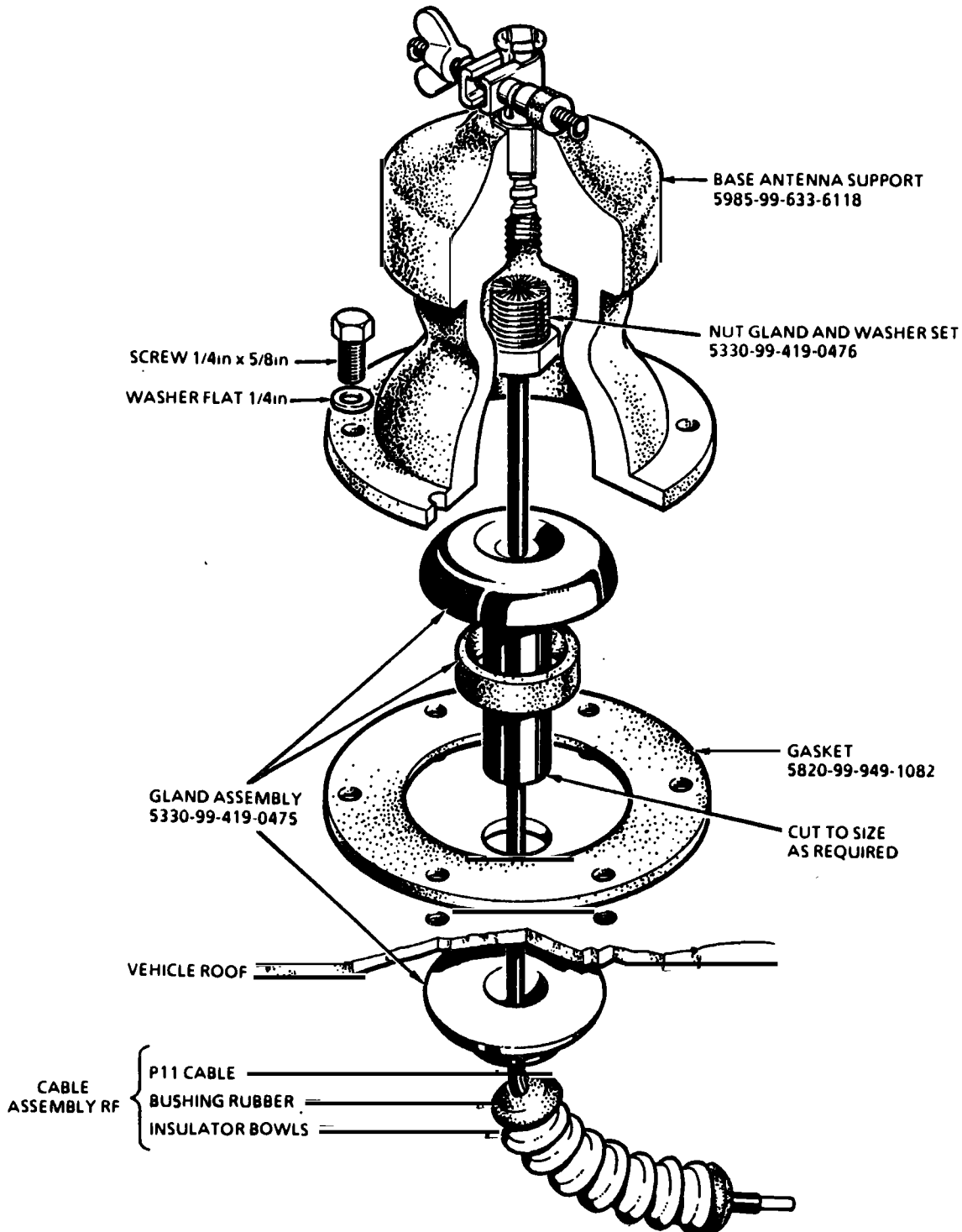


Fig 4 Antenna base assembly diagram

### 13.3 Co-axial outlet

A co-axial outlet position is provided, on MK II vehicles only, in the 'B' set position to allow a remote antenna to be used with the installation. Fit the co-axial outlet on the forward r.h.s. exterior as per Fig 5. Numbers in brackets after item title refer to item numbers in Table 3.

13.3.1 Remove and retain for possible future use the cover plate, gasket and fixings.

13.3.2 Position a gasket (5) over the three securing holes.

13.3.3 Assemble a co-axial outlet as detailed in Fig 5.

13.3.4 Feed the straight end of cable assembly (1) out through the centre hole and connect to the co-axial adaptor (3).

13.3.5 Place the co-axial outlet (4) over the gasket, ensuring that the holes in the shell, gasket, and roof are aligned. Secure using two screws (7) and washers (8 and 9).

13.3.6 Place the securing eye of the captive cover (2) over the remaining hole in the shell and secure using the remaining screw (7) and washer (9).

13.3.7 Fit the protective cap over the top of the outlet shell.

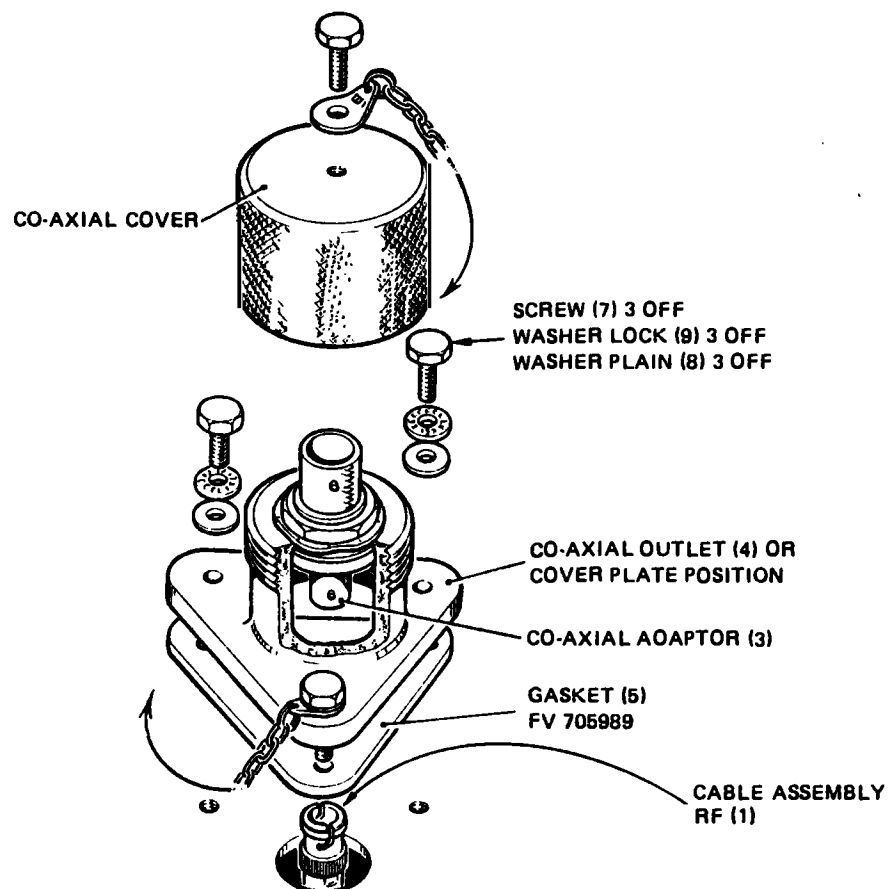


Fig 5 Co-axial outlet assembly diagram

**13.4 Control Radio Station Local Remote (CRS L/R)**

Fit the cradle assembly (9) with CRS L/R (16) on the universal mounting plate at the interior forward l.h.s., as per Fig 6 and Table 2, operation 3.

13.4.1 Locate the two fixing holes in the universal mounting plate.

13.4.2 Secure the CRS L/R cradle assembly in position using two screws (31) and washers (33 and 35).

13.4.3 Position the cradle assembly strap across the front of the RCLU and secure to the l.h.s. cradle fixing.

**13.5 Interconnecting box harness adaptor (IBHA)**

Fit the IBHA (12) to the universal mounting plate as per Fig 6 and Table 2, operation 4.

13.5.1 Locate the two fixings holes on the universal mounting plate.

13.5.2 Secure the IBHA (12) in position on the plate using two screws (30) and washers (33 and 35).

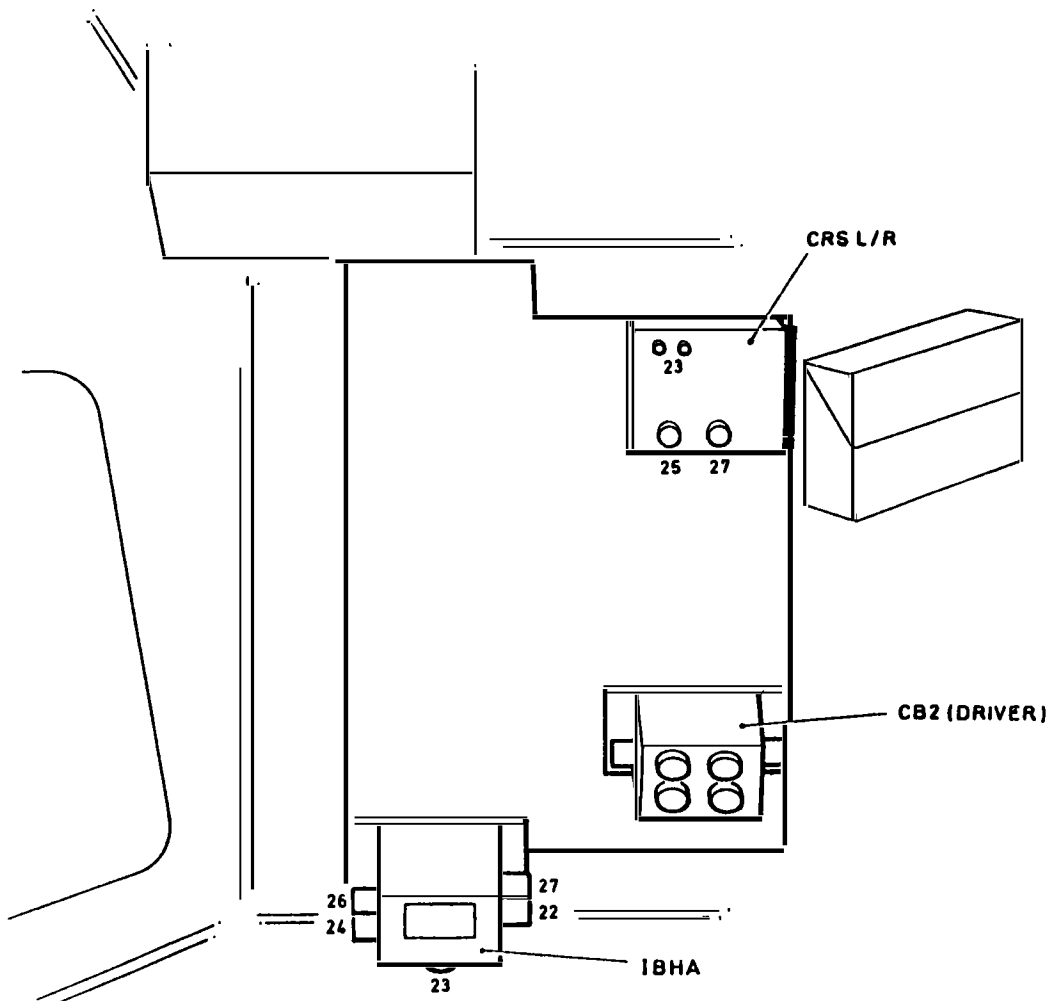


Fig 6 CRS/LR and IBHA locations diagram

13.6 Direct current charging unit (DCCU)

Fit the DCCU (11) to the radio rack mounting frame (15), installed in Sub Sub Para 13.1.1, as per Fig 2 and Table 2, operation 5.

13.6.1 Assemble the rubber bushings (6 and 7) on the DCCU (10).

13.6.2 Position the DCCU (10) over the mounting frame studs and secure in position using four washers (32) and nuts (28).

13.6.3 Connect the free end of the earth braid (18) fitted in Sub Sub Para 13.1.1 to the rear of the DCCU (10) using existing fixings.

13.7 Cable Assemblies

13.7.1 Route the cable assemblies as per Figs 7 and 8.

13.7.2 Secure using cable clips, at a maximum pitch of 450 mm and fit cable ties (obtained locally) where appropriate.

13.7.3 Ensure all elbows of cable assemblies, when connected to their appropriate harness box, are at 45 degrees to the surface to which the box is mounted.

FUNCTION CHECKS

14

14.1 Visually inspect the complete harness installation ensuring all connections have been correctly made and all cables are securely clipped.

14.2 Check all earth bonding points ..... see CAUTION immediately before Para 7.

14.3 Using Test Set Bond Resistance Resistance DT 109, check that individual earth bonding joints do not exceed 2 milliohms and resistance between the appropriate harness item earth and vehicle earth terminal does not exceed 25 milliohms.

14.4 Switch the battery master switch to ON.

14.5 Connect headsets to CB2 and CB2/CBF positions.

14.6 On the IB2/IB3, set the Clansman Harness switch to ON.

14.7 Carry out a functional test of the UK/PRC 320 as described in User Handbook Army Code No. 61123. Check that the intercommunication (IC) facility is working at both positions.

14.8 If the system is not functioning correctly use the test equipment listed in Sub Para 4.5 to help locate the failure.

14.9 The harness should also be checked using the Harness Installation Test Set (HITS) to prove the serviceability of functions, connectors and cables.





14.10 All installations are subject to a certain level of electrical interference, therefore tests of vehicle intercom should be carried out with:

14.10.1 Vehicle stationary with engine running at varying speeds from idling to max r.p.m.

14.10.2 Vehicle travelling at varying speeds to ensure that the level of interference is acceptable.

14.11 Radio Interference Tests (RFI) may be carried out using the procedure detailed in Chapter 8 of Tels and Radar Technical Folder TF/Tels.1.81, Issue 1, dated May 81.

PERMISSIBLE REPAIRS

15 Cable assemblies should be repaired in accordance with EMER Comms Inst Z 203. Individual items suspected of having failed should be substituted by known serviceable items as detailed in the Maintenance Instructions.

REDUNDANT ITEMS

16

- |  |       |
|--|-------|
| (1) FV639761 Antenna cover plate         | Qty 1 |
| (2) - Gasket                             | Qty 1 |
| (3) FV756596 Co-axial outlet cover plate | Qty 1 |
| (4) FV705989 Gasket                      | Qty 1 |

17 Items (1) and (3) (Para 16) are to be retained for possible future use. Items (2) and (4) (Para 16) are to be disposed of/discarded as per unit procedure.



TABLE 1 ITEM LIST - RADIO STATION UK/PRC 320

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Antenna Element	5985-99-649-8140	2	Fitted on 4
2	Antenna Element	5985-99-630-8455	1	Fitted on 1
3	Antenna Element	5985-99-630-8456	1	Fitted on 2
4	Base, Antenna Element	5985-99-652-2708	1	Fig 3
5	Beads, Plastic	5970-99-103-5758	46	Fitted on Item 4
6	Bushing, Rubber (conical)	5340-99-949-1084	4	Fitted with Item 13
7	Bushing, Rubber (rectangular)	5340-99-949-1083	4	Fitted with Item 13
8	Clamp Rubber	5340-99-103-4883	4	Fitted on Item 4
9	Cradle Assembly, CRS L/R	-	1	Fig 6
10	Direct Current Charging Unit (DCCU)	6130-99-117-0450	1	Fitted on Item 13
11	Gland Assembly	5330-99-419-0475	1	Rear l.h. corner turret, fitting for Item 4
12	Interconnecting Box Harness Adaptor (IBHA)	5820-99-117-6249	1	Fig 6
13	Mounting Bracket Assembly DCCU and UK/PRC 320	-	1	Fitted to Radio Rack and Item 14
14	Mounting Frame	5820-99-634-7531	1	Fitted to Radio Rack and Item 13
15	Plate Adaptor Carrier	5820-99-645-0133	1	Fitted to Item 14
16	Control Radio Station Local Remote (CRS L/R)	5820-99-117-0449	1	Fitted with Item 9
17	Sleeve	-	1	Fitted to Item 14
	<u>Cable Assemblies</u>			
18	Earth Braid	Z42/2590-99-896-0213	1	DCCU to Earth
19	Earth Braid	FV943842/1	1	UK/PRC 320 to Earth

(Continued)

TABLE 1 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
20	Lead Special Purpose	1500 mm FV745826/5	1	UK/PRC 320 (battery)to DCCU
21	Single Core Lead as required	FV324726/3	1	UK/PRC 320 to Antenna Base
22	2 - Conductor	3450 mm FV943760/7	1	DCCU to IBHA
23	2 - Conductor	1000 mm FV167997/2	1	IBHA to CRS L/R
24	2 - Conductor	1905 mm FV943775/1	1	PRC 320 to RUB
25	6 - Conductor	2590 mm FV745817/26	1	UK/PRC 320 to CRS L/R
26	6 - Conductor	1450 mm FV943774/1	1	IBHA to IB2/IB3
27	6 - Conductor	990 mm FV745817/20	1	IBHA to CRS L/R
<u>Fixings</u>				
28	Nut 1/4 in. UNF Hex Hd	G1/5310-99-941-0924	12	Fixings listed in Table 2
29	Screw 1/4 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0513	14	Fixings listed in Table 2
30	Screw 5/16 in. UNF x 5/8 in. Hex Hd	G1/5305-99-941-0524	3	Fixings listed in Table 2 and UK/PRC 320 to earth
31	Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0525	2	Fixings listed in Table 2
32	Washer 1/4 in. Flat	G1/5310-99-120-4032	18	Fixings listed in Table 2
33	Washer 5/16 in. Flat	G1/5310-99-941-8608	4	Fixings listed in Table 2
34	Washer 1/4 in. Lock Shakeproof	G1/5310-99-100-6945	14	Fixings listed in Table 2
35	Washer 1/4 in. Lock Shakeproof	G1/5310-99-101-0187	3	Fixings listed in Table 2 and PRC 320 to earth
<u>Stowed Items</u>				
36	Antenna Element	5985-99-630-8455	1	Embodiment loan Item
37	Antenna Element	5985-99-630-8456	1	Embodiment loan Item
38	Antenna Element	5985-99-649-8140	1	Embodiment loan Item
39	Bag Ancillaries Manpack	5985-99-521-9028	1	Stowage of loose Items

(Continued)

TABLE 1 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
40	Handset, General Purpose	5965-99-620-5669	1	Embodiment loan Item
41	Headset, General Purpose	5965-99-620-8320	1	Embodiment loan Item
42	Key Telegraph, Manual Manpack	5805-99-117-7542	1	Embodiment loan Item
43	Spanner Wrench Lug Type	5120-99-103-5591	1	Embodiment loan Item

TABLE 2 FIXING DETAILS

OPERATIONS

- 1 Radio rack mountings - rear shelf
- 2 Base antenna element - rear l.h.s. exterior ('B' set position)
- 3 CRS L/R - universal mounting plate
- 4 IBHA - universal mounting plate
- 5 DCCU - radio rack

Designation (1)	Catalogue No./NSN (2)	Operation No.				
		1	2	3	4	5
Nut 1/4 in. UNF Hex Hd	G1/5310-99-941-0924	8				4
Screw 1/4 in. UNF x 3/4 in. Hex Hd	G1/5305-99-941-0513	8	6			
Screw 5/16 in. UNF x 5/8 in. Hex Hd	G1/5305-99-941-0524				2	
Screw 5/16 in. UNF x 3/4 in. Hex Hd	G1-5305-99-941-0525			2		
Washer 1/4 in. Flat	G1/5310-99-120-4032	8	6			4
Washer 5/16 in. Flat	G1/5310-99-941-8608			2		
Washer 1/4 in. Lock Shakeproof	G1/5310-99-100-6945	8	6			
Washer 1/4 in. Lock Shakeproof	G1/5310-99-101-0187			2		2

TABLE 3 ITEM LIST - COAXIAL OUTLET

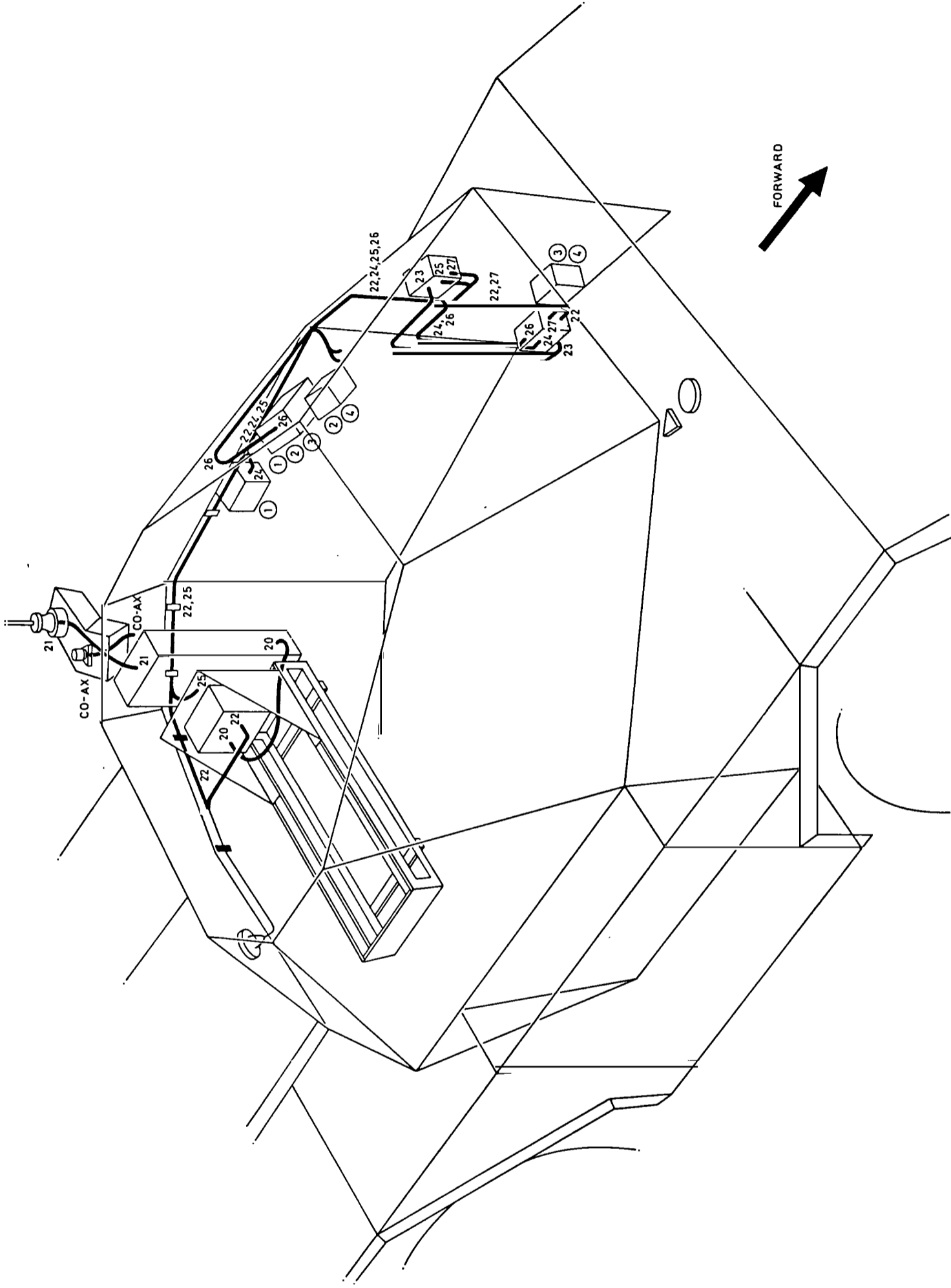
Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Cable Assembly R.F.	FV745829/29	1	Set position 'B' to Co-axial Outlet
2	Captive Cover		1	
3	Co-axial Adaptor (Bulkhead Mounting)		1	
4	Co-axial Outlet Shell	FV759688	1	
5	Gasket	FV705989	1	
6	Nut 5/16 - 24 UNF	5310-99-941-0925	3	Alternative to Item 7
7	Screw 5/16 - 18 UNC x 7/8 in. Hex Hd	5305-99-941-0699	3	Alternative to Item 6
8	Washer 5/16 Flat I/D	5310-99-941-8608	3	
9	Washer 5/16 Lock Shakeproof	5310-99-101-0187	3	

ROUTING/CONNECTIONS CHART

<u>Ref No.</u>	<u>FV No.</u>	<u>Cable Type</u>	<u>Route/Connection</u>
1E	745779/31	2 - conductor	RJB to IB2/IB3 (28 V)
2E	2050181/26	12 - point	IB2/IB3 to CB2/CBF (cmd)
3E	745757/135	12 - point	IB2/IB3 to CB2 (driver)
4E	2050181/27	12 - point	CB2/CBF (cmd) to CB2 (driver)
18	166727/3	Earth Braid	DCCU to earth
19	943842/1	Earth braid	UK/PRC 320 to earth
20	745826/5	Lead special	UK/PRC 320 (battery) to DCCU
21	324726/3	Single core lead	UK/PRC 320 to antenna base
22	943760/7	2 - conductor	DCCU to IBHA
23	167997/2	2 - conductor	IBHA to CRS L/R
24	943775/1	2 - conductor	IBHA to RJB
25	745817/26	6 - conductor	UK/PRC 320 to CRS L/R
26	943774/1	6 - conductor	IBHA to IB2/IB3
27	945817/20	6 - conductor	IBHA to CRS L/R

Note ...

Suffix E denotes existing cable



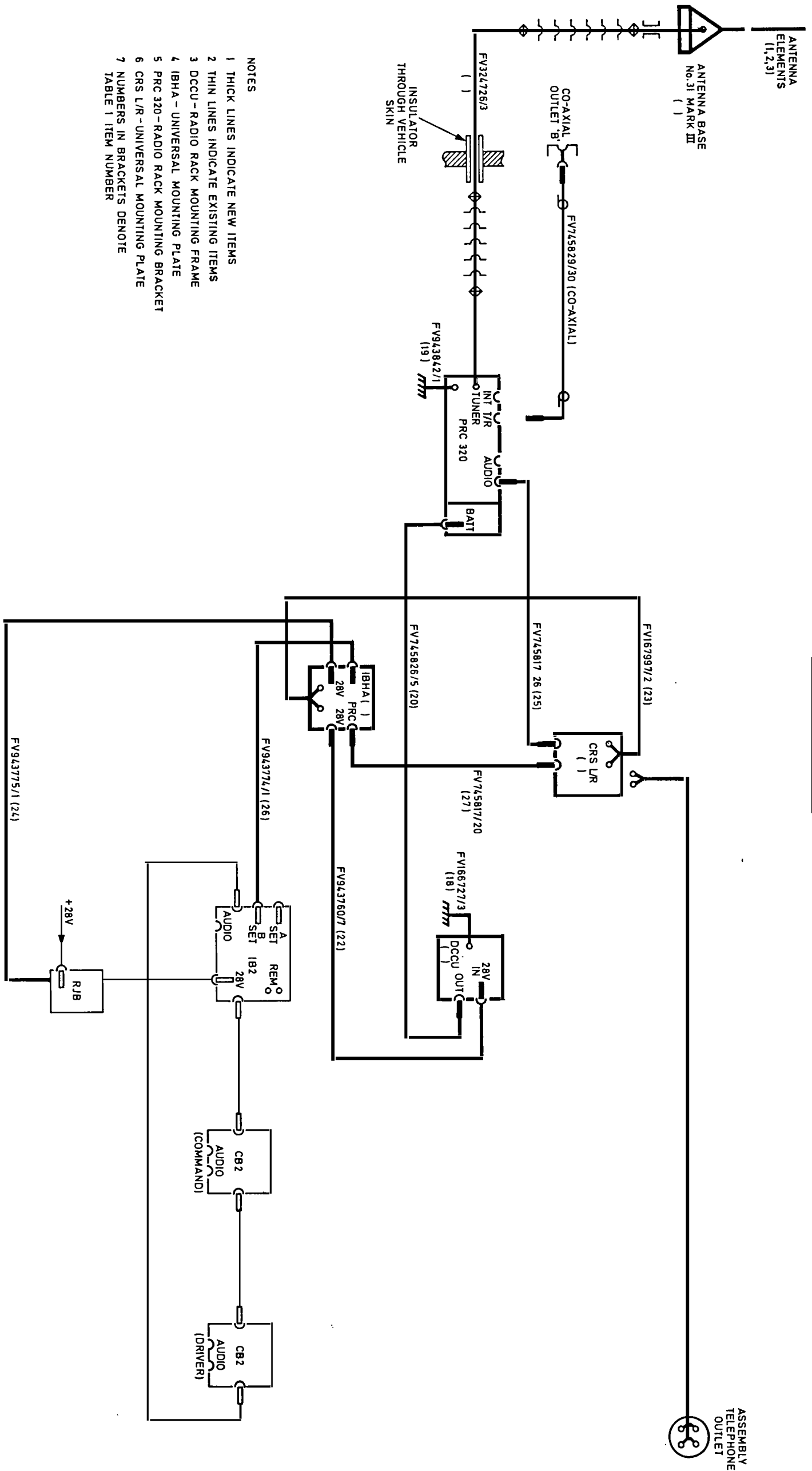
NOTES

1. CIRCLED NUMBERS DEPICT CONNECTIONS TO BE MADE BY EXISTING CABLES
2. PLAIN NUMBERS DEPICT THE ROUTING AND CONNECTIONS OF CABLES TO BE INSTALLED AS PER TABLE 1
3. ■ EXISTING CABLE CLIPS
4. □ CABLE CLIPS FV964639/18

Fig 7

Equipment location, with clip and cable routing diagram





- NOTES
- 1 THICK LINES INDICATE NEW ITEMS
  - 2 THIN LINES INDICATE EXISTING ITEMS
  - 3 DCCU - RADIO RACK MOUNTING FRAME
  - 4 IBHA - UNIVERSAL MOUNTING PLATE
  - 5 PRC 320 - RADIO RACK MOUNTING BRACKET
  - 6 CRS L/R - UNIVERSAL MOUNTING PLATE
  - 7 NUMBERS IN BRACKETS DENOTE TABLE 1 ITEM NUMBER

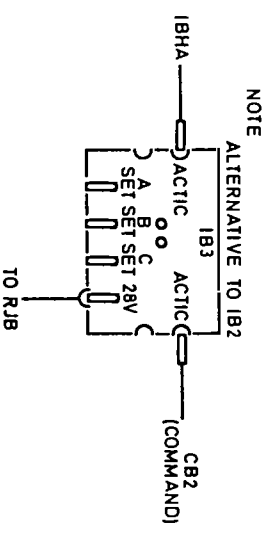


Fig 8 Interconnection block diagram

END

WHEELED VEHICLE FERRET FV701

CHAPTER 2 - B5

CES BRICK INSTALLATION INSTRUCTION

SUBJECT: Installation of Radio Station UK/VRC 321  
(Clansman Basic Harness Fitted)

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	3	Action required by	
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GENERAL INFORMATION

INTRODUCTION

1 This instruction details the installation of the Installation Kit for Radio Station UK/VRC 321 in a FV701 Ferret MK1/1, MK1/2 or MK2/3. The Kit comprises an Antenna Base Assembly and elements, mountings and fittings to be installed into the existing Clansman Basic Harness. The requirements of the vehicle installation are met by the selection and physical arrangement of the various harness items. Interconnections between the items are made by cable assemblies which are arranged in a ring-main configuration. A system of common plugs and sockets with various lengths of connecting cable is employed.

ESTIMATED TIME REQUIRED

2

(1) Installation of CES No. 44831/1 brick	3	man hours
(2) Installation of CES No. 44689 brick	1	man hours
(3) Preparation of vehicle	NIL	man hours
(4) Modifications	NIL	man hours
(5) Manufacture	NIL	man hours

ACTION REQUIRED BY

- 3
- 3.1 Units affected When instructions have been received through staff channels demand the stores and upon receipt, request REME to install the equipment.
- 3.2 REME and Royal Signals authorized to carry out Unit, Field and Base (REME only) repairs.
- 3.2.1 Install the equipment as detailed.
- 3.2.2 Endorse the vehicle log book, AB 413 (revised) with the installation details.

STORES, TOOLS AND TEST EQUIPMENT

- 4
- 4.1 Stores to be demanded
- |  |       |
|--|-------|
| (1) Z99/5820-99-966-3999 Installation Kit, Radio Station UK/VRC 321 in FV701 Ferret. | Qty 1 |
| (2) FV759689 Installation Kit, Co-axial Outlet.                                      | Qty 1 |
- 4.2 Stores to be obtained locally
- |                        |       |
|------------------------|-------|
| FV964639/16 Cable Clip | Qty 3 |
|------------------------|-------|
- 4.3 Stores to be manufactured
- Nil.

4.4 Special tools

Nil.

4.5 Test equipment

- |   |       |
|---|-------|
| (1) Z4/6625-99-620-3595 Clansman Harness Installation Test Set (HITS)       | Qty 1 |
| (2) Z4/6625-99-620-3592 Test Kit Condition Clansman Radio (TKC)             | Qty 1 |
| (3) Z4/6625-99-620-3593 Test Set Audio for Radio Audio Accessories (TSARAA) | Qty 1 |
| (4) Z4/6625-99-105-7049 Multimeter, Set CT498A (AV0)                        | Qty 1 |
| (5) Z4/6625-99-786-5771 Test Set Bond Resistance DT 109                     | Qty 1 |

ASSOCIATED PUBLICATIONS

5

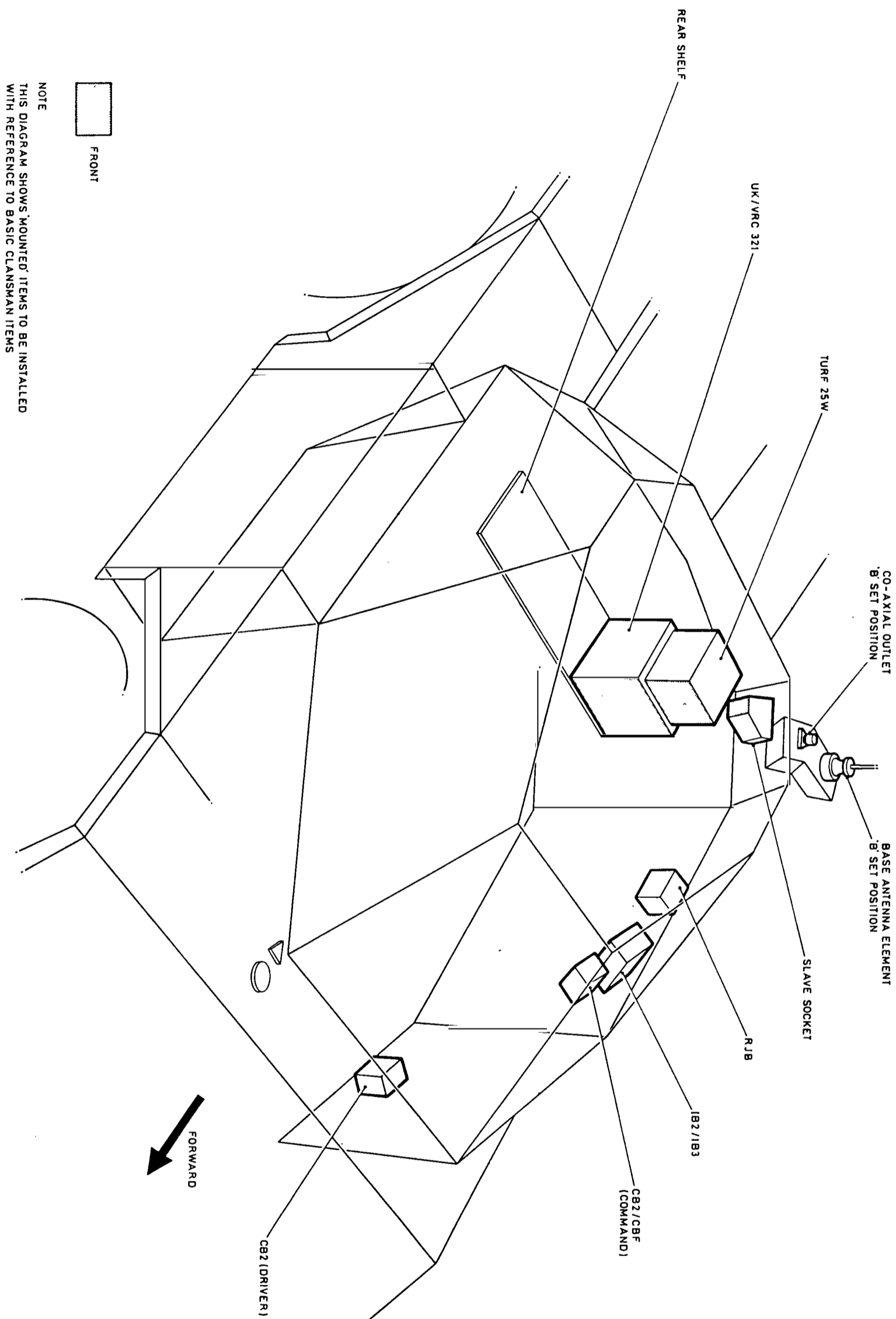
- (1) CES No. 44831/1 Installation Kit, Radio Station VRC 321 in FV701 Ferret
- (2) CES No. 44689 Installation Kit, Co-axial Outlet
- (3) Emer Tels L800-8009 Clansman Radio Control Harness
- (4) EMER Communications Installations K 677 Clansman Radio Control Harness in Wheeled Vehicle FV701 Ferret
- (5) EMER Communications Installations A 009 Instr No. 5
- (6) EMER Wheeled Vehicles V 620-629
- (7) EMER Communications Installations Z 203
- (8) Tels and Radar Technical Folder TF/Tels. 1.81, Issue 1
- (9) Users Handbook Army Code No. 61253

INFORMATION

6 If further information is required regarding this installation application should be made to:

Commanding Officer  
Electronics Branch REME  
Leigh Sinton Road  
MALVERN  
Worcs WR14 1LL

Giving all relevant details and quoting AESP 5800-F-121-412 Inst Instr No. B5, Chapter 2.



Location diagram

INSTALLATION

WARNINGS ...

- (1) BEFORE WORK IS COMMENCED ENSURE THAT THE VEHICLE MASTER SWITCH IS IN THE OFF POSITION AND THE VEHICLE BATTERIES ARE DISCONNECTED. (A CONVENIENT POINT IS THE NEGATIVE TERMINAL ON A BATTERY).
- (2) ALL UNTERMINATED CABLE ASSEMBLIES MUST HAVE THEIR UNTERMINATED ENDS SECURELY STOWED TO PREVENT POSSIBLE INJURY TO PERSONS RIDING IN THE VEHICLE.

CAUTION ...

Good earth contacts are an essential part of the installation. Poor bonding will degrade the performance leading to reduced operational range and susceptibility to r.f. interference (RFI). All earth bonding points, harness braids, screws, tapped holes and braid contact areas must be free from paint and grease using an approved solvent.

GENERAL NOTES

- 7 Figs 1 to 7 inclusive locate and show fitting details of the various installation items. Fig 8 is a clip and cable routeing diagram and Fig 9 an interconnection block diagram for the UK/VRC 321 installation.
- 8 Reference in the text to items in Table 1 is made by inserting the item number, in brackets, after the item title. Table 2 lists the operations for the main items and the fixings required to install them. Table 3 lists the items to install the co-axial outlet if a remote antenna is to be used with the installation. Reference to Table 1 cable assembly item numbers are shown on location diagrams as applicable.
- 9 Reference to left-hand side (l.h.s.) and right-hand side (r.h.s.) sides of the vehicle is made with respect to the driver facing forward.
- 10 EMER Comms Inst A 009 Misc Instr No. 5; The Use of Fastenings in Communication Installations in Military Vehicles, gives information on the correct use of washers and fastenings.
- 11 Unless otherwise stated, all holes are existing and are detailed in Cat 302, Chap 1, Fig 1.

PREPARATION OF VEHICLE

12

12.1 Existing installations

With reference to Fig 2, remove the radio rack and set mountings from the rear shelf retaining all fixings for possible future use.

12.2 Modifications

Nil

UK/VRC 321 ('B' POSITION) INSTALLATION

13

13.1 Radio table assembly

Fit the radio table assembly to the rear shelf as per Fig 2 and 3 and Table 2, operation 1.

13.1.1 Secure the shock mounts (9) in position on the radio table assembly (7) using sixteen screws (20), washers (24 and 29) and nuts (17).

13.1.2 Fit a module carrier (5 and 6) to each pair of shockmounts such that, with the curved edges of the plate at the sides and the with radio securing screw points toward the assembler, the l.h. carrier (6) is located in the l.h. pair of shockmounts and the r.h. carrier (5) on the r.h. pair. Secure the carriers in position using four screws (19) and washers (26).

13.1.3 Secure the radio table assembly with mountings in position on the radio shelf using four spacers (10), screws (21) and washers (24 and 25).

13.1.4 Secure an earth braid (11) to the rear shelf on the l.h.s. of the radio table assembly using existing fixtures.

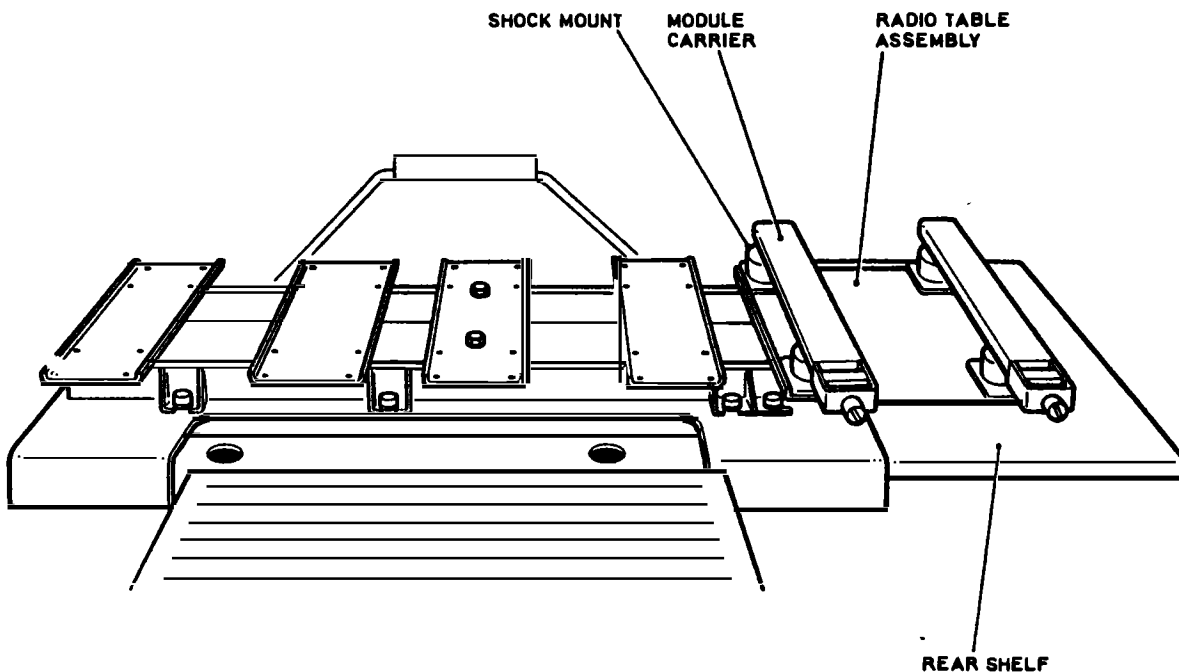
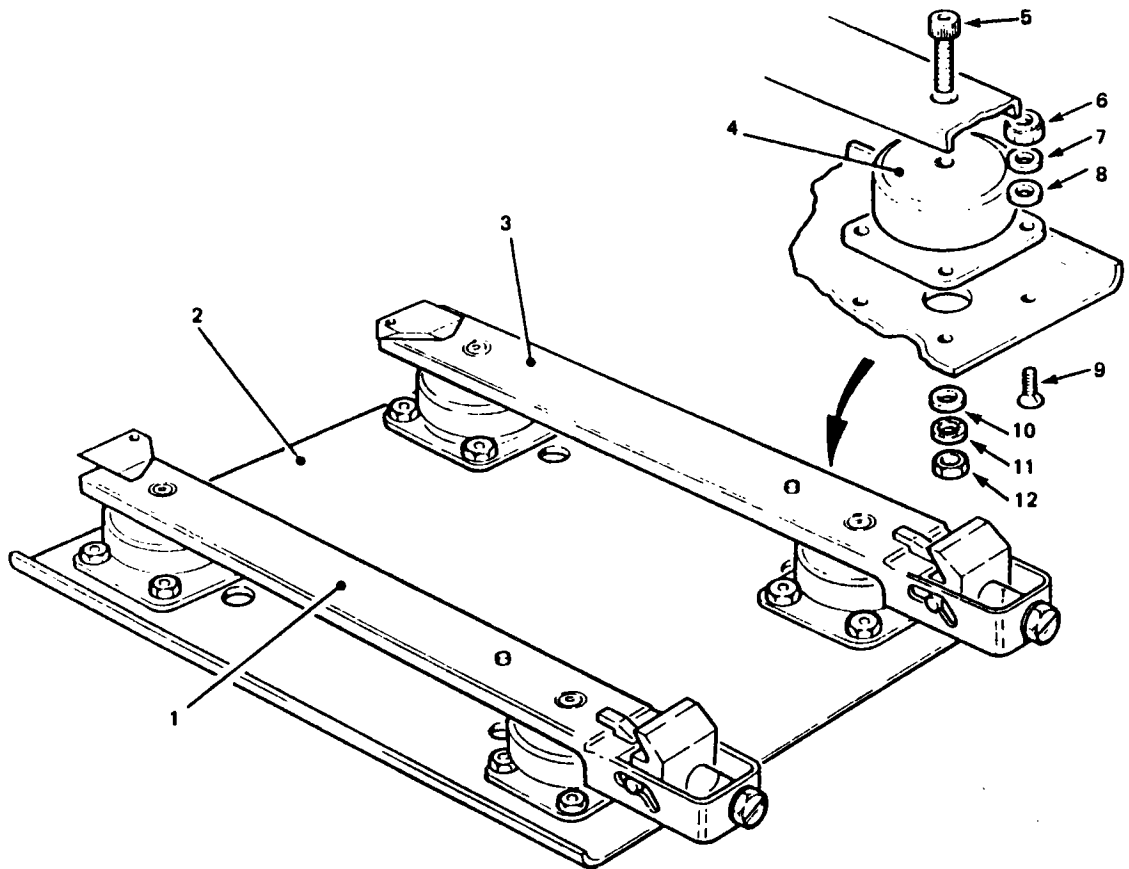


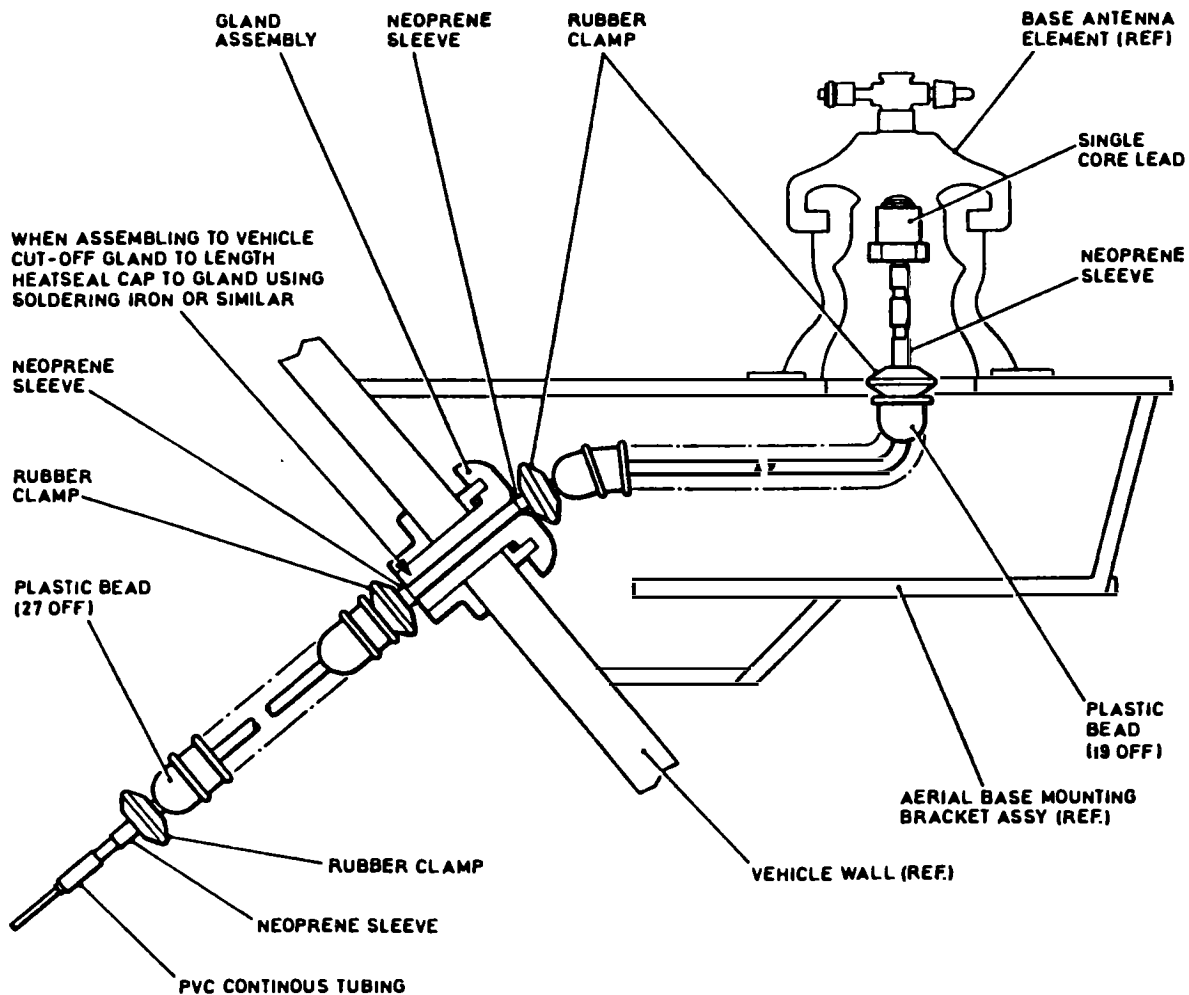
Fig 2 Radio table assembly location diagram



- |   |                        |
|---|------------------------|
| 1 MOUNTING BAR LH<br>5820-99-620-0062       | 7 WASHER, LOCK         |
| 2 PLATE MOUNTING IMPACT<br>5820-99-620-9661 | 8 WASHER, PLAIN        |
| 3 MOUNTING BAR RH<br>5820-99-620-0051       | 9 SCREW C/SK 10-32 UNF |
| 4 SHOCKMOUNT<br>5340-99-949-7802            | 10 WASHER PLAIN        |
| 5 SCREW SKT HEAD<br>6mm                     | 11 WASHER, SHAKEPROOF  |
| 6 NUT 10-32 UNF                             | 12 NUT 6mm             |

Fig 3 Guide to radio table assembly





**NOTES**

1. BASE ANTENNA ELEMENT AND AERIAL BASE MOUNTING BRACKET ASSY. SHOWN SIMPLIFIED FOR CLARITY
2. FIT IDENT AND RETAINING NEOPRENE SLEEVES IN APPROXIMATE POSITIONS SHOWN
3. HARNESS TO BE ASSEMBLED AND TESTED IN ACCORDANCE WITH MVEE SPEC 773

Fig 4 Antenna base cable assembly sequence diagram

13.2 Base antenna element

Fit the base antenna element (4) to the rear l.h.s. exterior ('B' set position) as per Figs 4 and 5 and Table 2, operation 2.

13.2.1 Remove and retain for possible future use, the fixings, cover plate and gasket at the antenna base 'B' set position.

13.2.2 With reference to Fig 4 attach one end of cable (14) to the base antenna support using the nut gland and washer set.

13.2.3 Place a Gasket supplied with the base antenna element over the antenna base position and align the holes. Push the male part of the gland assembly into the centre hole.

13.2.4 Fit the female part of the gland over the protruding end of the male part. Cut off the male part flush with the female part and seal the two parts together with a soldering iron.

13.2.5 Feed the free end of cable (14) through the gland, position the base antenna support and secure using six screws (18) and washers (23 and 28).

13.2.6 With reference to Fig 4 complete the assembly of the harness from inside the vehicle.

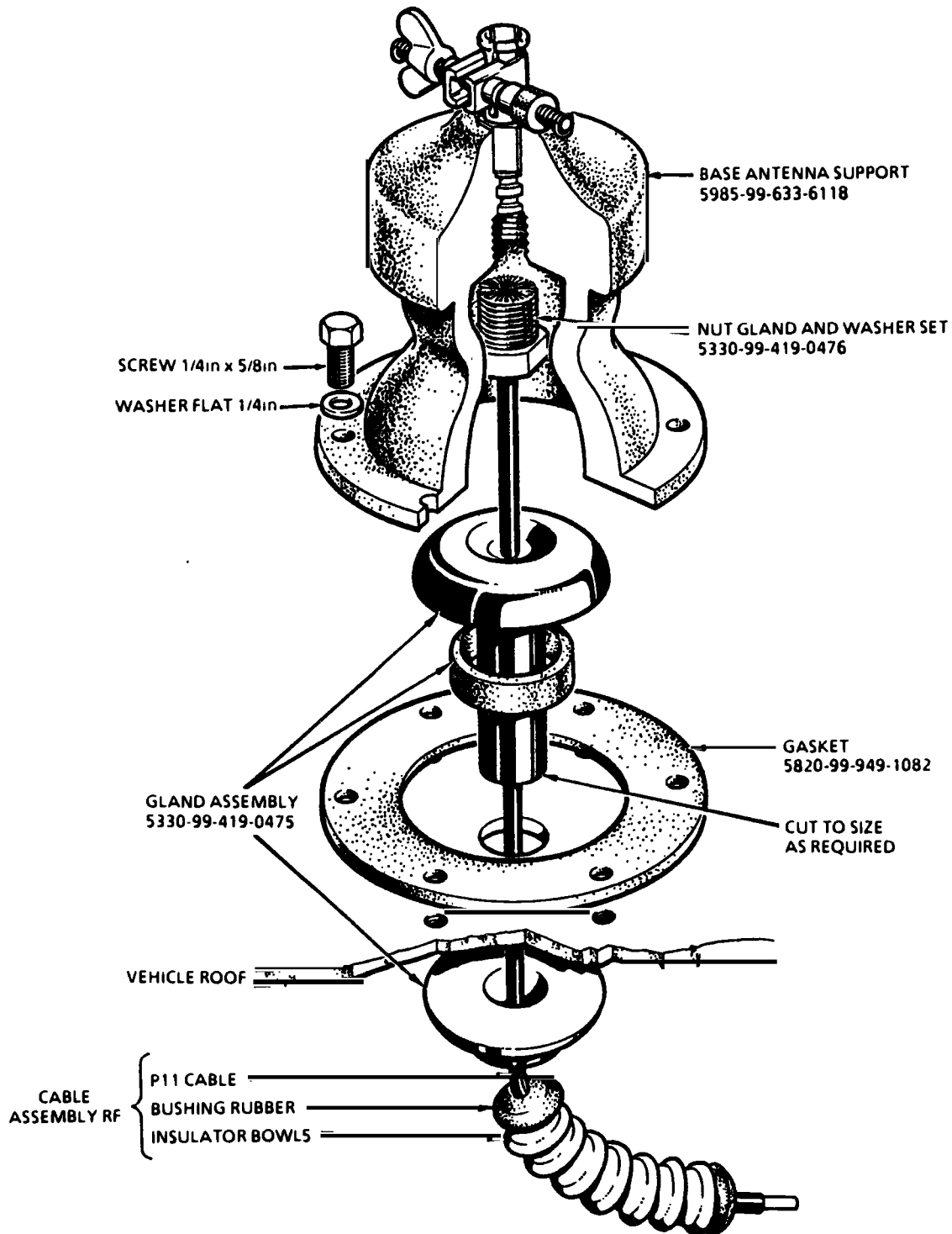


Fig 5 Antenna base assembly diagram



13.3 Reposition of slave socket

Reposition the slave socket above and to the l.h.s. of the panel generator unit per Fig 6. Use existing fixings and ensure the connections are as per Fig 9.

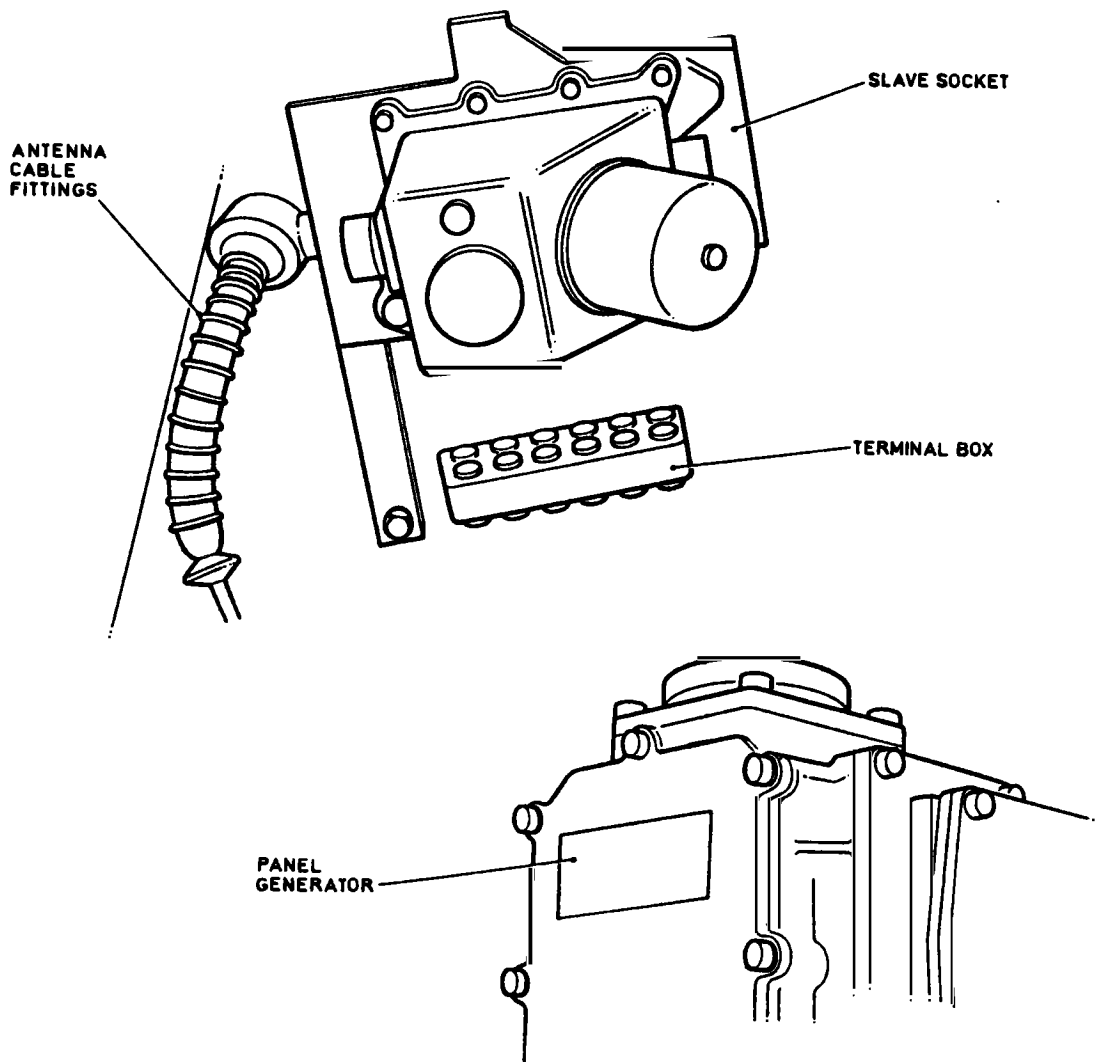


Fig 6 Slave socket reposition diagram



### 13.4 Co-axial outlet

A co-axial outlet position is provided, on MK II vehicles only, in the 'B' set position to allow a remote antenna to be used with the installation. Fit the co-axial on the forward r.h.s. exterior as per Fig 7 and Table 3.

13.4.1 Remove and retain for possible future use the cover plate, gasket and fixings.

13.4.2 Position a gasket (5) over the three securing holes.

13.4.3 Assemble a co-axial outlet as detailed in Fig 7.

13.4.4 Feed the straight end of cable assembly (1) out through the centre hole and connect to the co-axial adaptor (3).

13.4.5 Place the co-axial outlet (4) over the gasket, ensuring that the holes in the shell, gasket, and roof are aligned. Secure using two screws (7) and washers (8 and 9)

13.4.6 Place the securing eye of the captive cover (2) over the remaining hole in the shell and secure using the remaining screw (7) and washer (9).

13.4.7 Fit the protective cap over the top of the outlet shell.

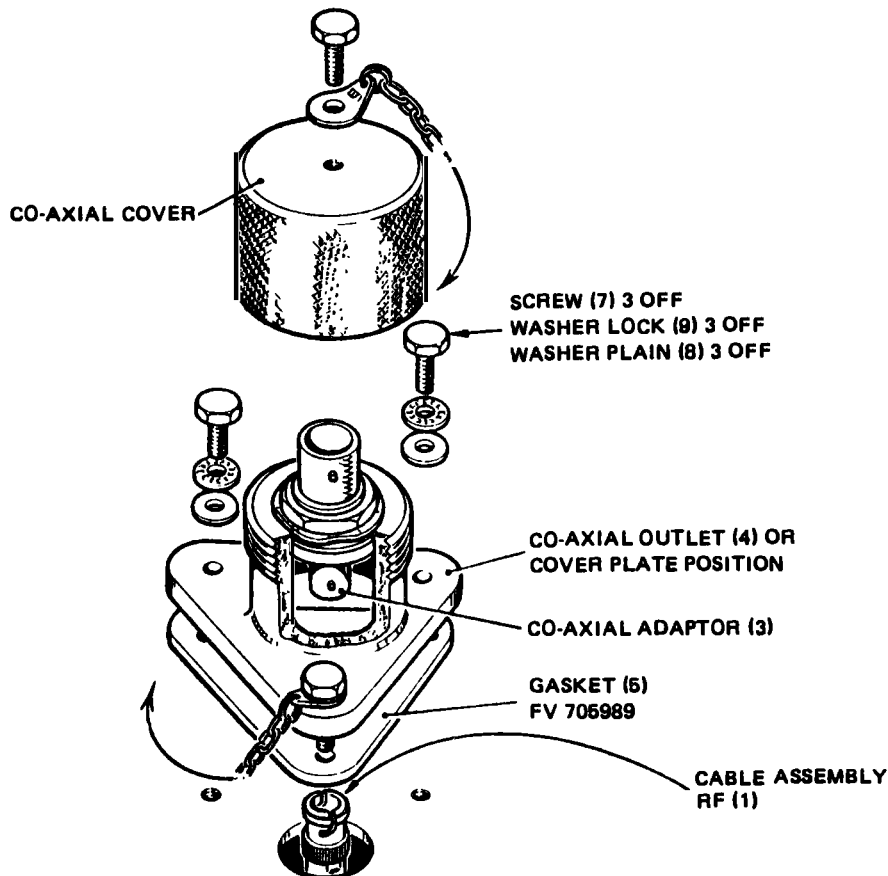


Fig 7 Co-axial outlet assembly diagram

### 13.5 Cable Assemblies

13.5.1 Route the cable assemblies as per Figs 8 and 9 and run in existing cable through.

13.5.2 Secure using cable clips, at a maximum pitch of 450 mm and fit cable ties (obtained locally) where appropriate.

13.5.3 Ensure all elbows of cable assemblies, when connected to their appropriate harness box, are at 45 degs to the surface to which the box is mounted.

13.5.4 Stow the UK/VRC 321 to TURF 25W cable assembly (13) until required.

### FUNCTION CHECKS

14

14.1 Visually inspect the complete harness installation ensuring all connections have been correctly made and all cables are securely clipped.

14.2 Check all earth bonding points ..... see CAUTION immediately before Para 7.

14.3 Using Test Set Bond Resistance DT 109, check that individual earth bonding joints do not exceed 2 milliohms and resistance between the appropriate harness item earth and vehicle earth terminal does not exceed 25 milliohms.

14.4 Switch the battery master switch to ON.

14.5 Connect headsets to the CB2 and CB2/CBF positions.

14.6 On the IB2/IB3, set the Clansman Harness switch to ON.

14.7 Carry out a functional test of the UK/VRC 321 as described in the Users Handbook Army Code No. 61253. Check that the intercommunication (IC) facility is working at both positions.

14.8 If the system is not functioning correctly use the test equipment listed in Sub Para 4.5 to help locate the failure.

14.9 The harness should also be checked using the Harness Installation Test Set (HITS) to prove the serviceability of functions, connectors and cables.

14.10 All installations are subject to a certain level of electrical interference, therefore tests of vehicle intercom should be carried out with:

14.10.1 Vehicle stationary with engine running at varying speeds from idling to max r.p.m.

14.10.2 Vehicle travelling at varying speeds to ensure that the level of interference is acceptable.

14.11 Radio Interference Tests (RFI) may be carried out using the procedure detailed in Chapter 8 of Tels and Radar Technical Folder TF/Tels.1.81, Issue 1, dated May 81.

PERMISSIBLE REPAIRS

15 Cable assemblies should be repaired in accordance with EMER Comms Inst Z 203. Individual items suspected of having failed should be substituted by known serviceable items as detailed in the Maintenance Instructions.

REDUNDANT ITEMS

16

(1) FV639761 Antenna cover plate	Qty 1
(2) - Gasket	Qty 1
(3) FV756596 Co-axial outlet cover plate	Qty 1
(4) FV705989 Gasket	Qty 1
(5) FV989839 Carrier manpack assembly	Qty 1
(6) FV895689 Battery support assembly	Qty 1
(7) FV989839 Radio rack	Qty 1

17 Items (1), (2) and (5) to (7) (Para 16) are to be retained for possible future use. Items (2) and (4) (Para 16) are to be disposed of/discarded as per unit procedure.

TABLE 1 ITEMS LIST - RADIO STATION UK/VRC 321

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Antenna Element	5985-99-630-8455	2	Fitted on Item 4
2	Antenna Element 9.5mm x 1m	5985-99-630-8456	1	Fitted on Item 1
3	Antenna Element 10mm x 1m	5985-99-630-8457	1	Fitted on Item 2
4	Base, Antenna Element	5985-99-652-2708	1	Fig 5
5	Carrier, Module (Bars Mounting) RH	5820-99-661-6077	1	Fitted on Item 9
6	Carrier, Module (Bars Mounting) LH	5820-99-661-6078	1	Fitted on Item 9
7	Radio Table Assembly	FV989716	1	Fig 2
8	Set Kit for Reposition Slave Socket (Interim)	FV990532	1	Fitted on rear l.h.s. wall, Fig 4
9	Shock Mount GBC 1020T4	5340-99-100-4469	4	Fitted to Item 7
10	Spacer	FV989955	4	Fitted to Item 7
	<u>Cable Assemblies</u>			
11	Earth Braid	FV990546/8	2	For UK/VRC 321 and TURF 25W
12	Radio Frequency	1985 mm FV745829/32	1	UK/VRC 321 to Co-axial Outlet
13	Radio Frequency	400 mm FV745811/123	1	TURF 25W to UK/VRC 321
14	Single Core	680 mm FV324726/5	1	TURF 25W to Antenna
15	2 - Conductor	1830 mm FV943775/30	1	UK/VRC 321 to RJB
16	4 - Conductor	3125 mm FV745731/78	1	UK/VRC 321 to IB2/IB3
	<u>Fixings</u>			
17	Nut 10 - 32 UNF	G1/5310-99-941-2419	16	Fixings detailed in Table 2
18	Screw 1/4 in. - 20 UNC x 3/4 in. Hex Hd	G1/5305-99-945-2106	6	Fixings detailed in Table 2
19	Screw 1/4 in. - 20 UNC x 3/4 Skt Hd	G1/5305-99-945-2106	4	Fixings detailed in Table 2

(Continued)



TABLE 1 (Cont'd)

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
<u>Fixings Cont'd</u>				
20	Screw 10 - 32 UNF x 1/2 Csk Hd	G1/5305-99-941-1738	16	Fixings detailed in Table 2
21	Screw 5/16 - 24 UNF 1 1/4 Hex Hd	G1/5305-99-941-0529	4	Fixings detailed in Table 2
22	Washer 3/16 in. Flat	G1/5310-99-941-8179	16	Fixings detailed in Table 2
23	Washer 1/4 in. Flat	G1/5310-99-120-4032	6	Fixings detailed in Table 2
24	Washer 5/16 in. Flat	G1/5310-99-941-8608	4	Fixings detailed in Table 2
25	Washer 5/16 in. Lock Shakeproof	G1/5310-99-100-6941	6	Fixings detailed in Table 2
26	Washer 1/4 in. Lock Shakeproof	G1/5310-99-941-6644	4	Fixings detailed in Table 2
27	Washer 0.195 in. Lock Shakeproof	G1.5310-99-914-0112	16	Fixings detailed in Table 2
28	Washer 0.261 in. Lock Shakeproof	G1/5310-99-100-6945	6	Fixings detailed in Table 2
<u>Stowed Items</u>				
29	Antenna Wire C/W Reel	5820-99-117-7440	1	Embodiment loan Item
30	Cable Assembly RF UR 67 20M	5995-99-114-3114	1	Embodiment loan Item
31	Centre Junction Dipole	5985-99-620-9535	1	Embodiment loan Item
32	Counterpoise Antenna (Vehicular)	5820-99-632-1033	1	Embodiment loan Item
33	Key Telegraph Manual (Vehicular)	5805-99-117-6903	1	Embodiment loan Item
34	Spanner Wrench Lug Type	5120-99-103-5591	1	Embodiment loan Item

TABLE 2 FIXING DETAILS

OPERATIONS

- 1 Radio Table Assembly - rear shelf
- 2 Base Antenna Element - rear r.h.s. exterior

Designation (1)	Catalogue No./NSN (2)	Operation No.	
		1	2
Nut 10 - 32 UNF	G1/5310-99-941-2419	16	6
Screw 1/4 in. - 20 UNC x 3/4 in. Hex hd	G1/5305-99-941-0687		
Screw 1/4 in. - 20 UNC x 3/4 Skt Hd	G1/5305-99-945-2106	4	
Screw 10 - 32 UNF x 1/2 Csk Hd	G1/5305-99-941-1738	16	
Screw 5/16 - 24 UNF x 1 1/4 Hex Hd	G1/5305-99-941-0529	4	
Washer 3/16 in. Flat	G1/5310-99-941-8179	16	
Washer 1/4 in. Flat	G1/5310-99-120-4032		6
Washer 5/16 in. Flat	G1/5310-99-941-8608	4	
Washer 5/16 in. Lock Shakeproof	G1/5310-99-100-6941	4	
Washer 1/4 in. Lock Shakeproof	G1/5310-99-941-6644	4	
Washer 0.195 in. Lock Shakeproof	G1/5310-99-914-0112	16	
Washer 0.261 in. Lock shakeproof	G1/5310-99-100-6945		6

TABLE 3 ITEM LIST CO-AXIAL OUTLET

Item No. (1)	Designation (2)	Catalogue No./NSN (3)	Qty (4)	Remarks (5)
1	Cable Assembly R.F.	FV745829/29	1	Set position 'B' to Co-axial outlet
2	Captive Cover		1	
3	Co-axial Adaptor (Bulkhead Mounting)		1	
4	Co-axial Outlet Shell	FV759685	1	
5	Gasket	FV705989	1	
6	Nut 5/16 - 24 UNF	5310-99-941-0925	3	Alternative to item 7
7	Screw 5/16 - 18 UNC x 7/8 in. Hex Hd	5305-99-941-0699	3	Alternative to item 6
8	Washer 5/16 Flat I/D	5310-99-941-8608	3	
9	Washer 5/16 Lock Shakeproof	5310-99-101-0187	3	



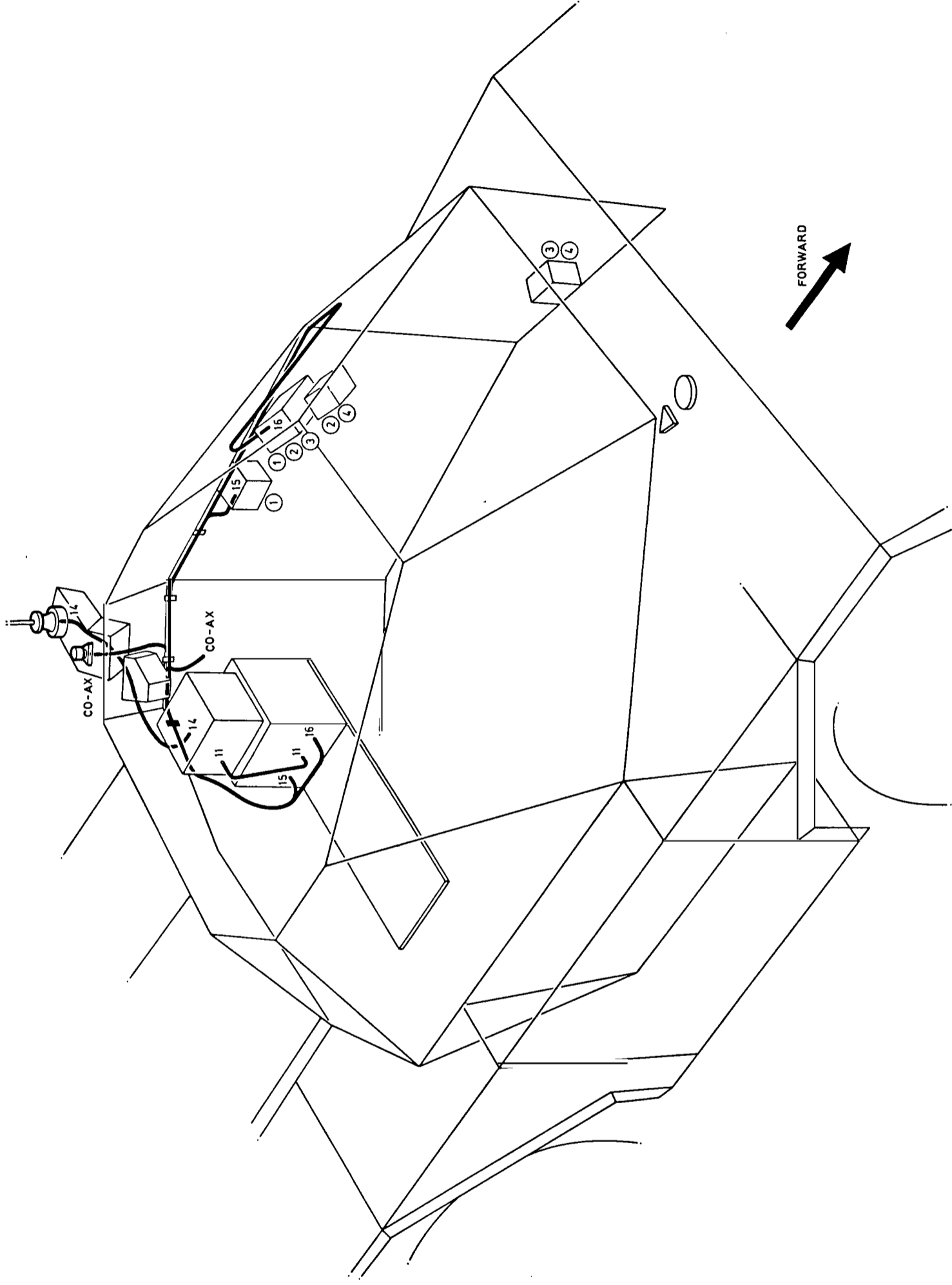
ROUTING/CONNECTIONS CHART

<u>Ref No.</u>	<u>FV No.</u>	<u>Cable Type</u>	<u>Route/Connection</u>
1E	745779/31	2 - conductor	RJB to IB2/IB3 skt (28 V)
2E	2050181/26	12 - point	IB2/IB3 harness skt to CB2/CBF (comd) harness skt
3E	745757/135	12 - point	IB2/IB3 harness skt to CB2 (driver) harness skt
4E	2050181/27	12 - point	CB2/CBF (comd) harness to CB2 (driver) harness skt
11	990546/8	Earth braid	For UK/VRC 321 and TURF 25W
12	745829/32	Radio frequency	UK/VRC 321 to co-axial outlet
13	745811/123	Radio frequency	TURF 25W to UK/VRC 321
14	324726/5	Single core	TURF 25W to antenna
15	943775/30	2 - conductor	UK/VRC 321 to RJB (28 V)
16	745731/78	4 - conductor	UK/VRC 321 to IB2/IB3

Note ...

Suffix E denotes existing cable

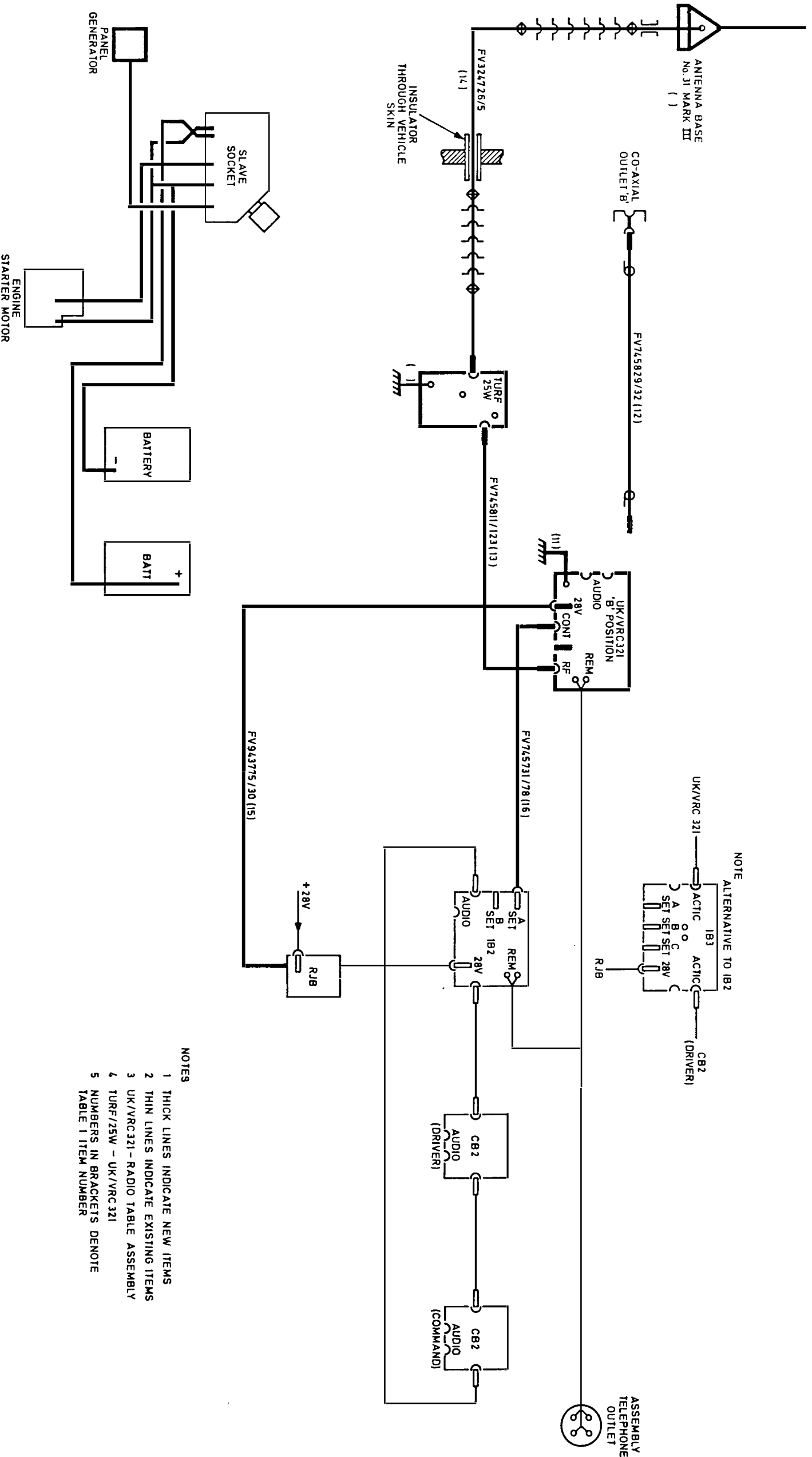




- NOTES
1. CIRCLED NUMBERS DEPICT CONNECTIONS TO BE MADE BY EXISTING CABLES
  2. PLAIN NUMBERS DEPICT THE ROUTING AND CONNECTIONS OF CABLES TO BE INSTALLED AS PERTABLE 1
  3. ■ EXISTING CABLE CLIP
  4. □ CABLE CLIP FV964639/16

Fig 8

Equipment location, with clip and cable routing diagram



- NOTES
- 1 THICK LINES INDICATE NEW ITEMS
  - 2 THIN LINES INDICATE EXISTING ITEMS
  - 3 UK/VRC321 - RADIO TABLE ASSEMBLY
  - 4 TURF/25W - UK/VRC321
  - 5 NUMBERS IN BRACKETS DENOTE TABLE 1 ITEM NUMBER

Interconnection block diagram

END





