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Part 7 Supplement 5

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**USER HANDBOOK
FOR
CLANSMAN RADIO INSTALLATIONS
in TRUCKS, ½ and ¾ ton, FFR and GS,
ROVER**

Part 7 Supplement 5

UK / PRC - 320
in FFR and GS

High power RF radiation can be harmful to your health. The power of the UK/PRC-320 is judged to be insufficient to cause ill effects, except when someone is very close to the antenna, coupled with an exposure of several minutes.

Published under the authority of
the Signal Officer - in - Chief (Army), Ministry of Defence

JUNE 1977

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SUPPLEMENT 5

THE INSTALLATION OF RADIO STATION UK/PRC-320 INTO
TRUCKS, $\frac{1}{2}$ AND $\frac{3}{4}$ TON, FFR AND GS, ROVER

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This supplement details the installation of Radio Station UK/PRC-320 into trucks, $\frac{1}{2}$ and $\frac{3}{4}$ ton, FFR and GS Rover. Operating instructions are not included.

ASSOCIATED PUBLICATIONS

The following are applicable to this installation:-

MOD (ARMY) User Handbooks

User Handbook Radio Station UK/PRC-320	-	Army Code 61123
User Handbook CLANSMAN condition test set	-	Army Code 61655

Note...

In this supplement the terms 'Equipment rack' and 'Radio table' are applied not only to the $\frac{3}{4}$ ton FFR vehicle items but also to the module rack and module table which are part of the $\frac{1}{2}$ ton FFR vehicle dismountable module.

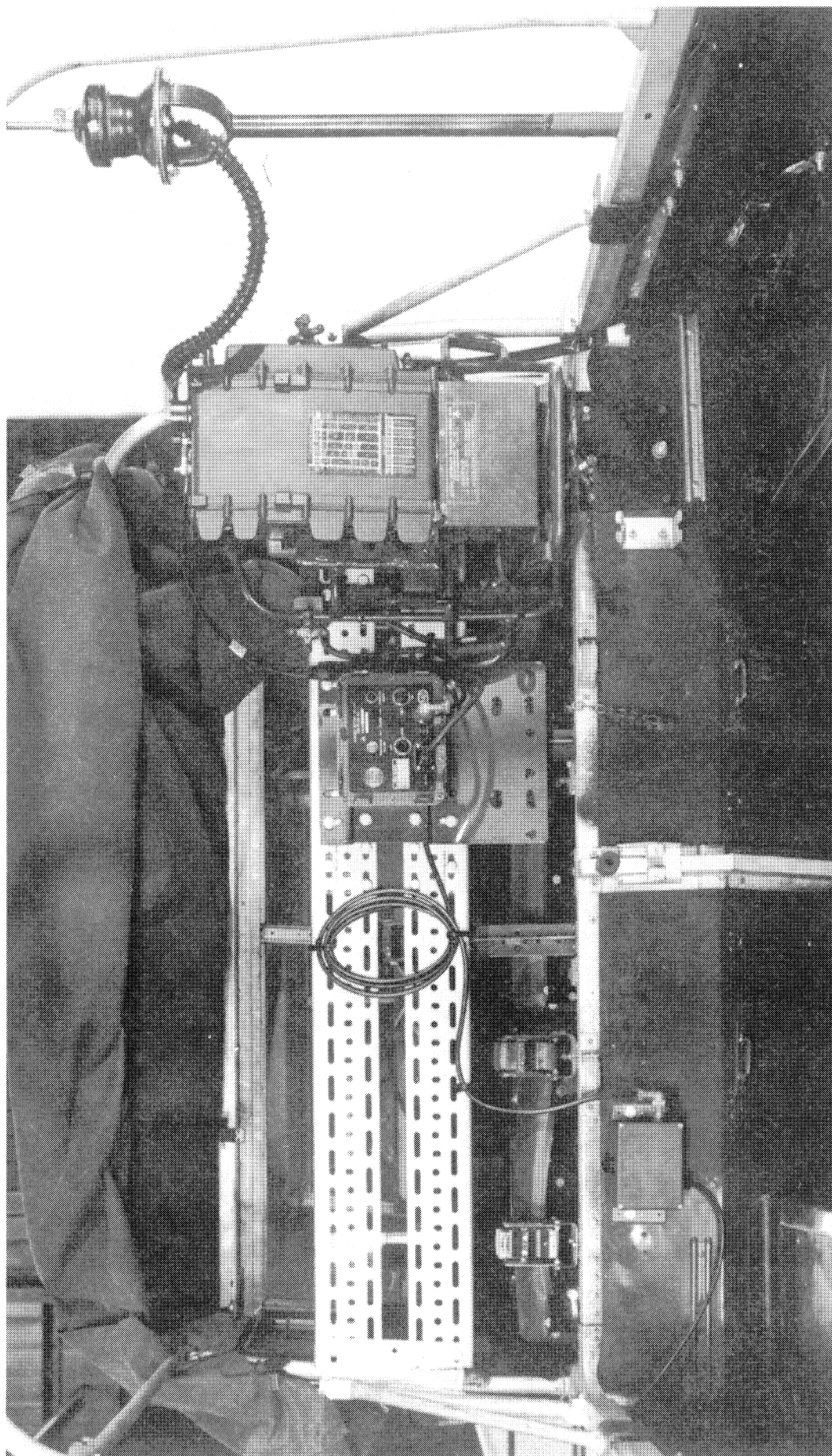


Fig. 1 UK/PRC-320 installed in truck, $\frac{3}{4}$ ton, GS Rover

THE INSTALLATION

1.1 All the items required for this installation are provided as CLANSMAN $\frac{1}{2}$ and $\frac{3}{4}$ ton Rover 'brick' kits. The bricks appropriate to UK/PRC-320 installations in $\frac{1}{2}$ and $\frac{3}{4}$ ton FFR and GS Rovers are listed below.

CLANSMAN $\frac{1}{2}$ and $\frac{3}{4}$ ton FFR Rover 'brick' kits required

Kit	CES	Function
I.K. Distribution box CLANSMAN radio in FFR vehicles	44661	Provides fused distribution box
Kit, battery charger 28V	43743	Provides DCCU for charging radio set battery
C.I.K. UK/PRC-320	44658	The radio equipment installation kit
Radio station UK/PRC-320	43740	Basic radio station

Note... I.K. = Installation kit C.I.K. = Clip-in kit

CLANSMAN $\frac{1}{2}$ and $\frac{3}{4}$ ton GS Rover 'brick' kits required

Kit	CES	Function
Adaptor kit for CLANSMAN radio in GS vehicles	44662	Provides equipment rack and fused distribution box
Kit, battery charger 14V	43741	Provides DCCU for charging radio set battery
Supplementary adaptor kit for UK/PRC-320 in $\frac{1}{2}$ ton GS	44663	Provides antenna mountings: $\frac{1}{2}$ ton only

... continued

continued...

Kit	CES	Function
C.I.K. UK/PRC-320	44658	the radio equipment installation kit
Radio station UK/PRC-320	43740	basic radio station

Note... C.I.K. = Clip-in kit

1.2 This supplement contains installation instructions for all these kits. A full description of radio station UK/PRC-320, together with operating instructions is given in user handbook army code 61123.

1.3 It is important for the satisfactory operation of the radio that the length of the antenna feeder cable does not exceed 0.5 metres and because of this the radio can only be mounted on the right of the vehicle and special arrangements must be made to fit the antenna. The antenna is mounted on the righthand side of the vehicle. $\frac{1}{2}$ ton FFR vehicles use the standard FFR antenna support, while $\frac{3}{4}$ ton FFR vehicles also use the standard support, lengthened with an extension provided in the clip-in kit UK/PRC-320. An antenna support, similar to the $\frac{1}{2}$ ton FFR support, is provided for $\frac{1}{2}$ ton GS vehicles as part of the supplementary adaptor kit. $\frac{3}{4}$ ton GS vehicles are provided with an antenna support similar to the $\frac{3}{4}$ ton FFR support but longer, avoiding the use of the extension.

1.4 The frame, electrical equipment, to which the radio set and its frame packboard clip, is secured to the extreme righthand side of the equipment rack. The equipment rack is a standard fitting in FFR vehicles but is provided as part of the adaptor kit for GS vehicles and must be installed by the user. Instructions for this are given in section 2. A direct current charging unit (DCCU) is provided to maintain the rechargeable battery of the radio set. The DCCU is supplied from the radio batteries in FFR vehicles and the vehicle battery in GS vehicles.

NOTE

The right and left hand sides of the vehicle are those which would be assumed by a person sitting normally in the drivers seat.

CONTENTS OF KITS

1.5 The main items of the kits are listed below and at the head of the appropriate installation instructions in the next section. Nuts, bolts and washers are not referred to. For a complete list of kit parts refer to the appropriate CES (See para 1.1).

Main items of kits

A. Installation kit distribution box, CLANSMAN radio in FFR vehicles

Item	Name	NATO Stock No.	Qty	Remarks
1	Distribution box	6110-99- 637-9550	1	
2	Bracket, angle	5340-99- 637-9551	1	½ ton vehicles only
3	Gasket	5820-99- 119-2019	2	

All cable clips, nuts, bolts and washers are stowed in a linen bag together with items 2 and 3. The linen bag is attached to item 1.

B. Kit, battery charger 28V

Item	Name	NATO Stock No.	Qty	Remarks
1	Charger battery DC. 28V	6130-99- 117-0450	1	referred to as DCCU in this supplement
2	Cable assy. power electrical 4 cond. 1m long	5995-99- 117-7436	1	DCCU to radio set battery
3	Cable assy. power electrical 2 cond. 2m long	5995-99- 117-7437	1	not used

C. Clip-in kit UK/PRG-320

Item	Name	NATO Stock No.	Qty	Remarks
1	Frame, electrical equipment	5820-99-620-9619	1	attaching parts in linen bag
2	Plate, mounting	5820-99-637-0882	1	associated parts in linen bag
3	Support, antenna	5985-99-637-0879	1	) ) ) ½ ton GS
4	Bracket, support antenna mounting	5985-99-637-0810	1	) only)
5	Bolt, externally relieved body	5306-99-637-0811	1	) associated parts in linen bag attached to item 3
6	Plate, bushed	5975-99-637-0815	1))
7	Extension, antenna support,	5985-99-645-0295	1	¾ ton FFR only
8	Base, antenna support	5985-99-633-6118	1	associated items in linen bag
9	Plate, plastic	5340-99-419-0474	1))
10	Nut, gland and washer set	5330-99-419-0476	1	) stowed in linen bag attached to item 8
11	Spanner, wrench	5120-99-103-5591	1))
12	Bushing, rubber	5340-99-103-4883	5	) ) stowed in linen bag
13	Insulator bowl, plastic	5970-99-103-5758	3	) attached to item 8
14	Antenna element 10mm max dia	5985-99-630-8455	3	) ) one each
15	Antenna element 9.5mm max dia	5985-99-630-8456	2	) spare,) stowed in item 17
16	Antenna element 6.25mm max dia	5985-99-630-8457	2))

... continued

C. Clip-in UK/PRC-320 (continued)

Item	Name	NATO Stock No.	Qty	Remarks
17	Case, antenna element	5985-99-637-0806	1	
18	Retainer, lead, electrical	5999-99-637-0880	1)
19	Adaptor, lead, electrical	5935-99-637-9532	1	) stowed in
20	Fuselink, size 0 7-amp	5920-99-059-0113	3	) linen bag
21	Fuselink, size 1 3-amp	5920-99-059-0143	3	) attached to
22	Cable assembly power, electrical	5995-99-637-9887	1	) item 22
23	Lead, electrical	5995-99-637-0739	1)
24	Lead, electrical	5995-99-637-9536	1	) GS vehicles
25	Lead, electrical	5995-99-645-0104	1	) only
26	Lead, electrical	5995-99-645-0105	1)
27	Lead, electrical	5995-99-645-0170	1	) FFR vehicles
28	Clip, adjustable rivet, RC2	5340-99-135-3435	10	) only
				in linen bag attached to item 22

D. Adaptor kit for CLANSMAN radio in GS vehicles

Item	Name	NATO Stock No.	Qty	Remarks
1	Support, equipment rack	5975-99-637-0807	2	
2	Angle, perforated, equipment rack	5975-99-637-0808	2	attaching parts in linen bag
3	Channel	5975-99-637-0809	1	
4	Bracket, stay, equipment rack	5975-99-627-0812	2	
5	Stay, equipment rack	5975-99-627-0813	2	
6	Distribution box GS	6110-99-637-9888	1	associated items in linen bag
7	Bracket angle	5340-99-637-9551	1	for ½ ton vehicles
8	Gasket	5820-99-119-2019	2	

E. Supplementary adaptor kit for UK/PRC-320 in ½ ton GS

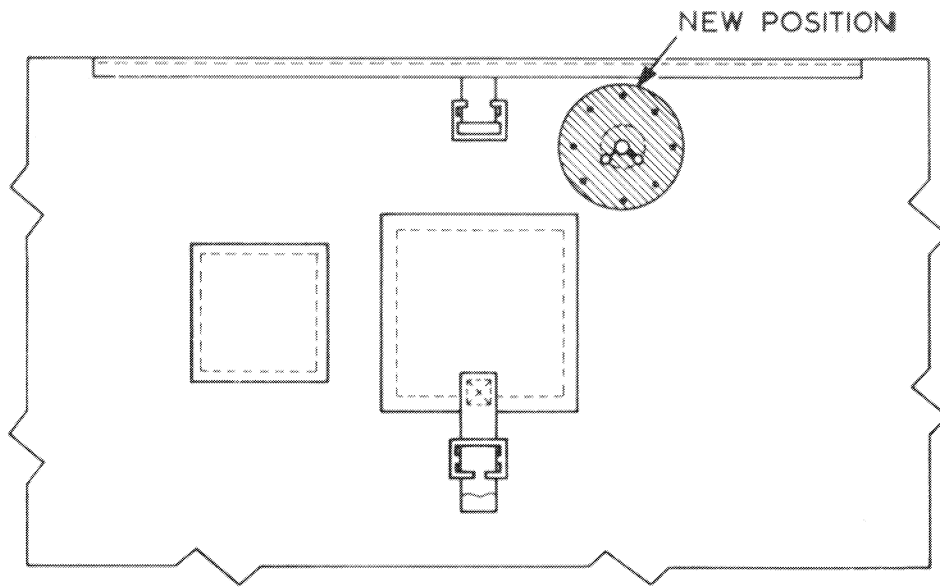
Item	Name	NATO Stock No.	Qty	Remarks
1	Support, antenna base	5985-99-637-0886	1	
2	Angle, clamp, threaded	5975-99-637-0888	2)
3	Angle, clamp	5975-99-637-0887	2)
4	Bracket, support equipment rack	5340-99-645-0294	2	) stowed in linen bag attached to item 1
5	Pin, clamp and chain assembly	5975-99-637-0889	1)
6	Bolt, sliding handle	5306-99-637-0890	2)

F. Kit, battery charger 14V

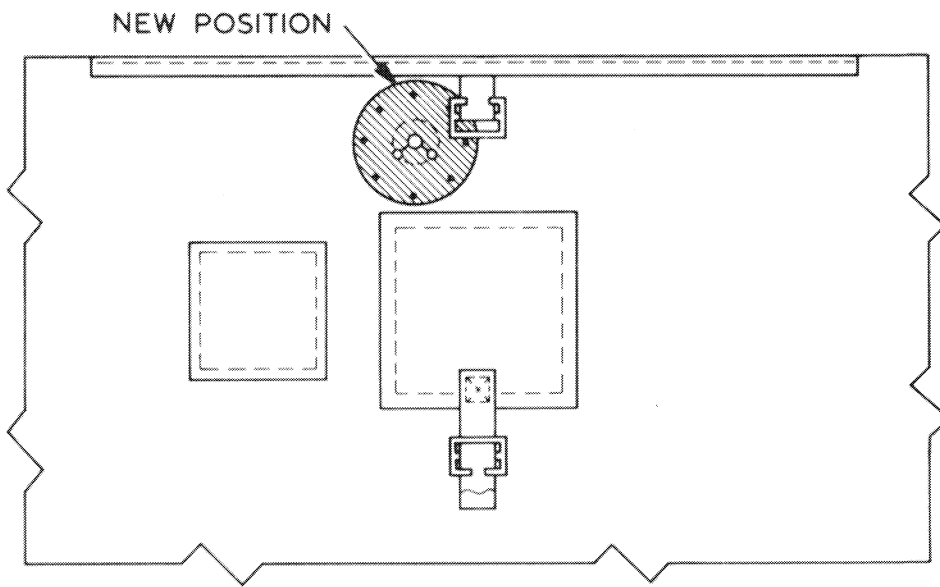
Item	Name	NATO Stock No.	Qty	Remarks
1	Charger battery DC.14V	6130-99- 620-2114	1	referred to as DCCU in this supplement
2	Cable assy. power electrical 4 cond. 1m long	5995-99- 117-7436	1	DCCU to radio set battery
3	Cable assy. power electrical 2 cond. 2m long	5995-99- 117-7437	1	not used

G. Radio station UK/PRC-320 (basic)

Item	Name	NATO Stock No.	Qty	Remarks
1	Transmitter- receiver RT-320	5820-99- 114-3188	1	
2	Bag ancillaries	5820-99- 621-9028	1	
3	Handset	5965-99- 620-5669	1	
4	Headset	5965-99- 620-8320	1	
5	Cable assy. switch elect.	5965-99- 620-5667	1	
6	Frame, packboard	8465-99- 135-7135	1	
7	Plate adaptor carrier	5820-99- 645-0133	1	
8	Battery, alkaline secondary 3.3AH	6140-99- 620-8057	3	two spare



$\frac{1}{2}$ TON



$\frac{1}{4}$ TON

Fig.2. Modifications to tilt.

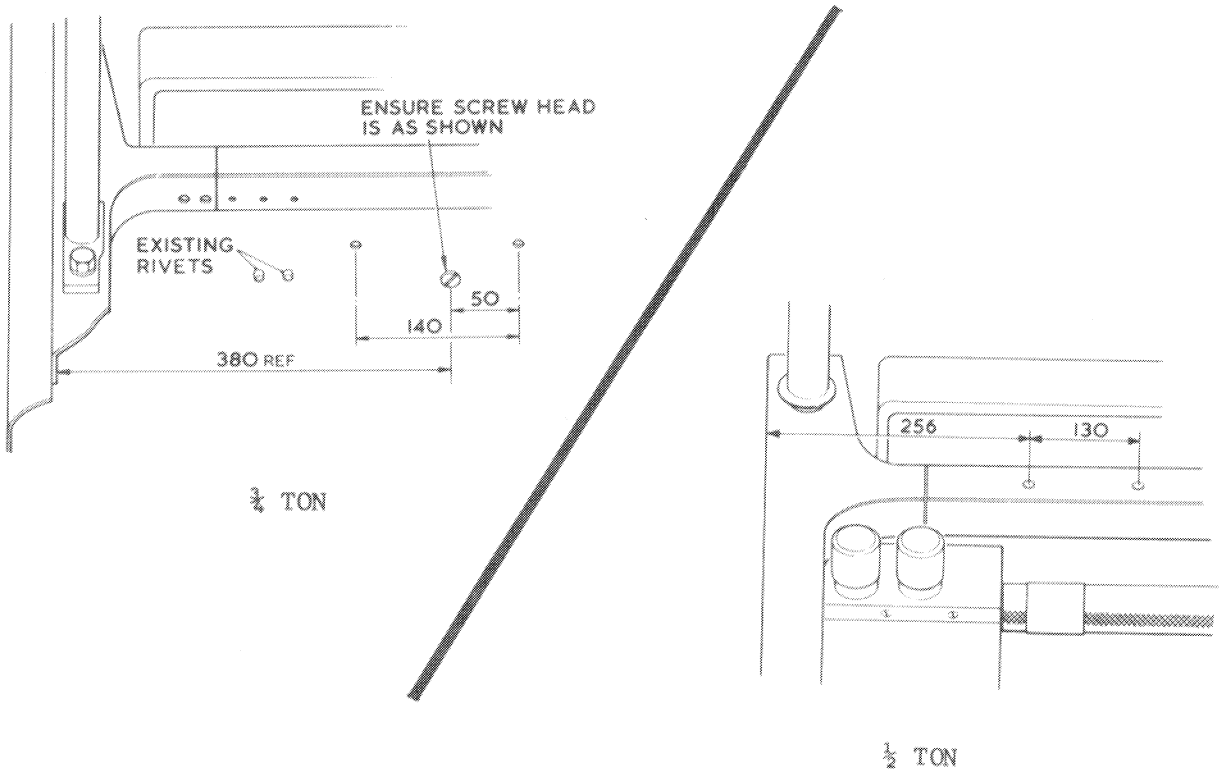


Fig.3. Modifications to bulkhead.

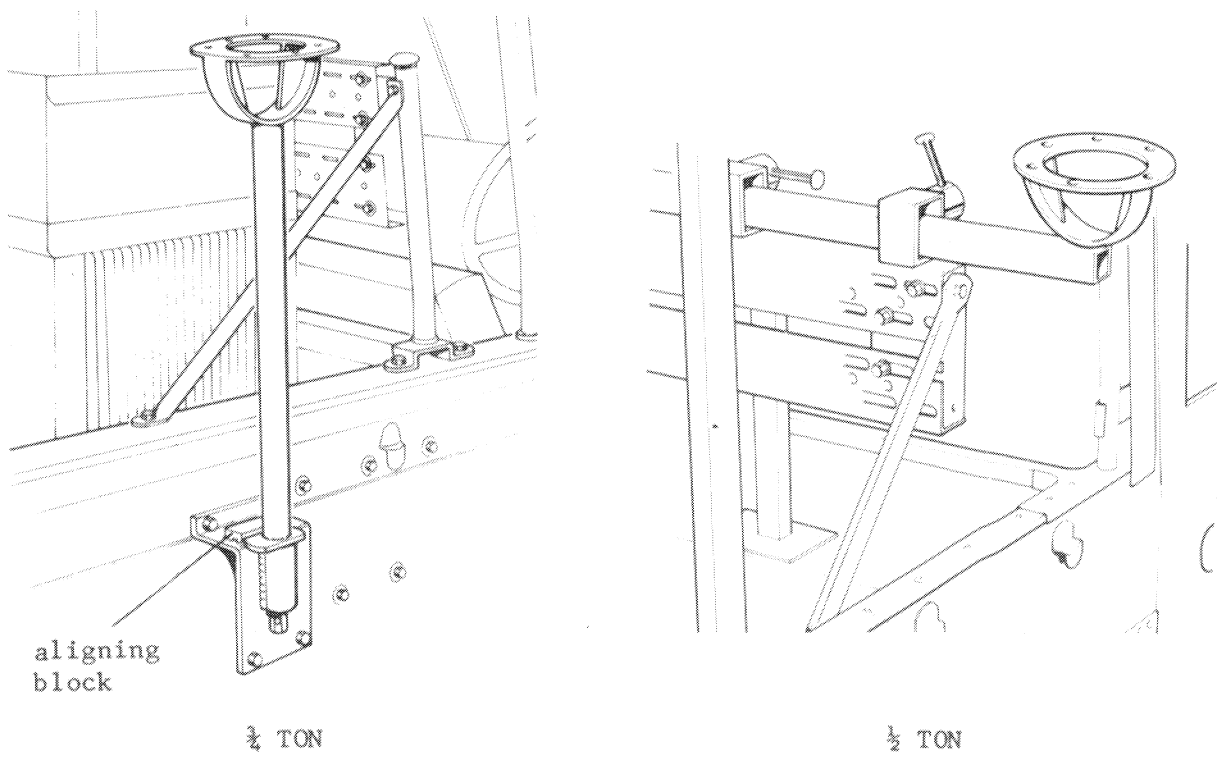


Fig. 4 GLANSMAN type antenna support

MODIFICATIONS TO VEHICLE

1.6 The following modifications are necessary to the vehicle to enable the radio station to be installed. This does NOT constitute authority to embody these modifications.

1. The bulkhead behind the lefthand front seat should be drilled to accept the distribution box ($\frac{3}{4}$ ton) or its mounting bracket ($\frac{1}{2}$ ton) as in fig. 3. In $\frac{3}{4}$ ton FFR vehicles it is essential that the cable clamp securing screw has its head toward the rear.
2. An extra cable entry must be provided in the righthand side of the tilt as in fig. 2. $\frac{1}{2}$ ton GS vehicles also require an aperture with 'sleeve' in the righthand side of the tilt for the antenna support to pass through.
3. FFR vehicles only: The radio table should have three bonding terminals fitted and the ends of the table should be bonded to the vehicle sides.
4. FFR vehicles only: CLANSMAN type antenna supports must be fitted. See fig. 4. Antenna support mounting brackets on $\frac{3}{4}$ ton vehicles must be modified by welding on metal aligning blocks.
5. GS vehicles only: The sides of the vehicles require drilling as in fig. 5 to accept the equipment rack and, in $\frac{3}{4}$ ton vehicles, the antenna support bracket, shown dotted.
6. GS vehicles only: The lefthand rear of the vehicle must be modified to allow connection of the distribution box to the vehicle wiring. A hole must be drilled in the top of the wheelarch in the lefthand rear corner. In $\frac{3}{4}$ ton vehicles this is concealed by the rear light cover which must also be drilled.

These modifications are detailed in EMERs Wheeled Vehicles Q 027 mod instructions 64 ($\frac{3}{4}$ ton FFR), 65 ($\frac{1}{2}$ ton FFR), 66 ($\frac{3}{4}$ ton GS) or 67 ($\frac{1}{2}$ ton GS).

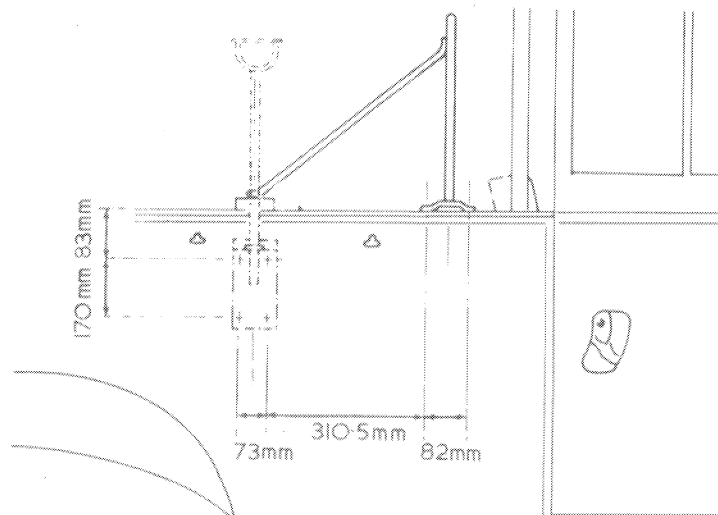


Fig. 5 Modifications to vehicle sides

FITTED FOR RADIO (FFR) VEHICLES

1.7 These are specially equipped vehicles, being provided with a 24V power supply, radio table, equipment rack, extra batteries, antenna mounting and special cabling to facilitate fitting and operation of radio equipment. In $\frac{3}{4}$ ton vehicles the radio table and equipment rack, extra batteries, and antenna mountings are bolted to the vehicle body. In $\frac{1}{2}$ ton vehicles these items are assembled in the form of a dismantlable module.

EQUIPMENT POWER SUPPLIES. FFR ONLY

1.8 Normally two 12V, 100Ah batteries will be provided, connected in series to give 24V and charged from the vehicle when the engine is running. For some multiset installations an extra pair of batteries wired in parallel to the first pair may be employed. In $\frac{3}{4}$ ton vehicles one pair of 'screw down' terminals are provided on top of a vehicle terminal box in the front lefthand corner of the rear compartment. These terminals are labelled 'RADIO' and the distribution box is to be connected to them. Another pair of terminals - insulated and coloured white are provided on the bulkhead. These are to stow the leads from the vehicle power supply to the batteries if the vehicle engine is to be started with the leads disconnected from the batteries. Some earlier $\frac{3}{4}$ ton vehicles have two pairs of terminals in the front lefthand corner, one pair marked 'EQPT' the other 'BTY.' The distribution box should be connected to the 'EQPT' pair.

Note...

The negative lead to the radio batteries is internally earthed to the vehicle chassis.

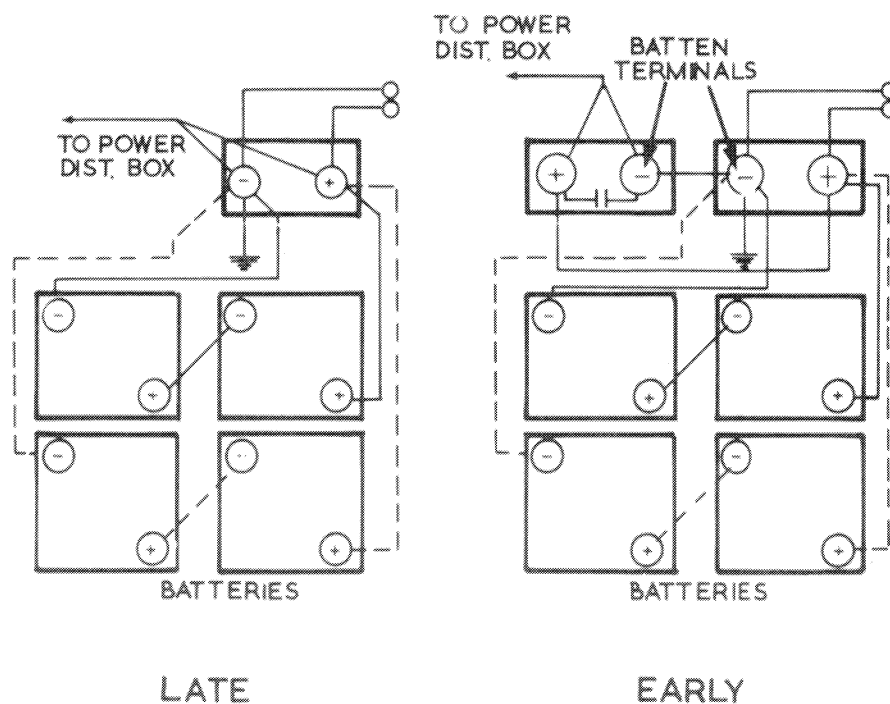


Fig. 6 Radio battery connections: $\frac{3}{4}$ ton FFR

1.9 There are three pairs of terminals fitted to the module in $\frac{1}{2}$ ton vehicles and these are connected to the three fixed plugs in the battery compartment. Two of these pairs of terminals are further wired to a plug on the back of the module. Connection to the vehicle power supply is made at this point via a cable which connects with a fixed plug on the bulkhead behind the seats. The third pair of terminals is completely isolated from the vehicle power supply and is marked ISOLATED and mounted on a white base. The corresponding fixed plug in the battery compartment is also mounted on a white base. Either two or four batteries should be fitted. These are mounted one pair to each battery tray. Each pair of batteries is connected to a harness terminated with a free socket which should be connected to one of the fixed plugs in the battery compartment. With the engine running and connecting cable in place batteries connected to the non-isolated plugs will be charged. In this application the batteries must be connected to the non-isolated side. A diagram of connections is on the inside of the battery compartment lid. It may be necessary to open the tailboard and remove the seats to fully open the battery compartment lid.

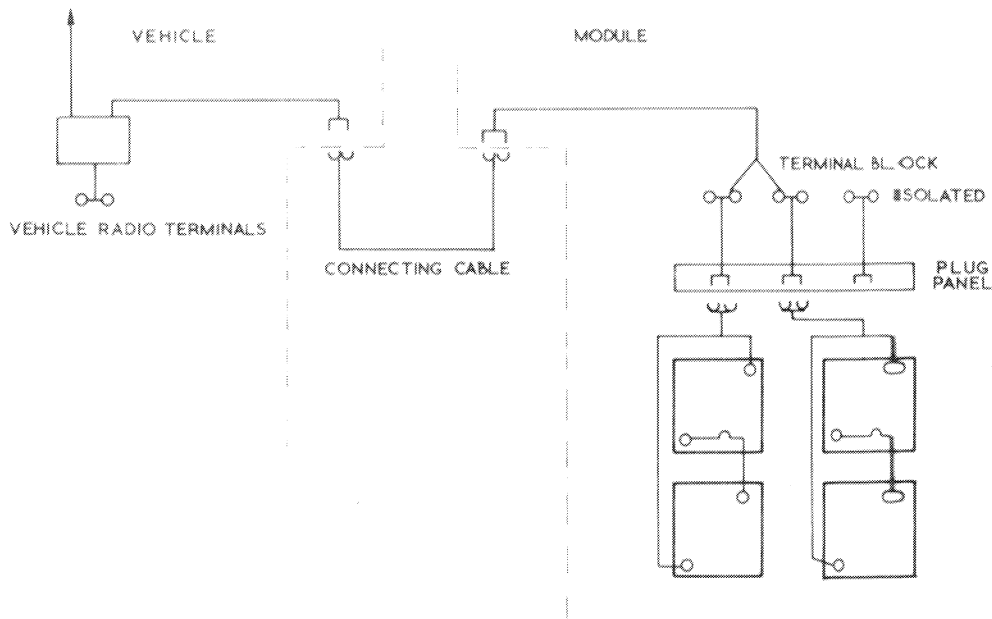


Fig. 7 Radio battery connections: $\frac{1}{2}$ ton FFR

1.10 The $\frac{1}{2}$ ton vehicle has one pair of terminals installed in the front lefthand of the rear compartment as in $\frac{3}{4}$ ton vehicles. If the connecting cable between the module and the cable is not in place these terminals are only live when the engine is running.

CAUTIONS...

1. There are live terminals behind the battery box hinge panel.
2. ALWAYS unplug the batteries from the module FIRST when disconnecting them in $\frac{1}{2}$ ton vehicles.

IMPORTANT

ALWAYS stow the lug ends of the battery leads on insulated terminals when not fitted to the battery. Should the engine be started with the positive lead in contact with the metal parts of the body the vehicle generator output will be shortcircuited.

ALWAYS disconnect the series connector from the batteries FIRST when disconnecting batteries.

1.11 If for any reason battery leads have to be removed from the batteries in any vehicle the following order must be observed: -

- (1) Remove the series connector from the batteries.
- (2) Remove the positive connector and stow on one insulated terminal.
- (3) Remove the negative connector and stow on the other insulated terminal.

Connection of batteries should be accomplished in the reverse order.

IMPORTANT

Make sure that power leads are connected positive to positive and negative to negative throughout. If polarity is reversed the equipment may be damaged.

Section 2 INSTALLATION

GENERAL

2.1 This procedure involves the fitting of all the kits listed in para 1.1. If one or more of the kits are already installed it may simplify installation of the remainder if certain items are temporarily removed. Plain and spring washers are provided with the nuts and bolts used in the installation of the kits. Unless otherwise stated these plain and spring washers are to be used as follows:-

1. Where nuts and bolts are used together: (fig. 8A) Fit a plain washer onto the bolt. Pass the bolt through the items to be secured together. Fit another plain washer to the protruding end of the bolt. Fit the spring washer and the nut. Tighten the nut and bolt with a pair of spanners by holding the bolthead with one spanner and turning the nut with the second.
2. Where a bolt screws into an item: (fig. 8B) Fit the spring washer onto the bolt, then a plain washer. Pass the bolt through the item to be secured and screw the bolt into the other item. Tighten the bolt up firmly.
3. Where a nut screws onto a threaded extension of an item: (fig. 8C) Fit the item to be secured over the threaded extension. Fit a plain washer over the protruding threaded extension. Fit the spring washer and the nut. Tighten the nut up firmly.

When the kits are assembled correctly at least $1\frac{1}{2}$ turns of screw thread will protrude through each nut used.

The following applies to all vehicles unless otherwise stated.

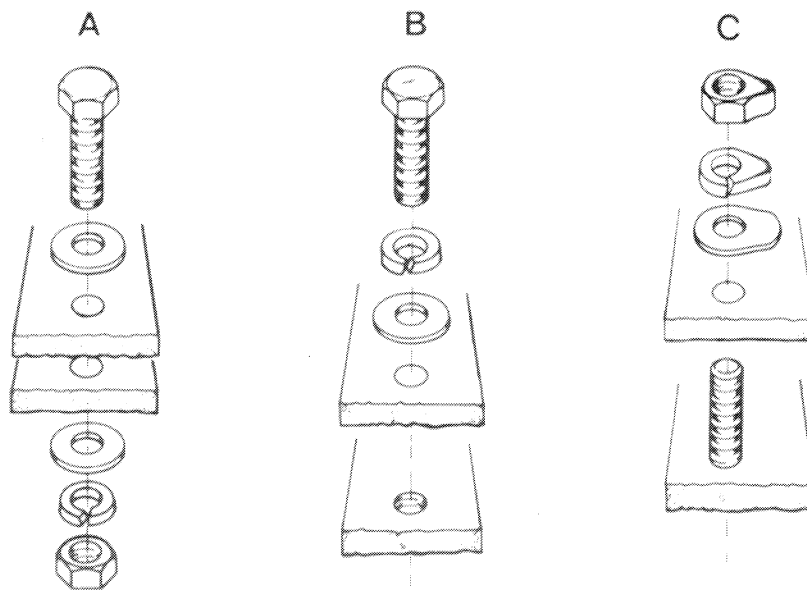


Fig. 8 Use of spring washers

EQUIPMENT RACK

Note...

This is required in GS vehicles only.

2.2 Items required

Name	NATO Stock No.	Qty	Remarks
Support, equipment rack	5975-99-637-0807	2	
Angle, perforated equipment rack	5975-99-637-0808	2	attaching parts in linen bag
Channel	5975-99-637-0809	1	
Bracket, stay, equipment rack	5975-99-637-0812	2	
Stay, equipment rack	5975-99-637-0813	2	
Bracket, support antenna mounting	5985-99-637-0810	1	$\frac{1}{2}$ ton only
Plate, bushed	5975-99-637-0815	1	$\frac{1}{2}$ ton only

Unless otherwise stated all nuts, bolts and washers for this assembly are stowed in the linen bag attached to the angles, perforated equipment rack.

Installation of the equipment rack is facilitated considerably if the canvas tilt is removed from the vehicle sides and folded back over the roof of the vehicle. In $\frac{1}{2}$ ton vehicles removal of the seats from the rear compartment may be necessary.

Note...

$\frac{1}{2}$ ton GS only: Do not tighten the bolts securing the channel (5975-99-637-0809) to the angles, perforated (5975-99-637-0808) or the angles, perforated to the supports equipment rack (5975-99-637-0807) until the antenna support has been installed.

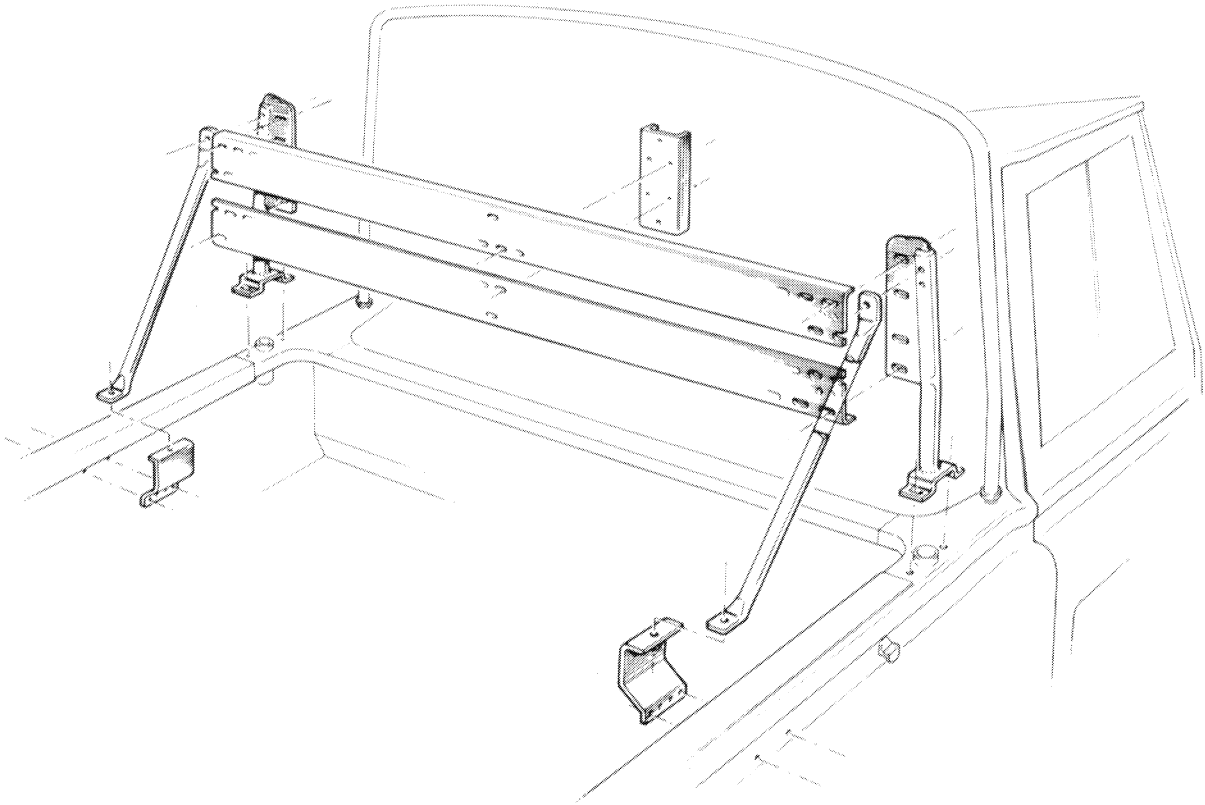


Fig. 9 Equipment rack: exploded view

1. Using 2 off M8 x 20 and 2 off M8 x 30 bolts ($\frac{3}{4}$ ton) or 4 off M8 x 20 bolts ($\frac{1}{2}$ ton) with nuts and washers secure the supports, equipment rack (5975-99-637-0807) to the sides of the vehicle. Pass the bolts through the vehicle sides from the outside. The supports should curve towards each other. Fit the longer bolts in the holes nearer the front in $\frac{3}{4}$ ton vehicles.
2. $\frac{1}{2}$ ton GS only: Using 4 off M8 x 20 bolts, nuts and washers secure the brackets, stay equipment rack (5975-99-637-0812) to the inside of the vehicle sides. Pass the bolts through the vehicle sides from the outside.

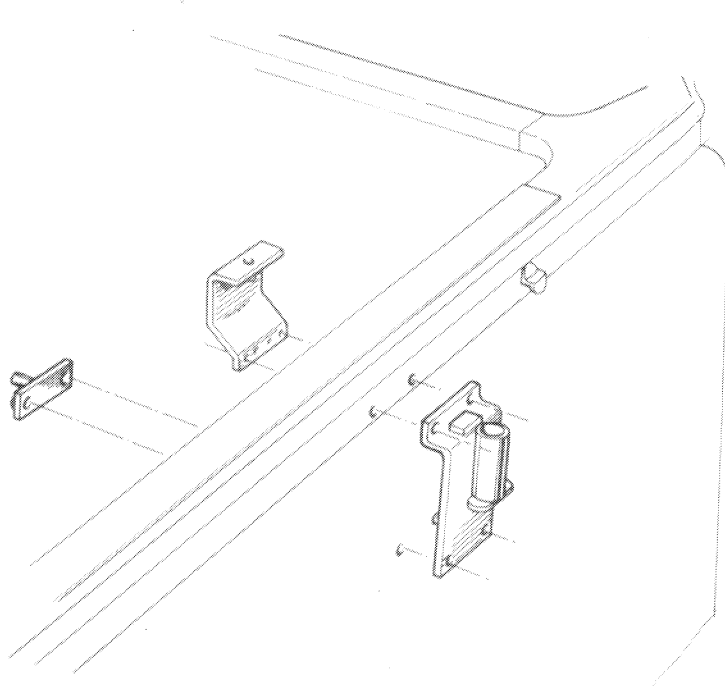


Fig. 10 Securing of bracket, support antenna: $\frac{3}{4}$ ton GS only

3. $\frac{3}{4}$ ton GS only: Using 2 off M8 x 20 bolts, nuts and washers secure one bracket, stay equipment rack (5975-99-637-0812) inside the lefthand side of the vehicle. Pass the bolts through the vehicle sides from the outside.
4. $\frac{3}{4}$ ton GS only: All the nuts, bolts and washers, together with plate, bushed (5975-99-637-0815) are stowed in a linen bag attached to support antenna (5985-99-637-0879). Using 2 off M8 x 25 bolts and washers and plate bushed (5975-99-637-0815) secure bracket, support antenna mounting (5985-99-637-0810) to the outside of the vehicle on the righthand side through the lower pair of holes, as in fig. 10. Pass the bolts through the vehicle side from the outside. Using 2 off M8 x 25 bolts, nuts and washers, secure bracket, stay equipment rack (5975-99-637-0812) to the inside of the vehicle through the upper pair of holes as in fig. 10. Pass the bolts through the vehicle side from the outside.
5. Bolt the stays, equipment rack (5975-99-637-0813) to the brackets, stay equipment rack using 2 off M8 x 20 bolts and washers and to the upper of the holes in the tubes of the supports, equipment rack using 2 off M8 x 45 bolts, nuts and washers as in fig. 9.
6. Using 8 off M8 x 20 bolts, nuts and washers secure the angles, perforated, equipment rack (5975-99-637-0808) between the supports, equipment rack as in fig. 9. The holes in the upper angle must be directly above the corresponding holes in the lower angle.
7. Using 6 off M8 x 20 bolts, nuts and washers secure the channel (5975-99-637-0809) to the angles, perforated, equipment rack, midway between the supports, equipment rack, as in fig. 9.

ANTENNA SUPPORTS

Note...

Instructions are given for installing a suitable support in 1/2 and 3/4 ton GS vehicles. Providing a CLANSMAN type antenna support has been fitted 1/2 ton FFR fittings are suitable for use without further adaption. 3/4 ton FFR vehicles require in addition the fitting of an extension. See para 2.5.

2.3 1/2 ton GS only: items required

Name	NATO Stock No.	Qty	Remarks
Support, antenna base	5985-99-637-0886	1)
Angle, clamp threaded	5975-99-637-0888	2)
Angle, clamp	5975-99-637-0887	2)
Bolt, sliding	5306-99-637-0890	2	) assembled together for storage
Pin, clamp and chain assembly	5975-99-637-0889	1)
Bracket, support, equipment rack	5985-99-645-0294	2	attaching parts for items stowed in attached linen bag
Frame, electrical equipment	5820-99-620-9619	1	attaching parts stowed in linen bag

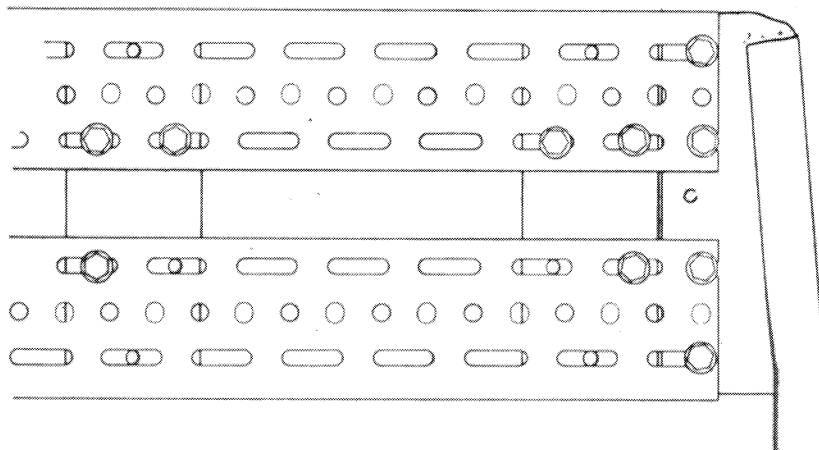


Fig. 11 Location of brackets, support, equipment rack

1. Ensure the bolts securing the angles, perforated equipment rack, to the supports, equipment rack, are slackened off.
2. Using 12 off M8 x 20 bolts, nuts and washers, loosely bolt the two brackets, support, equipment rack (5985-99-645-0294) between the angles, perforated equipment rack. Locate one bracket up against the righthand support, equipment rack, and the other approximately 250mm (10 inches) away as in fig. 11. Fit the bolts in the positions indicated in fig. 11. Pass the bolts through so that the boltheads are to the rear of the vehicle.
3. Using 2 off M8 x 25 countersunk screws, nuts and washers bolt the two angles, clamp, threaded (5975-99-637-0888) to the top of the equipment rack and the channels, equipment rack as in fig. 12.
4. Using 6 off M8 x 45 bolts, nuts and washers secure frame electrical equipment (5820-99-620-9619) to the equipment rack as in fig. 12. 4 off M8 x 45 bolts, nuts and washers are stowed in the linen bag attached to the frame, electrical equipment. 2 off M8 x 45 bolts, nuts and washers are stowed in a linen bag attached to bracket support equipment rack (5985-99-645-0294).
5. Tighten all the bolts, securing the channel to the angles, perforated, and the angles, perforated to the supports, equipment rack.
6. Pass support, antenna base (5985-99-637-0886) through the sleeve in the tilt and clamp it to the top of the equipment rack using the angles, clamp (5975-99-637-0887) and bolts, sliding handle (5206-99-637-0890). Pass the bolts, sliding handle through the angles, clamp and screw them into the angles, clamp threaded, as in fig. 12.
7. Pass the split pin end of pin clamp and chain assembly (5975-99-637-0889) through the hole in the support, antenna base, and open out the split pin. Using the M6 x 16 bolt, nut and washers secure the other end of the pin, clamp and chain assembly to a convenient position on the equipment rack. The chain must not be taut.

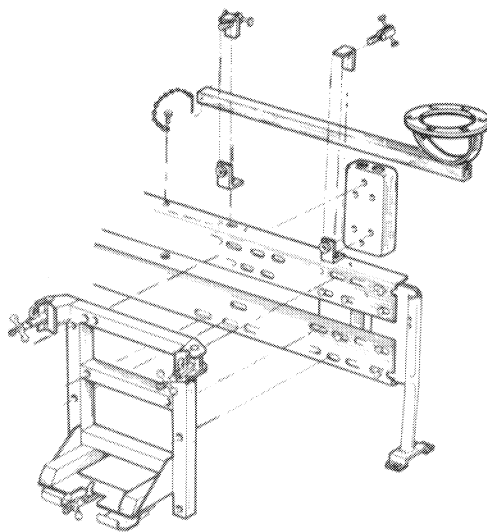


Fig. 12 Antenna support: ½ ton GS exploded view

2.4 $\frac{1}{2}$ ton GS only: items required

Name	NATO Stock No.	Qty	Remarks
Support antenna	5985-99-637-0876	1	$\frac{1}{2}$ GS only
Bolt, externally relieved body	5305-99-637-0811	1	stowed in linen bag attached to item 2 $\frac{1}{2}$ ton GS only

1. Insert support, antenna (5985-99-637-0876) into bracket, support antenna mounting (5985-99-637-0879) already fitted to the righthand side of the vehicle. The top ring support must lie along the vehicle as in fig. 13.

2. Using bolt, externally relieved body (5305-99-637-0811) secure the support, antenna into the bracket, support antenna mounting.

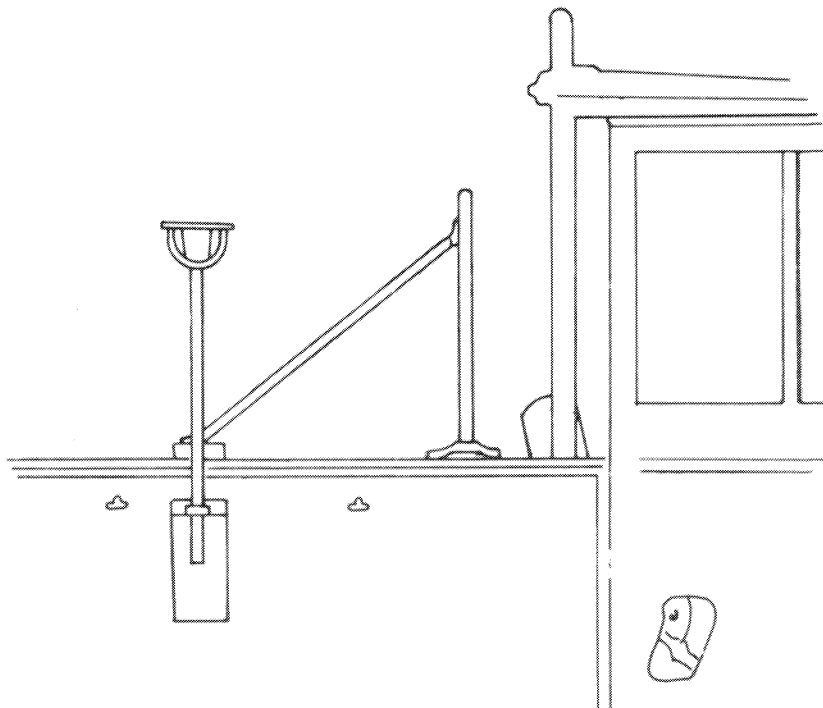


Fig. 13 Alignment of top ring support

2.5 ¼ ton FFR only: item required

Name	NATO Stock No.	Qty	Remarks
Extension antenna support	5995-99-645-0294	1	

1. Undo the bolt securing the existing FFR side antenna support in its mounting on the righthand side of the vehicle and remove the support.
2. Fit the side antenna support into the extension antenna support - outer, as indicated in fig. 14. The projection on the outer extension should engage in one of the two flats in the side antenna support.
3. Pass the extension antenna support - inner, through the extension antenna support - outer, and screw into the side antenna support.
4. Fit the side antenna support and extensions into the mounting on the side of the vehicle - one of the flats on the outer extension should butt up against the aligning block on the mounting. When correctly assembled the top ring support should lie along the vehicle as in fig. 13. Secure using the existing bolt.

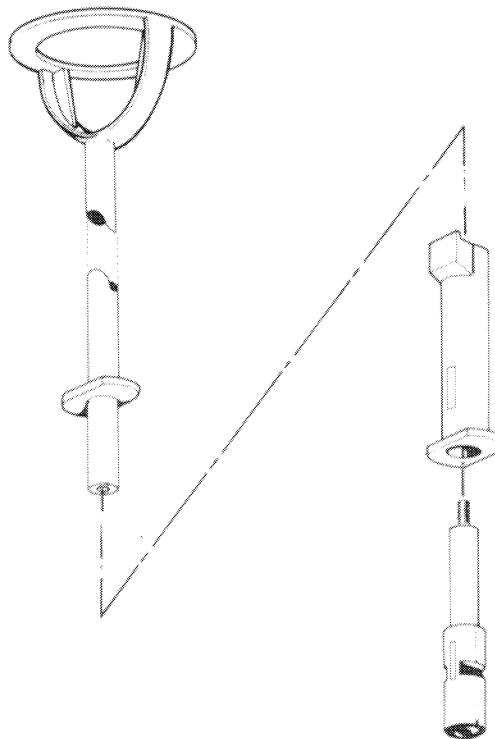


Fig. 14 Antenna extension

RADIO SET

2.6 Items required

Name	NATO Stock No.	Qty	Remarks
Frame, electrical equipment	5820-99-620-9619	1	attaching parts stowed in linen bag
Transmitter-receiver RT-320	5820-99-114-3188	1	

Notes...

1. The radio set must be secured to its frame, packboard which is part of the basic radio station. Instructions for this are given in the radio station user handbook Army Code 61123.
 2. $\frac{1}{2}$ ton GS only: Frame, electrical equipment (5820-99-620-9619) is already installed, see para 2.3.
1. Bolt the frame, electrical equipment to the equipment rack as in fig. 15 using 4 off M8 x 45 bolts, nuts and washers stowed in the linen bag attached to the frame, electrical equipment. Install the frame as near to the righthand end of the rack as possible.
 2. Clip the frame, packboard with the radio set attached, to the frame, electrical equipment and secure using the three handwheel-operated J-bolts.

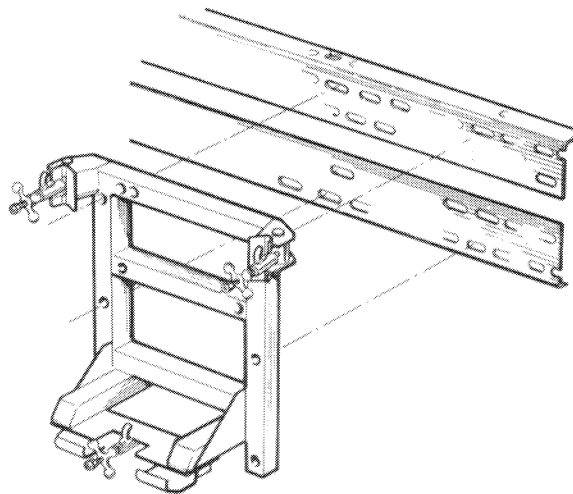


Fig. 15 Installation of frame, electrical equipment

DCCU

2.7 Items required

Name	NATO Stock No.	Qty	Remarks
Plate, mounting	5820-99-637-0882	1	attaching parts stowed in linen bag
DCCU 28V or	6130-99-117-0450	1	FFR vehicles only. Attaching parts stowed in linen bag attached to plate mounting
DCCU 14V	6130-99-620-2114	1	GS vehicles only. Attaching parts stowed in linen bag attached to plate, mounting

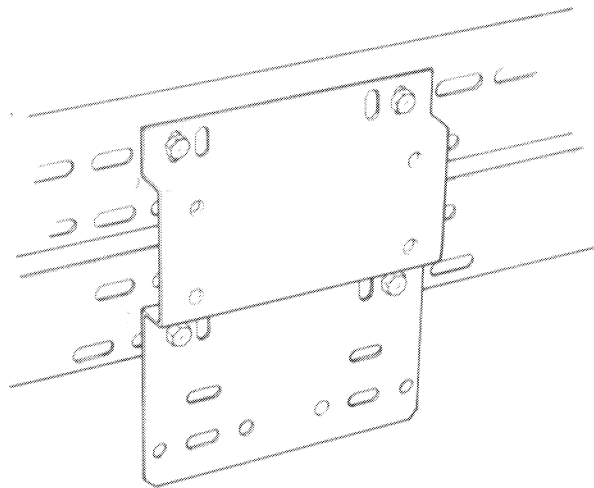


Fig. 16 Fitting of plate, mounting to equipment rack

1. Bolt the plate, mounting (5820-99-637-0882) to a convenient position on the equipment rack adjacent to the radio as in fig. 16 using 4 off M8 x 20mm bolts, nuts and washers from the attached linen bag. This position must be such that the one metre cable from the DCCU will easily reach the radio set.

CAUTION...

The cable interconnecting the DCCU and the radio set battery is a fixed one metre length and under no circumstances may it be either lengthened or shortened.

2. Bolt the DCCU (6130-99-117-0450 for FFR vehicles, 6130-99-620-2114 for GS vehicles) to the plate, mounting using 4 off M8 x 25mm bolts and washers from the linen bag attached to the plate, mounting.

ANTENNA

2.8 Items required

Name	NATO Stock No.	Qty	Remarks
Base, antenna support	5985-99-633-6118	1	attaching nuts, bolts etc. in linen bag
Plate, plastic	5340-99-419-0474	1	
Case, antenna element	5985-99-637-0806	1	stows spare elements
Antenna element	5985-99-630-8455))
Antenna element	5985-99-630-8456	2	) one each spare
Antenna element	5985-89-630-8457	2)
Bushing, rubber	5340-99-103-4883	5)
Insulator bowl plastic	5970-99-103-5758	30	) stowed in linen bag
Nut gland and washer set	5330-99-419-0476	1)
Spanner, wrench lug type	5120-99-103-5591	1	) stowed in linen bag
Lead, electrical	5995-99-637-0739	1)

1. The side antenna mounting on the righthand side must be set as follows:-

- a. $\frac{1}{2}$ ton vehicles: The 'sleeve' part of the tilt, through which the side antenna mounting passes, MUST be on the outside.
- b. $\frac{1}{2}$ ton vehicles: The side antenna mounting must be positioned such that the nearest part of the antenna base to the tilt is not closer than 20mm.
- c. $\frac{3}{4}$ ton vehicles: The side antenna mounting should be orientated as indicated in fig. 13. This is to ensure the antenna feeder cable has maximum clearance from the mounting.

2. From the nut, gland and washer set (5330-99-419-0476) thread the nut, gland and washer over the shorter (12mm) bared end of the lead, electrical (5995-99-637-0739). See fig. 17. Splay the wire strands out round and under the washer. Slide the gland and nut right up to the washer and screw the assembly into the base antenna support (5985-99-633-6118) using the spanner, wrench, lug type (5120-99-103-5591) provided.

3. Clean paint away from the base, antenna support and the side antenna mounting to ensure a good bonding connection through the bolts when bolted together. Pass the longer (20mm) bared end of the lead, electrical (5995-99-637-0739) through the centre hole of the plate, plastic (5340-99-419-0474) and the centre of the side antenna mounting.

4. $\frac{3}{4}$ ton vehicles: Using 5 off M6 x 20 bolts, nuts and washers and 1 off M6 x 25 bolt, nut and washers, bolt the base, antenna support to the side antenna mounting. Fit the longer bolt on the side away from the vehicle and to the rear.

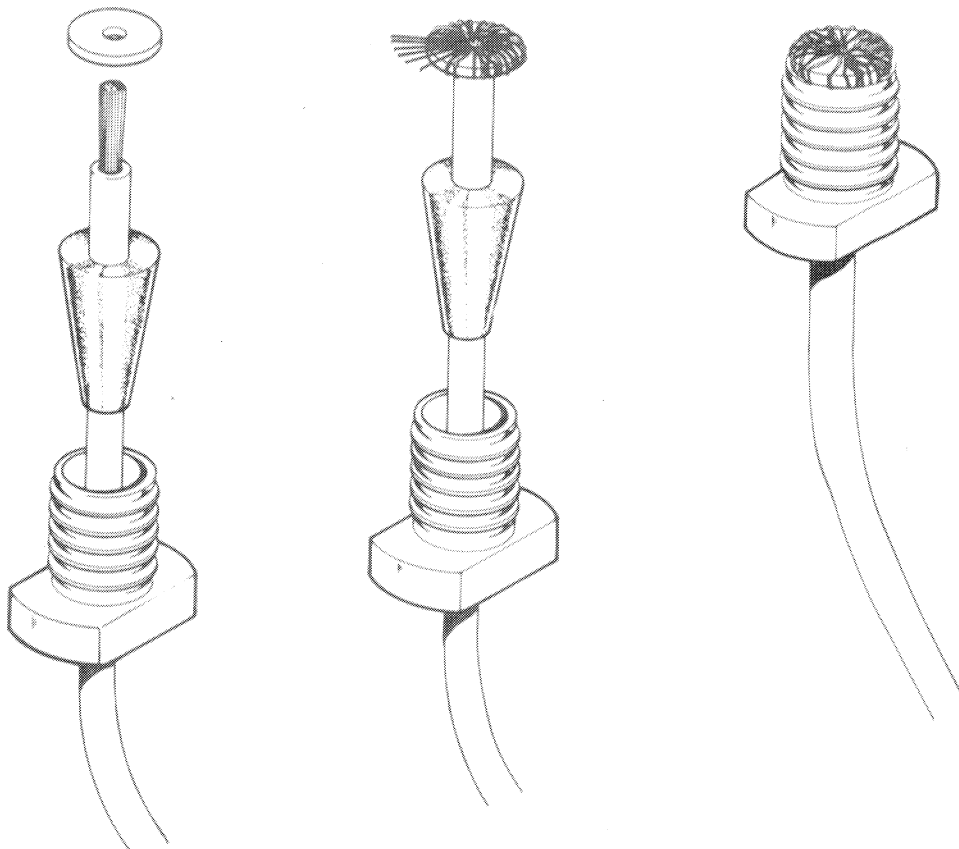


Fig. 17 Preparation of lead, electrical (5995-99-637-0739)

5. $\frac{1}{2}$ ton vehicles: Using 5 off M6 x 20 bolts, nuts and washers and 1 off M6 x 25 bolts, nut plain and spring washers and two large diameter washers, bolt the base, antenna element to the side antenna mounting. Fit the longer bolt to the side away from the vehicle and to the front. Clamp lead, electrical (5995-99-645-0104) to the underside of the side antenna mounting using the longer bolt as in fig. 18.

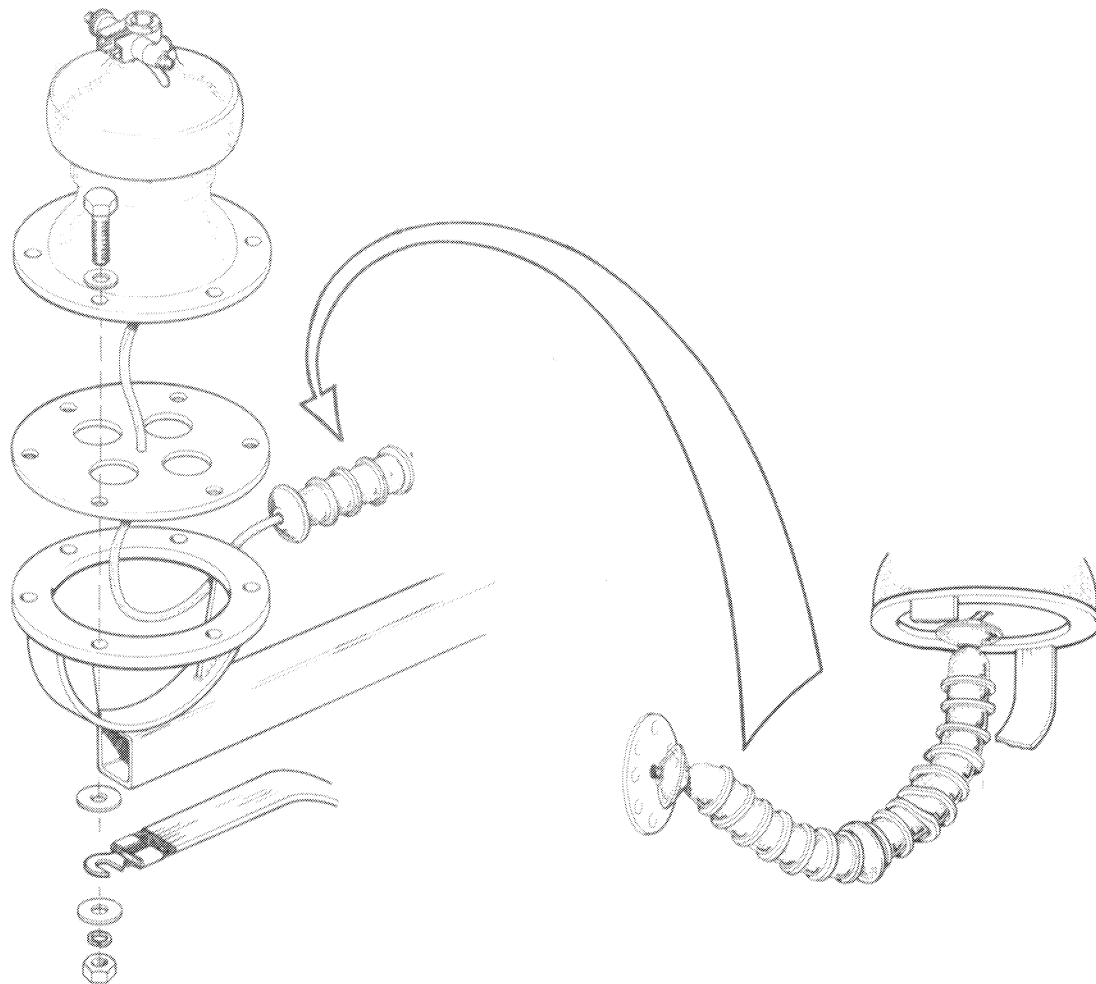


Fig. 18 Installation of antenna base

6. Thread onto the lead, electrical one bushing, rubber (5340-99-103-4883), 7 ($\frac{1}{2}$ ton vehicles) or 9 ($\frac{3}{4}$ ton vehicles) insulator bowls, plastic (5970-99-103-5758) and another bushing, rubber. Fit these insulator bowls open end downward. Thread on another 7 insulator bowls and a bushing, rubber. Fit these insulator bowls open end upward. Pass the lead, electrical through the hole in the tilt. All the insulator bowls should now be open end down as in fig. 18.

7. Inside the vehicle fit a bushing, rubber onto the lead, electrical. Thread on sufficient insulator bowls to cover the lead, electrical to within 50mm (2 inches) of the end of the insulation and finally fit a bushing, rubber.

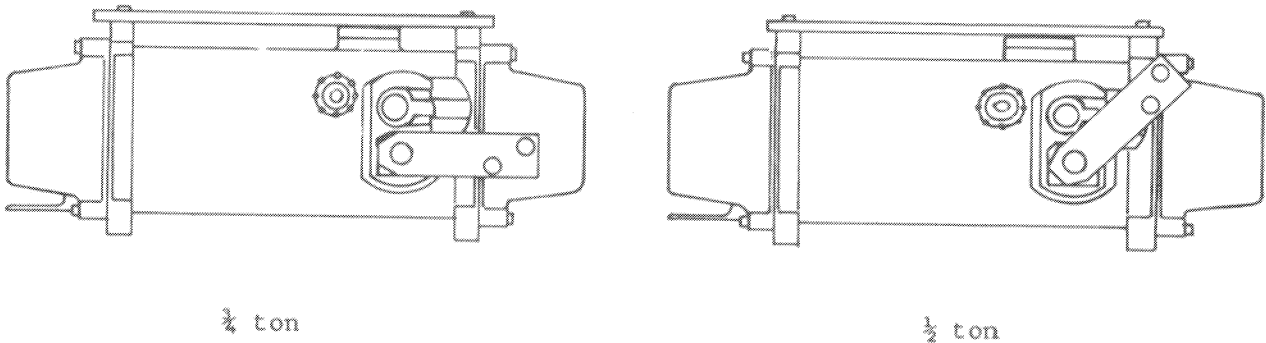


Fig. 19 Installation of retainer, lead electrical

8. Clip retainer, lead electrical (5999-99-637-0880) into the whip antenna socket on top of the radio set. Orientate it as indicated in fig. 19.

9. Feed the end of lead, electrical through the cable grip of the retainer lead, electrical and clip the lead into the remote antenna connection of the radio set.

CAUTIONS...

It is important that all wire strands are clamped into the antenna connection. Considerable power loss and damage through corona effects may be experienced if this is not so.

The antenna feeder cable must not touch any metal parts of the installation.

10. Assemble a 3 x 1 metre antenna by screwing together 1 off antenna element (5985-99-630-8457), 1 off antenna element (5985-99-630-8456) and 1 off antenna element (5985-99-630-8455). A 4 x 1 metre antenna, if required, is prepared by screwing 1 off antenna element (5985-99-630-8455) onto a 3 x 1 metre antenna. Insert the assembled antenna into its socket on the antenna base and tighten the securing clamp.

POWER SUPPLIES

2.9 Items required: FFR only

Item	Name	NATO Stock No.	Qty	Remarks
1	Distribution box	6110-99-637-9550	1	FFR vehicles only
2	Bracket, angle	5340-99-637-9551	1	½ t on vehicles only
3	Gasket	5820-99-119-2019	2	
4	Cartridge fuselink 3-amp ferrule contact size 1	5920-99-059-0143	3	from C.I.K. UK/ PRC-320

All cable clips, nuts, bolts and washers are stowed in a linen bag together with items 2 and 3. The linen bag is attached to item 1. Use the fuses supplied in the linen bag attached to cable assembly, power electrical (5995-99-637-9887) part of the clip-in kit UK/PRC-320.

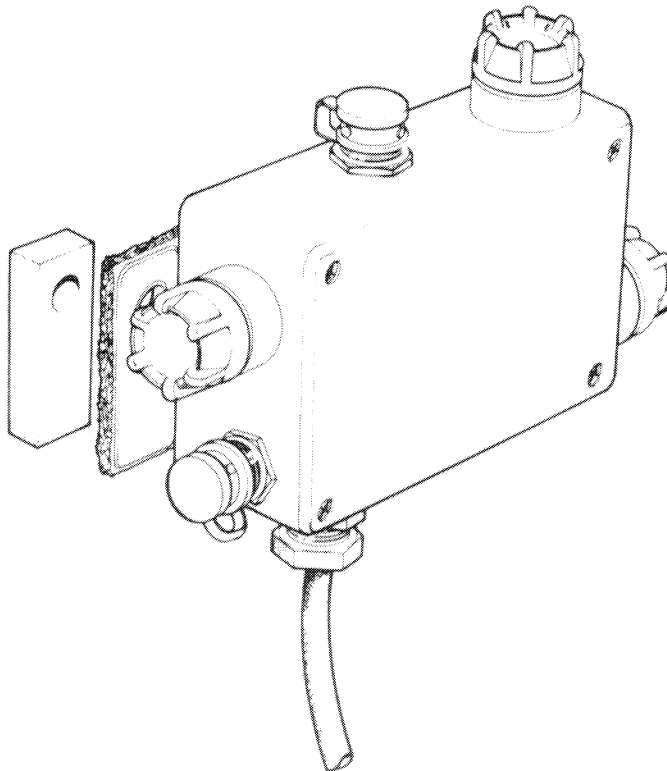


Fig. 20 Distribution box: FFR

1. Fit 3 off 3 amp fuses (5920-99-059-0143) into the fuseholders in the distribution box (6110-99-637-9550).
2. $\frac{1}{2}$ ton vehicles only: Secure the bracket angle (5340-99-637-9551) to the bulkhead behind the front seat on the lefthand side using 2 off M8 x 20 screws, nuts and washers from the linen bag.
3. Secure the distribution box with the cable entry underneath either to the bracket angle in $\frac{1}{2}$ ton vehicles or direct to the bulkhead behind the front seat on the lefthand side in $\frac{3}{4}$ ton vehicles. Use 2 off M8 x 35 bolts, nuts and washers with gaskets (5820-99-109-2019) to space the box away from the bracket or bulkhead.
4. Connect the lead from the distribution box to the FFR 'RADIO' terminals. Clip the lead to the equipment rack using the clips (5340-99-138-3495) provided.

IMPORTANT

Make sure that power leads are connected positive to positive and negative to negative throughout. If polarity is reversed the equipment may be damaged.

2.10 Items required: GS only

Name	NATO Stock No.	Qty	Remarks
Distribution box GS	6110-99-631-9888	1	associated items in linen bag
Bracket angle	5340-99-637-9551	1	for use with $\frac{1}{2}$ ton vehicles
Gasket	5820-99-119-2019	2	
Cartridge fuselink 7-amp	5920-99-059-0113	1	from C. I.K. UK/PRC-320

1. Fit the 7-amp cartridge fuselink into the fuseholder of the distribution box GS (6110-99-637-9888).
2. $\frac{1}{2}$ ton vehicles only: Secure the bracket angle (5340-99-627-9551) to the bulkhead behind the front seat on the lefthand side using 2 off M8 x 20 screws, nuts and washers from the linen bag.
3. Secure the distribuion box with the cable entry underneath either to the bracket angle in $\frac{1}{2}$ ton vehicles or direct to the bulkhead behind the seat on the lefthand side in $\frac{3}{4}$ ton vehicles. Use 2 off M8 x 35 bolts, nuts and washers with gaskets (5820-99-109-2019) to space the box away from the bracket or bulkhead.

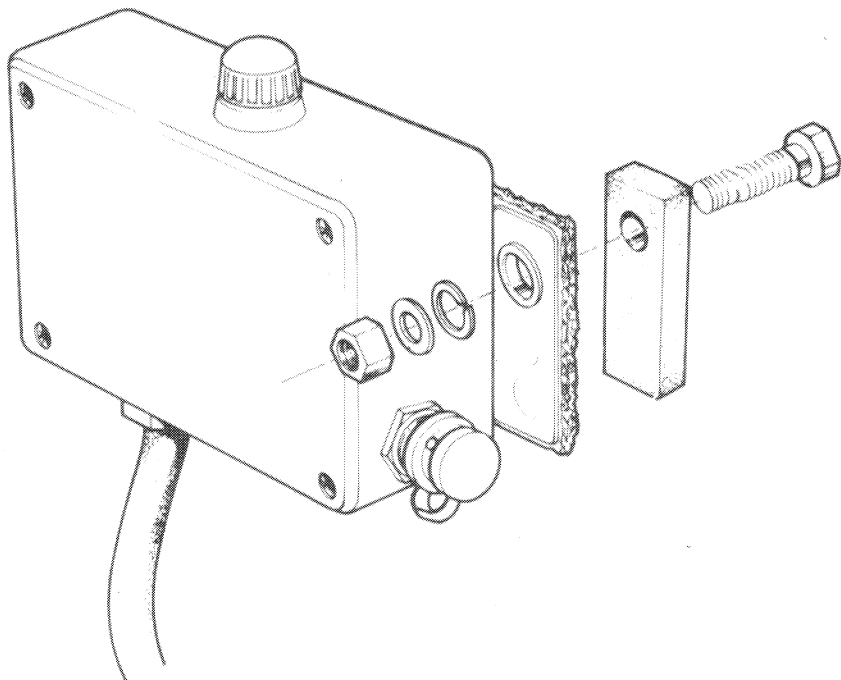


Fig. 21 Distribution box: GS

4. Pass the lead from the distribution box to the rear of the vehicle through the top section of the vehicle lefthand side.
5. $\frac{1}{2}$ ton vehicles only: Remove the toolbox from under the lefthand rear wing. There are four nuts, spring washers and plain washers inside the toolbox, at the top. Retain all of these. Pass the lead through the floor of the vehicle and along to the trailer light socket connections at the rear of the vehicle. Fit one of the grommets on the cable into the hole in the floor.
6. $\frac{3}{4}$ ton vehicles only: Remove the metal rear light cover from the inside of the lefthand corner of the vehicle. The cover is secured with two screws and either one or two nuts depending on the type of vehicle. Retain these. Pass the lead through the hole in this cover and through the hole in the floor exposed by removing the cover. Fit the grommets which will be found on the lead into the holes to protect the lead. Refit the rear light cover. Open the lefthand toolbox and remove the rearmost panel, retained by four screws. This gives access to the power take-off point at the trailer light socket connections.

WARNING...

THE VEHICLE BATTERY MUST BE DISCONNECTED BEFORE
WORKING ON THE VEHICLE ELECTRICAL SYSTEM.

7. Clip the blue lead into the spare position in the double snap connector connecting together three wires labelled EARTH.
8. Identify the lead AUXFEED and find its single snap connector. Replace the single snap connector with the double already fitted to the red lead, connecting the red lead to the lead AUXFEED.
9. $\frac{1}{2}$ ton vehicles only: Replace the toolbox and the seat if it has previously been removed.
10. $\frac{3}{4}$ ton vehicles only: Replace the panel in the toolbox.

IMPORTANT

Make sure that power leads are connected positive to positive and negative to negative throughout. If polarity is reversed the equipment may be damaged.

Cable assemblies

Ref	Description	NATO Stock No.	From	To
101	Lead electrical	5995-99-637-0739	RT-320	Antenna base
102	Lead electrical	5995-99-645-0104	Antenna mounting	Equipment rack bonding point
103	Lead electrical	5995-99-645-0105	Vehicle bonding point	Equipment rack bonding point
104	Adaptor lead electrical	5935-99-637-9532	RT-320	Leads 105, 106
105	Lead electrical	5995-99-645-0103	Equipment rack bonding point	Lead 104
106	Lead electrical	5995-99-637-9536	DCCU	Lead 104
201	Cable assembly power electrical	5995-99-637-9887	DCCU	Distribution box
401	Cable assembly power electrical	5995-99-117-7436	DCCU	RT-320 battery

Notes: Cable 401 supplied with DCCU
 Cable 102 only used in ½ ton vehicles
 Bonding leads shown as dotted lines

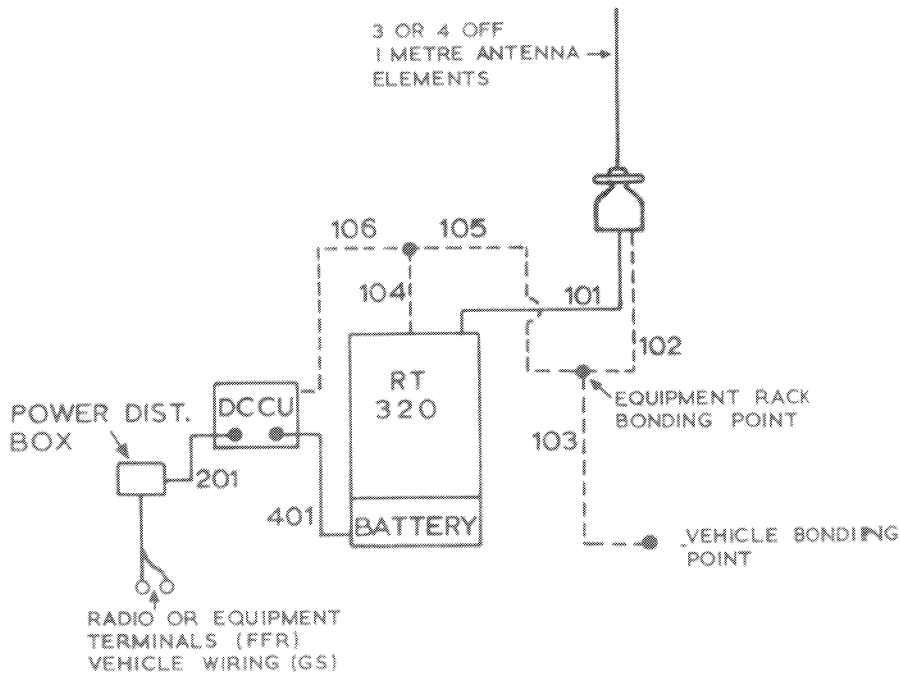


Fig. 22 Block schematic

INTERCONNECTIONS

2.11 These are shown in the block schematic fig. 22. All cables are to be clipped to the equipment rack or vehicle, as appropriate, to ensure that there is no possibility of damage to the cables. Clips for this purpose are stowed in the linen bag attached to cable assembly, power electrical, (5995-99-637-9887). Connection of lead electrical (5995-99-637-0739) is detailed in para 2.8 and connection of the distribution box in paras 2.9 or 2.10.

1. Connect the DCCU to the radio set's battery using cable assembly, power electrical (5995-99-117-7436) provided with the DCCU.

CAUTION...

Cable assembly, power electrical (5995-99-117-7436) as supplied is one metre long. This cable is not to be lengthened or shortened.

2. Make sure that the INPUT switch on the front of the DCCU is set to OFF.

Note...

When the distribution box is connected to the FFR RADIO terminals the outlet sockets are LIVE.

Connect the DCCU to the distribution box using cable assembly power, electrical (5995-99-637-9887).

BONDING

IT IS ESSENTIAL FOR THE SUCCESSFUL
OPERATION OF THIS INSTALLATION THAT THE
BONDING INSTRUCTIONS ARE FOLLOWED EXACTLY

2.12 Bonding connections are shown in the block schematic fig. 22, and fig. 26 ($\frac{1}{2}$ ton) or fig. 27 ($\frac{3}{4}$ ton). Paint is to be removed from around the bonding points down to bare metal. Details of installation of the antenna base end of lead, electrical (5995-99-637-0104) are given in para 2.8.

CAUTION...

Bonding leads are not to touch or cross the antenna feeder cable.

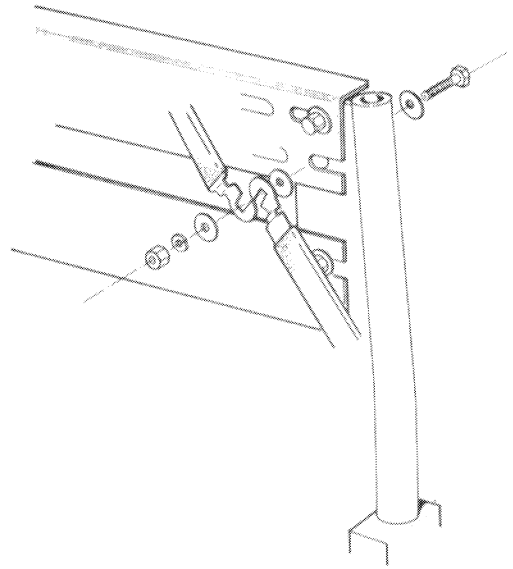


Fig. 23 Equipment rack bonding point: $\frac{3}{4}$ ton FFR

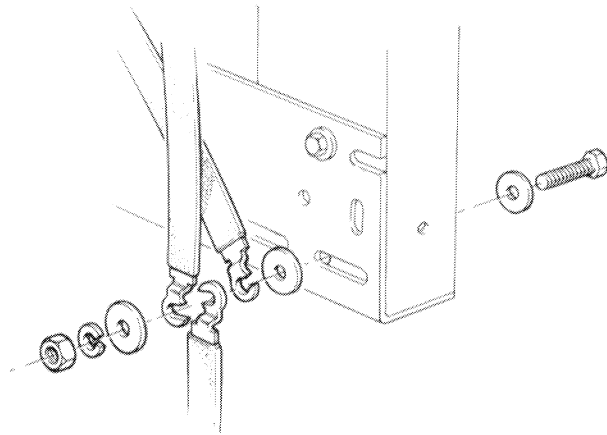


Fig. 24 Equipment rack bonding point: $\frac{1}{2}$ ton FFR

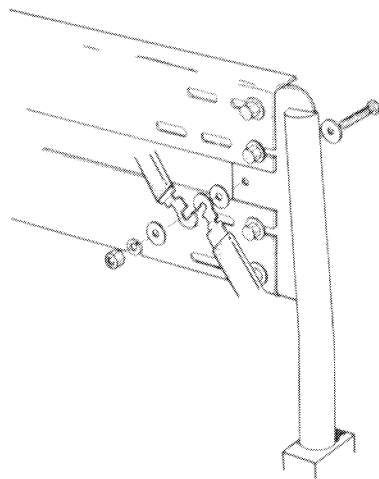


Fig. 25 Equipment rack bonding point: $\frac{1}{2}$ & $\frac{3}{4}$ ton GS

1. Prepare the equipment rack bonding point as indicated below for the various types of vehicle.

a. GS vehicles only: Fit the M6 x 25 bolt, nut, spring washer and three large diameter washers to the righthand support equipment rack at the hole between the two angles perforated equipment rack. The bolt, nut and washers are stowed in a linen bag attached to cable assembly, power, electrical (5995-99-637-9887). Fit a large diameter washer onto the bolt, pass the bolt through the support, equipment rack from the front, fit on two more large diameter washers, the spring washer and the nut, but do not tighten. See fig. 25.

b. $\frac{3}{4}$ ton FFR only: Remove the second bolt down of the four securing the angle part of the equipment rack to the righthand vertical support. Replace this bolt with the M6 x 25 bolt, nut, etc. as detailed in a. above. See fig. 23.

c. $\frac{1}{2}$ ton FFR only: Remove the lowest of the four bolts securing the vertical face of the angled part of the equipment rack to its righthand end support, as indicated in fig. 24. Replace this bolt with the M6 x 25 bolt, nut etc. as detailed in a. above.

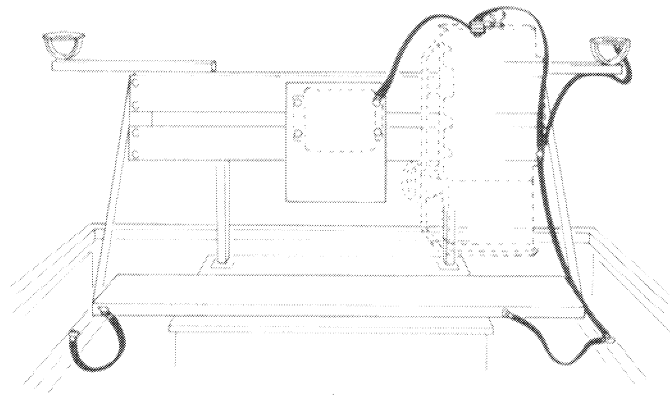
2. Prepare the vehicle bonding point as indicated below for the various types of vehicle.

a. FFR vehicles only: The bonding point is already prepared in these vehicles as an EMER modification (See para 1.6). The righthand side of the radio table is bonded to this point. In $\frac{3}{4}$ ton vehicles it consists of the end of an antenna mounting bracket bolt protruding into the vehicle. In $\frac{1}{2}$ ton vehicles one of the bolts securing the vehicle side to the body is used.

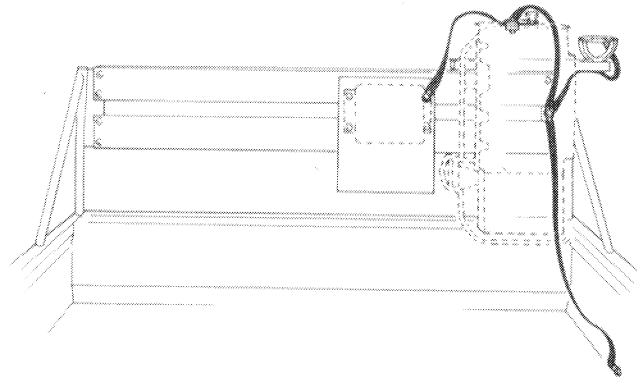
b. $\frac{3}{4}$ ton GS only: Onto the stud of plate, bushed (5975-99-637-0815), used in the installation of the equipment rack (para 2.2), fit 2 off large diameter M6 washers, 1 off M6 spring washer and 1 off M6 nut. Do not tighten.

c. $\frac{1}{2}$ ton GS only: Remove the middle bolt of three securing the righthand side of the vehicle to the body. This bolt is almost directly below the bracket, stay equipment rack (5975-99-637-0812) used in the installation of the equipment rack (See para 2.2).

3. Clip adaptor, lead electrical (5935-99-637-9532) into the earth terminal on top of the radio. Fit the M6 x 16 bolt, nut, spring washer and 2 off large diameter washers from a linen bag attached to cable assembly, power electrical (5995-99-637-9887). Pass the bolt through the tag on the end of the adaptor, lead electrical, then fit two large diameter washers, the spring washer and finally the nut. Do not tighten the nut.

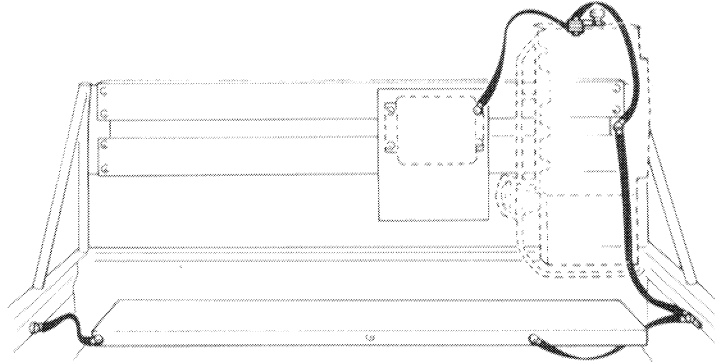


FFR

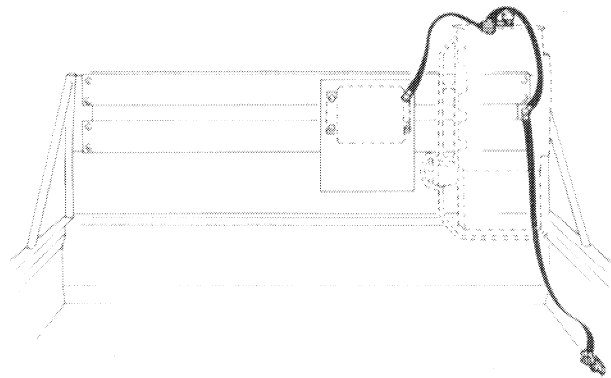


GS

Fig. 26 Bonding lead layout: $\frac{1}{2}$ ton



FFR



GS

Fig. 27 Bonding lead layout: $\frac{1}{4}$ ton

4. Bond the DCCU to the adaptor, lead electrical using lead, electrical (5995-99-637-9536). Secure the lead at the DCCU end under the top righthand bolt securing the DCCU to its plate, mounting.
5. Bond the adaptor lead, electrical to the equipment rack bonding point using lead, electrical (5995-99-645-0103). Tighten up the M6 nut and bolt on the adaptor lead, electrical.
6. Connect the vehicle bonding point to the equipment rack bonding point using lead, electrical (5995-99-645-0105). Tighten up the nut at the vehicle bonding point.
7. $\frac{1}{2}$ ton vehicles only: Connect lead, electrical (5995-99-645-0104) already connected to the antenna base, to the equipment rack bonding point.
8. Tighten up the nut and bolt at the equipment rack bonding point.

Section 3 TESTING

TESTING THE INSTALLATION

3.1 After the kits have been installed the following checks should be carried out:-

1. Inspect all fittings ensuring all nuts and screws are securely tightened.
2. Check that connectors are correctly fitted and are secured to vehicle or equipment rack to prevent accidental damage. Connector locking rings should be firmly tightened by hand.
3. Ensure the equipment is clean and dry.
4. Ensure that the antenna feeder cable does not touch any metal parts of the installation.

TESTING THE RADIO EQUIPMENT

3.2 Check the radio equipment for serviceability as detailed in the appropriate User Handbook.



IDEAS SUGGESTIONS DEFECTS

YOU are the user of this equipment—can it be improved?

If you have any good suggestions about this or ANY Signals equipment, The Ministry of Defence Army Department are interested.

Ideas and Suggestions

If you can suggest:

- (a) *an improvement in design or shape,*
- (b) *a better method of installation, operating, or servicing,*
- (c) *other equipment which might do the job better.*

the procedure is quite simple—pass it to your OC or Adjutant for transmission to the local Chief Signal Officer.

It will remain YOUR idea.

See the Signal Equipment Performance Report (AF B63), details for completion of which are found on the cover of the pad.

Defects

If there is something wrong with the equipment AS IT STANDS, other than a fair wear and tear fault, it is a defect.

Again, don't keep it to yourself, pass it to your OC. The procedure for him to follow is given in EMER Management N200. (AFG 3660 is the form to use).

RESTRICTED
CANCELLED

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