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7610-21-102-2439
MANUAL TECHNICAL

CANADIAN ARMY

OPERATORS HANDBOOK

RADIO STATION C42/52

TRUCK PANEL UTILITY 3/4 TON CDN

(EIS 1409)

Prepared By

Army Development Establishment

Ottawa, Canada

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RECORD OF AMENDMENTS

Amendment (Instruction or Page)	Date of Insertion	Entered by:

TABLE OF CONTENTS

FOREWORD

This handbook has been compiled by combining the individual publications listed in the Table of Contents under one cover.

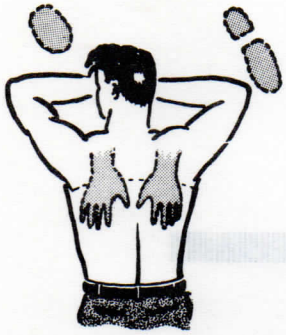
CHECK THAT BOOK IS COMPLETE

Parts information contained in this handbook was correct at time of printing. The official information is contained in the appropriate COC Catalogue.

Amendments to the EME Manual are notified in CAOs.

ARTIFICIAL RESPIRATION

Holger Nielson Method



LAY PATIENT FACE DOWN

BEND HIS ELBOWS, PLACE HANDS ONE ON THE OTHER. TURN FACE ON ONE SIDE WITH CHEEK UPON THE HANDS.

KNEEL FACING SUBJECT

PLACE ONE KNEE NEAR THE HEAD AND THE OTHER FOOT ALONGSIDE THE ELBOW.

PLACE YOUR HANDS ON THE PATIENT'S BACK

POSITION THE HEELS OF YOUR HANDS OVER THE TOP OF THE SHOULDER BLADES.

ROCK FORWARD

UNTIL THE ARMS ARE ALMOST DIRECTLY VERTICAL. KEEP ELBOWS STRAIGHT AND PRESSURE EXERTED ALMOST DIRECTLY DOWNWARD ON THE BACK FOR 3 SECONDS.

RELEASE THE PRESSURE

SLIDE YOUR HANDS TO JUST ABOVE THE ELBOWS AND ROCK BACKWARDS DRAWING HIS ARMS UPWARDS AND TOWARDS YOU UNTIL YOU FEEL RESISTANCE OF THE PATIENT'S SHOULDERS.

LAY THE ARMS DOWN

REPLACE YOUR HANDS ON THE SHOULDER BLADES AND START CYCLE AGAIN.

EVOY/61

ELECTRIC SHOCK

1. PROTECT YOURSELF - with dry leather, wood, rubber, etc.
2. BREAK THE CIRCUIT - by opening the power switch or by pulling the victim free of the line conductor.
3. DON'T TOUCH THE VICTIM WITH THE BARE HANDS - until the circuit is broken.
4. REMOVE FALSE TEETH, CHEWING GUM, ETC - from the victim's mouth.
5. START ARTIFICIAL RESPIRATION QUICKLY.
6. SEND FOR A DOCTOR.
7. KEEP PATIENT WARM - with blankets, etc.

DROWNING

1. REMOVE FROM WATER.
2. SEND FOR A DOCTOR.
3. LOOSEN CLOTHING.
4. PLACE PATIENT FACE DOWNWARDS - clear mouth if necessary.
5. APPLY ARTIFICIAL RESPIRATION.
6. KEEP WARM - with blankets, etc.

GASSING

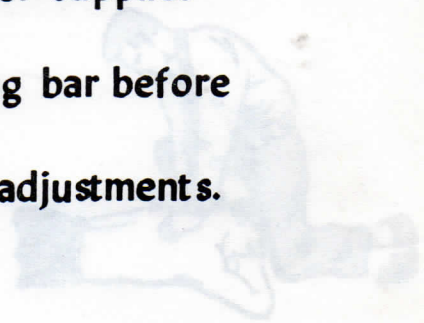
1. REMOVE TO FRESH AIR.
2. SEND FOR A DOCTOR.
3. LOOSEN CLOTHING.
4. PLACE PATIENT FACE DOWNWARDS - clear mouth if necessary.
5. APPLY ARTIFICIAL RESPIRATION.
6. KEEP WARM - with blankets, etc.

NOTE:

- THE CYCLE SHOULD BE COMPLETED 12 TIMES PER MINUTE.
- WHILE ARTIFICIAL RESPIRATION IS CONTINUED HAVE SOMEONE ELSE LOOSEN THE PATIENT'S CLOTHING AND KEEP THE PATIENT WARM.
- FOUR HOURS OR MORE MAY BE REQUIRED.
- DO NOT GIVE LIQUIDS UNTIL THE PATIENT IS CONSCIOUS.

WARNING

The voltages employed in this equipment are sufficiently high to endanger human life and every safety precaution should be observed. The power should be removed completely and the high voltage capacitors in power supplies discharged manually with a shorting bar before changing tubes or making internal adjustments.



RADIO STATION C42/52 IN TRUCK PANEL 3/4 TON CDN
DATA SUMMARY

(7326)

HQ 6016-60-515 TD 1079D

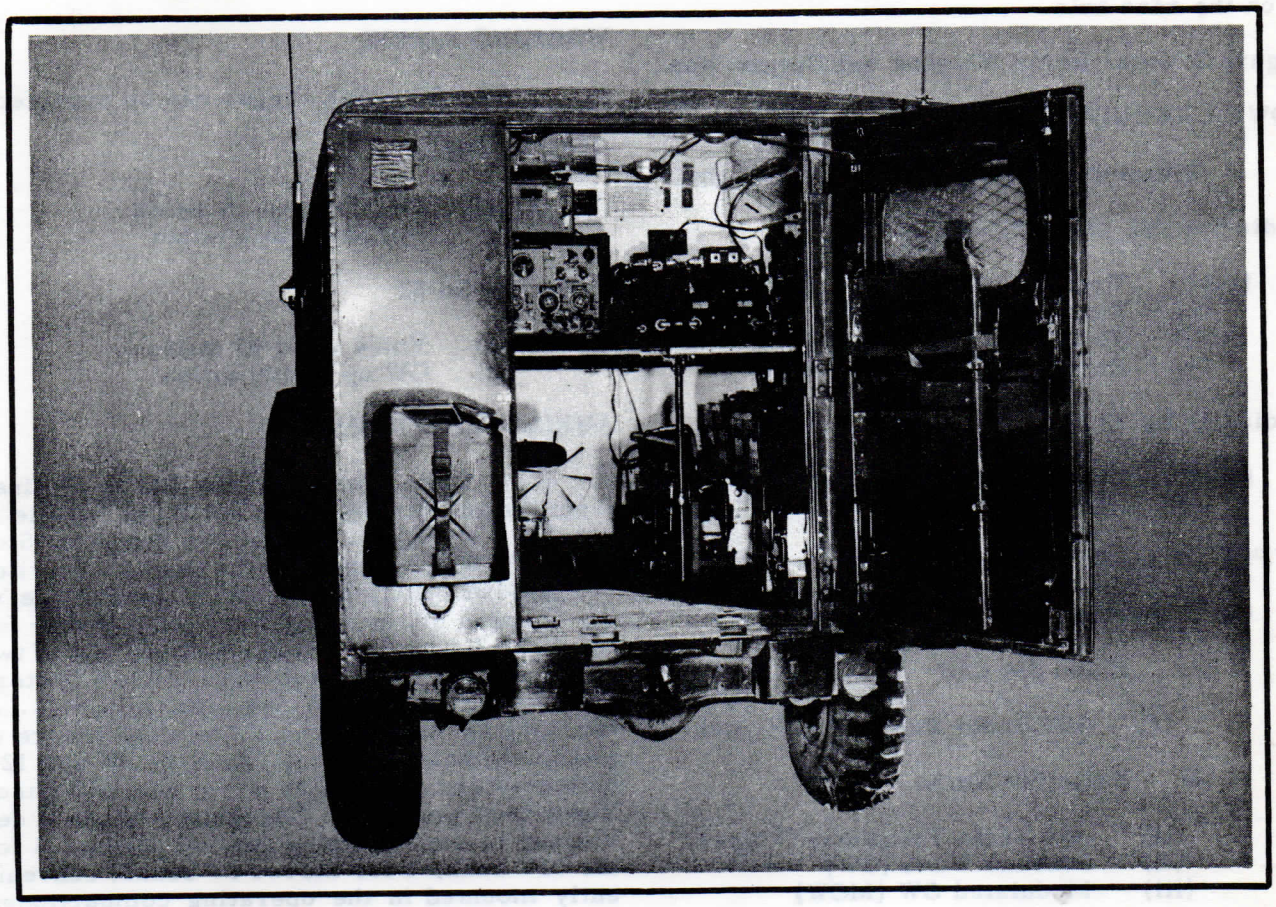


Figure 1 Radio Station C42/52 in Truck Panel 3/4 Ton CDN

INTRODUCTION

PURPOSE

1. The Radio Station C42/52 in Truck Panel 3/4 Ton CDN is used to provide a 15 mile VHF voice link and a 40 mile HF voice, MCW or CW link. The C42 set may be dismounted from the vehicle and used as a ground station.

DESCRIPTION

2. (a) The station is provided by combining an Installation Kit, Electronic Equipment, Radio Set C42/52, Truck Panel, 3/4 Ton CDN (EIS 1413 COC No 5820-21-109-5286) with Radio Set C42 Basic (EIS 1393 COC No 5820-21-108-2761) and Radio Set No 52 CDN (EIS 1300 COC No 5820-21-101-1804). The station then contains a Radio Set C42 and a Radio Set No 52 interconnected by components of a B type control harness. The two sets provide the facilities of a Two Set Station as indicated in ELECT K761 with the exception that automatic rebroadcasting is not available. Rebroadcast switching must be performed by the operator.

(b) The station equipment is easily dismounted from the vehicle if repairs are necessary or if, for tactical reasons, a ground station is required.

DATA AND PERFORMANCE

PHYSICAL DATA

3. (a) Figure 2 lists the major components of the station with the approximate overall dimensions and weights.

(b) The complete radio station, including the vehicle, driver, co-driver and two wireless operator, weighs approximately 9300 lb of which 3930 lb is on the front axle with 5370 lb on the rear axle.

Figure 2 Major Items Weights and Dimensions

POWER REQUIREMENTS

4. Consumption under various conditions:

Radio Set C42 (24 VDC supply)

(a)(1)	Transmit HP	8.3a
(2)	Transmit LP	5.5a
(3)	Receive (TRAFFIC)	4.9a
(4)	Receive (STAND BY)	4.0a

Radio Set No 52 (12 VDC supply)

(b)(1)	Transmit	57a
(2)	Receive	6.5a

TYPES OF OPERATION

5. (a) Normal

(1) Radio Set C42

(i) FM Radio Telephony (Voice)

(2) Radio Set No 52

(i) AM Radio Telephony (Voice)
(ii) Antenna Wave (CW)
(iii) Modulated CW (MCW)

(b) Remote

(1) Radio Set C42

(i) Voice

(2) Radio Set No 52

(i) Voice
(ii) CW or MCW

(c) Rebroadcast (Voice only. Rebroadcast switching performed by the operator).

(d) Remote Rebroadcast

(1) Radio Set C42

(i) Voice only. Rebroadcast switching may be automatic or manual depending on the type of radio set at the remote site.

(2) Radio Set No 52

(i) Voice only. Rebroadcast switching performed by the operator.

(e) Break-in

WORKING RANGE

6. The following ranges can be expected:

Radio Set C42

(a)(1) On HP up to 15 miles
(2) On LP up to 4 miles

Radio Set No 52

(b)(1) Voice up to 40 miles
(2) CW up to 100 miles

AUXILIARY EQUIPMENT

7. (a) Power for Radio Set C42 is obtained from the vehicle batteries when the vehicle is running, or from a bank of two Batteries Storage 12V BB46, connected in series. A switch on the power distribution panel selects one of the sources of power as required. Power for the Radio Set No 52 is obtained from one of two banks of batteries. Each bank has two Batteries Storage 6V 200 AH connected in series. A two position knife switch selects the source of power to operate the set. Both the 6V and 12V batteries are charged by a 300 watt 24V gasoline driven generator. Charging current is delivered to two charging control panels, 1 for the 12V bank, 1 for the two 6V banks, conveniently mounted in the operating compartment. Rheostats mounted on each panel control the rate of charge to each bank. Batteries are not supplied as part of the station equipment and must be demanded separately from RCOC.

(b) Two battery charging units are supplied as part of the station; one is in service and one is spare.

RELATED PUBLICATIONS

8. (a) Electrical EME Manuals as follows:

Radio Station C42/52 Truck Panel 3/4 Ton CDN	L280-289
Radio Set C42	I400-409
Radio Set No 52 CDN	F520-529
Power Supply Vibrator No 12	K240-249
Radio Control Harness Type B	K760-769
Tuner, Radio Frequency, No 6	K 520-529

(b) Working Instructions Wireless Sets CDN No 52 ZA/CAN 00077

Qty per Eqpt	Name of Item and Designation	COC/NATO Stock No UK Stock No ADE No	Overall Dim (IN)			Net Weight (lb)
			Height	Width	Depth	
1	Radio Set C42	5820-99-943-9362 ZA 43207 -	8-1/2	14	14-1/4	45
1	Power Supply Vibrator No 12 Mk 2	6230-21-108-2169 ZA 50544 -	8-1/2	8	14-1/4	40
1	Transmitter Radio CDN No 52	5820-21-106-5786) - -)				
1	Receiver Radio CDN No 52	5820-21-106-5422) - -)	18	42-1/4	14-1/2	300
1	Dynamotor-Power Supply 12 VDC Input	6125-21-106-4974) - -)				
1	Case Receiver Transmitter	5820-21-106-5505) - -)				
1	Junction Box Two-Set, J2, 24V	5975-21-108-2422 - -	6-1/4	8-3/4	4-1/4	6
1	Remote Control Unit R 24V	5820-21-108-2424 - -	5-1/2	8-3/4	4	6-1/4
1	Rebroadcast Unit B	5820-21-108-2423 - -	4	6-1/2	3-1/2	2
1	Aerial Base No 28 and Tuning Unit No 6 Assy * Reworked	- ZA 47032* -	14-3/4	7-3/4	6-3/4	15-1/2

Figure 2 Major Items Dimensions and Weights

Qty per Eqpt	Name of Item and Designation	COC/NATO Stock No UK Stock No ADE No	Overall Dim (IN)			Net Weight (lb)
			Height	Width	Depth	
2	Control Unit Operators C	- ZA 46192 -	4	6-1/2	3-1/2	3
1	Panel Power Distribution	5820-21-100-8887 - -	8	5-1/4	2-1/4	1-1/2
1	Panel Power Distribution	5820-21-100-8890 - -	14-1/2	6-1/4	2-1/2	2-1/2
1	Panel Power Distribution	5820-21-100-8888 - -	14-1/2	6-1/4	2-1/2	2-1/2
1	Switch, Knife 4 PDT	5930-21-100-8886 - -	14-1/2	7-1/4	2-1/2	3
1	Junction Remote Control No C 101	- ZA 2370 -	7	6-1/2	4	5
1	Junction Remote Control No C 102	- ZA 2371 -	2-1/2	7	3-1/4	3
2	Generator Set Gasoline Engine PU 5008/U	6115-21-100-8051 - -	15	16	15	87
2	Microphone, Hand, S1, No 6 and Harness Neckband, Snatch Pattern No 6	- YA 11382 -	-	-	-	-
2	Receivers, Hand, S1, Double No 1A	- YA 9595 -	-	-	-	-
1	Telephone, Hand, S1, Remote Control	- YA 9311 -	-	-	-	-
1	Box, Junction, 4 Way, No 4	- ZA 46292 -	4-1/2	6-1/2	3-1/8	2-1/4
1	Microphone and Receivers Headgear Assy CDN Type 1	- ZA/CAN 1570 -	-	-	-	-

Figure 2 Major Items Dimensions and Weights
END

RADIO STATION C42/52 IN TRUCK PANEL 3/4 TON CDN
OPERATING INSTRUCTIONS

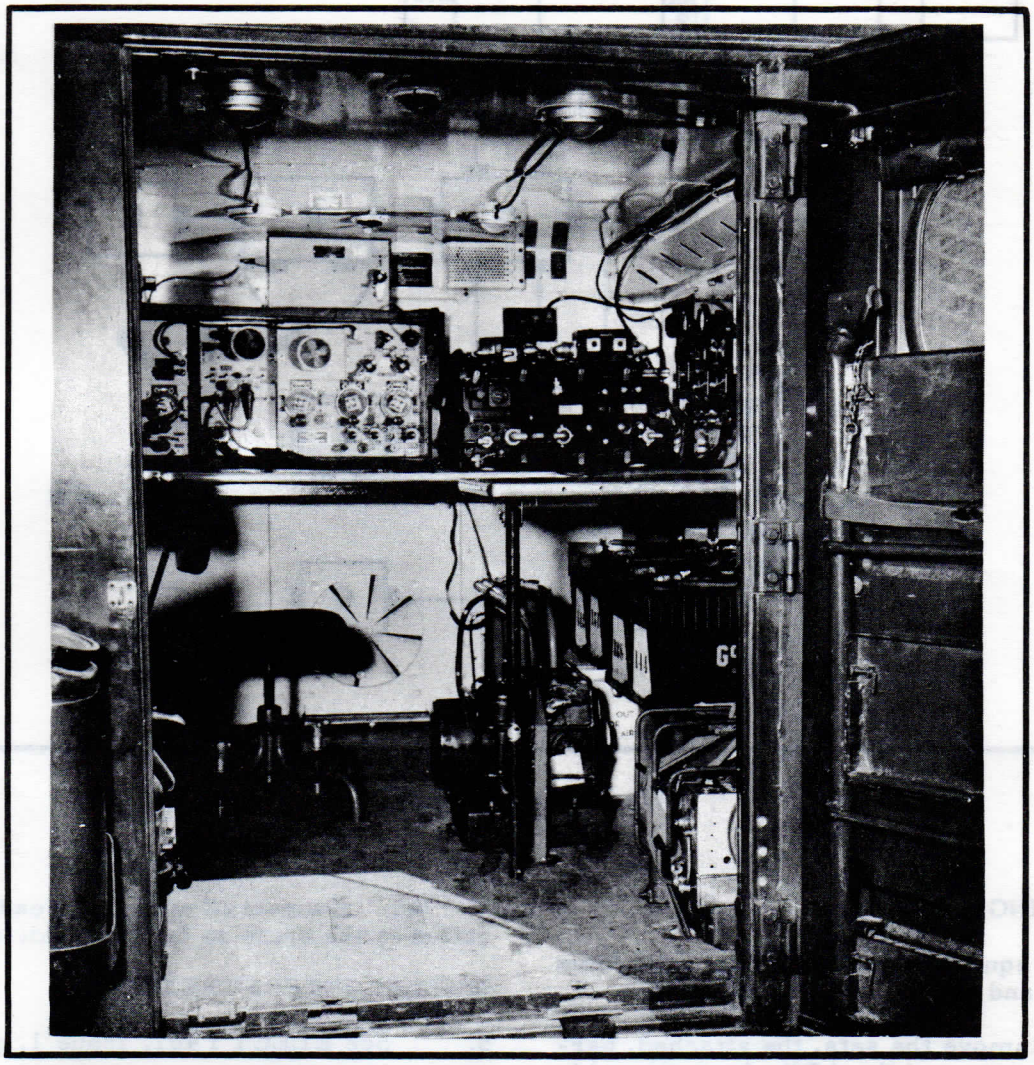


Fig 1 Radio Station C42/52 in Truck Panel 3/4 Ton CDN

INTRODUCTION

GENERAL

1. These instructions are used in conjunction with EME Manual ELECT I401 and ELECT K761 and the Technical Manual (COC No 7610-21-102-2174) for the Wireless Set 52.

MAJOR COMPONENTS

2. The major components used in this station are shown in Fig 2.

OPERATION

GENERAL

3. The successful operation of this station to make full use of the facilities available depends upon the proper use of the controls found on the basic sets and on the harness components. The operator must be thoroughly familiar with the details given in the instruction referred to in para 1 above, as well as the specific instructions given here. Fig 3 gives a reference to the function and operation of the major components.

(7327)

HQ 6016-60-515 TD 1079F

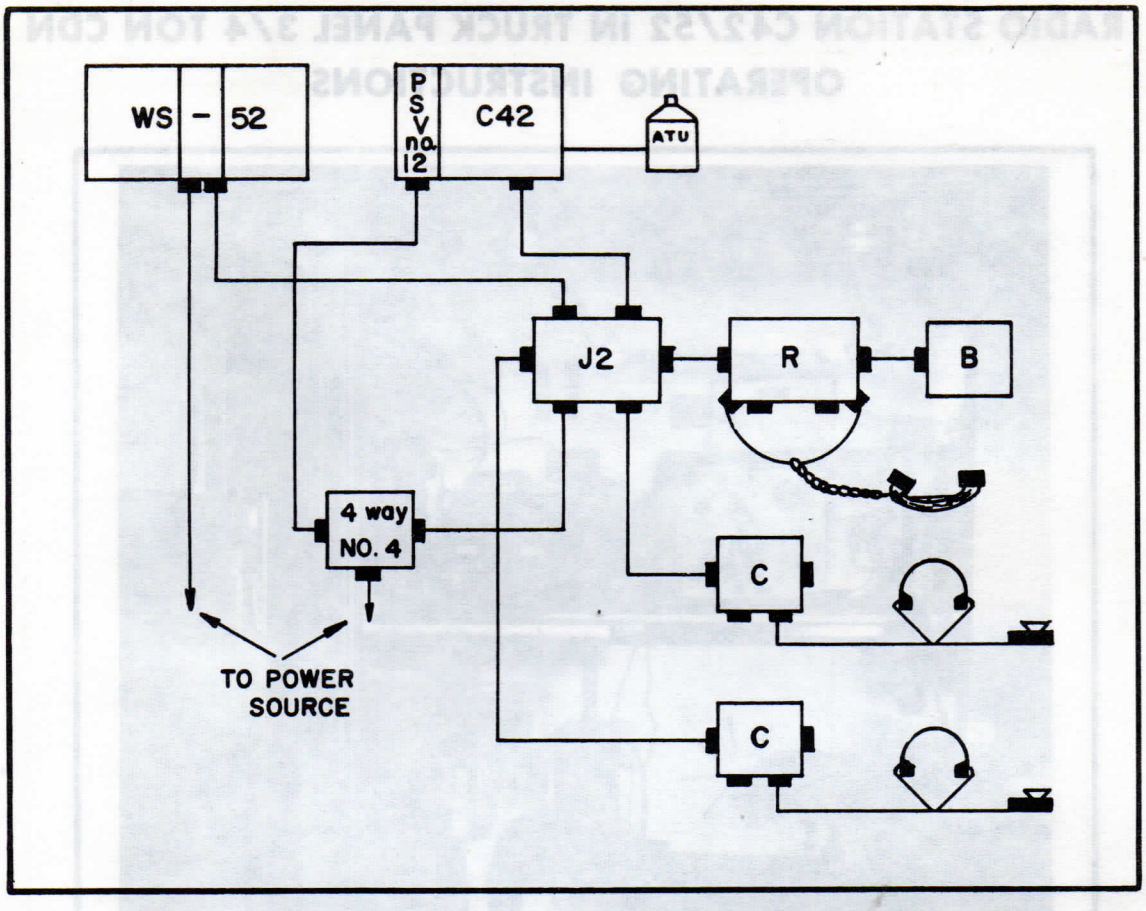


Fig 2 Block Diagram

DISMOUNTING

4. The equipment can be dismounted from the vehicle and set up as a ground station.

(a) Remove the sets, the attached, harness components and the ATUs from the vehicle.

(b) Remove batteries from the battery rack and connect to the sets in the normal manner. In connecting the C42, the negative of the battery supply must be grounded to the ground point on the front of the PSU, and this in turn grounded to the grounding spike.

(c) Choose the antenna locations. Drive the Spike Mk 1/1 Antenna Rod D for the C42 into the ground. Place the ATU No 6 assembly onto the spike (Fig 4) and secure by tightening the captive locking screw. (Finger tight is adequate.) Connect the ATU to the set, using the co-axial cable. Set up the 52 set as described in the manual for the set.

(d) Connect all units and Headsets. Operation is the same as for the vehicle station.

MUTUAL INTERFERENCE

5. See ELECT I 401, Issue 1, para 15.

BATTERY CHARGING

6. The wiring from the battery banks to the Charging Panel (Fig 5) is permanently installed. Batteries can be charged while the station is in operation. The procedure is as follows:

(a) Install batteries in the racks provided.

(b) Using the jumpers, connect each pair of batteries in series to form a battery bank of two batteries.

(c) Connect each bank of batteries to the leads provided. Observe proper polarity.

Component	Functional Description	Operation
Radio Set No 52		Technical Manual 7610-21-102-2174
Radio Set C42		I 401, Issue 1 para 9, 11, 12
Power Supply Vibrator No 12, Mk 2		I 401, Issue 1 para 8
Aerial Tuning Unit No 6		I 401, Issue 1 para 10
4 Way Junction Box	Low tension junction box distributing 24V from battery to PSU and harness	
Junction Box J2	K761, Issue 1, para 14	*
Remote Control Unit R	K761, Issue 1, para 15	
Rebroadcast Unit B	K761, Issue 1, para 10	
Control Unit Operators C	K761, Issue 1, para 11	
Headsets and Handset	K761, Issue 1 para 17, 18, 19	
* Check K761, Issue 1 against type of operation required.		

Fig 3 Function and Operation of Major Components

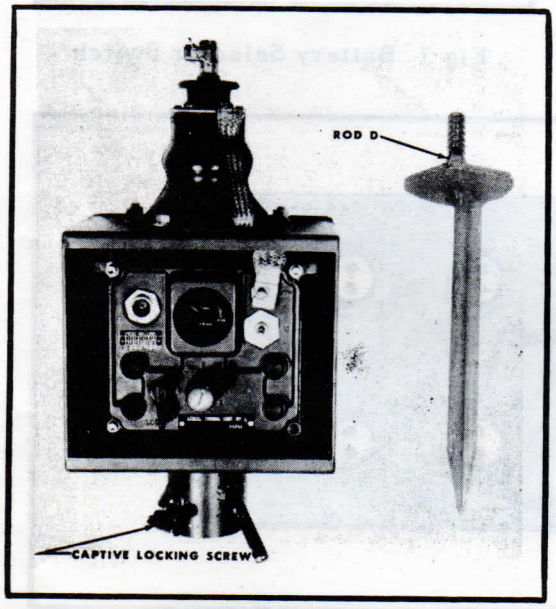


Fig 4 ATU Assembly and Antenna Rod D

(d) Connect the charger to the DC GENERATOR socket on the Input Terminal Panel (Fig 6) on the left side of the vehicle, using the 30 ft cable. This portion of the Input Terminal Panel is permanently wired into the Charging Panel. The radio equipment is connected to the Battery Selector Switch (Fig 7), which is permanently wired into the battery system. When this selector switch is at VEH, radio equipment is run from the vehicle battery.

NOTE

Radio sets must not be operated from vehicle battery without vehicle engine running.

(e) Determine which bank of batteries is to be charged. Throw the ON-OFF Switch on the appropriate Charging Panel to ON.

(f) Start the charger.

(g) Adjust the charging rate.

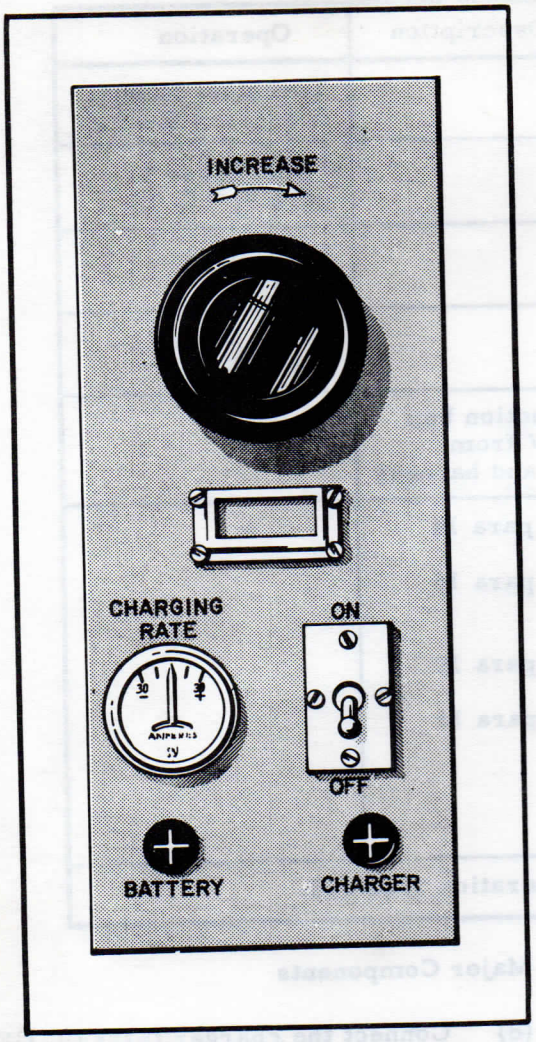


Fig 5 Charging Panel

NOTE

The Battery Selector Switch has nothing to do with selecting banks for charging. Its sole purpose is to choose which bank is to be used by the radio equipment.

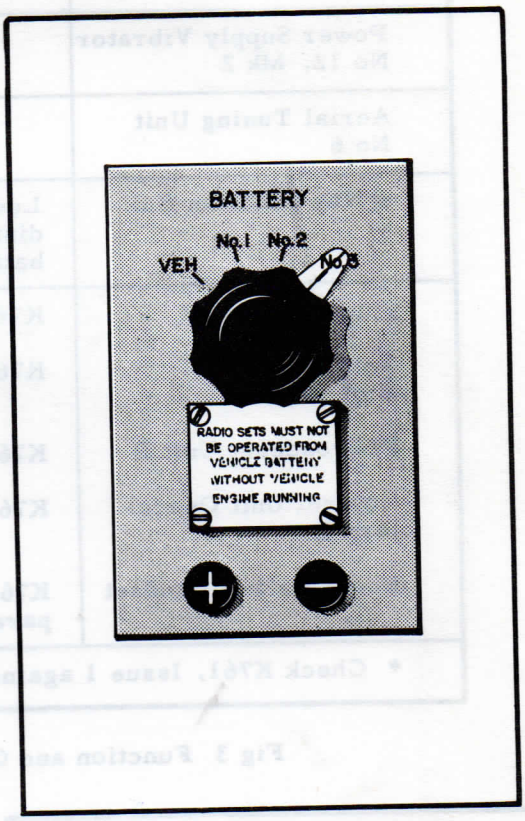


Fig 7 Battery Selector Switch

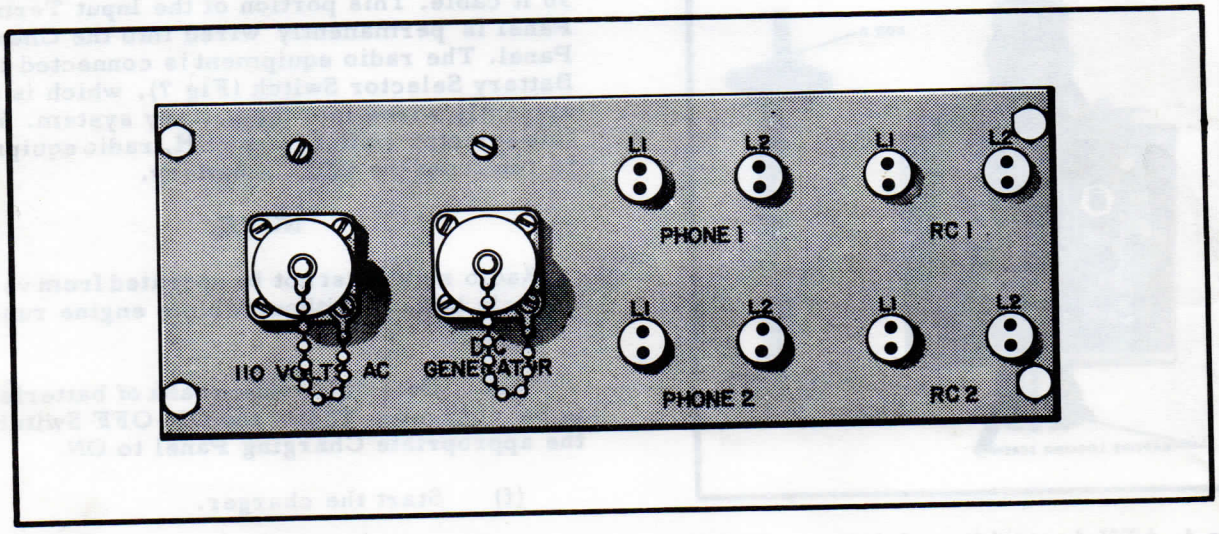


Fig 6 Input Terminal Panel

END

RADIO STATION C42/52 IN TRUCK PANEL 3/4 TON CDN INSTALLATION INSTRUCTIONS

SUMMARY

PURPOSE

1 This instruction details the procedure for installing the following kits in a vehicle previously modified in accordance with VEHICLES D 117 Instr 32:

(a) Installation Kit, Electronic Equipment, Radio Set C42/52, Truck, Panel Utility, 3/4 Ton, CDN (COC No 5820-21-109-5282, EIS 1409).

(b) Radio Set C42 Basic (COC No 5820-21-109-2761, EIS 1393).

(c) Radio Set CDN No 52 (EIS 1300).

(7418)

GENERAL

ITEMS AFFECTED

2 See paragraph 1.

TD 1136 E

ACTION REQUIRED

3 (a) By Units:

As required by AHQ.

(b) By RCEME:

As required by AHQ.

HQ 6016-60-515

STORES REQUIRED

4 Stores required for this installation are shown in Figure 1.

STORES REMOVED

5 None

LOCATIONAL TERMS

6 Right and left sides of the vehicle are determined by viewing it from the rear looking to the front.

IDENTIFICATION

7 Each part should be identified by part number, shown on the illustrations. Where a quantity of more than one part is required the quantity is indicated by a number in parenthesis following the part number.

DETAIL

TOOLS REQUIRED

8 The following tools are required when this installation is made.

Drill, electric, 3/8" capacity
Drills, twist, No 7, 9/32"
Hammer, ball, pein, 1-1/2 lb
Hole cutter, 2"
Punch, centre
Rule, steel, tape, 6'
Scriber
Screwdrivers, medium, cross recess and straight bit
Wrench, adjustable, 8"
Wrenches, open or box end, 7/16", 1/2", 9/16"
See EME Manual GEN T 050 for self tapping screw hole sizes.

ORDER OF INSTALLATION

9 The installation sequence is established by following the figures in order of appearance, then by numerical sequence of reference numbers within each figure.

CAUTION

If basic radio set is not available when Installation Kit is installed, all loose cables, brackets, etc must be adequately protected and secured.

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Stock Class 3895			
Reeling machine, cable, hand	1		3895-21-109-3825 - -
Stock Class 4210			
Bracket, fire extinguisher, style No 2, carbon dioxide, 5 lb	1	11	4210-00-268-9729 - 3006664
Extinguisher, fire, carbon dioxide, portable type, 5 lb	1	11	4210-21-583-0341 - 3006663
Stock Class 5325			
Grommet, rubber, rd, .312 in by .500 in by .062 in	2	3, 7	5325-21-108-1820 - HEL 2215
Grommet, rubber, rd, .750 in by 1.00 in by .070 in	2	4	5325-21-108-1821 - HEL 3253
Grommet, rubber, rd, 5/8 in id by 1-1/8 in od by 1/8 in groove w	2	8	5325-00-185-0001 - MS 35489-46
Stock Class 5340			
Mount, resilient, 2-1/2 in lg by 1 in w by 3/8 in thk	8	2, 4, 6	5340-21-110-0832 - 351564
Mount, resilient, 5 in lg by 1 in w by 3/8 in thk	4	2	5340-21-110-0831 - 351563
Strap, webbing, 96 in lg by 1 in w	2		5340-21-111-0016 - 351271
Stock Class 5820			
Adapter, antenna to antenna base, No 1	2		5820-99-949-1077 ZA 27220 -
Antenna element, 4 ft 1-1/2 in lg, No 2, MK 2	2		5820-99-949-0985 ZA 44683 -

Fig 1 Check List (Sheet 1 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Antenna element, 4 ft 1-1/2 in lg, No 3, MK 2	2		5820-99-949-0995 ZA 44682 -
Base, aerial support, 5-1/4 in lg, 5 in dia o/a No 28	1	7, 12	5820-99-949-0981 ZA 41843 Mod 351617
Bracket, mounting, control panel, 6 in lg	1	4	5820-21-111-1473 - 351612
Case, maintenance kit, electronic equipment, steel, No 49	1		5820-99-949-1009 ZB 14972 -
Control, radio set, remote unit, R, 24V, MK 1	1	2, 12	5820-99-949-1072 ZA 46292 -
Control, radio set, 4 way, unit C	2	4, 6	5820-99-949-1007 ZA 46192 -
Distribution box, remote control, 6-11/16 in lg by 2-7/16 in w	1		5820-21-106-5762 - -
Distribution box, remote control, 6-3/4 in lg by 6-3/8 in w	1		5820-21-106-5761 - -
Interconnecting box, rebroadcast unit B	1		5820-99-949-1024 ZA 46193 -
Interconnecting box, 2 set, J2, 24V	1	2, 12	5820-99-949-1098 ZA 46286 -
Interconnecting box, 4 way, No 4	1	2	5820-99-949-0960 ZA 46982 -
Panel, power distribution, 7-7/8 in lg, 5-1/4 in w, 2-1/4 in h	1	5, 12	5820-21-100-8887 - 3011950
Panel, power distribution, 14-3/8 in lg, 6-3/16 in w	1	5, 12	5820-21-100-8888 - 3012005

Fig 1 Check List (Sheet 2 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Panel, power distribution, 14-3/8 in lg, 6-1/4 in w	1	5, 12	5820-21-100-8890 - 3011925
Plate, st, 4 in lg, 2 in w	4	4	5820-21-111-1458 - 351549
Rack, electrical equipment, 21 in lg by 13 in h by 1-1/4 in d	1	2	5820-21-111-1313 - 351568
Support, antenna st, threaded	1		5820-99-949-1022 ZA 29831 -
Support, antenna tuning unit, 19-1/4 in lg by 6 in h	1	6	5820-21-111-1377 - 351606
Support, radio set, steel, 41-1/2 in lg, 12-5/8 in w	1	10	5820-21-100-8909 - 3012570
Tray, electrical equipment, 22-3/4 in by 14 in by 4-1/2 in, CDN	1	2	5820-21-108-2427 ZB 14936 Mod 351593
Tray, battery, steel, 16 in lg, 14-3/4 in w, 1-1/4 in thk	1	4	5820-21-111-1440 - 351543
Stock Class 5930			
Switch, knife, 4P2T	1	5, 12	5930-21-100-8886 - 3012580
Stock Class 5965			
Handset telephone, No 1	1		5965-99-901-0727 - -
Headset, electrical, 2 earphone, No 1A	2		5965-99-901-0725 - -
Headset-microphone, 2 earphones	1		5965-21-106-3530 - -

Fig 1 Check List (Sheet 3 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Microphone, magnetic, 300 ohm, w/neckband snatch harness, No 6	2		5965-99-901-0717 - -
Stock Class 5970			
Insulation tape, electrical, 3/4 in w	1		5970-21-100-0310 - -
Insulator plate, plastic, 7 in lg, 1-1/2 in w	1	3	5970-21-100-8906 - 3012372
Insulator plate, plastic, 21 in lg, 1-1/2 in w	1	3	5970-21-100-8907 - 3012371
Stock Class 5975			
Rack, electrical equipment, No 82, CDN	1	2	5975-21-108-2426 ZB 14893 Mod 351592
Stock Class 5985			
Antenna base and tuning unit assembly, CDN	1	6, 12	5985-21-108-2632 ZA 47032 Mod 351569
Antenna, 140 ft, w/reel	1		5985-21-106-4107 - -
Antenna, vertical, 34 ft, steel, telescopic (per EIS 1324)	1	11	5985-21-101-8705 - -
Base, antenna support	1	3, 12	5985-21-100-8910 - 3007246
Case, antenna, 4 ft 3-1/2 in lg, 1-1/8 in dia, No 2	1	11	5985-99-949-1061 ZA 11550 -
Stock Class 5995			
Cable assembly, power, electrical, 2 cont, 7 ft lg	1	8, 12	5995-21-100-8902 - 3012000

Fig 1 Check List (Sheet 4 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Cable assembly, power, electrical, 2 cont, 10 ft lg	1	4, 8, 12	5995-21-100-8901 - 3012145
Cable assembly, power, electrical, 2 cont, 30 ft lg, dc	1		5995-21-100-8900 - 3011975
Cable assembly, power, electrical, 2 cont, 50 ft lg, ac	1		5995-21-100-8899 - 3011945
Cable assembly, radio frequency, 1 cond, 12 ft 6 in lg, No 120	1	8, 9, 12	5995-99-949-1037 ZA 49890 -
Cable assembly, radio frequency, 1 cond, 50 ft, 1-1/2 in lg, No 5	1		5995-99-949-1016 ZA 47041 -
Cable assembly, special purpose, electrical, 2 cond, 8 in lg, No 400	1	12	5995-99-949-0976 ZA 49893 -
Cable assembly, special purpose, electrical, 2 cond, 1 ft 6 in lg, No 397	1	8, 12	5995-99-949-0978 ZA 47084 -
Cable assembly, special purpose, electrical, 2 cond, 6 ft 6 in, No 399	1	12	5995-99-949-1001 ZA 47108 -
Cable assembly, special purpose, electrical, 2 cond, 10 ft lg	1		5995-21-106-4441 - -
Cable assembly, special purpose, electrical, 6 cond, 30 ft, No 35	1		5995-99-949-1080 ZA 46732 -
Cable assembly, special purpose, electrical, 12 cond, 2 ft 9 in lg, No 85	1	4, 12	5995-99-949-1031 ZA 50160 -
Cable assembly, special purpose, electrical, 12 cond, 3 ft 6 in lg	1	12	5995-21-111-1305 ZA 50161 Mod 351616
Cable assembly, special purpose, electrical, 12 cond, 3 ft 6 in lg, No 85	1	8, 12	5995-99-949-1027 ZA 49901 -

Fig 1 Check List (Sheet 5 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Cable assembly, special purpose, electrical, 12 cond, 12 ft lg, No 85	1	8, 9, 12	5995-99-949-1029 ZA 46878 -
Cable assembly, special purpose, electrical, 25 cond, 1 ft 2 in lg, No 1	1	12	5995-99-949-0964 ZA 50158 -
Cable assembly, special purpose, electrical, 25 cond, 7-1/2 in lg, No 5	1	12	5995-99-949-0963 ZA 49908 -
Lead assembly, electrical, 8 leads	2		5995-21-106-4535 - -
Lead, electrical, 10 in lg	1	6, 12	5995-21-111-1476 ZA 46904 Mod 351614
Lead, electrical, 1 ft 4 in, No 2	1	7, 8, 12	5995-99-949-1083 ZA 46701 -
Lead, electrical, 2 ft 6 in lg, No 3A	3	4, 10, 12	5995-99-949-1068 ZA 0781 -
Lead, electrical, 5 ft 6 in lg, No 23	4	12	5995-21-106-4295 ZA 1949 -
Lead, electrical, 6 ft lg, No 186	1	3, 12	5995-21-106-4366 ZA 10318 -
Lead, electrical, 8 in lg	2	6, 7	5995-21-111-1477 ZA 46905 Mod 351613
Lead, electrical, No 196, 3 ft,	1		5995-21-108-2665 ZA 47089 -
Lead, electrical, braid, 36 in lg, w/plate	1	10	5995-21-106-4578 - -
Lead, electrical, insulated, 10 in lg, positive	1	12	5995-21-100-8897 - 3012185

Fig 1 Check List (Sheet 6 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Lead, electrical, insulated, 26 in lg, positive	2	12	5995-21-100-8896 - 3012170
Lead, electrical, insulated, 2 ft 2 in lg	1	12	5995-21-100-8895 - 3012600
Stock Class 6115			
Generator set, gasoline engine, PU-5008/U, w/e (per EIS 9150)	2	10	6115-21-100-8051 - -
Stock Class 6145			
Cable, telephone, WD-1/TT, 1/4 mile on reel DR-8	2		6145-00-226-8812 - -
Stock Class 6150			
Lead, electrical, 3 ft 4 in lg	1	8, 12	6150-210111-1089 - 351615
Lead, electrical, 7 ft lg	1		6150-21-111-1099 - 351618
Stock Class 6630			
Hydrometer, syringe, battery, specific gravity, C1	1		6630-21-107-3289 - -
Stock Class 7105			
Chair, folding, metal	2	10	7105-21-536-0703 - -
Stock Class 7240			
Can, gasoline, military, C1	1		7240-00-222-3088 - -

Fig 1 Check List (Sheet 7 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Stock Class 7610			
Manual, technical, operators, radio station, C42/52, truck, panel, 3/4 ton, CDN	1		7610-21-102-2439 - -
Stock Class 8030			
Sealing compound, rubber	1		8030-21-102-7013 - 3012141
Stock Class 8110			
Can, screw cap, C2, 1 gal	1		8110-21-106-6292 - -
Stock Class 8125			
Bottle, screw cap, round, polyethylene, 1 qt	1		8125-21-102-7012 - 3011718
Stock Class 8465			
Field pack, canvas, signal, No 1, MK 1/1	3		8465-99-940-0047 ZA 27294 -
SEPARATELY DEMANDABLE ITEMS			
Stock Class 6140			
Battery, storage, 6V, 200A/H, spcl, c/w handles and clamp-on-wing nut term	4	10, 12	6140-21-102-6809 - DEX 749947
Battery, storage, 12V, 90A/H, JCNAAF-BB46	2	4, 12	6140-00-126-1544 - -
ATTACHING STOCK			
Stock Class 5305			
Screw, cap, hex hd, low carbon st, cad or zn pl, 1/4-20UNC-2A by 3/4	5	7	5305-00-012-1887 - MS 35291-6

Fig 1 Check List (Sheet 8 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Screw, cap, hex hd, low carbon st, cad or zn pl, 1/4-20UNC-2A by 1-1/4	1	7	5305-00-012-1913 - MS 35291-10
Screw, cap, hex hd, low carbon st, cad or zn pl, 3/8-16UNC-2A by 1/2	3	7	5305-00-012-1852 - MS 35291-55
Screw, machine, cross recess, fl hd, st, cad or zn pl w/chromate fin, 1/4-20UNC-2A by 1-1/4	4	2	5305-00-059-4964 - MS 35192-74
Screw, machine, cross recess, pan hd, st, cad pl, 1/4-20UNG-2A by 1	12	5	5305-00-059-7724 - MS 35206-73
Screw, tapping, thread forming cross recess, pan hd, blunt pt, st, cad pl, No 10-16 by 1/2	35	3, 4, 8, 9	5305-21-111-0065 - MS 24621-43
Screw, tapping, thread cutting, hex hd, sltd blunt pt, st, cad or zn pl, 1/4-20 by 3/4	2	6	5305-21-111-3468 - 172431
Stock Class 5306			
Bolt, machine, hex hd, low carbon st, cad or zn pl, 5/16-18UNC-2A x 1-1/4	12	2	5306-00-012-2027 - MS 35291-36
Stock Class 5310			
Nut, pl, hex, st, cad or zn pl, 5/16-18UNC-2B, 1/2 in w by 3/16 in thk	16	2, 4, 6	5310-21-111-0151 - MS 35691-502
Nut, pl, hex, st, cad or zn pl w/chromate fin, 1/4-20UNC-2B, 7/16 in w by 7/32 in thk	22	2, 5, 7	5310-00-550-0777 - MS 35690-402
Nut, pl, hex, st, cad or zn pl w/chromate fin, 5/16-18UNC-2B, 1/2 in w by 17/64 in thk	16	4	5310-00-543-2629 - MS 35690-502
Nut, pl, hex st, cad or zn pl w/chromate fin, 3/8-16UNC-2B, 9/16 in w by 21/64 in thk	3	7	5310-00-543-2628 - MS 35690-602
Washer, fl, sq, st, 3/8 in screw size, 1-1/4 sq, .1345 thk	4	4	5310-21-102-6501 351556

Fig 1 Check List (Sheet 9 of 10)

Name of Item and Designation	Qty per Kit	Fig No	COC/NATO Stock No UK Stock No ADE No
Washer, fl, st, cad or zn pl w/chromate fin, 1/4 in screw size, 5/8 in od by 0.065 in thk	13	5, 6	5310-00-194-1540 - MS 15795-210
Washer, fl, st, cad or zn pl w/chromate fin, 5/16 in screw size, 11/16 in od by 0.065 in thk	16	2, 4, 6	5310-00-227-6566 - MS 15795-212
Washer, lock, int ext teeth locking feature, st, cad or zn pl, 1/4 in screw size by 0.690 in max od	11	6, 7	5310-00-261-6187 - SK 4014-20-00 CAD
Washer, lock, st, cad or zn pl, fl ext teeth locking feature, 1/4-(0.256 to 0.267) in screw size, 0.494 in to 0.510 in od by 0.023 in to 0.028 in thk	12	5	5310-00-012-1753 - MS 35335-19
Washer, lock, st, cad or zn pl w/chromate fin, 1/4 in screw size, 0.493 in od by 0.072 in thk	13	2, 4, 7	5310-00-012-0380 - MS 35338-25
Washer, lock, st, cad or zn pl w/chromate fin, 3/8 in screw size, 0.694 in od by 0.040 in thk	3	7	5310-00-639-8062 - MS 35335-21
Stock Class 5340			
Clamp, loop, pl, double tube 11/16 in	4	8	5340-21-102-7190 - ADH 440S-22-8
Clamp, loop, st, cad or lead pl, 1/4 in loop id by 1/2 in w	5	3	5340-00-291-5317 - AN 742-4
Clamp, loop, st, cad or zn pl, 3/8 in loop id by 1/2 in w	12	8, 9	5340-00-047-3977 - AN 742-6
Clamp, loop, st, cad or zn pl, 5/8 in loop id by 1/2 in wide	2	8	5340-00-057-2896 - AN 742-10

Fig 1 Check List (Sheet 10 of 10)

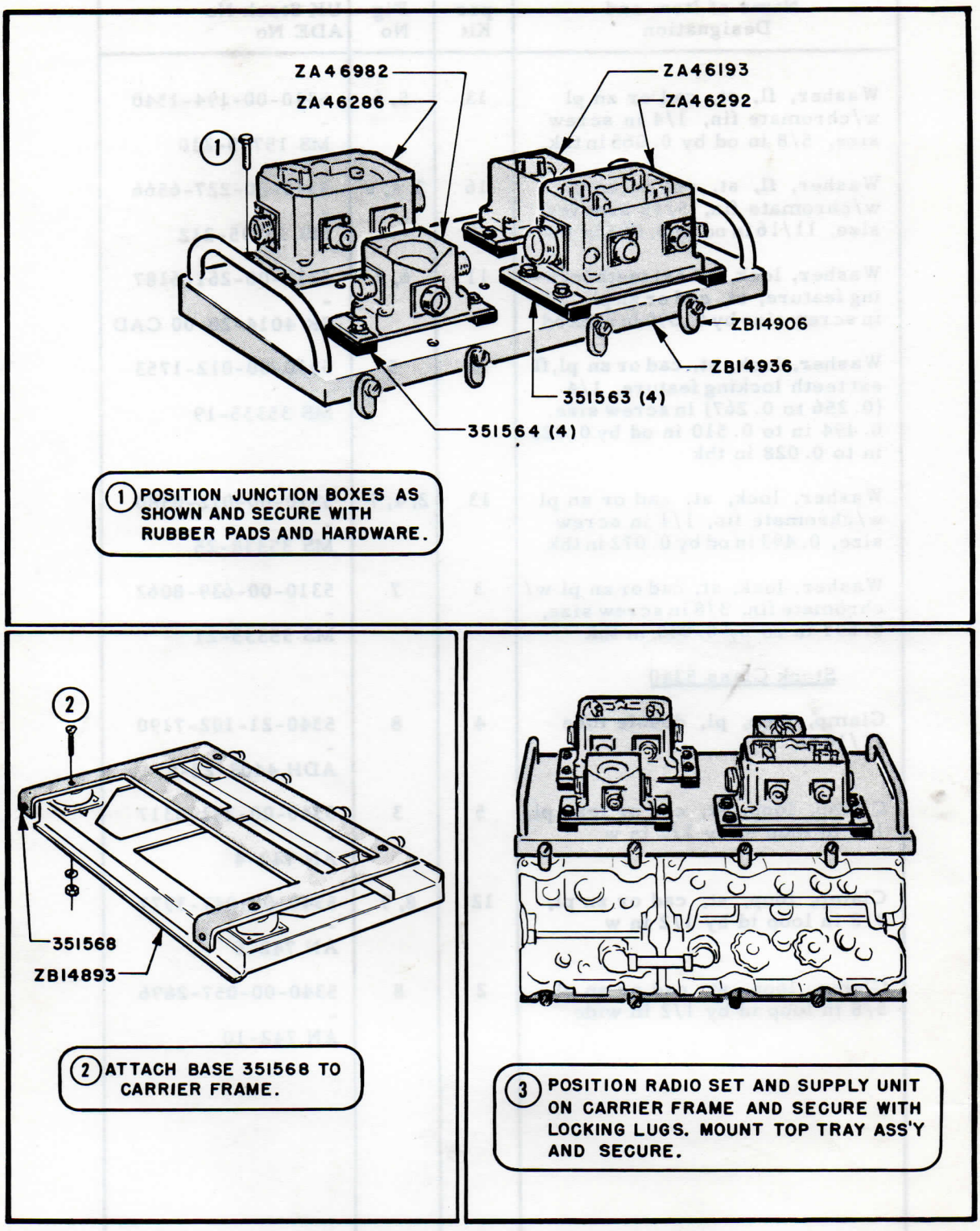


Fig 2 Mounting Junction Boxes and Radio Set

Mounting Junction Boxes and Radio Set

Ref	Qty	Hardware Required
①	12	Screw, hex hd cap 5/16-18 x 1-1/4
	12	Washer, fl 5/16 nom
	12	Nut, hex 5/16-18
	12	Nut, hex jam 5/16-18
②	4	Screw, fl hd mach 1/4-20 x 1-1/4
	4	Washer, lock 1/4 nom
	4	Nut, hex 1/4-20

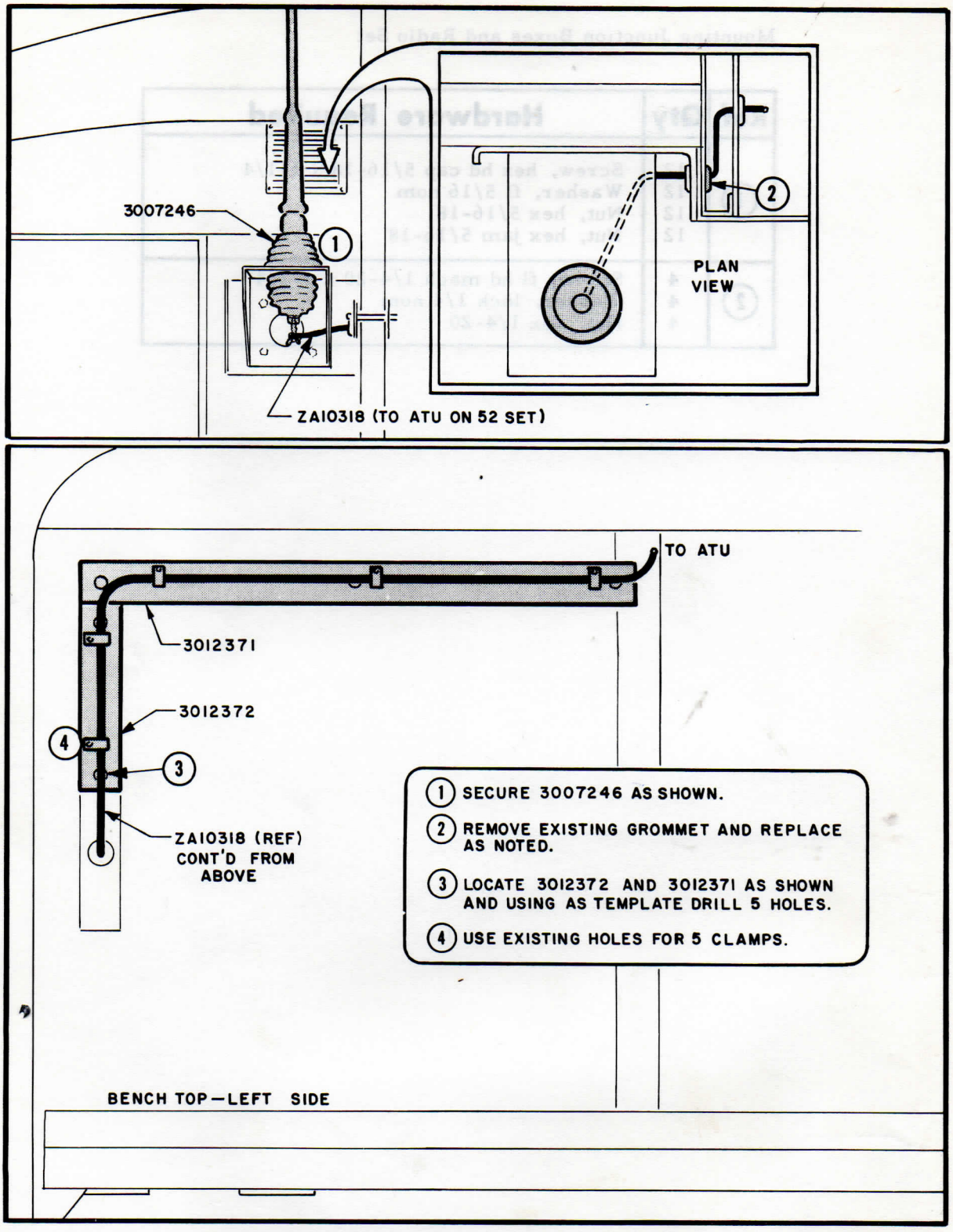


Fig 3 Outside Antenna and Wiring Arrangement

Outside Antenna and Wiring Arrangement

Ref	Qty	Hardware Required
(2)	1	Grommet, 5/16 dia hole 1/2 dia groove Hevlin No 2215
(3)	5	Screw, pan hd tapping type "B" No 10 x 1/2
(4)	5 5	Clamp, AN 742-4 Screws, pan hd tapping type "B" No 10 x 1/2

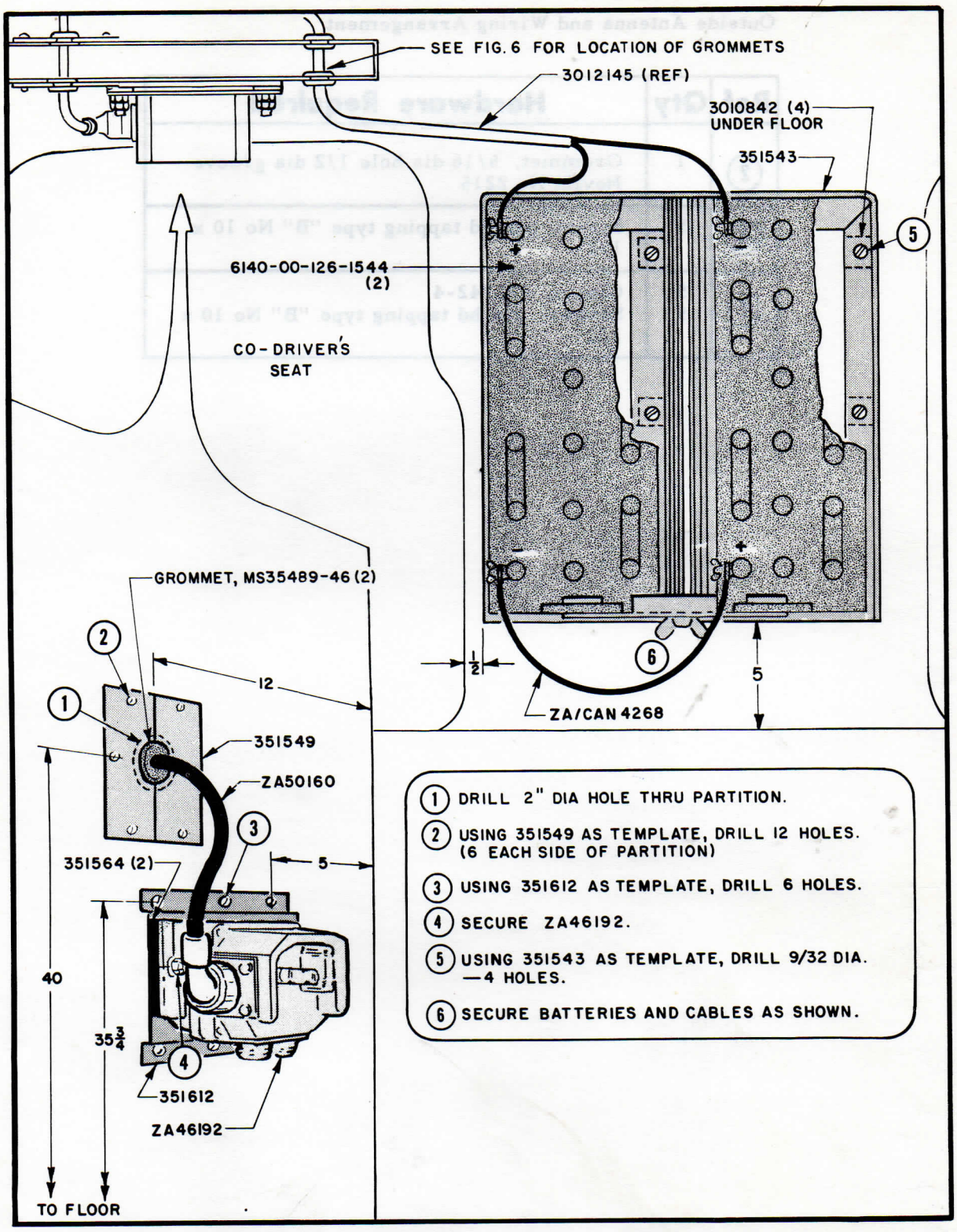
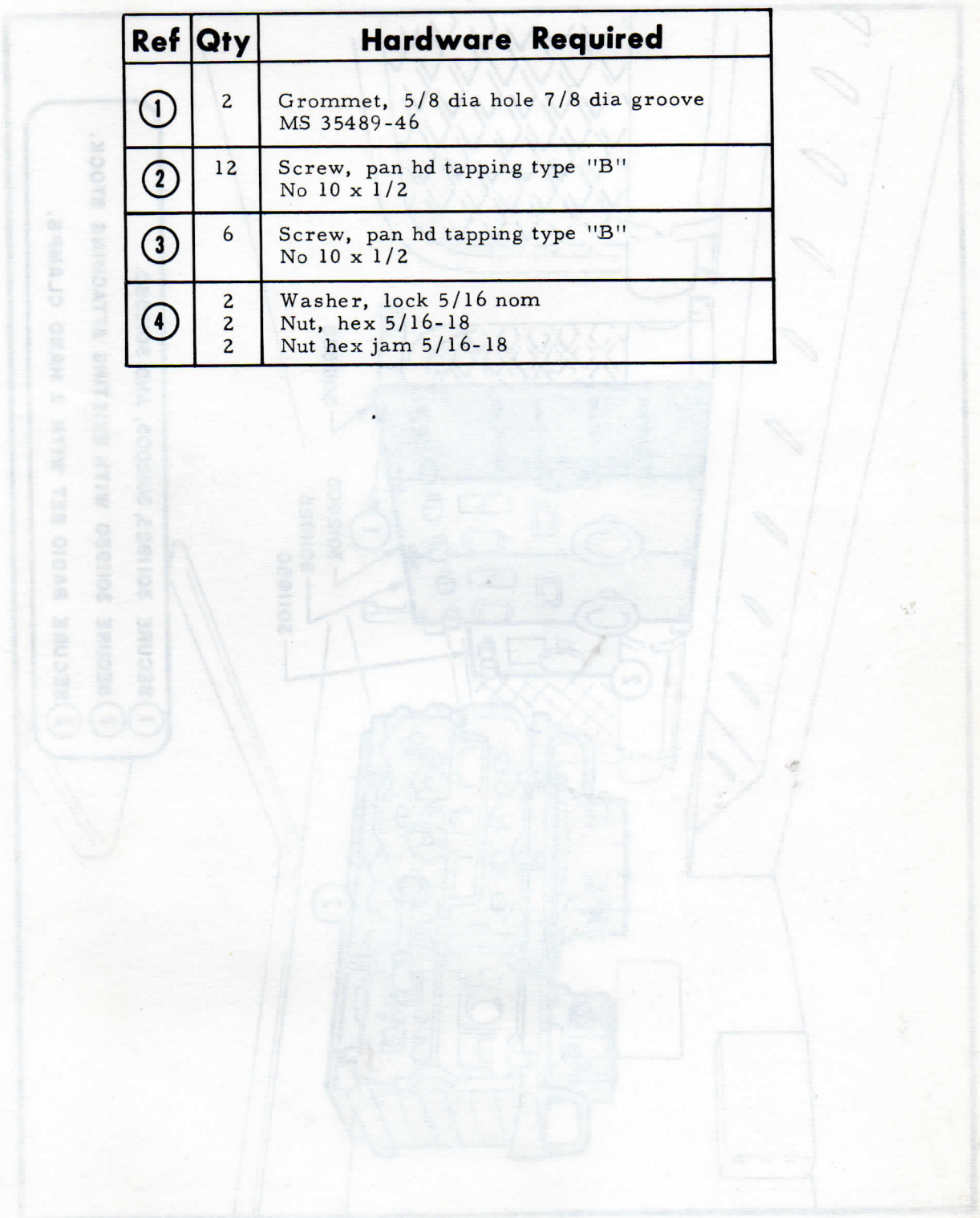


Fig 4 Junction Box and Batteries in Cab

Junction Box and Batteries in Cab

Ref	Qty	Hardware Required
(1)	2	Grommet, 5/8 dia hole 7/8 dia groove MS 35489-46
(2)	12	Screw, pan hd tapping type "B" No 10 x 1/2
(3)	6	Screw, pan hd tapping type "B" No 10 x 1/2
(4)	2 2 2	Washer, lock 5/16 nom Nut, hex 5/16-18 Nut hex jam 5/16-18



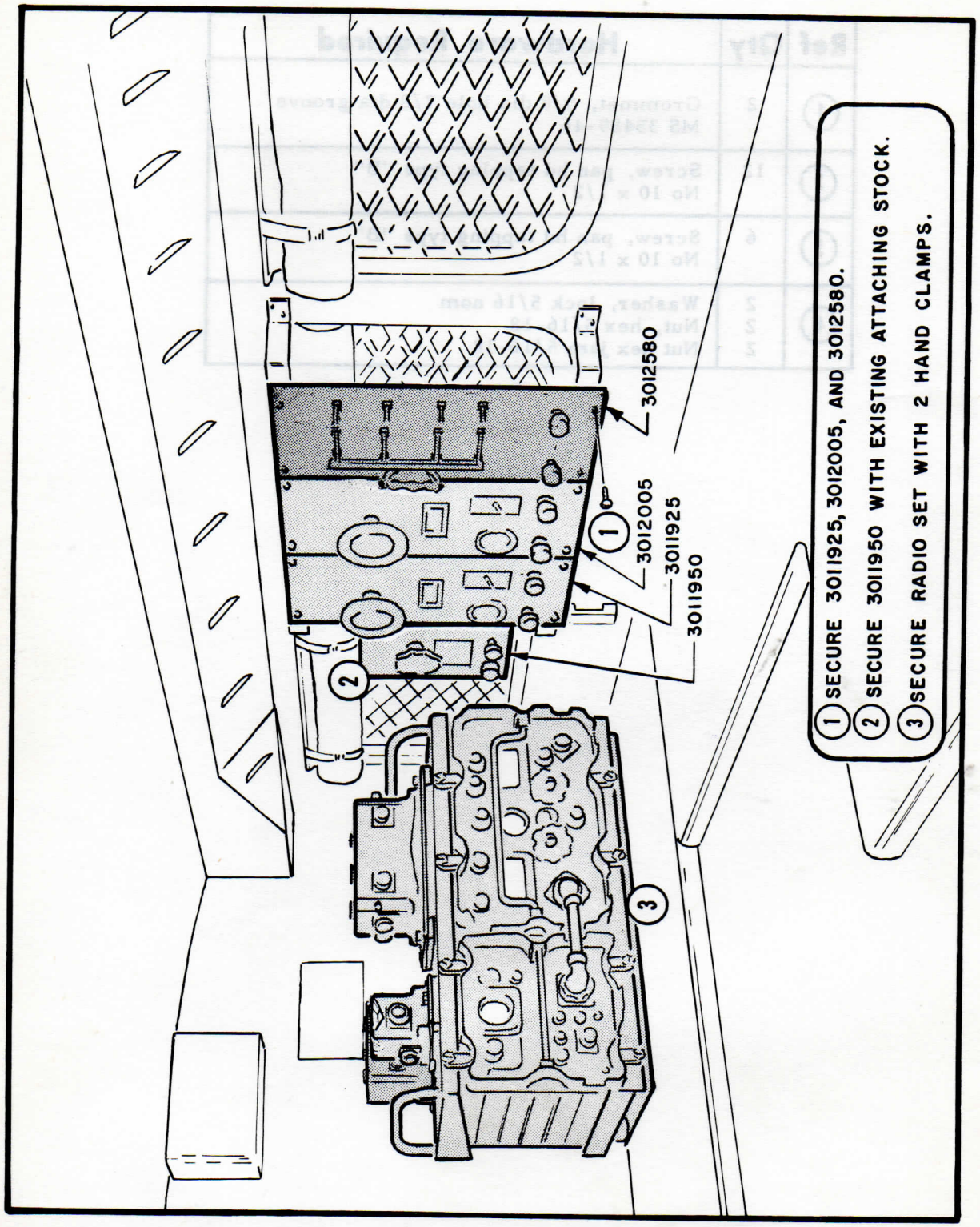
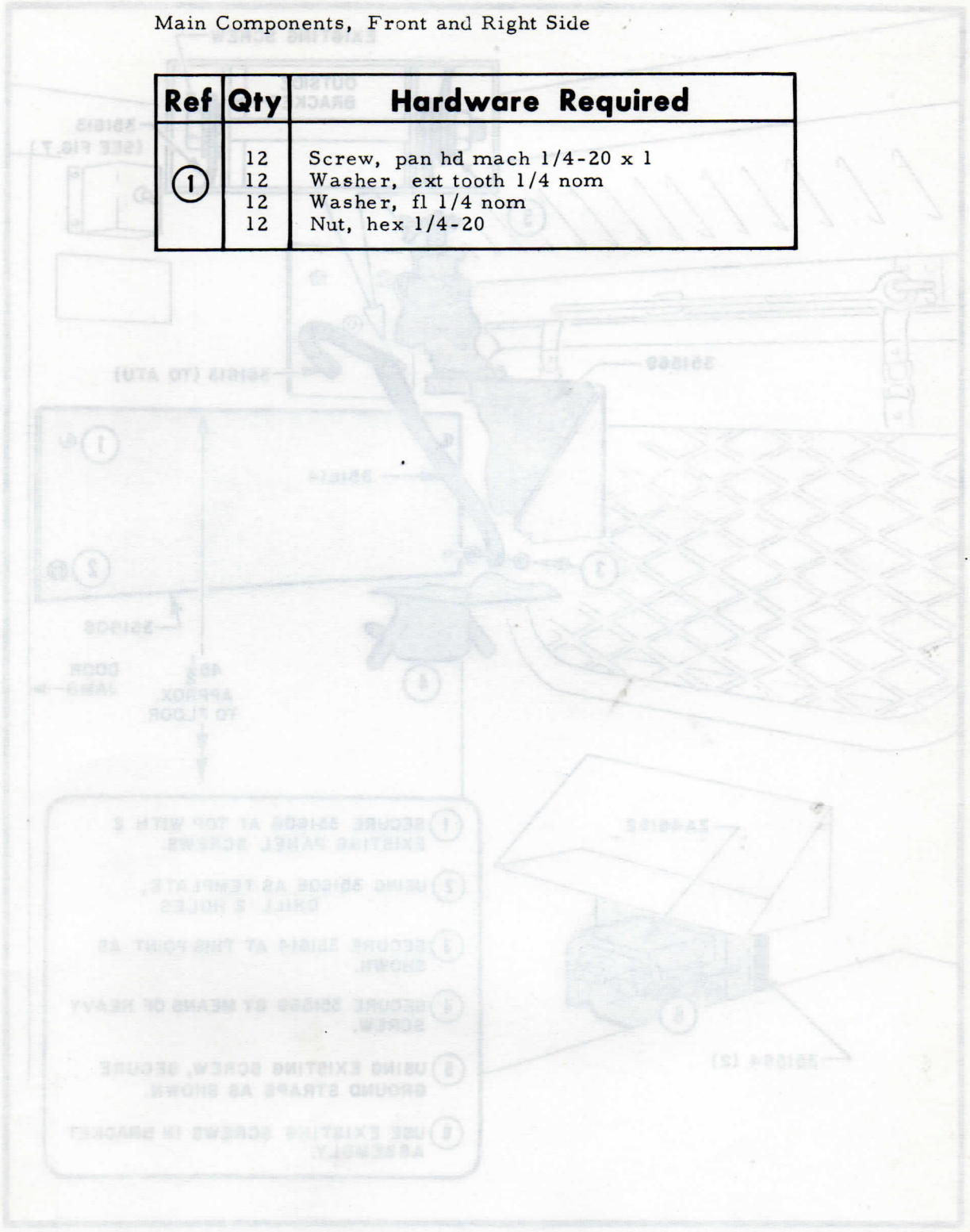


Fig 5 Main Components, Front and Right Side

Main Components, Front and Right Side

Ref	Qty	Hardware Required
①	12	Screw, pan hd mach 1/4-20 x 1
	12	Washer, ext tooth 1/4 nom
	12	Washer, fl 1/4 nom
	12	Nut, hex 1/4-20



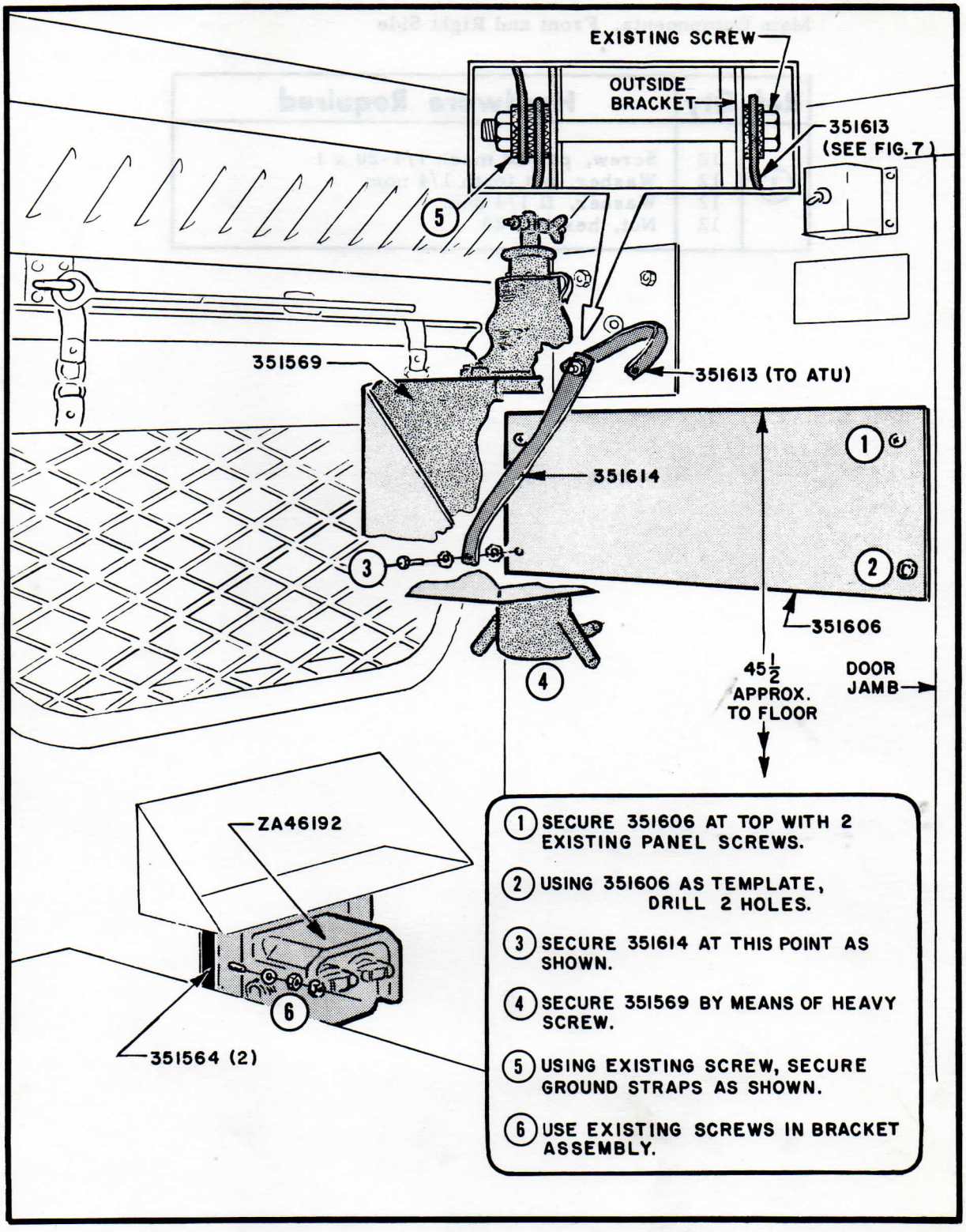
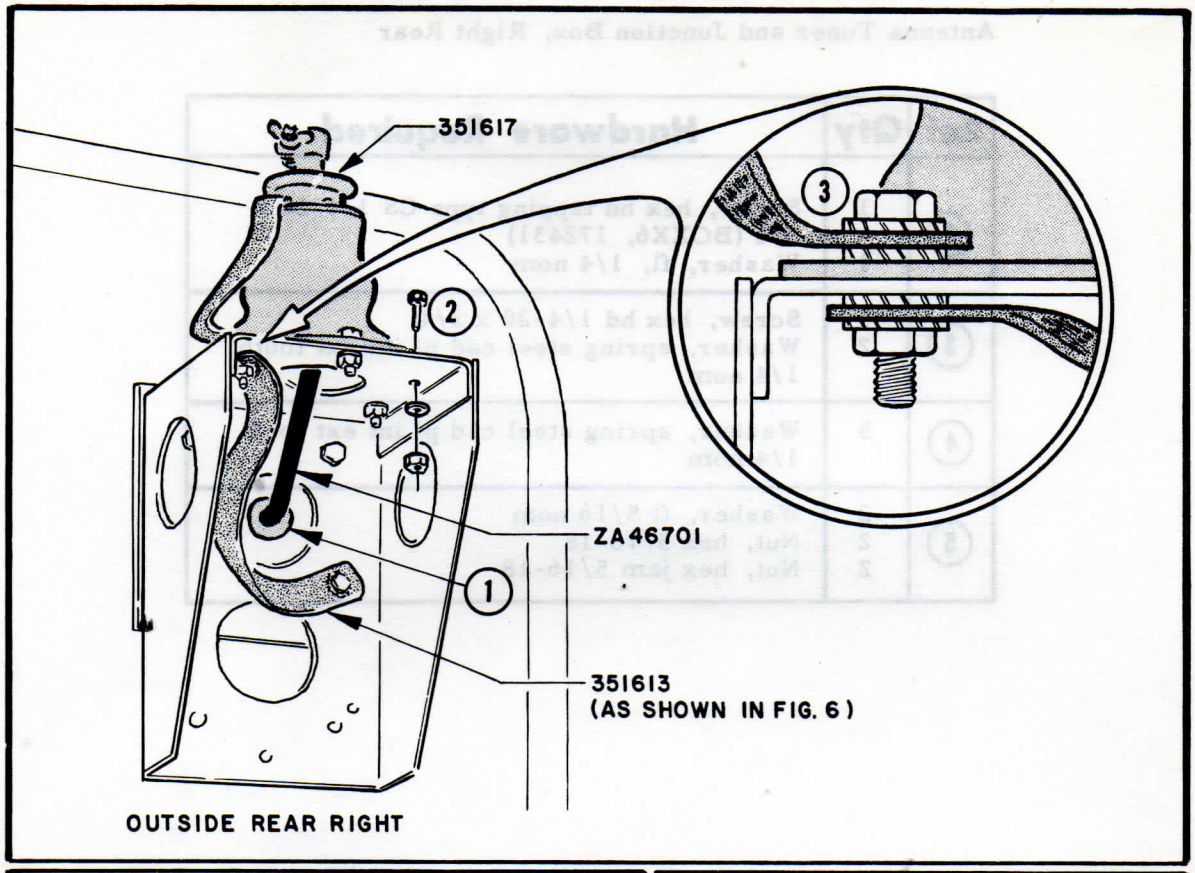


Fig 6 Antenna Tuner and Junction Box, Right Rear

Antenna Tuner and Junction Box, Right Rear

Ref	Qty	Hardware Required
(2)	1	Screw, hex hd tapping type CS 1/4-20 x 3/4 (BCXX6, 172431)
	1	Washer, fl, 1/4 nom
(3)	1	Screw, hex hd 1/4-20 x 3/4
	2	Washer, spring steel cad pl int ext tooth 1/4 nom
(4)	5	Washer, spring steel cad pl int ext tooth 1/4 nom
(5)	2	Washer, fl 5/16 nom
	2	Nut, hex 5/16-18
	2	Nut, hex jam 5/16-18



1. REMOVE EXISTING GROMMET AND REPLACE WITH GROMMET AS NOTED.
2. SECURE ZA46701 TO 351617 THEN ASSEMBLE TO BRACKET.
3. SECURE GROUND STRAPS AT THIS POINT AS SHOWN.
4. PLACE 306664 ON FLOOR AND SECURE USING EXISTING HOLES IN RACK LEG AND BRACKET AS SHOWN.

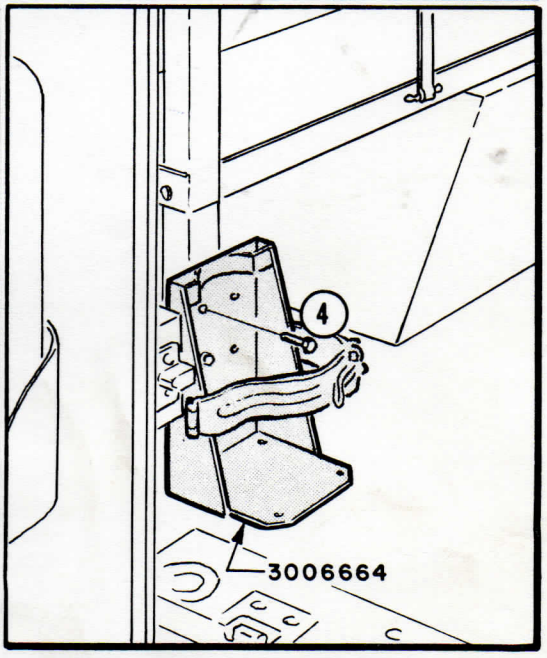
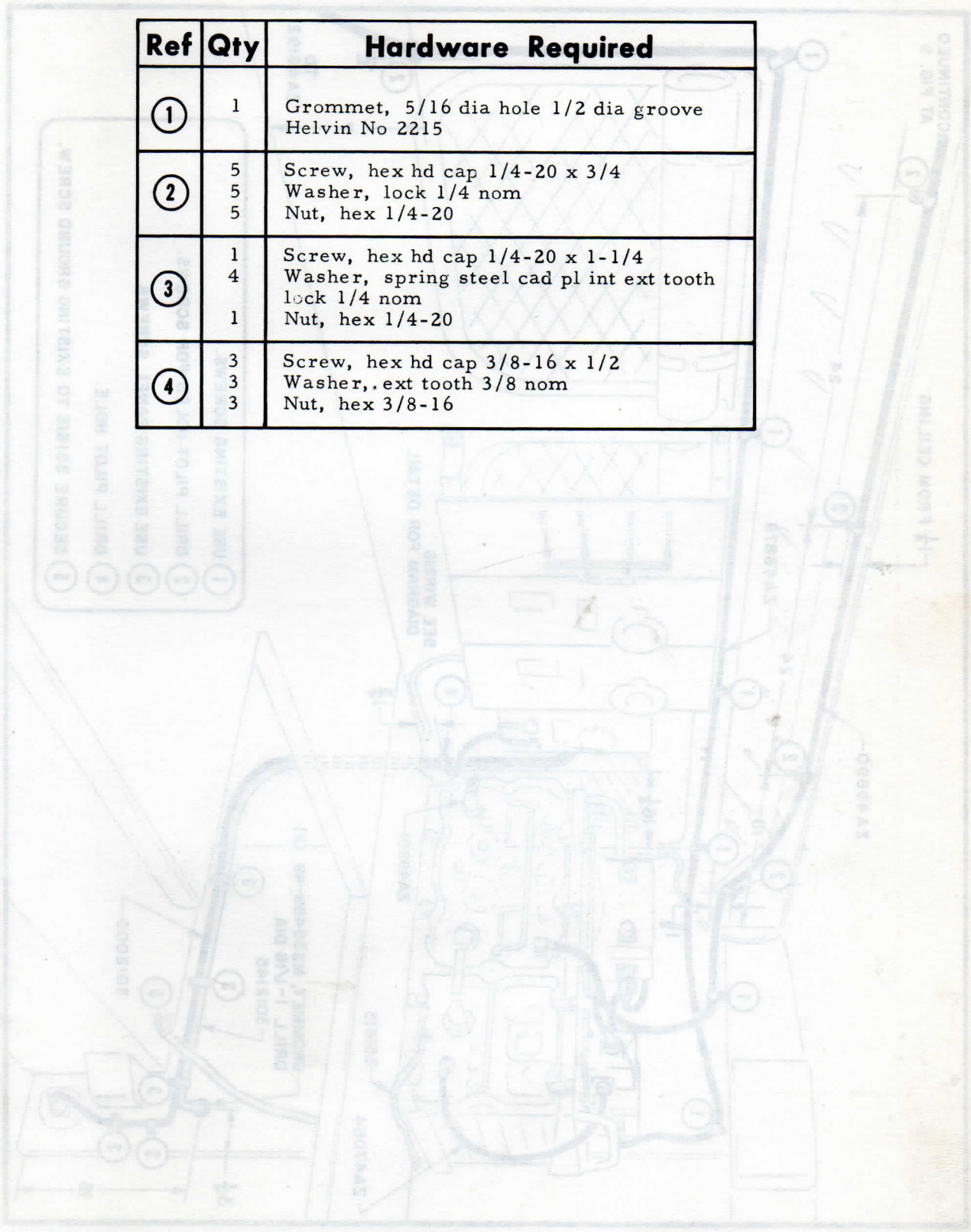


Fig 7 Outside Antenna and Extinguisher Bracket

Outside Antenna and Extinguisher Bracket

Ref	Qty	Hardware Required
1	1	Grommet, 5/16 dia hole 1/2 dia groove Helvin No 2215
2	5 5 5	Screw, hex hd cap 1/4-20 x 3/4 Washer, lock 1/4 nom Nut, hex 1/4-20
3	1 4 1	Screw, hex hd cap 1/4-20 x 1-1/4 Washer, spring steel cad pl int ext tooth lock 1/4 nom Nut, hex 1/4-20
4	3 3 3	Screw, hex hd cap 3/8-16 x 1/2 Washer, ext tooth 3/8 nom Nut, hex 3/8-16



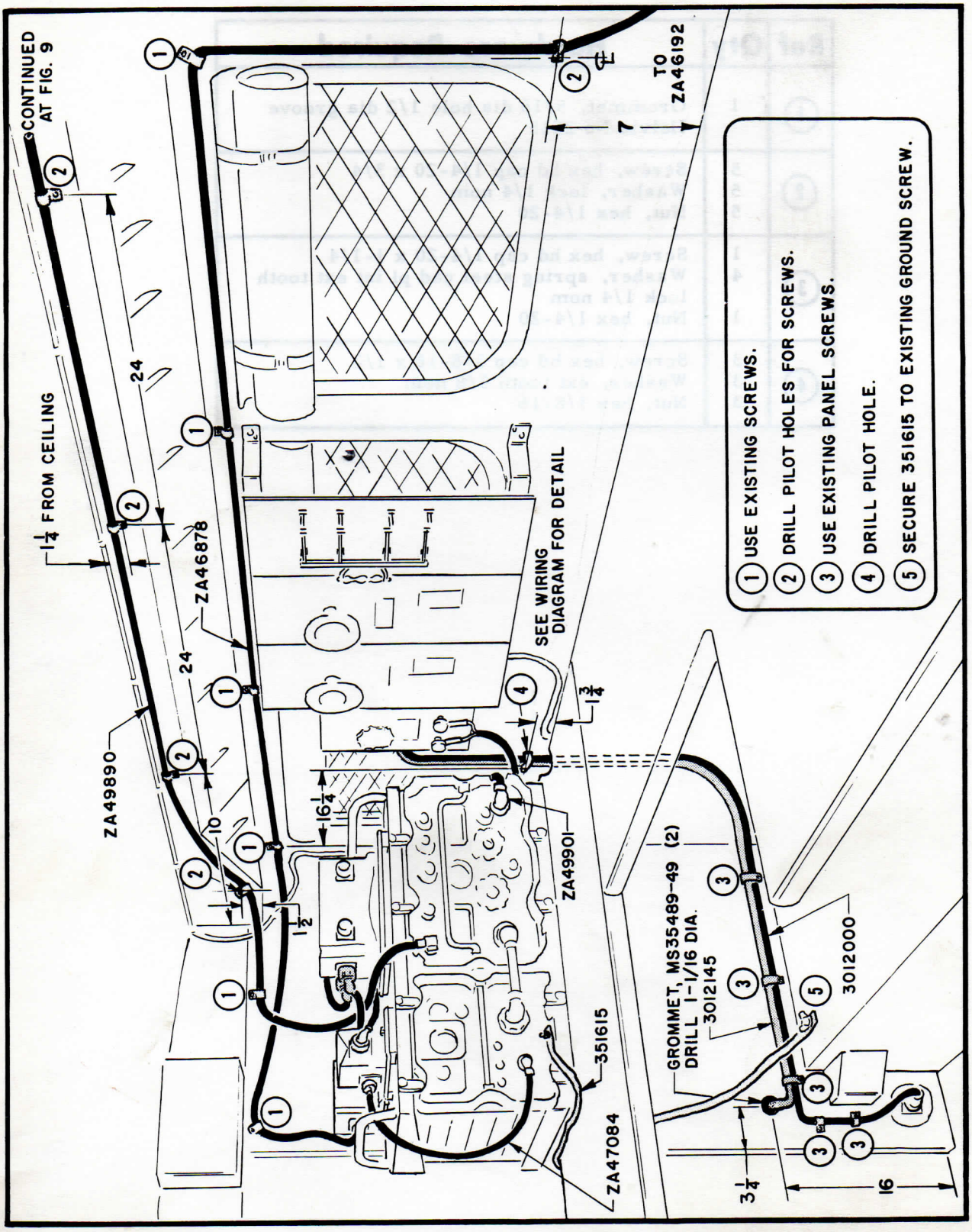


Fig 8 Method of Fastening Cables, Front and Right Side

Method of Fastening Cables, Front and Right Side

Ref	Qty	Hardware Required
1	6	Clamp, AN 742-6
2	5 5	Clamp, AN 742-6 Screw, pan hd tapping type "B" No 10 x 1/2
3	3 2	Clamp, dual 440S-22-8 Clamp, AN 742-10
4	1 1	Clamp, dual 440S-22-8 Screw, pan hd tapping type "B" No 10 x 1/2

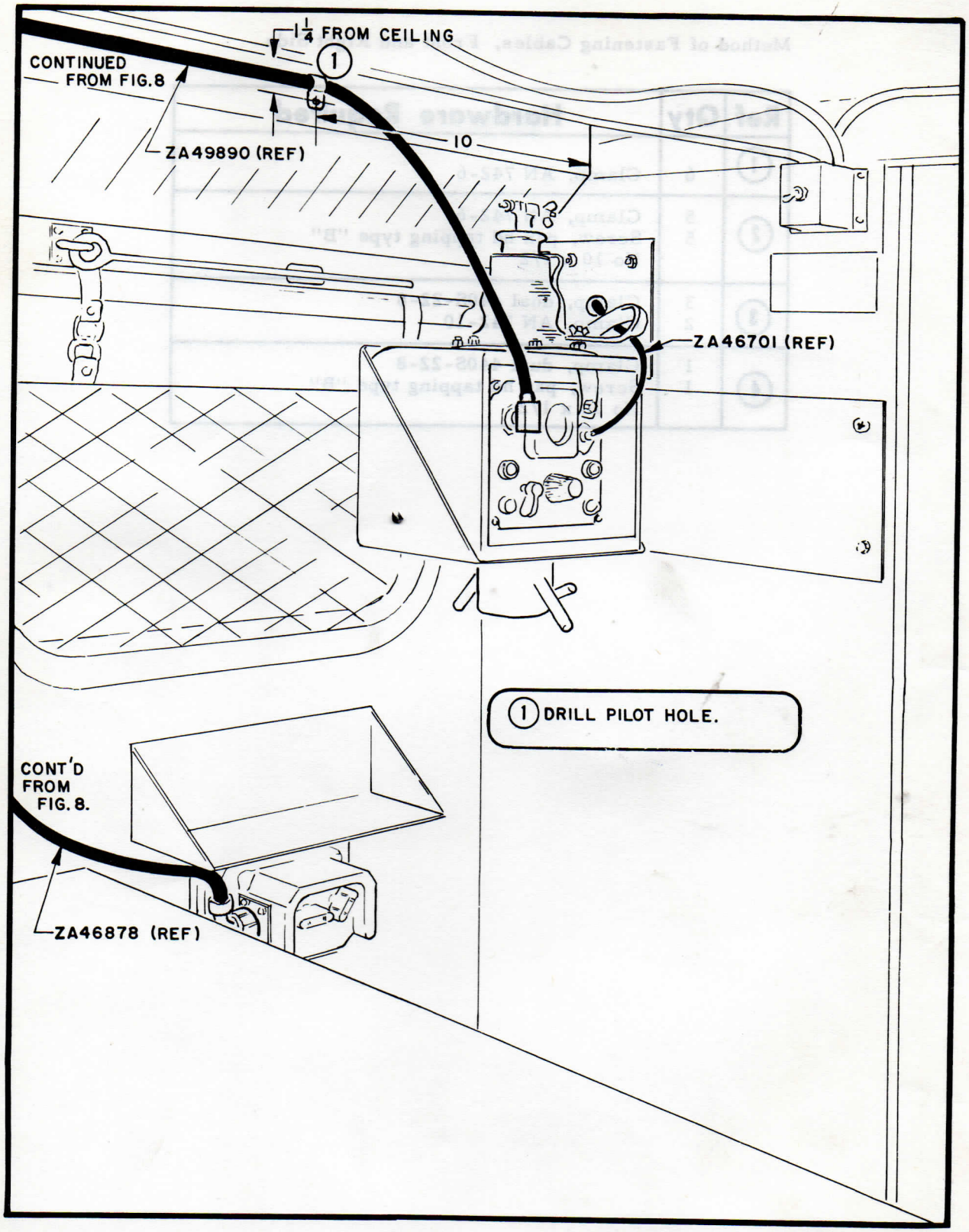
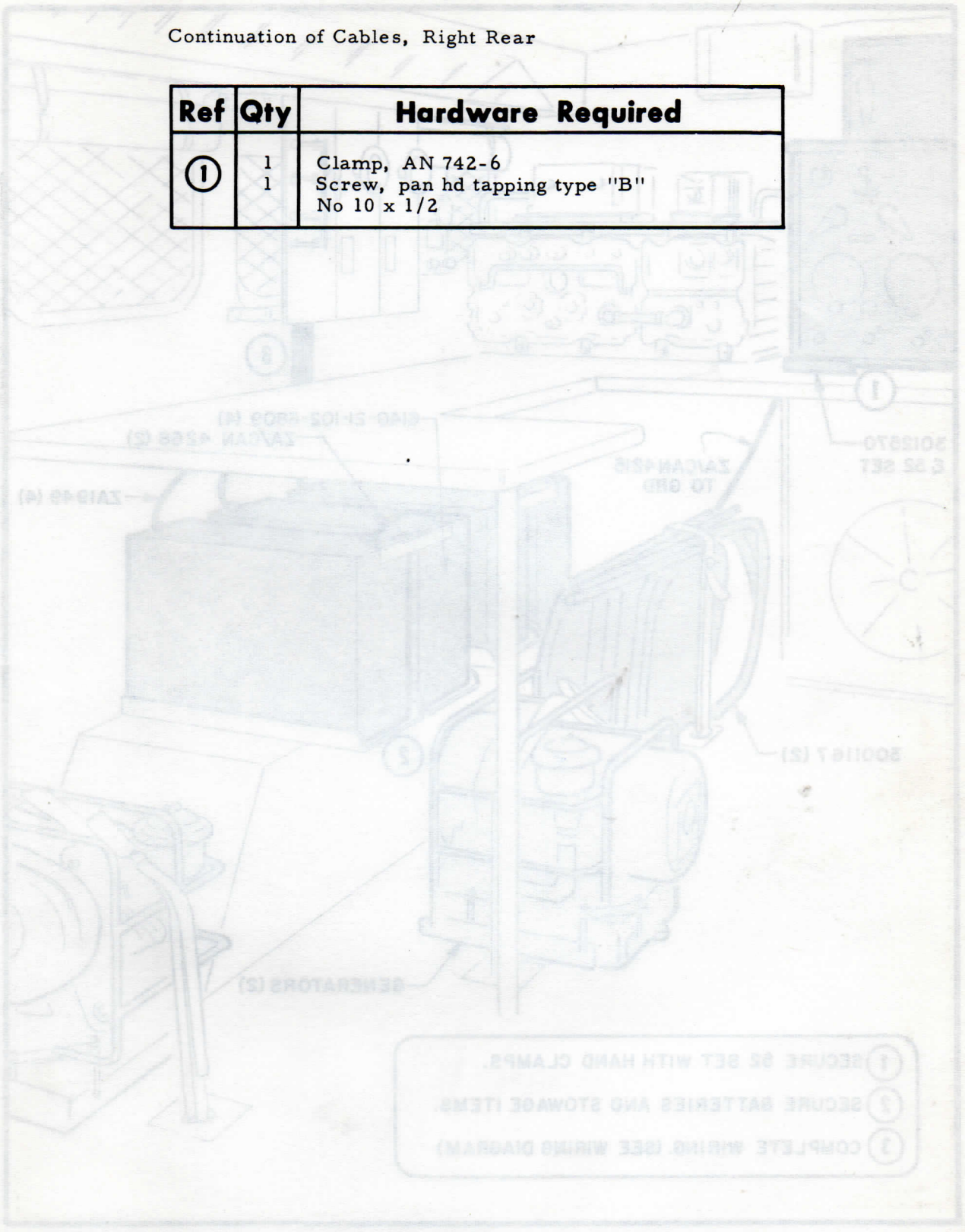


Fig 9 Continuation of Cables, Right Rear

Continuation of Cables, Right Rear

Ref	Qty	Hardware Required
①	1 1	Clamp, AN 742-6 Screw, pan hd tapping type "B" No 10 x 1/2



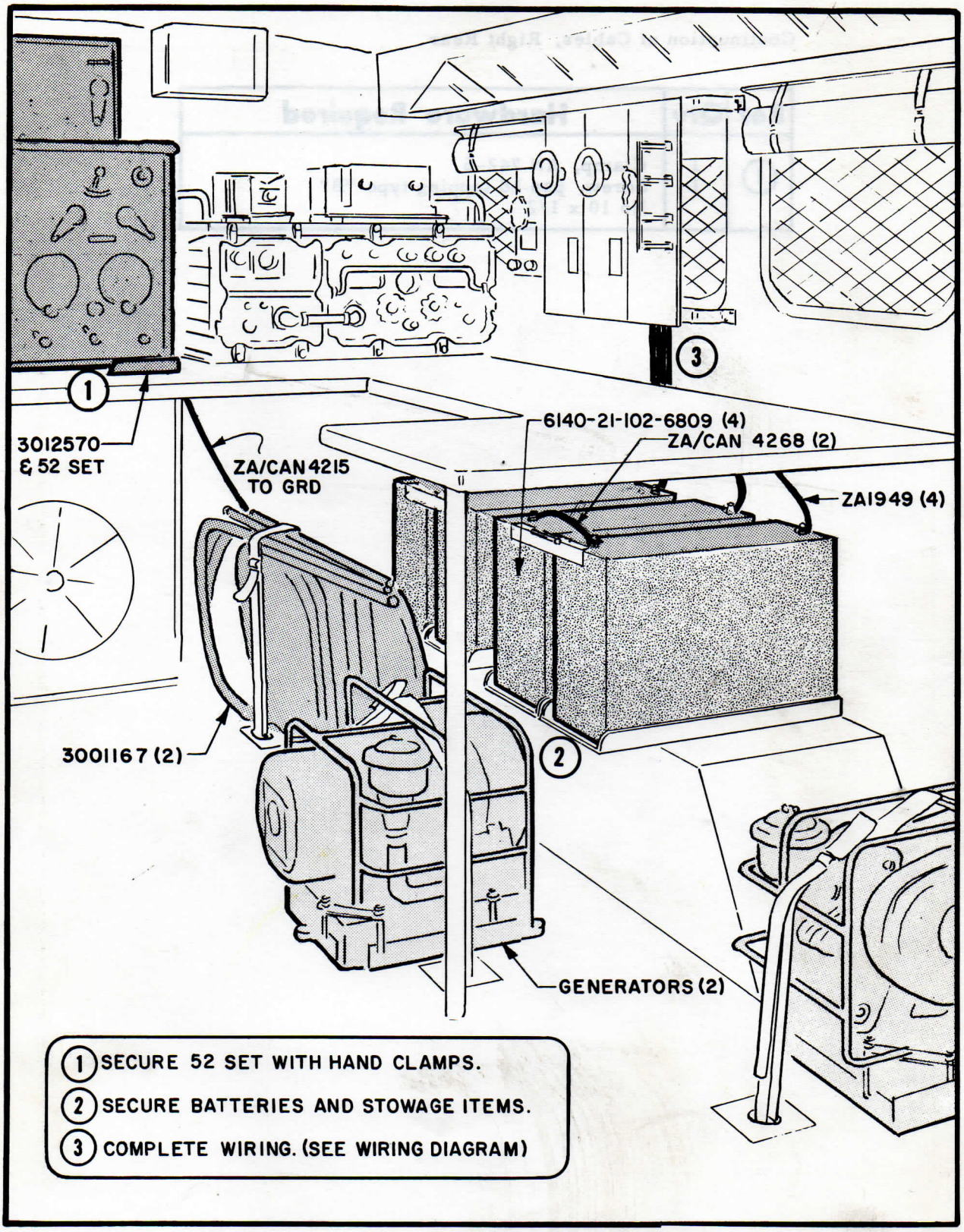


Fig 10 Securing 52 Set and Stowage Items

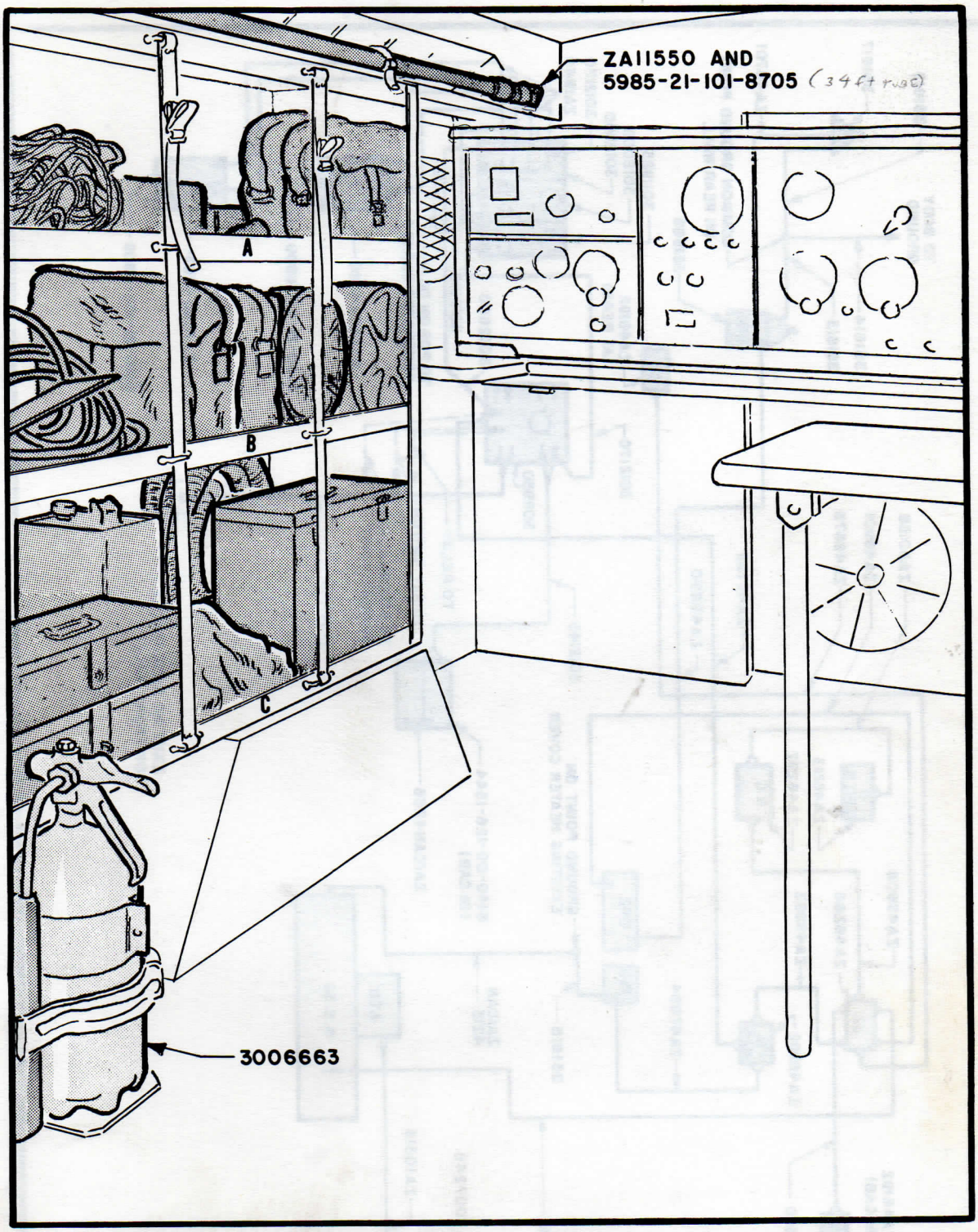
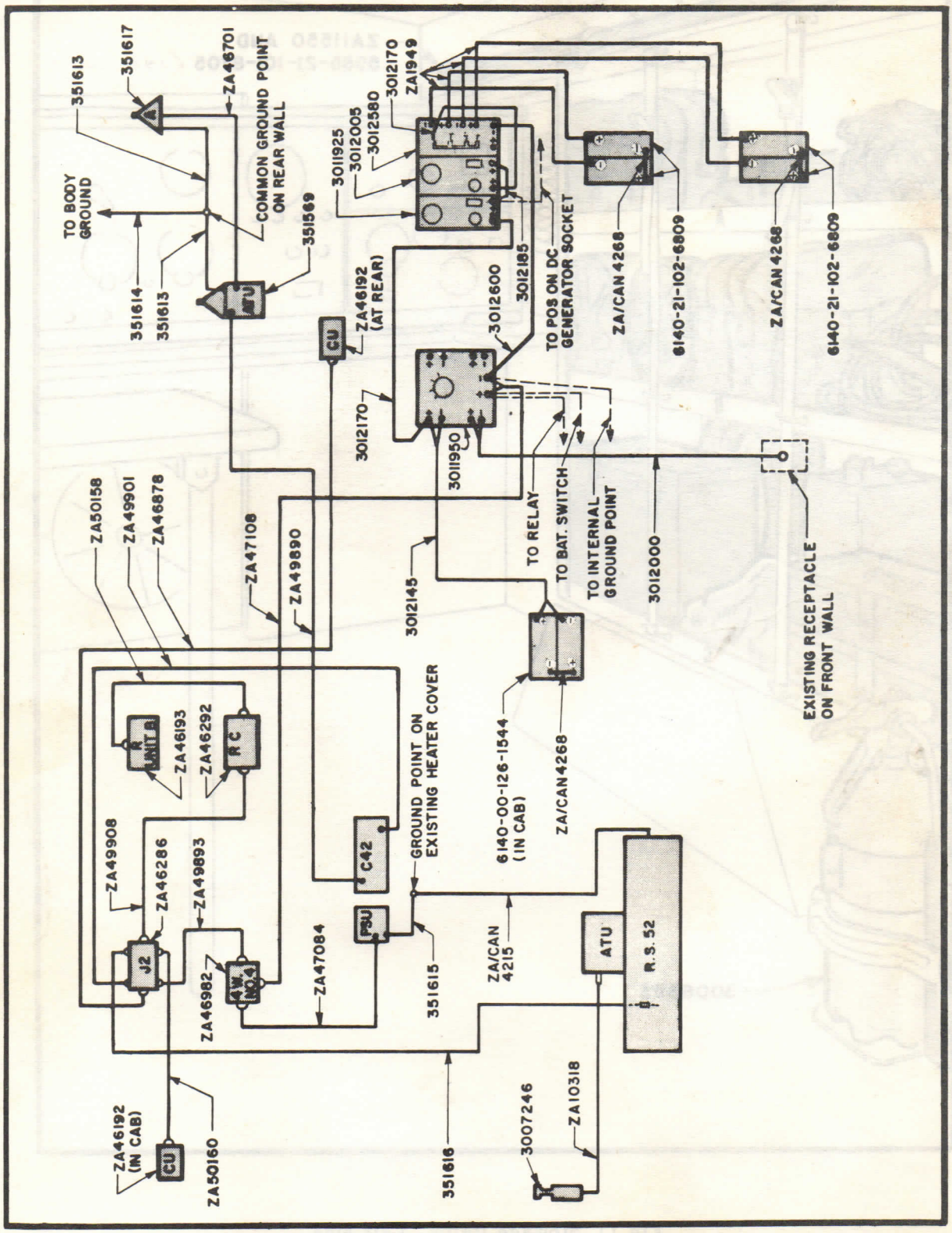


Fig 11 Stowage Items, Left Side

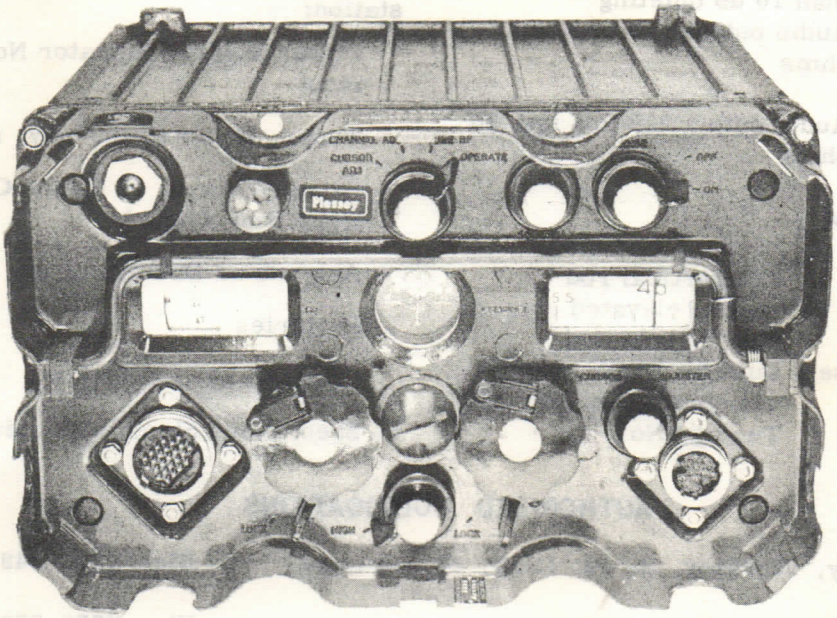

351613
351617
ZA46701
TO BODY GROUND
COMMON GROUND POINT ON REAR WALL
351569
351614
351613
CU
ZA46192 (AT REAR)
3012170
ZA1949
3012580
3012005
3011925
3012600
3012185
TO POS ON DC GENERATOR SOCKET
ZA/CAN 4268
6140-21-102-6809
ZA/CAN 4268
6140-21-102-6809
3012170
3011950
TO RELAY
TO BAT. SWITCH
TO INTERNAL GROUND POINT
3012000
EXISTING RECEPTACLE ON FRONT WALL
ZA50158
ZA49901
ZA46878
ZA47108
ZA49890
3012145
UNIT B
ZA46193
ZA46292
RC
ZA49908
ZA46286
ZA49893
J2
ZA46982
1 M NO.1
ZA47084
C42
PSU
GROUND POINT ON EXISTING HEATER COVER
6140-00-126-1544 (IN CAB)
ZA/CAN4268
ZA/CAN 4215
351615
ATU
R.S. 52
ZA46192 (IN CAB)
CU
ZA50160
351616
3007246
ZA10318

END

RECEIVER - TRANSMITTER, RADIO, C 42

5820-99-943-9362

DATA SUMMARY



General View of Equipment

INTRODUCTION

PURPOSE

To provide communications, from both vehicles and ground, at a nominal range of 15 miles in open terrain, within field units and Infantry Brigade Group voice radio nets.

DESCRIPTION

This equipment is portable and waterproofed. It consists of an automatic frequency controlled transmitter with automatic modulation control, and a double superheterodyne receiver with squelch. It uses one control for receiver and transmitter tuning and provides automatic rebroadcast, intercommunication, and remote control facilities.

DATA

PHYSICAL DATA

Width	Height	Depth	Weight
14 in	8 1/2 in	14 1/4 in	45 lb

POWER REQUIREMENTS

Met by the POWER SUPPLY, VIBRATOR, No 12 Mk 2, 24 volts input, which requires 210 watts at 24 volts on transmit HP.

FREQUENCY

RF - continuously tunable 36 to 60 mc with channels spaced at 100 kc intervals.

IF - 6 and 2.4 mc

HQ 6001-Wireless/42 TD 9240 (7244)

PERFORMANCE

Transmitter - High power 15 watts
Low power 0.3 - 0.5 watts
(up to 4 miles range)

Frequency deviation: ±15 kc/s

Receiver - Sensitivity 1.25 uv for better than 10 db quieting
Audio output 150 mw into 50 ohms

Intercom - Audio output 250 mw into 30 ohms

ANTENNA SYSTEM

Mobile Use - 8 ft vertical rod
Stationary Use - special elevated antenna may be supplied
Instructional Use - Dummy Load, Electrical, Simulator Aerial Tuning, No 1

ELECTRON TUBE COMPLEMENT

19 - CV 850 (JAN 6AK5W)	6 - CV 469
1 - CV 133 (JAN 6C4WA)	1 - CV 4015
1 - CV 2209	1 - CV 2243
1 - CV 2220	1 - CV 2128

ASSOCIATED EQUIPMENT

All or part of the following associated equipment are required to make up a C42 radio station:

Power Supply, Vibrator No 12, Mk 2, 24 v input

Tuner, Radio Frequency, aerial, No 6

Selected items of Radio Control Harness, Type B or Type A

Antenna or Dummy Load

Batteries

Connectors and Cables

Special and Standard Hardware

AUTHORIZED PUBLICATIONS

Power Supply, Vibrator, No 12, Mk 2, 24 volt input	Elec K240-249
Radio Control Harness, Type A	Elec K770-779
Radio Control Harness, Type B	Elec K760-769
Tuner, Radio Frequency, Aerial, No 6	Elec K550-559
Issue Scale Field	M/W&L/187
Canadian Basic Scale	C-120-14

END

RADIO SET C42
TABLE OF CONTENTS

LIST OF FIGURES

RADIO SET C42

PART 1

OPERATING INSTRUCTIONS

INTRODUCTION

COMMON NAMES

1. The official nomenclature assigned to many of the components of this equipment differs from that in common use by operators. Consequently, common names such as junction box J1, control unit B, plugs, sockets, radio set C42, etc are used throughout this Instruction. In many cases the common name can be directly related to markings on the item. The Figures in the Installation Instructions in the Handbook for each station can be used in identifying harness components.

GENERAL

2. The Radio Set C42 is a VHF, FM voice set normally mounted in vehicles. A working station based on the C42 set is prepared by combining a Radio Set C42 Basic (COC No 5820-21-108-2761, EIS 1393) with an appropriate Installation Kit. This kit contains selected items of a radio control harness plus necessary ancillary equipment. These Operating Instructions refer to the items listed in the following paragraph. The handbook for a complete station describes the other items used.

PRINCIPAL ITEMS

3. The principal items referred to in the Instruction are:

(a) Radio set – Radio Set C42.

(b) Power supply unit (PSU) – Power Supply Vibrator No 12, Mk 2, 24 volt input.

(c) Antenna tuning unit (ATU) – Aerial Tuning Unit No 6.

(d) Cable assemblies – Specific references are found in the appropriate Handbook.

FACILITIES

4. The following facilities are provided:

(a) A crystal controlled calibrator system and an adjustable cursor are incorporated to provide accurate tuning of the set and avoids the necessity for "netting".

(b) The transmitter is tuned simultaneously with the receiver.

(c) Two transmission powers, approximately 15 watts (HIGH) and ½ watt (LOW).

(d) Automatic gain control of the modulation level compensates for different speech levels into the microphones.

(e) A squelch circuit silences the receiver except when signals are being received. This enables operators to listen for long periods without the fatigue caused by a high background noise level.

(f) An amplifier for inter-communication purposes between all members of the crew of the vehicle.

(g) Automatic rebroadcast between the radio set C42 and any other set with a similar squelch circuit.

(h) A TRAFFIC/STANDBY switch on the power supply unit switches off the transmitting tubes on STANDBY, reducing power consumption.

(j) A SIGNAL lamp is illuminated by the operation of the squelch circuit on reception of signals.

NOTE

The associated control harnesses are described in ELECTRICAL K760-9 and K770-9.

OPERATIONAL CHARACTERISTICS

5. A summary of operational characteristics follows.

Frequency Range

(a) The frequency range is from 36 to 60 Mc, providing 241 channels at 100 kc spacing.

Working Range

(b) When operating with another C42 set under normal conditions with both sets using standard 8 ft rod antennas, the average ranges that can be expected are:

Low Power – up to 4 miles

High Power – up to 15 miles

Using an elevated antenna at one station, with the other using an 8 ft rod antenna, these ranges should be increased by 25 per cent. The ranges quoted may vary greatly because of the site, and should be used only as a rough guide.

Power Supply

(c) Power is supplied to the radio set from a supply unit working from 24 volts DC. In vehicle installations the supply unit is connected either to the vehicle batteries or to batteries provided for radio operation. Details of the connections will be found in the appropriate Operator's Handbook for each installation. A voltage control device is incorporated in

the harness system, and is arranged to switch the power supply unit to a low voltage tap when the battery voltage falls below 23.5 volts. It will select the high voltage tap when the battery voltage exceeds 25.5 volts. The voltage control will automatically operate on the high range irrespective of battery voltage, if the harness is not connected and switched on.

NOTE

The control harness must always be switched on when the radio set is in use. If this is not done, the set will not send or receive properly if the batteries are low.

Antenna Systems

(d) The Radio set C42 must not be operated on transmit unless it is connected to a properly adjusted Antenna system. Two authorized systems are described below:

(1) An 8 foot vertical rod consisting of two, 4 foot sections is mounted in an antenna base. This is connected to the AE terminal of the Aerial Tuning Unit by a pigtail WHICH MUST NOT EXCEED 16 INCHES IN LENGTH. The ATU matches the 8 foot rod antenna to the Radio set C42 and is connected to the radio set by a co-axial cable. The length of this co-axial cable depends on the installation.

(2) An antenna adapter, shown in Fig 1, is provided which permits the 8 foot rod antenna to be adjusted at an angle. Use of this adapter on the move reduces the danger of antenna breakage from overhead obstructions. However, performance will be reduced when the antenna is not vertical.

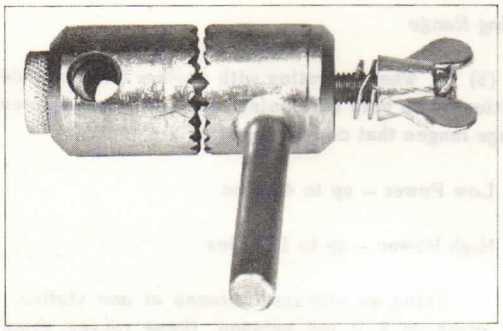


FIG 1 ANTENNA ADAPTER

(3) The antenna simulator is a modified ATU and will be used as a dummy antenna for classroom use. It replaces the system described in para 5(d) (1) above and has a range of a few yards. This range may be extended slightly by connecting a 12 inch length of wire to the AE terminal on the simulator. The simulator is identical in appearance to the ATU except that its front panel is grey instead of olive drab.

NOTE

Certain installations requiring extended working range will be equipped with special antenna systems. The proper use of such systems will be described in a separate instruction on the antenna system.

CAUTION

The Radio set C42 will not under any circumstances be operated without an antenna load, or serious damage to the transmitter will result. Lack of an antenna load is indicated by a zero reading on the ATU meter. The only antenna systems permitted are as outlined in this paragraph.

GENERAL CONSTRUCTION

6. The set and power supply, the aerial tuning unit and the simulator are sealed in die-cast water-tight metal cases. Air circulation to prevent overheating is provided by a fan inside the set. The fan can be heard when the set is switched on.

OPENING UP DRILL

7. Before operating the station, the following points will be checked:

(a) That the free end of the pigtail leading from the antenna base is connected to the AE terminal of the ATU, and that the 8 ft rod antenna is secure in the antenna base. (See Fig 2).

(b) That the grounding straps between the grounding ring of the antenna base and its mounting, and between the ATU and the vehicle structure, are clean and secure. (See Fig 2).

(c) That the coaxial cable is connected between the ATU and the aerial plug on the set.

(d) That the PSU is connected to the set with the 25 contact cable assembly. (See Fig 3).

(e) That the harness is connected to the 12 contact connector situated in the lower right hand corner of the set.

(f) That the PSU is connected to the battery via the two contact connector on the front panel.

CAUTION

Correct polarity must be observed when connecting the 2 contact connector to the battery. The RED lead is connected to the positive terminal (+) and the BLACK lead to the negative terminal (-).

Power switch on PSU must be in the OFF position when connecting or disconnecting all cables. If this is not done, arcing of the 24 volt dc connectors will result.

(g) That all plugs are screwed down firmly, hand tight.

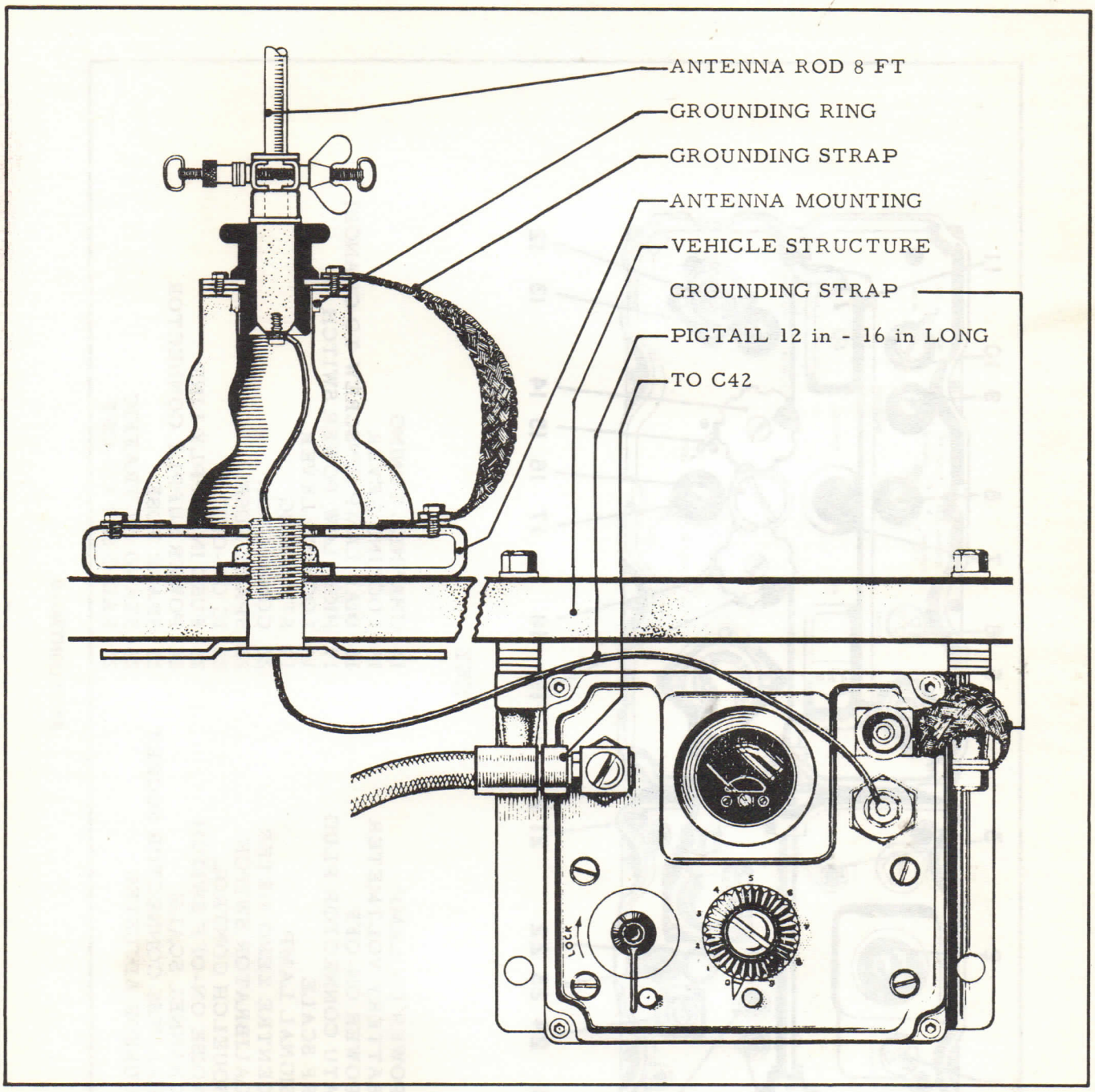


FIG 2 ANTENNA AND AERIAL TUNING UNIT OPERATION

(h) That the headset is plugged into a connector on the control unit of the harness, and that the set selection switch on the control unit is switched to the correct position for the set to be used.

SWITCHING ON

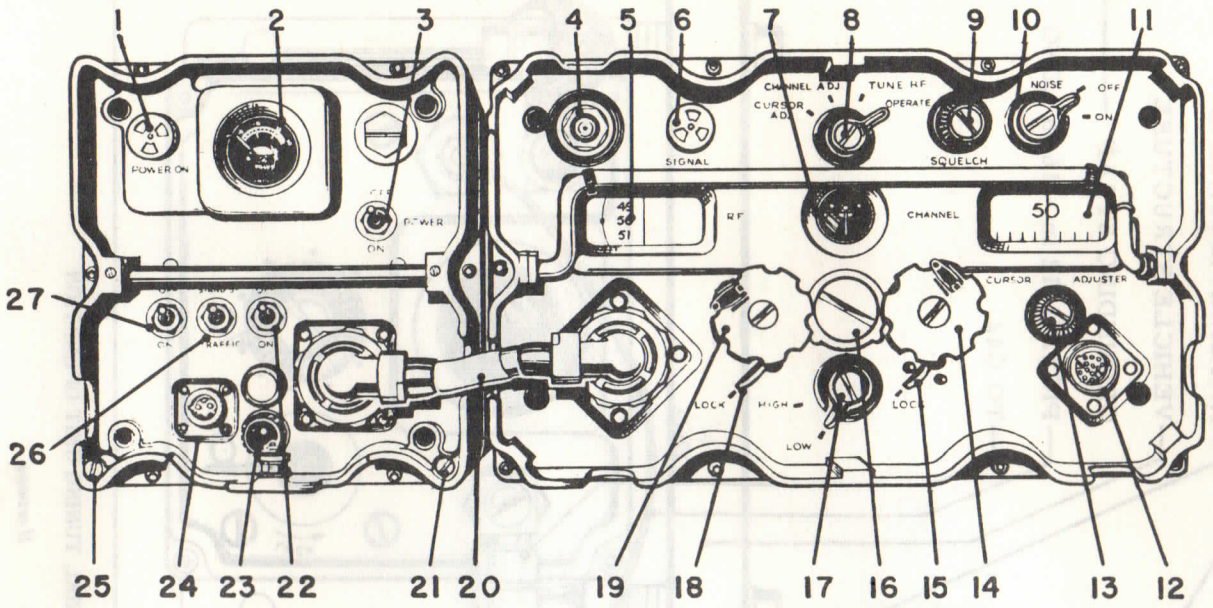
8. The harness and power supply are switched on as follows:

Harness

(a) Switch the harness on by the appropriate switch on the JD 9 (Harness Type A), J1 or J2 box, (Harness Type B).

Power Supply Unit

(b) Set the POWER ON/OFF switch, Fig 3 (3), to ON; this should cause the POWER ON lamp, Fig 3 (1), to



KEY

1 POWER ON LAMP
2 BATTERY VOLTMETER
3 POWER ON-OFF
4 ATU CONNECTOR PLUG
5 RF SCALE
6 SIGNAL LAMP
7 CENTRE ZERO METER
8 CALIBRATOR SWITCH
9 SQUELCH CONTROL
10 NOISE ON-OFF SWITCH
11 CHANNEL SCALE
12 HARNESS CONNECTOR SOCKET
13 CURSOR ADJUSTER
14 CHANNEL TUNING
15 LOCKING LEVER
16 DIAL LAMP (UNSCREW TO CHANGE)
17 HIGH/LOW POWER SWITCH
18 LOCKING LEVER
19 RF TUNING
20 CONNECTOR
21 SPARE FUSE
22 IC ON-OFF
23 FUSE IN SUPPLY LINE
24 POWER SUPPLY CONNECTOR
25 SPARE FUSE
26 STAND BY TRAFFIC
27 RADIO SET ON-OFF

FIG 3 CONTROLS

glow. If it is too bright, turn the lamp cover in a clockwise direction.

(c) If the IC amplifier is to be used, set the IC ON/OFF switch, Fig 3 (22) to ON.

(d) Set the SET ON/OFF switch, Fig 3 (27) to ON.

(e) Set the STAND-BY/TRAFFIC switch, Fig 3 (26), to TRAFFIC.

NOTE

Allow at least five minutes before tuning to enable the set to warm up. If time allows, a period up to 15 minutes is preferable. In an emergency, a 30 second warmup period is permissible.

TUNING THE TRANSMITTER/RECEIVER

9. Numbers in parenthesis refer to controls on Fig 3.

(a) Set the Calibrator switch, (8), to CURSOR ADJ. This energizes the 2.0 mc crystal calibrator, providing calibration points at any even megacycle.

NOTE

The two dials and the centre zero meter are illuminated when the calibrator switch is at positions CURSOR ADJ., CHANNEL ADJ., and TUNE RF. The light is out when the switch is set to OPERATE.

(b) Unlock the RF and CHANNEL tuning knobs, (14) and (19), by turning the locking levers, (15) and (18), fully anticlockwise.

(c) Rotate the RF tuning knob, (19) until the RF scale, (5), shows approximately the required frequency.

NOTE

To avoid parallax errors the operator must look squarely at the scales while tuning.

(d) Rotate the CHANNEL tuning knob, (14), until the CHANNEL scale, (11) reads to the nearest even whole number of megacycles. This may be either above or below the required frequency, eg

Required Frequency	*Set CHANNEL To*
47.3 mc	48 mc
51.0 mc	50 or 52 mc
44.8 mc	44 mc
46.0 mc	46 mc

(e) Gently turn the CHANNEL tuning knob, (14), until the meter pointer, (7), reaches the centre zero mark, ensuring that in doing so the NEEDLE MOVES IN THE SAME DIRECTION AS THE CHANNEL SCALE OR THE TOP OF THE TUNING KNOB. If the movement of the needle towards the centre zero mark is in the opposite direction to that of the CHANNEL scale, the correct tuning point has not been found, and the knob should be rotated in the opposite direction.

(f) Rotate the CURSOR ADJ knob, (13), until the cursor on the CHANNEL scale, (11), is over the calibration line corresponding to the "Set CHANNEL To" frequency chosen in para (d) above.

(g) Now rotate the CHANNEL tuning knob, (14), until the CHANNEL scale, 4 (11) reads the "Required Frequency".

(h) Turn the CALIBRATOR switch, (8), to CHANNEL ADJ, thus energizing the more accurate 100 kc crystal calibrator. This provides calibrating points every 100 kc for the final adjustment to the "Required Frequency".

(j) Carefully adjust the CHANNEL tuning knob, (14) until the centre zero meter, (7), reads zero, ensuring that the meter pointer moves in the same direction as the CHANNEL scale, as in para (e) above. The cursor should be within 1/3 of a channel marker of the "Required Frequency". If it is not, start again at para 9(a).

(k) Lock the CHANNEL tuning knob by fully turning the LOCK lever, (15), in a clockwise direction.

(m) Turn the CALIBRATOR switch, (8), to TUNE RF. Carefully adjust the RF tuning knob, (19), until the centre zero meter, (7), reads zero, ensuring that the meter pointer moves in the same direction as the top of the tuning knob. Lock the RF tuning knob by fully turning the LOCK lever, (18), in a clockwise direction.

(n) Set the CALIBRATOR switch, (8), to OPERATE.

TUNING THE ANTENNA

10. The antenna is tuned by the following procedure:

(a) Set the HIGH/LOW power switch on the set, Fig 3 (17), to HIGH.

(b) Put on the headset and listen to make sure there is no incoming signal.

(c) Unlock the TUNE knob on the ATU by turning the lock lever fully anti-clockwise.

(d) Depress the pressel switch on the headset microphone and rotate the TUNE knob until a maximum reading is obtained on the meter of the ATU. During this operation the set is transmitting. Do not transmit for longer than necessary.

(e) Release the pressel switch and re-lock the TUNE knob in this position.

FINAL SETTINGS AND ADJUSTMENT

11. Numbers in parenthesis refer to Fig 3.

(a) Set the HIGH/LOW power switch (17) to HIGH OR LOW as required. (The setting of this switch determines the transmitting power of the transmitter).

(b) Set the SQUELCH control (9) fully anti-clockwise.

(c) Turn the NOISE ON/OFF switch, (10) to ON.

(d) Using a handset or headset, listen to ensure that there is no incoming signal.

(e) Rotate the SQUELCH control, (9) clockwise until the SIGNAL lamp (6) lights, then turn the knob back until the SIGNAL lamp just goes out, and remains out without flickering.

(f) Set the NOISE ON/OFF switch (10) to OFF.

NOTE

The squelch circuit should normally be kept operative. However, if signals are very weak, reception may be improved by setting the NOISE ON/OFF switch, (10), to ON.

(g) If the set is to be used for listening watch only, set the STAND-BY/TRAFFIC switch, (26), to STAND-BY. This will reduce drain on the battery, but the transmitter will not operate from any of the headset pressel switches. Before transmitting, set the STAND-BY/TRAFFIC switch to TRAFFIC and allow five minutes (or in an emergency, 30 seconds) for the transmitter to warm up.

TO CHECK TUNING

12. The set tuning should be re-checked every ten to fifteen minutes during the first hour following a normal warm-up. Frequent checking will be required during the first 10 minutes following a 30 second warmup. After the first hour, an hourly check should be sufficient.

(a) To check the tuning, set the CALIBRATOR switch, Fig 3 (8), to CHANNEL ADJ. If the centre zero meter does not read zero, unlock the CHANNEL tuning knob and re-adjust slightly until it does. Re-lock the CHANNEL knob, and set the CALIBRATOR switch to TUNE RF. If the centre zero meter does not read zero, unlock the RF tuning knob, and re-adjust slightly until it does. Relock the RF tuning knob, and re-set the CALIBRATOR switch to OPERATE.

(b) To select a new frequency, repeat operations in para 9-11 inclusive.

FM CAPTURE EFFECT

13. With an FM radio set such as the C42, unwanted signals from another transmitter on the same frequency (or a frequency very close to it) can "capture" the receiver, and the interfering signal only will be received. This can only happen when the interfering transmitter is producing a stronger signal at the receiver antenna than is the wanted station. If capture effect occurs small changes of antenna position must

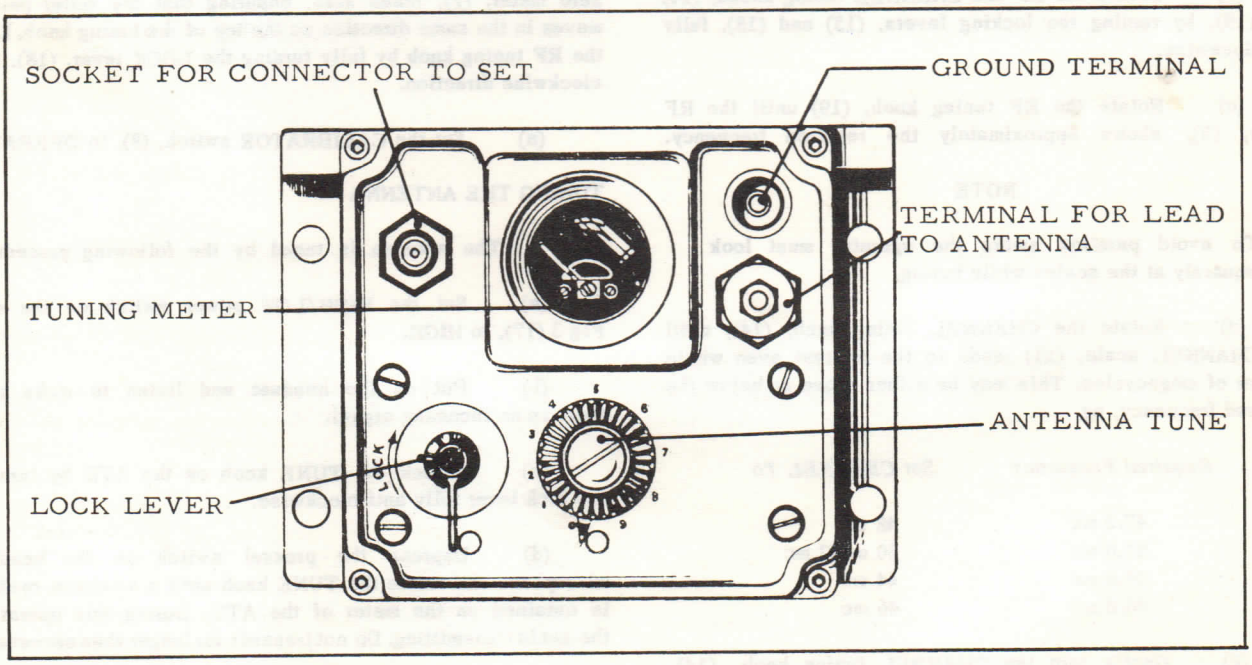


FIG 4 AERIAL TUNING UNIT

be tried, either by moving the vehicle or remoting the antenna, in the hope that the wanted signals will be heard. If no satisfactory location can be found, the net frequency must be changed. Do not attempt to get rid of capture effect by small changes in the tuning of the set. This will only disrupt your own net, and probably cause interference to other nets working on adjacent channels.

SITING

14. VHF radio signals differ from HF signals in three important respects:

(a) Sky-wave working is generally not possible. Service VHF radio sets are therefore designed for ground-wave working with vertical rod antennas or special arrays. No attempt should be made to work sky-wave.

(b) VHF signals are more sensitive to screening. Hills, power lines, buildings or other obstructions between the antennas will usually reduce signals. The best possible condition for communication is a line of sight path between the two antennas. For tactical reasons this will seldom be possible, and the normal rule must be to avoid sites close to hills and similar obstructions whenever possible.

WARNING

Live transmission lines which may foul the antenna are a potential safety hazard. If the vehicle mounted antenna accidentally contacts such a line, no one should attempt to leave the vehicle until the line and antenna are no longer in contact.

(c) VHF signals are frequently reflected from objects such as buildings or broken ground in the neighbourhood of the receiver. Such reflections often improve signals, sometimes very greatly, provided that the right position to make use of them can be found. This position is, however, apt to be very critical and cannot be predicted. When signals are poor, the antenna position should be changed by moving the vehicle or remoting the antenna. Changes of a few feet will often make the difference between signals and no signals.

MUTUAL INTERFERENCE IN TWO SET STATIONS

15. When two radio sets in a station are operated simultaneously, as in the case of rebroadcast or of dual net operation, mutual interference is likely to be encountered. This interference is due to the close positioning of the two antennas, and/or insufficient frequency separation between the operating channels of the two radio sets, causing the transmitted signal of one set to interfere with the received signal of the other. In most cases this type of interference can be eliminated by employing remote antennas and/or by removing one set from the vehicle and operating it remotely as a ground station. Two examples are discussed as follows:

(a) Stations employing two Radio sets C42 are equipped with two 50 ft co-axial cables for remote antenna operation, providing a maximum antenna separation of 100 ft. This distance should be sufficient to eliminate mutual interference if the two frequencies are not too close. If mutual interference still exists (and a greater frequency separation is not feasible) it will be necessary to remove one of the sets to a remote site. It is necessary to obtain a junction box J1 and the necessary cables so that the remote set can be operated remotely as a one set station as detailed in ELECT K 761. The set that remains in the vehicle operates normally except for rebroadcast; this function requires the other set which has been removed.

(b) Stations equipped with a Radio set C42, and a Radio set AN/PRC 509 or 510 have two 50 ft co-axial cables allowing remote antenna systems for both radio sets. In addition, facilities exist which allow for the AN/PRC 509 or 510 to be operated remotely on the end of a twisted pair telephone line. The maximum length of cable over which this type of operation can be obtained is ¼ mile. In most cases though, a separation of 200 yards is sufficient to eliminate the mutual interference.

UNIT MAINTENANCE

UNIT SERVICING

16. No equipment can be expected to work properly, unless it is kept in first class condition by periodic maintenance, conscientiously carried out. This is the responsibility of the NCO or man who is in direct charge of the equipment, and responsible for its operation; NOT of workshop or repair personnel. The Signal Officer or NCO in charge will determine the timetable and scope of the periodic maintenance that operators will follow.

17. The following paragraph lists the periodic tasks to be performed:

Set Switched Off

(a) Remove any dirt from plugs, connectors, dials and knobs.

(b) If equipment is wet, dry with soft absorbent cloths.

(c) Ensure that all mounting hardware is tight and properly secured.

(d) Ensure that all cables are complete and that no undue bends or tension exists, and that there is no fraying of the cable shielding.

(e) Where receptacles are not in use ensure that the proper dust covers are fitted.

(f) Headset cords, handset cords, battery cords and antenna connections should be inspected for frayed ends and worn insulation.

(g) Cable connectors should be checked for tightness and tightened if necessary.

Set Switched ON

(h) During opening up drill check that controls and switches perform their function properly.

(j) Replace any pilot or dial lamps which do not light.

NOTE

When any of the above checks indicate an unsatisfactory condition it must be reported immediately to the NCO or officer in charge.

18. Fault location is tabulated in Fig 5.

Symptom	Possible Fault	Remedy
Set apparently dead.	Supply not switched on	Switch ON.
	Batteries not connected	Trace battery connection
	Batteries low (as indicated by meter in PSU)	Replace with fully charged batteries
	Fuse blown	Replace with new fuse
	Internal fault in PSU	Report fault
No Aerial Current	Open antenna circuit	Check antenna, pigtail, and coaxial cable
Opening up drill completed but communications NOT established.	Faulty headset or handset	Change
	Incorrect tuning	Retune
	Internal fault	Report fault
Fuses repeatedly blowing	Internal fault	Report fault
The performance of the set should be observed from day to day. If a gradual deterioration is noticed this should be reported so that corrective action can be taken before the condition results in failure of communications. Faults which might denote inadequate design or those which recur should be reported in accordance with EME Manual GEN H206.		

FIGURE 5 FAULT LOCATION

END

WIRELESS SET CDN. No. 52

DATA SUMMARY

This regulation cancels E.M.E.R. Tels FZ 520, Issue 1, dated Nov 1944 which has been amended in Paras. marked ● and must be destroyed.

PURPOSE

Designed for use in vehicles or as a ground station with Air Support Units. It provides facilities for C.W., M.C.W. and R/T communication.

● DESCRIPTION

The set comprises a sender, receiver and power supply unit contained in a carrier, and an aerial tuning coil. The receiver is a thirteen valve superheterodyne, including a noise limiter and crystal calibrator. The sender employs a master oscillator, two I.P.A. stages, power amplifier, modulator, speech amplifier and voltage regulator. The M. O. and first I.P.A. stage act as doublers on higher frequency ranges.

PHYSICAL DATA

Unit	Length	Height	Depth	Weight
Sender	15 5/16in.	14 3/16in.	12in.	52 lb.
Receiver	15 1/16in.	14 3/16in.	12in.	41 lb.
Supply Unit	7 1/16in.	14 3/16in.	13in.	53 lb.
Aerial Tuning Coil	13 1/16in.	8 3/4in.	10in.	15 lb.
Carrier & Cradle	42 1/4in.	17in.	14 1/4in.	109 lb.
Complete Station	—	—	—	270 lb.

FREQUENCY

Continuously variable from 1.75 - 16 Mc/s. in three overlapping bands.

Receiver I.F.—420 Kc/s.

PERFORMANCE

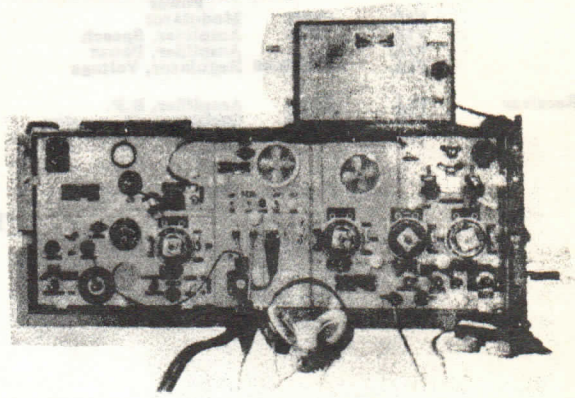
Receiver sensitivity: 2 uV. for 10 mW. output on C.W.
5 uV. for 10 mW. output on R/T.

Sender power output (approximate):

High power—70 W. on R/T nd M.C.W.
100 W. on C.W.

Medium power—20 W. on R/T and M.C.W.
30 W. on C.W.

Low power—2-4 W. on R/T and M.C.W.
2 W. on C.W.



T FZ 520 / 2 - 1 **Fig. 1 Wireless Set CDN. No. 52**

O POWER REQUIREMENTS

Two 6 V. accumulators provide 12 V. for the filaments and drive two dynamotors supplying 145 V. (Receiver H.T.) and 300 V. and 1430 V. (Sender H.T.).

Maximum current drain: 6.5 A. on receive
57 A. on send

● VALVES

Unit	Circuit Reference	Type	Function
Sender	V5A	6V6G	Oscillator, Master
	V5B	6V6G	Amplifier, Doubler
	V5C	6V6G	Amplifier Intermediate Power
	V5D	6V6G	Modulator
	V1J	ARP3	Amplifier, Speech
	V7A	813	Amplifier, Power
	V6A	VR150-30	Regulator, Voltage
Receiver	V1A	ARP3	Amplifier, R.F.
	V1B	ARP3	Oscillator, Conversion
	V1C	ARP3	Mixer
	V1D	ARP3	Amplifier, 1st I.F.
	V1E	ARP3	Amplifier, 2nd I.F.
	V1F	ARP3	Oscillator, Heterodyne
	V1G	ARP3	Amplifier, 1st A.F.
	V1H	ARP3	Amplifier, Output
	V2A	ARDD1, 12Y4G	Detector, A.V.C.
	V2B	ARDD1, 12Y4G	Noise Limiter
Crystal Calibrator	V3A	12SC7	Oscillator, Crystal
	V3B	12SC7	Multivibrator
	V3C	12SC7	Output
Supply Unit	V4A	OZ4A	Rectifier

SPECIAL FACILITIES

The set may be operated by remote control by means of a separate, similar receiver unit, used in conjunction with a Supply Unit ZE-12 and two Wireless Remote Control Units No. 1 Cdn.

END

H.Q. 76-48-16-14 A.P. 2171

RADIO CONTROL HARNESS TYPE B
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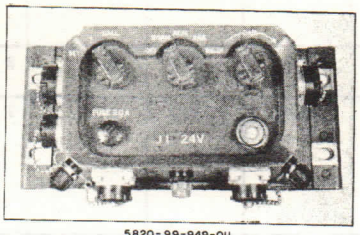
LIST OF FIGURES

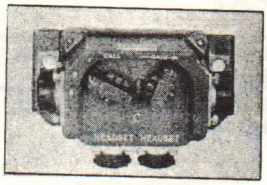
RADIO CONTROL HARNESS, TYPE B

DATA SUMMARY

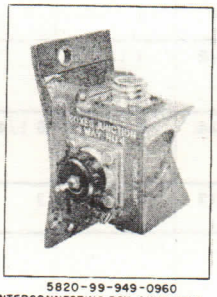
5965-99-901-0719 MICROPHONE, MAGNETIC, 300Ω W/NECKBAND SNATCH HARNESS NO.6 AND 5965-99-901-0725 HEADSET, ELECTRICAL, 2 EARPHONE, NO.1 A



5820-99-949-011
INTERCONNECTING BOX, 1 SET, J1, 24 VOLT, MK.1

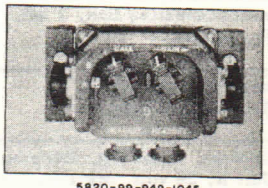


5820-99-949-1007
CONTROL, RADIO SET, 4 WAY, UNIT C

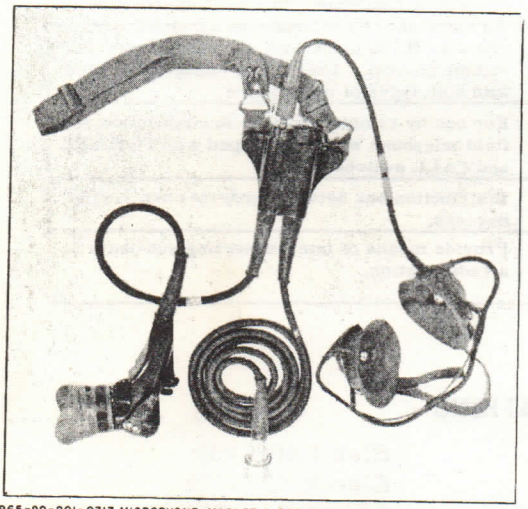


5820-99-949-0960
INTERCONNECTING BOX, 4 WAY NO.4

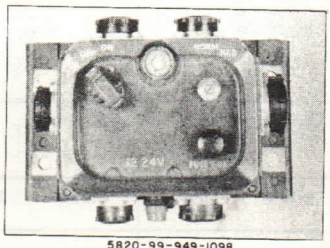
5965-99-901-0727
HANDSET, TELEPHONE, NO.1



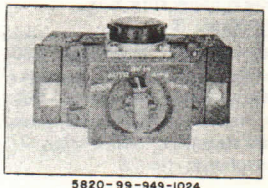
5820-99-949-1045
CONTROL, RADIO SET, 4 WAY, UNIT D



5965-99-901-0717 MICROPHONE, MAGNETIC, 300Ω W/NECKBAND SNATCH HARNESS NO.7 AND 5965-99-901-0725 HEADSET, ELECTRICAL, 2 EARPHONE, NO.1 A



5820-99-949-1098
INTERCONNECTING BOX, 2 SET, J2, 24 VOLT



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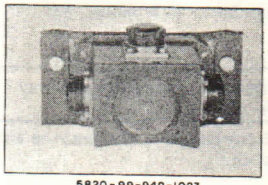
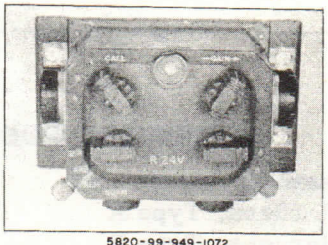
INTERCONNECTING BOX, REBROADCAST UNIT B



5820-99-949-1023
INTERCONNECTING BOX, HEADSET, T



5820-99-949-1072
CONTROL, RADIO SET, REMOTE, UNIT R, 24 VOLT, MK 1

General View of Equipment (Main Items Only)

INTRODUCTION

PURPOSE

The Radio Control Harness, Type B provides a means of interconnecting, operating and controlling up to two radio sets (for example, one Receiver-Transmitter, Radio, C42 and one Radio Set AN/PRC-509) in vehicles and ground stations.

DESCRIPTION

The harness consists of a group of control units, remote control units, junction distribution units, microphones, telephones, cables, connectors and headgear. Some of the units are housed in light alloy, desiccated cases.

DATA

POWER REQUIREMENTS

24 volts dc.

PHYSICAL DATA, FACILITIES AND/OR FUNCTION

Unit	Overall Dimensions (in)			Net Weight (lb)	Facilities and/or Function
	Height	Width	Depth		
Control, Radio Set, 4 way, Unit C	4	6 1/2	3 1/2	2 1/4	Normal transmit and receive control of set(s). Also provides IC and CALL functions. Connections for two headsets.
Control, Radio Set, 4 way, Unit D	4	6 1/2	3	2 1/2	Receiver monitoring of set(s). Also provides IC and CALL functions.
Interconnecting Box, 1 set, J1, 24 volt, MK 1	5 3/4	11 1/2	5	7 1/4	Junction box between control boxes and the radio set in a one-set station. Normal transmit and receive control of set(s). Also provides IC and CALL functions. Connections for two headsets. REMOTE, REMOTE REBROADCASTING and BREAK IN in a one set station.
Interconnecting Box, 2 set, J2, 24 volt	6 1/4	8 3/4	4 1/4	6	Junction box between control boxes and two radio sets in a two-set station. NORMAL or REBROADCASTING for two-set switching.
Interconnecting Box, Rebroadcast Unit B	4	6 1/2	3 1/2	2	Local rebroadcast in a two-set station. NORMAL, AUTO, MANUAL REBROADCAST and BREAK-IN switching.
Control, Radio Set, Remote, Unit R, 24 volt, Mk 1	5 1/2	8 3/4	4	6 1/4	Provides the same functions as CONTROL, RADIO SET, 4 Way, Unit C. Remote control and remote rebroadcast for a two-set station.
Interconnecting Box, Headset, T	3 3/4	6 1/2	3 1/4	2	Provides facilities for connecting an extra headset.
Microphone, Magnetic, 300 w/Neckband Snatch Harness No 6; Microphone, Magnetic, 300 w/Neckband Snatch Harness No 7 and Headset, Electrical, 2 earphone, No 1A	-	-	-	-	The No 6 microphone is an assembly used by the operator and is equipped with a microphone, transmit-receive switching and facilities for connecting headgear. The No 7 microphone is the commander's microphone assembly and provides A, B, IC and CALL switching and headset volume control. The No 1 A headgear is used with both types of microphone.
Handset, Telephone, No 1	2 1/2	9	3	1/2	For use by remote operator in conjunction with field telephone wire. Equipped with PRESSEL and CALL switches.
Interconnecting Box, 4 way No 4	4 1/2	6 1/2	3 1/8	2 1/4	Distribution box between batteries and rest of harness.
Miscellaneous connectors and cables	-	-	-	-	Provide means of interconnecting sub-units in a radio station.

AUTHORIZED PUBLICATIONS

Receiver-Transmitter, Radio C42	Elec I 400-409
Radio Control Harness, Type A	Elec K 770-779
Radio Control Harness, Type B	Elec K 760-769
Power Supply, Vibrator No 12, Mk 2, 24 v input	Elec K ,40-249
Tuner, Radio Frequency, Aerial, No 6	Elec K 550-559

NOTE

The term "harness" is used only for convenience, for example, in the training of operators. The harness is not catalogued as one complete assembly but each component of the harness is catalogued. Certain selected items of the harness are contained in the installation kits for C42 Radio Stations and the range and quantity of these items are dependent on the facilities required in the particular Radio Station.

END

RADIO CONTROL HARNESS TYPE B

PART 1

OPERATING INSTRUCTIONS

INTRODUCTION

COMMON NAMES

1. The official nomenclature assigned to many of the components of this equipment differs from that in common use by operators. Consequently, common names such as junction box J1, control unit B, plugs, sockets, radio set C42, etc are used throughout this Instruction. In many cases the common name can be directly related to markings on the item. The Figures in the Installation Instructions in the Handbook for each station can be used in identifying harness components.

GENERAL

2. The Radio Control Harness Type B is a system comprising control and interconnecting units. For the operation of a complete station, see the Operating Instructions for the specific station. Seven different units are described in this Instruction. Certain of these units, together with the necessary connectors and headsets, are used to construct the required station. The units used depend upon whether one or two radio sets are included in the station, and upon the facilities required. The diagrams in this Instruction illustrate typical arrangements.

FACILITIES

3. The following facilities are provided:

(a) Selection of the radio set to be used for transmitting and receiving.

(b) Intercommunication.

(c) Automatic rebroadcast in two set stations incorporating VHF radio sets with squelch circuits.

(d) Manually controlled rebroadcast in two set stations using a HF radio set with no squelch circuit.

(e) Remote control, up to 1000 yards.

(f) Remote rebroadcasting up to 1000 yards between stations.

(g) Break in on rebroadcast by operators at either station.

TYPICAL INSTALLATIONS

4. Fig 1 illustrates three typical installations and shows the manner in which they can inter-work. Station A is a one set station connected by remote control cable to an observer who can speak on the remote handset. Transmissions from station A are received by station B, which is a two set station with rebroadcasting facilities. At station B signals from the observer can be heard by operators connected to the harness, and they can be simultaneously retransmitted on the second radio set for reception at station C. Similarly the remote operator at C can speak to the observer at A. Traffic can proceed in either direction, rebroadcasting by station B being fully automatic provided VHF sets with squelch circuits are used. Operators at A, B and C can break in on this transmission if they wish. Units comprising the control harness are summarized in Fig 2 and are described in detail later in this Instruction.

POWER SUPPLY

5. Radio control harness type B requires a direct current power source of 24 volts in addition to the power required by the radio set or sets in the station. The source from which the radio sets are powered will provide this additional requirement. The harness has a current drain of between 0.5 and one ampere, according to the installation. The negative (–) terminal of the power source must be grounded to the vehicle chassis as described in the Installation Instructions.

6. Power connections are made to the two set junction box J2 or to the one set junction box J1 through a four way junction box which forms part of the installation. Pilot lamps are fitted on junction boxes J1 and J2 to indicate when the harness is switched on.

7. Voltage control circuits are provided in junction boxes J1 and J2 to ensure that radio sets operate satisfactorily on battery voltages which may vary between 20.7 and 29 volts for a nominal 24 volt supply. A voltage control relay selects a low voltage transformer tap in the radio set supply unit when the battery voltage is between 20.7 and 25.5 volts, and a high voltage tap when this voltage exceeds 25.5 volts. If the junction box J1 or J2 is disconnected the supply unit is restored to the high voltage tap regardless of the battery voltage, resulting in reduced efficiency if battery voltage is low. Similar reduced efficiency will result if certain faults develop in the voltage control circuit. A fuller description of the voltage control circuit is given in EME Manual Elect K 762.

MECHANICAL DESCRIPTION

CONSTRUCTION

8. Each control unit and junction box is of cast

aluminum construction, hermetically sealed, and mounted on a flexible base. Desiccators are fitted in junction boxes J1 and J2 and in remote control units R. Normally these desiccators are blue, but change to pink as moisture is absorbed. Each control unit and junction box is clearly marked with the designation by which it is identified. All controls and switches are fitted to the fronts of the units. Knobs and panels are designed to enable switches to be manipulated by operators even when wearing arctic gloves.

CONNECTIONS

9. Connections between units are normally made by means of special cables terminated in Mk 4 multi-contact plugs and sockets. Leads from standard headsets are terminated in six contact Mk 4 plugs. The Commander's headset has a 12 contact Mk 4 connector and can be connected to a socket on a control unit C or D, or boxes J1 or J2. All Mk 4 plugs and sockets on units are protected by plastic covers which screw on when the connection is not in use, and which are held captive by a short length of chain. Field telephone cable is used to provide a remote control cable and is connected to terminals on the appropriate units. The remote control handset has a pair of terminals to which the remote control cable is connected. If HF radio sets such as Radio set CDN No 52 are incorporated in a Type B control harness a special adapter lead must be fitted to the radio set output to connect the set to the Mk 4 type plugs and sockets used

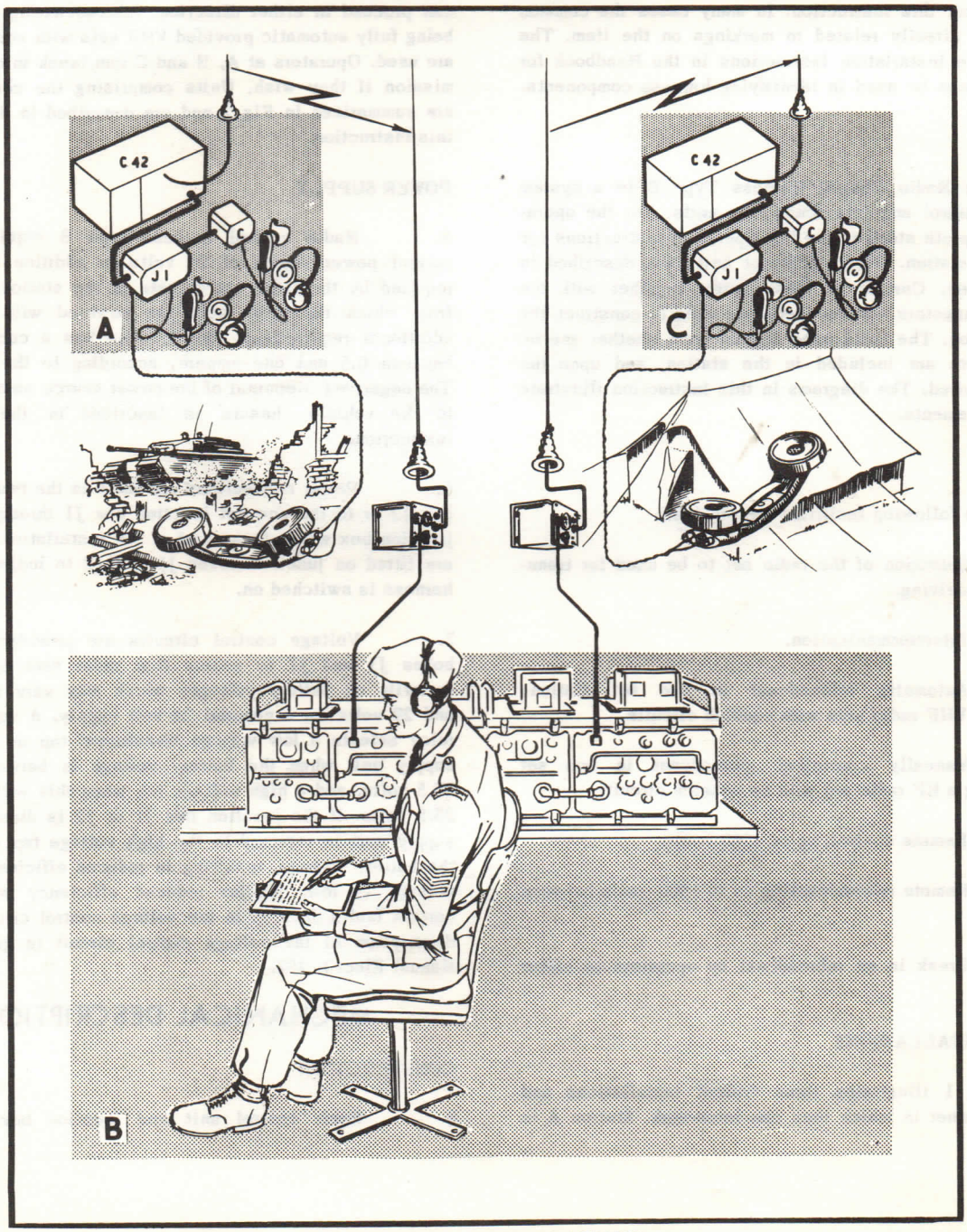
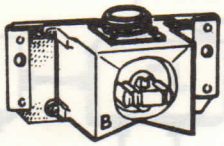


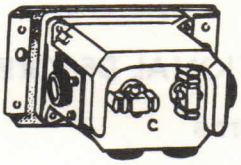
FIG 1 TYPICAL INSTALLATIONS

REBROADCAST UNIT "B"



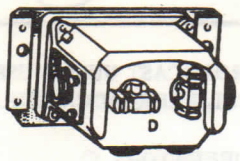
Local rebroadcast control unit with switch positions for automatic or manual rebroadcast, and break-in.

CONTROL UNIT OPERATORS "C"



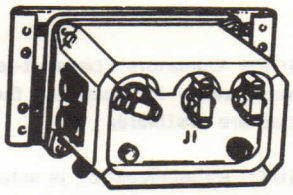
Operator's control unit for controlling one or two radio sets through junction box, and intercom. Two headset sockets and connections to other control units.

CONTROL UNIT DRIVERS "D"



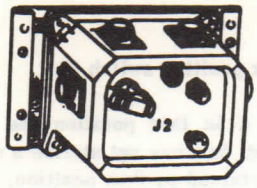
Driver's control unit in one and two-set installation. Provides listening facilities only on radio sets, otherwise similar to unit "C".

JUNCTION BOX ONE-SET "J1"



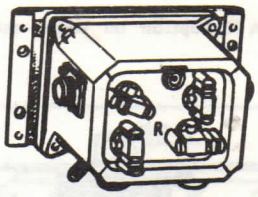
Junction box for a one-set installation. Fitted between radio set and harness, with set or IC, on-off, remote control and rebroadcast switching. Two headset sockets, cable terminals, LT input. Voltage control circuit.

JUNCTION BOX TWO-SET "J2"



Junction box for a two-set installation. Fitted between radio sets and harness, with on-off and rebroadcast switching and voltage control circuit. Connections for two radio sets, two control units, unit "R" and LT.

REMOTE CONTROL UNIT "R"



Combined local remote control unit and operator's unit for two-set installations. Radio set, IC remote control and break-in switching. Two headset sockets, cable terminals, and connections for junction box and rebroadcast unit.

ADAPTER UNIT HEADSET "T"

Headset adapter enabling two headsets to be connected to one standard 6-way Mk 4 headset outlet socket through an extension lead.

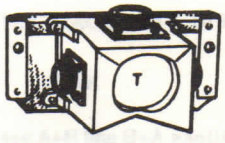


FIG 2 CONTROL HARNESS TYPE B – MAJOR COMPONENTS

in the control harness. The Installation Instructions for a specific station describe where and how items are mounted and connected.

FUNCTIONAL DESCRIPTION

REBROADCAST UNIT B

10. This unit is used for local rebroadcasting in two set stations. Its position in a typical installation is indicated in Fig 4. A 25 contact connector attaches it to a remote control unit R (as shown) or directly to a junction box J2. Rebroadcast unit B is not needed for remote, rebroadcasting (RRB). See Fig 11.

(a) A five position switch selects the following facilities:

(1) NORM Operators' transmit-receive pressel switches are connected ready for operating the sets. No rebroadcasting facilities are available.

(2) AUTO Rebroadcasting is automatic between two VHF sets on which the squelch controls are correctly adjusted. Operators' transmit-receive pressels are disconnected.

(3) BK IN An operator at control unit C or remote control unit R can break in on rebroadcasting.

(4) A→B Reception on radio set A is rebroadcast on radio set B.

(5) B→A Reception on radio set B is rebroadcast on radio set A.

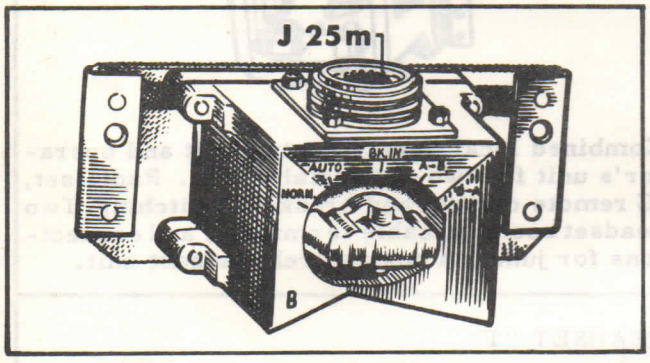


FIG 3 REBROADCAST UNIT B

NOTE

Switch positions A→B and B→A are controlled manually when HF radio sets without squelch circuits or a mixture of HF and VHF sets are used, eg C42/WS 52 installations.

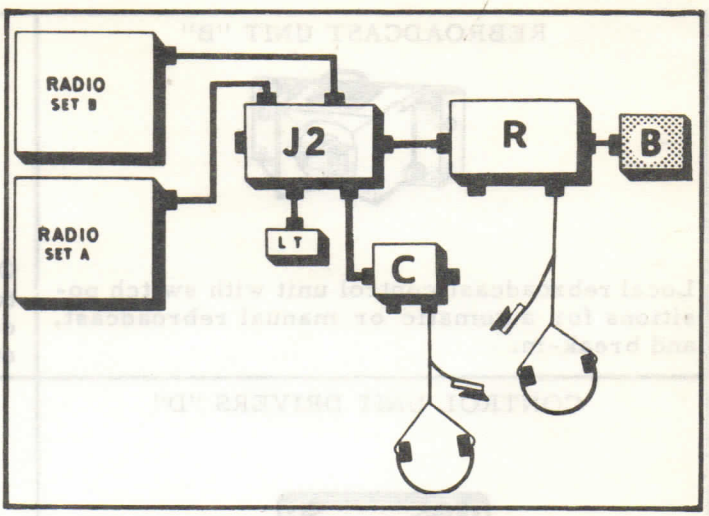


FIG 4 REBROADCAST UNIT B USED FOR LOCAL REBROADCASTING

CONTROL UNIT, OPERATORS, C

11. This is the operator's control box in either one set or two set stations. The unit is illustrated in Fig 5 and its position in a typical one set station is shown in Fig 6. The operator's control unit is fitted with a 12 contact plug J12m through which it is connected to other types of control unit. A 12 contact socket J12f enables the box to be connected to an additional control unit C or to a driver's control unit, D. Two 6 contact sockets are used for the connection of headsets. The following facilities are provided by the two controls on this box:

(a) Four position switch S1:

(1) A In this position the headsets are connected to the A set. In a one set station a stop screw prevents this switch being turned to this position, and the B position is always used.

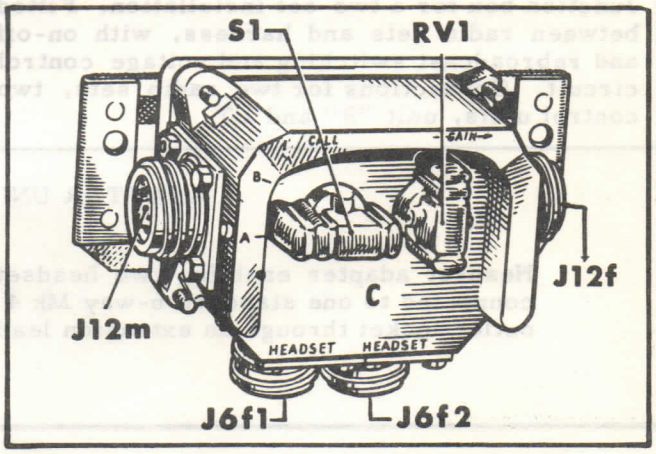


FIG 5 CONTROL UNIT, OPERATORS, C

(2) B In this position the headsets are connected to the B set.

(3) I In this position intercommunication is provided between all headset positions connected to the harness.

(4) CALL This is a spring loaded position. When held in CALL position, a buzzing noise is sent to all headphones.

(b) The gain control, RV1, adjusts the audio level for all headsets connected to this unit.

CONTROL UNIT, DRIVER'S, D

12. This is the control unit provided for use by the driver and co-driver in one set or two set stations. It is illustrated in Fig 7 and its position in a typical one set and two set station is indicated in Figs 6 and 21 respectively. The driver's control unit is fitted with a 12 contact plug J12m on the left hand side which enables the unit to be connected to other types of control units. Socket J12f on the right hand side provides for the connection of additional operator's control units, other driver's units, or a commander's microphone. Two 6 contact Mk 4 sockets are provided for the connection of operator's headsets. The following facilities are provided by the two controls on this box:

(a) Four position switch S1:

(1) A Driver and co-driver can hear traffic on set A, intercommunication and call signals. In one set stations a stop screw is fitted to prevent this switch being turned to position A.

(2) B Driver and co-driver can hear traffic on set B, intercommunication and call signals.

NOTE

The D box does not provide facilities for either the driver or co-driver to transmit on either radio set.

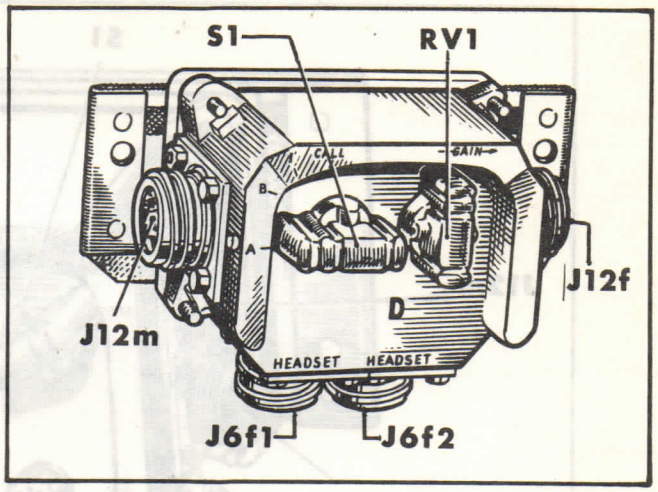


FIG 7 CONTROL UNIT, DRIVER'S, D

(3) I Driver can hear call buzz, speak on and listen to intercommunication.

(4) CALL This is a spring loaded switch position. When held in the CALL position a buzzing noise is heard in all headphones.

(b) The gain control, RV1, adjusts the audio level for all headsets connected to this unit.

JUNCTION BOX, ONE SET, J1

13. This junction box connects one radio set to the control harness. It is illustrated in Fig 8; Fig 9 indicates its position in a typical one set station. Junction box J1 is provided with a 12 contact plug J12m, for connection to the radio set; a 12 contact socket J12f, for connection to the operator's or driver's control units; and a 2 pin plug, J2m, for the LT supply. At the bottom of the box are two 6 contact sockets for headsets, one of which is shown connected in Fig 12, and two terminals for connecting a remote control cable, as shown in this diagram. A red lamp on the underside of the unit indicates when the harness is switched on. The

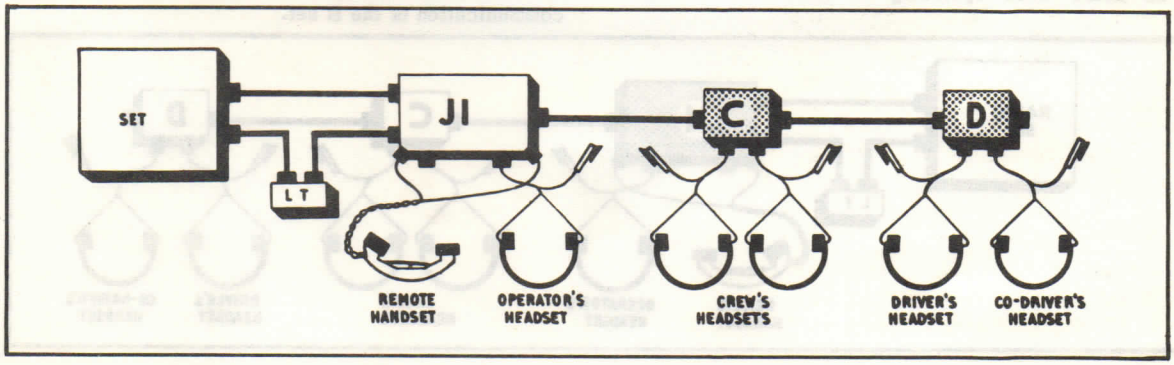


FIG 6 CONTROL UNITS, C AND D
IN ONE SET STATIONS

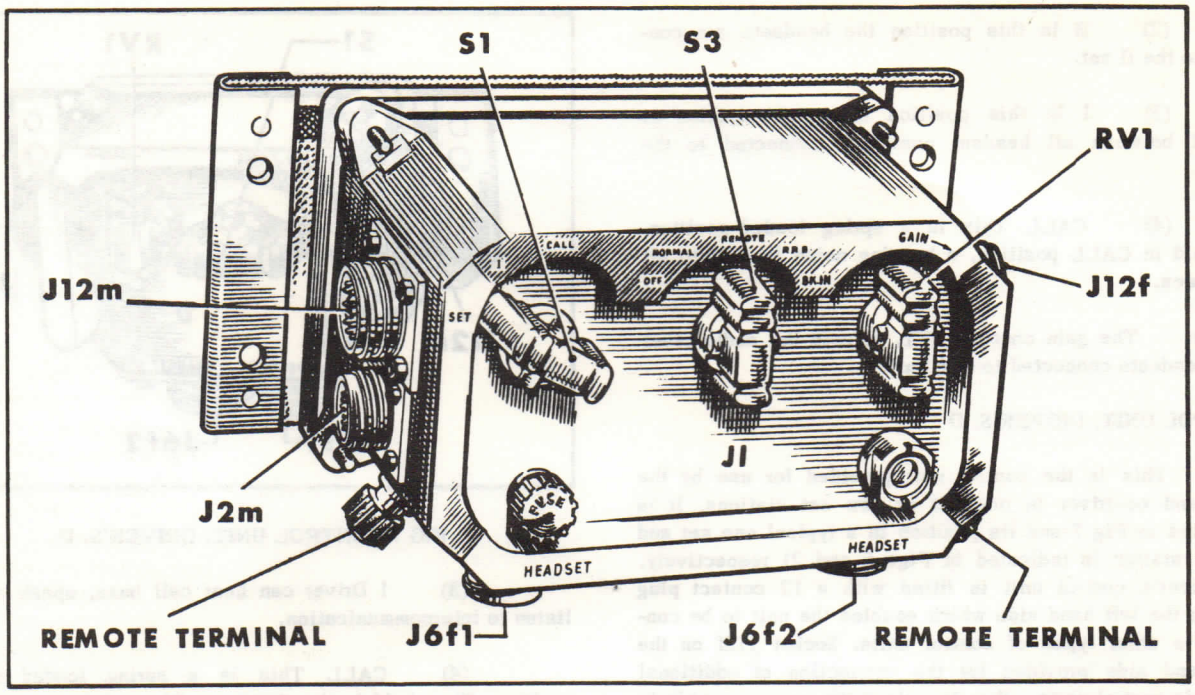


FIG 8 JUNCTION BOX ONE SET, J1

brightness of this lamp can be varied by turning the lamp cover. The voltage control circuit is incorporated in junction box J1. A 2.5 amp fuse, a desiccator and three controls are fitted on the front of this junction box. The controls function as follows:

(a) The left hand control, S1, is a three position function switch:

(1) SET This position connects the headsets to the radio set, enabling an operator to send and receive on the set.

(2) I In this position the switch connects the headsets to the IC amplifier in the radio set, and enables intercommunication between all headset positions attached to the harness. The transmitter is not operated nor can the receiver be heard when operating on intercommunication.

(3) CALL In this position the switch is spring loaded and will return to I when released. When held in the CALL position a buzzing noise is heard in all headphones.

(b) The centre control S3 selects the system of working. It has five positions:

(1) OFF In this position the voltage control circuit, the IC buzzing relay and the red indicator lamp are switched off. The remote terminals are disconnected.

(2) NORM The voltage control relay and indicator lamp are switched on, and the buzzing relay is in the circuit. The remote control terminals remain disconnected.

(3) REM The remote control cable terminals are switched into the circuit and the remote handset shown connected in Fig 12 can then be used to operate intercommunication or the B set.

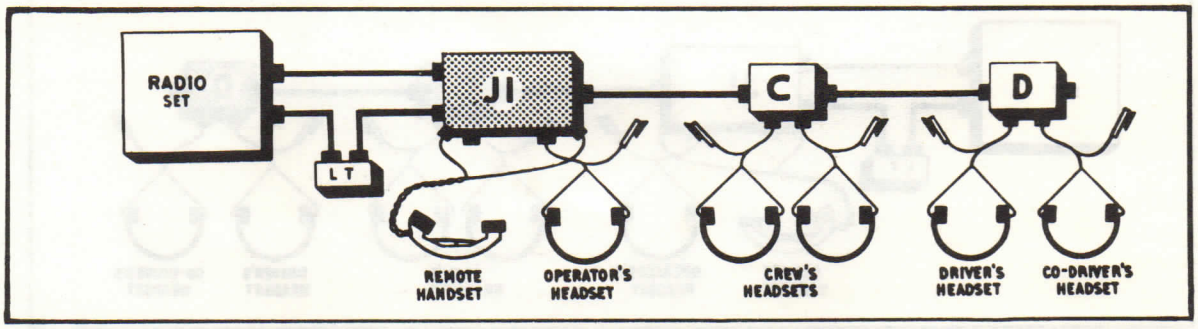


FIG 9 TYPICAL ONE SET STATION

(4) RRB Used in a station such as that shown in Fig 24 when rebroadcasting is required between the two radio stations. Operators at junction boxes J1 can monitor RRB working.

(5) BREAK IN Used when an operator whose headset is connected to a J1 box has a message to transmit over both links.

(c) The right hand control RV1 is a gain control.

JUNCTION BOX, TWO SET, J2

14. This junction box is provided for the connection of two radio sets in a station and is illustrated in Fig 10. Its position in two, two set stations with remote rebroadcasting facilities is shown in Fig 11. Fig 12 illustrates a J2 box in a two set station providing local rebroadcasting. Junction box J2 is provided with two 12 contact plugs, J12m1 and J12m2, for the connectors to the two radio sets; a 25 contact socket, J25f, for connection to a remote control unit R or a rebroadcast unit B; and a 2 point plug, J2m, for the LT. Two 12 contact sockets, J12f1 and J12f2, are provided for the connection of operator's control units C. The voltage control circuit, a 2.5 amp fuse, and a desiccator are incorporated in junction box J2. (If radio sets other than C42 sets are used with the harness, special adapter leads must be fitted between the set and the Mk4 plug on junction box J2.) Two switches, mounted on the front of the unit, perform the following:

(a) Two position switch S4 provides:

(1) ON Voltage control and IC buzzing relays are in the circuit and the indicator lamp glows.

(2) OFF

(b) Switch S2, enclosed by a transparent cover, is screwdriver operated. It has two positions:

(1) NORM Switch should be in this position when rebroadcast unit B is not connected.

(2) REB Set in this position when a rebroadcast unit B is connected.

REMOTE CONTROL UNIT R

15. This is the remote control unit used in two set stations. It is illustrated in Fig 13 and its position in a typical two set station with remote rebroadcast facilities is indicated in Fig 14. Fig 12 shows the unit in a two set station. Remote control unit R is fitted with a 25 contact plug, J25m, for connection to junction box J2, and a 25 contact socket J25f, for connection to a rebroadcast unit B or another control unit R. Two 6 contact sockets are provided for the connection of headsets. Two screw terminals, one marked positive (+) and one negative (-), are fitted for connecting a remote control cable. This cable can connect the control unit to a similar control unit R in another station, as shown in Fig 14, or it can be connected between the control unit R and a junction box J1 when remote rebroadcasting with a single set station is required.

NOTE

The cable must be connected (+) to (+) and (-) to (-). If the wrong connection is made, both radio sets are switched to transmit, and the wires at one end must be interchanged.

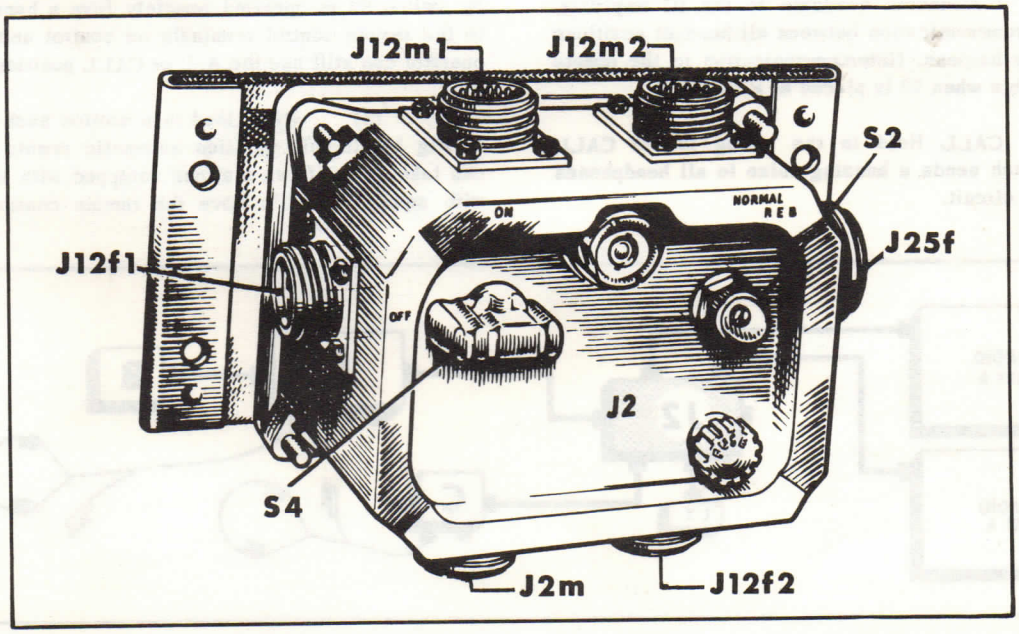


FIG 10 JUNCTION BOX TWO SET J2

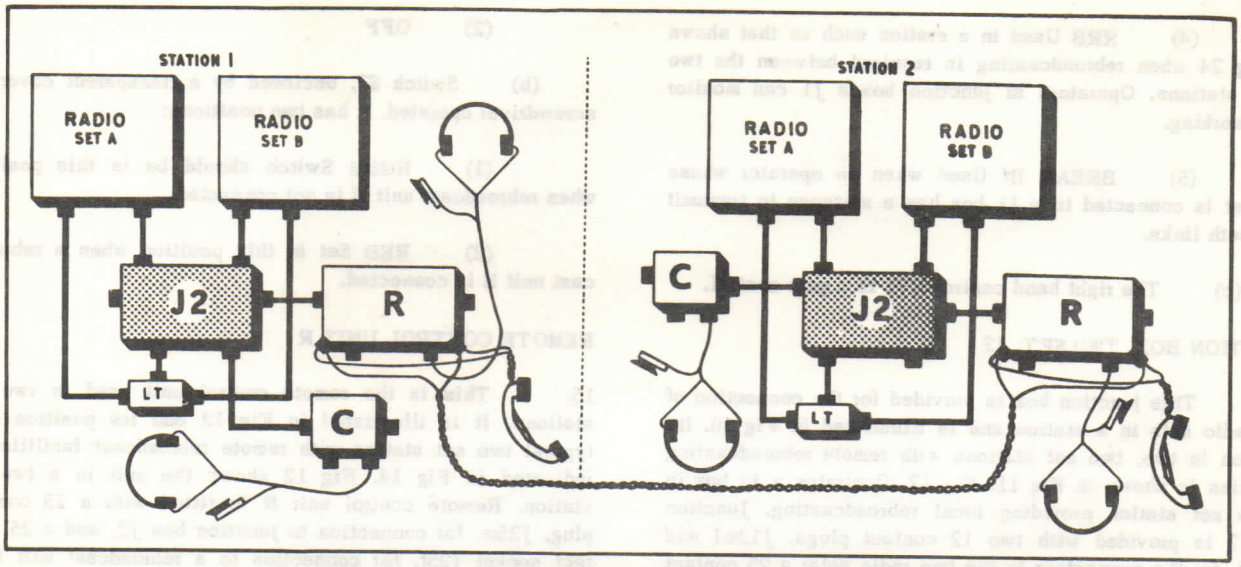


FIG 11 TWO TWO-SET STATION COUPLED
FOR REMOTE REBROADCASTING

The remote control handset is connected to the terminals on the R box when remote operation is required. Three switches mounted on the unit perform the following:

(a) Four position switch S1:

(1) A Connects headsets to radio set A, enabling an operator to transmit or receive on this set.

(2) B Similarly connects headset to radio set B.

(3) I Connects headsets to the IC amplifier, and permits intercommunication between all headset positions connected to the harness. (Intercommunication to the remote handset is possible when S3 is placed at REMOTE.)

(4) CALL Held in the spring loaded CALL position the switch sends a buzzing noise to all headphones connected in the circuit.

(b) Switch S2 has two positions, A and B, which select the radio set to be controlled.

(c) Four position switch S3:

(1) NORM In this position the remote control cable terminals are disconnected. Operators connected to remote control unit R can operate the radio sets by means of switch S1.

(2) REM In this position the radio set selected by switch S2 is operated remotely from a handset connected to the remote control terminals on control unit R. The local operator can still use the A, B or CALL position on switch S1.

(3) RRB Used in a station such as that shown in Fig 14. In this position automatic remote rebroadcasting can take place if two stations equipped with VHF radio sets with squelch circuits have the remote control terminals of

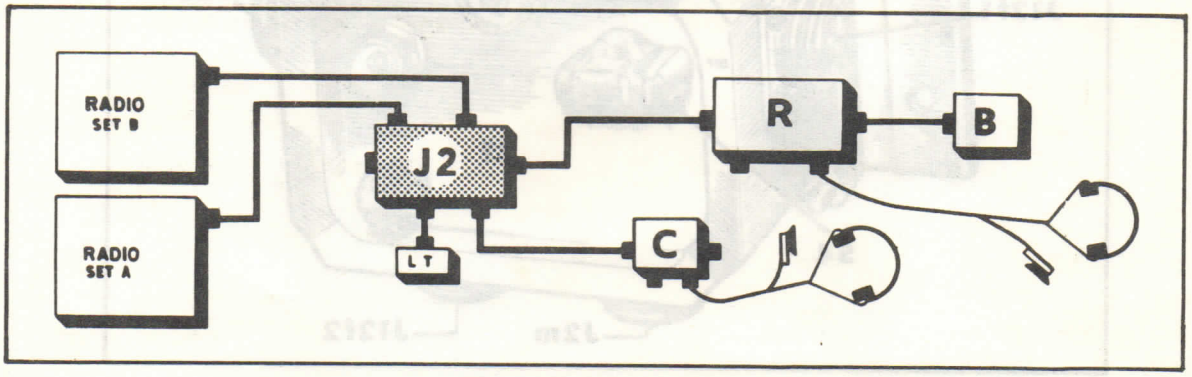


FIG 12 TWO SET STATION WITH LOCAL
REBROADCASTING FACILITY

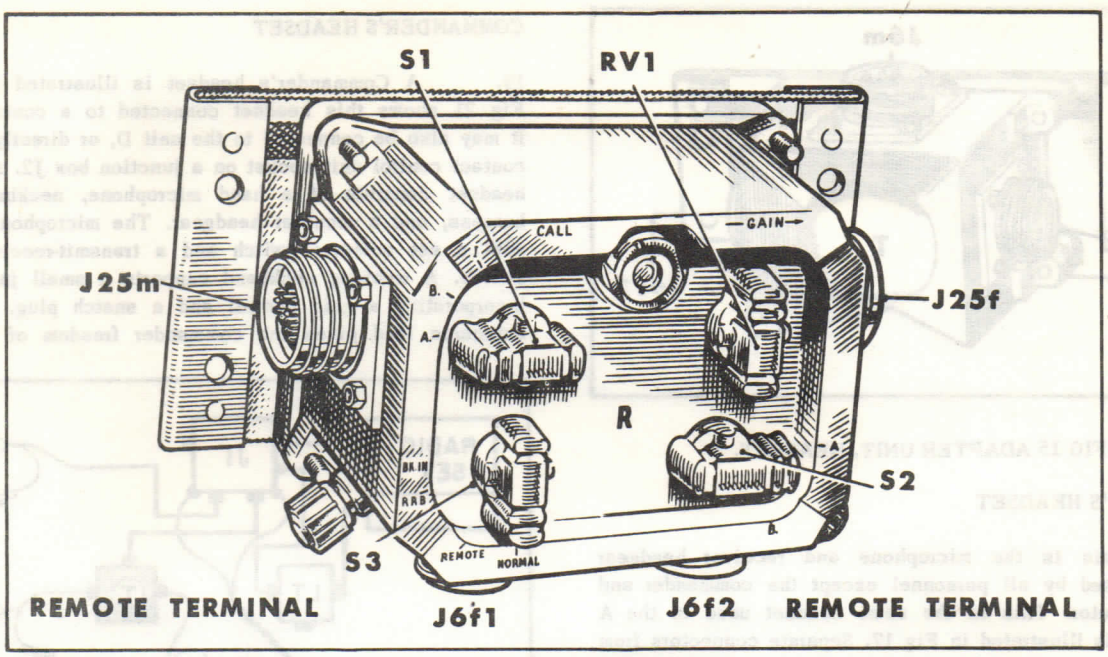


FIG 13 REMOTE CONTROL UNIT R

their control units R or J1 connected by field telephone cable. The set to be used in a two set station is determined by switch S2.

(4) BK IN Used when an operator whose headset is connected to remote control unit R has a message to transmit over both links.

(d) RV1 is the gain control for all headsets connected to this junction box.

ADAPTER UNIT, HEADSET, T

16. This three way adapter is illustrated in Fig 15. It enables two headsets to be connected to one of the standard 6 contact Mk 4 headset sockets on a junction box or control unit. Adapter T consists of a box having two 6 contact output sockets, J6f1 and J6f2, connected in parallel with a 6 contact input plug, J6m, at the top.

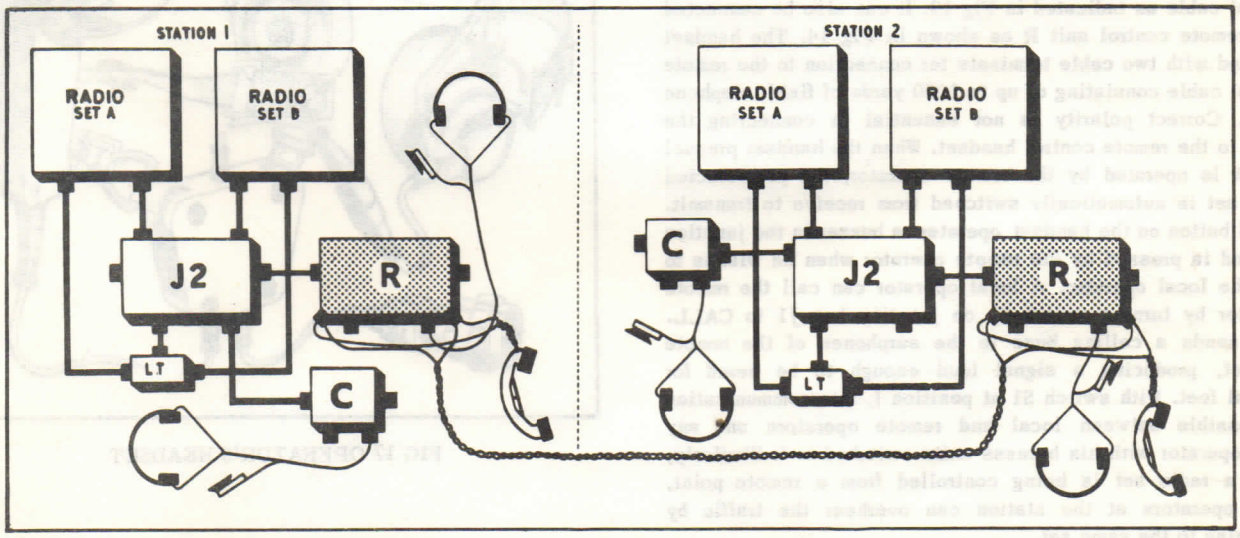


FIG 14 REMOTE CONTROL UNIT R IN A TWO SET STATION

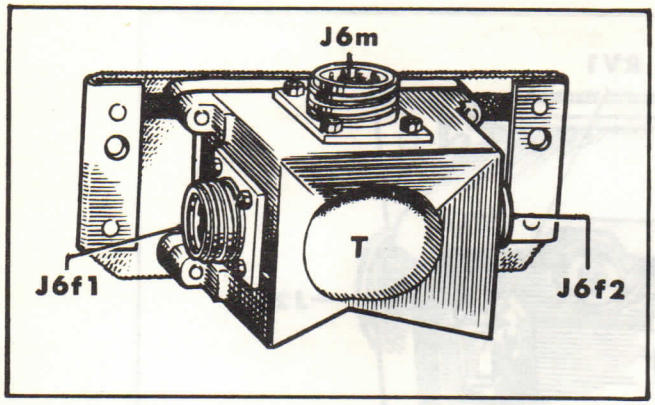


FIG 15 ADAPTER UNIT, HEADSET, T

OPERATOR'S HEADSET

17. This is the microphone and receiver headgear assembly used by all personnel except the commander and remote operator. This is the same headset used in the A harness. It is illustrated in Fig 17. Separate connectors from the microphone and receivers are joined at a small junction box. The junction box is connected to a Mk 4 HEADSET socket by means of a 6 contact Mk 4 plug. A snatch plug connects the receiver on the headband to the junction box, which is attached to the webbing neckband harness by stud fasteners. The combination of the snatch plug and the stud fasteners permits the operator to disconnect quickly from the harness. A pressel switch on the microphone performs transmit-receive switching. A 30 foot extension lead is provided to give flexibility to the user.

REMOTE CONTROL HANDSET

18. This handset is used by an operator at the distant end of the remote control cable. It is illustrated in Fig 18. It can be connected to a junction box J1 by means of a remote control cable as indicated in Fig 19. It can also be connected to a remote control unit R as shown in Fig 14. The handset is fitted with two cable terminals for connection to the remote control cable consisting of up to 1000 yards of field telephone cable. Correct polarity is not essential in connecting the cable to the remote control handset. When the handset pressel switch is operated by the remote operator, the pre-selected radio set is automatically switched from receive to transmit. A call button on the handset operates a buzzer in the junction box and is pressed by the remote operator when he wishes to call the local operator. A local operator can call the remote operator by turning switch S1 on junction box J1 to CALL. This sends a calling buzz to the earphones of the remote handset, producing a signal loud enough to be heard for several feet. With switch S1 at position I, intercommunication is possible between local and remote operators and any other operator with his harness units switched to I. Similarly, when a radio set is being controlled from a remote point, other operators at the station can overhear the traffic by switching to the same set.

COMMANDER'S HEADSET

19. A Commander's headset is illustrated in Fig 20. Fig 21 shows this headset connected to a control unit C. It may also be connected to the unit D, or directly to the 12 contact control unit socket on a junction box J2. A complete headset consists of a hand microphone, neckband snatch harness, and a receiver headgear. The microphone is fitted with a set selector switch and a transmit-receive pressel switch. A webbing neckband supports a small junction box incorporating a gain control and a snatch plug. A 30 foot extension lead gives the commander freedom of movement.

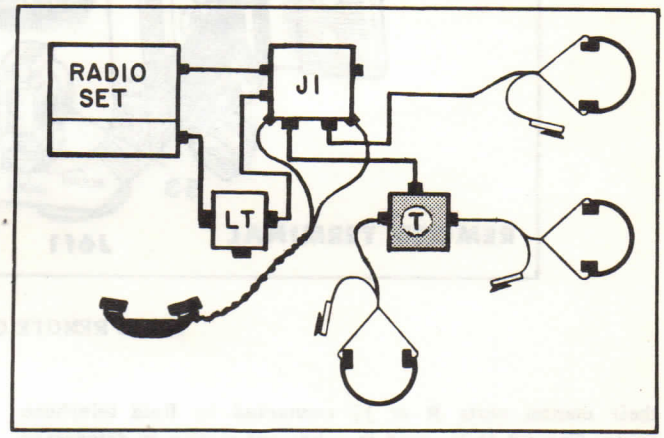


FIG 16 HEADSET ADAPTER IN USE

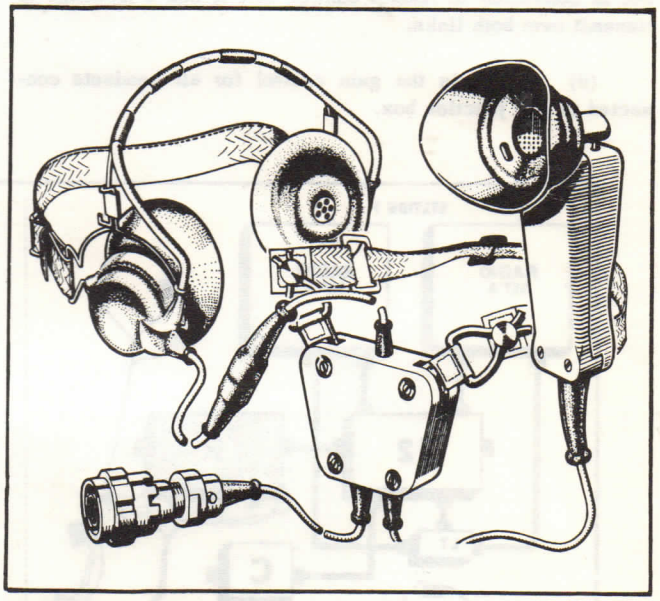


FIG 17 OPERATOR'S HEADSET

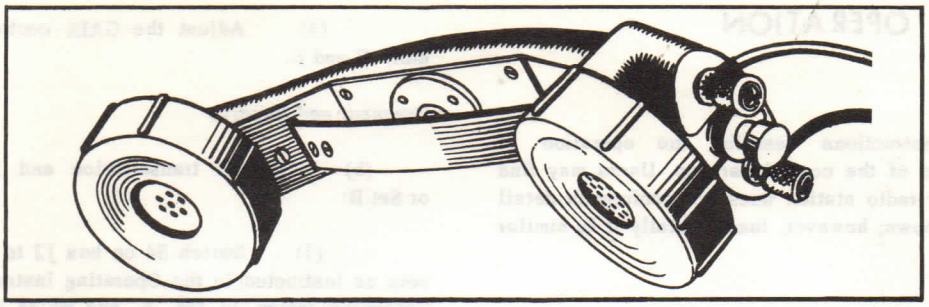


FIG 18 REMOTE CONTROL HANDSET

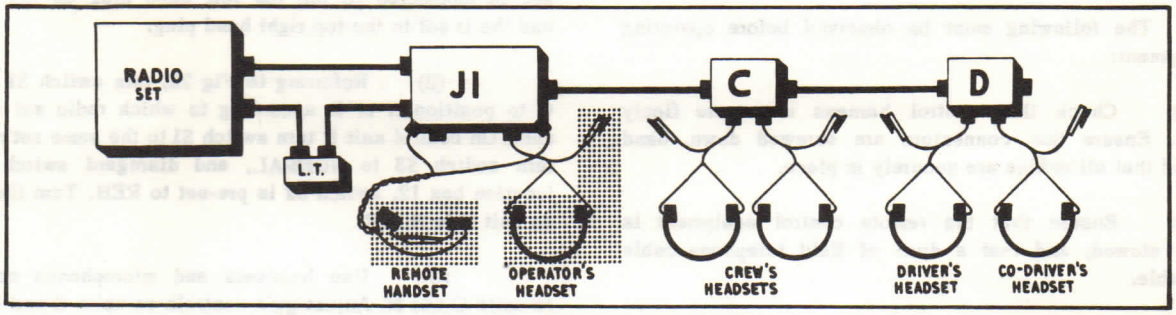


FIG 19 HANDSET AND HEADSETS

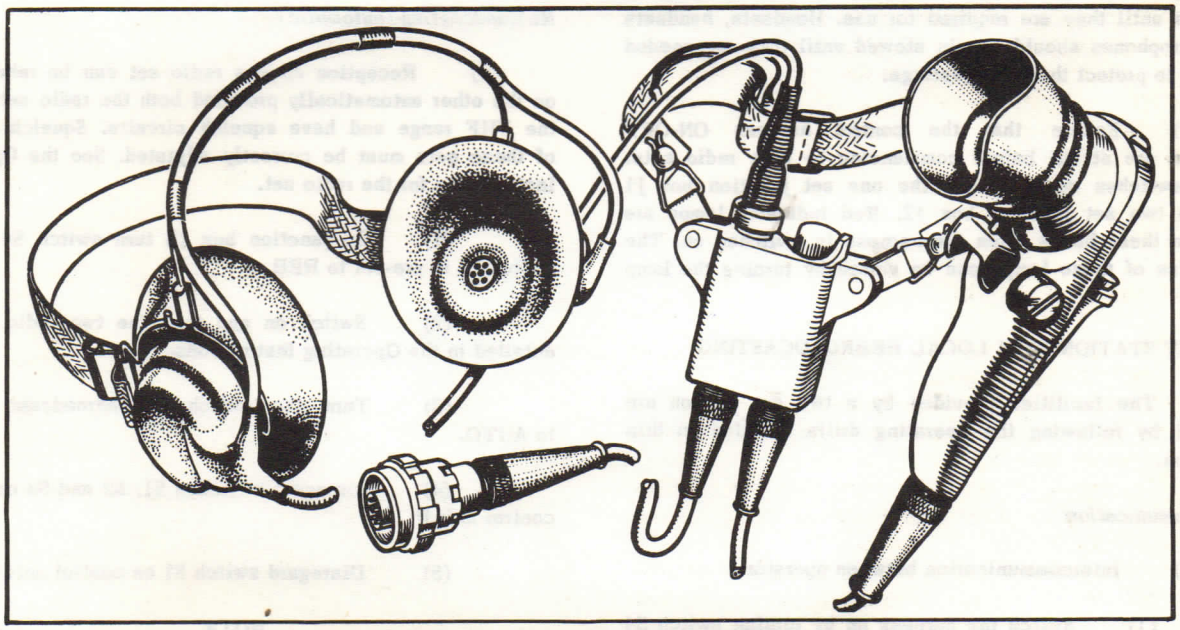


FIG 20 COMMANDER'S HEADSET

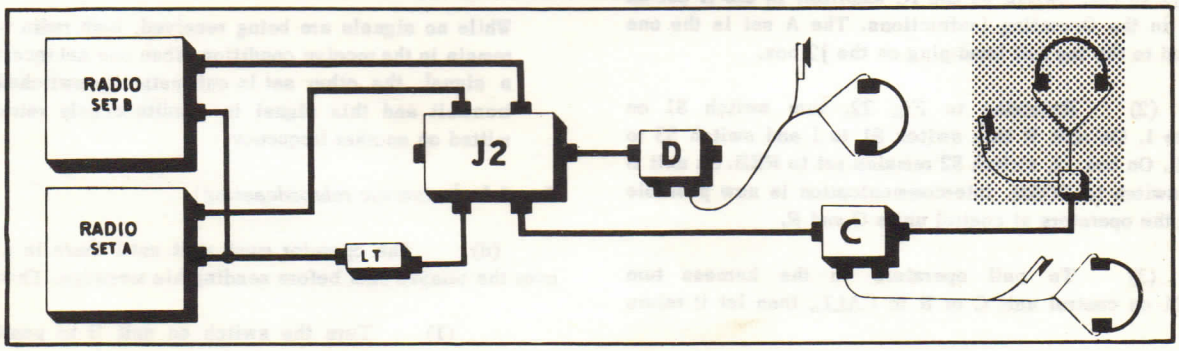


FIG 21 COMMANDER'S HEADSET IN A TWO SET STATION

OPERATION

GENERAL

20. These instructions describe the operation of typical arrangements of the control harness. Users may find that their particular radio station does not conform in detail with any of those shown; however, fundamentally it is similar to one of them.

PREPARATION

21. The following must be observed before operating the equipment:

(a) Check that control harness units are firmly mounted. Ensure that connectors are screwed down, hand tight, and that all cables are securely in place.

(b) Ensure that the remote control equipment is properly stowed, and that a drum of field telephone cable is available.

(c) Do not attach headsets to control units or adapters until they are required for use. Headsets, handsets and microphones should remain stowed until they are needed in order to protect them from damage.

(d) Ensure that the control harness ON-OFF switches are at ON before commencing to tune radio sets. These switches are fitted on the one set junction box J1 and the two set junction box J2. Red indicator lamps are fitted on these boxes when the harness is switched on. The brightness of these lamps can be varied by turning the lamp cover.

TWO SET STATION WITH LOCAL REBROADCASTING

22. The facilities provided by a two set station are obtained by following the operating drills detailed in this paragraph.

Intercommunication

(a) Intercommunication between operators:

(1) Switch the harness on by turning switch S4 on box J2 to ON. Switch on the IC amplifier in the A set as detailed in the Operating Instructions. The A set is the one connected to the top left hand plug on the J2 box.

(2) Referring to Fig 22, turn switch S1 on unit C to I. On unit R turn switch S1 to I and switch S3 to NORMAL. On box J2, switch S2 remains set to REB. On unit B set the switch to NORM. Intercommunication is now possible between the operators at control units C and R.

(3) To call operators on the harness turn switch S1 on control unit C or R to CALL, then let it return to I.

(4) Adjust the GAIN controls RV1 on control units C and R.

Transmit and Receive

(b) Normal transmission and reception on Set A or Set B:

(1) Switch S4 on box J2 to ON. Tune the radio sets as instructed in the Operating Instructions for the sets. Determine which is the A and which is the B set. The A set is connected to the top left hand plug on the J2 box, and the B set to the top right hand plug.

(2) Referring to Fig 22, turn switch S1 on unit C to position A or B according to which radio set is to be used. On control unit R turn switch S1 to the same set position, turn switch S3 to NORMAL, and disregard switch S2. On junction box J2, switch S2 is pre-set to REB. Turn the switch on unit B to NORM.

(3) Use headsets and microphones connected to units C and R. Adjust gain controls on units C and R.

Rebroadcasting (automatic)

(c) Reception on one radio set can be rebroadcast on the other automatically provided both the radio sets are in the VHF range and have squelch circuits. Squelch circuits of these sets must be correctly adjusted. See the Operating Instructions for the radio set.

(1) On junction box J2 turn switch S4 to ON. Switch S2 is pre-set to REB.

(2) Switch on and tune the two radio sets as detailed in the Operating Instructions.

(3) Turn the switch on rebroadcast unit B to AUTO.

(4) Disregard switches S1, S2 and S3 on remote control unit R.

(5) Disregard switch S1 on control unit C.

NOTE

While no signals are being received, both radio sets remain in the receive condition. When one set receives a signal, the other set is automatically switched to transmit and this signal is simultaneously retransmitted on another frequency.

Break In (automatic rebroadcasting)

(d) The operator must wait until there is no traffic over the relayed link before sending his message. Then;

(1) Turn the switch on unit B to position BK

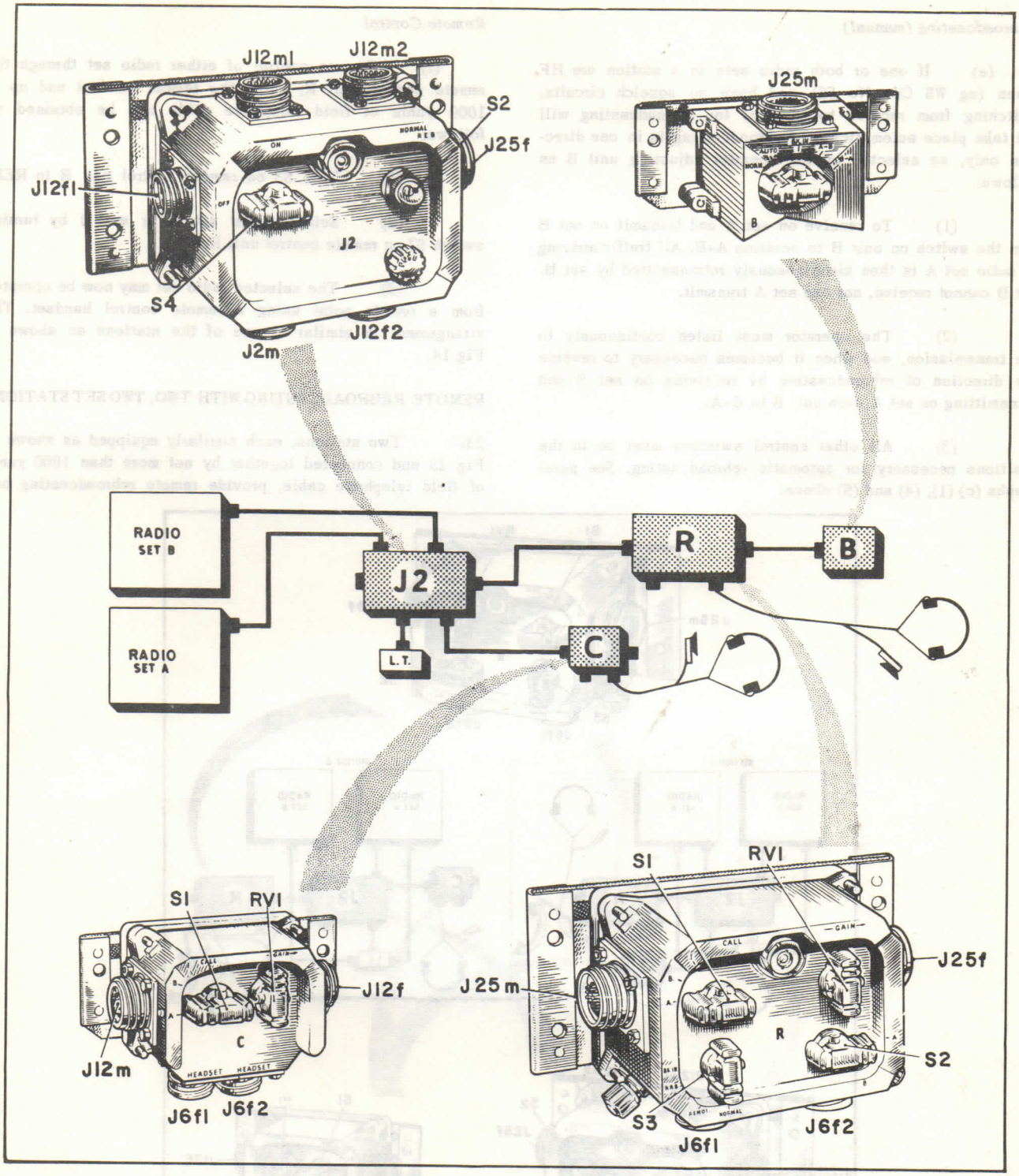


FIG 22 LOCAL REBROADCASTING
WITH A TWO SET STATION

IN. All other switches remain as set in paragraph (c) (1), (4) and (5) above.

(2) Operate the pressel switch on the headset microphone attached to control unit C or R. The operator can then transmit simultaneously on both radio sets. Transmit-receive switching of both radio sets is controlled by the operator's pressel switch.

Rebroadcasting (manual)

(e) If one or both radio sets in a station are HF types (eg WS Cdn No 52) and have no squelch circuits, switching from receive to transmit for rebroadcasting will not take place automatically. Rebroadcasting is in one direction only, as selected by the operator adjusting unit B as follows:

(1) To receive on set A and transmit on set B turn the switch on unit B to position A→B. All traffic arriving at radio set A is then simultaneously retransmitted by set B. Set B cannot receive, nor can set A transmit.

(2) The operator must listen continuously to the transmission, and when it becomes necessary to reverse the direction of rebroadcasting by receiving on set B and transmitting on set A, turn unit B to B→A.

(3) All other control switches must be in the positions necessary for automatic rebroadcasting. See paragraphs (c) (1), (4) and (5) above.

Remote Control

(f) Remote control of either radio set through the remote control unit R, using the remote handset and up to 1000 yards of field telephone cable can be obtained as follows:

(1) Turn S3 on remote control unit R to REM.

(2) Select either set A or set B by turning switch S2 on remote control unit R.

(3) The selected radio set may now be operated from a remote point using a remote control handset. The arrangement is similar to one of the stations as shown in Fig 14.

REMOTE REBROADCASTING WITH TWO, TWO SET STATIONS

23. Two stations, each similarly equipped as shown in Fig 23 and connected together by not more than 1000 yards of field telephone cable, provide remote rebroadcasting and

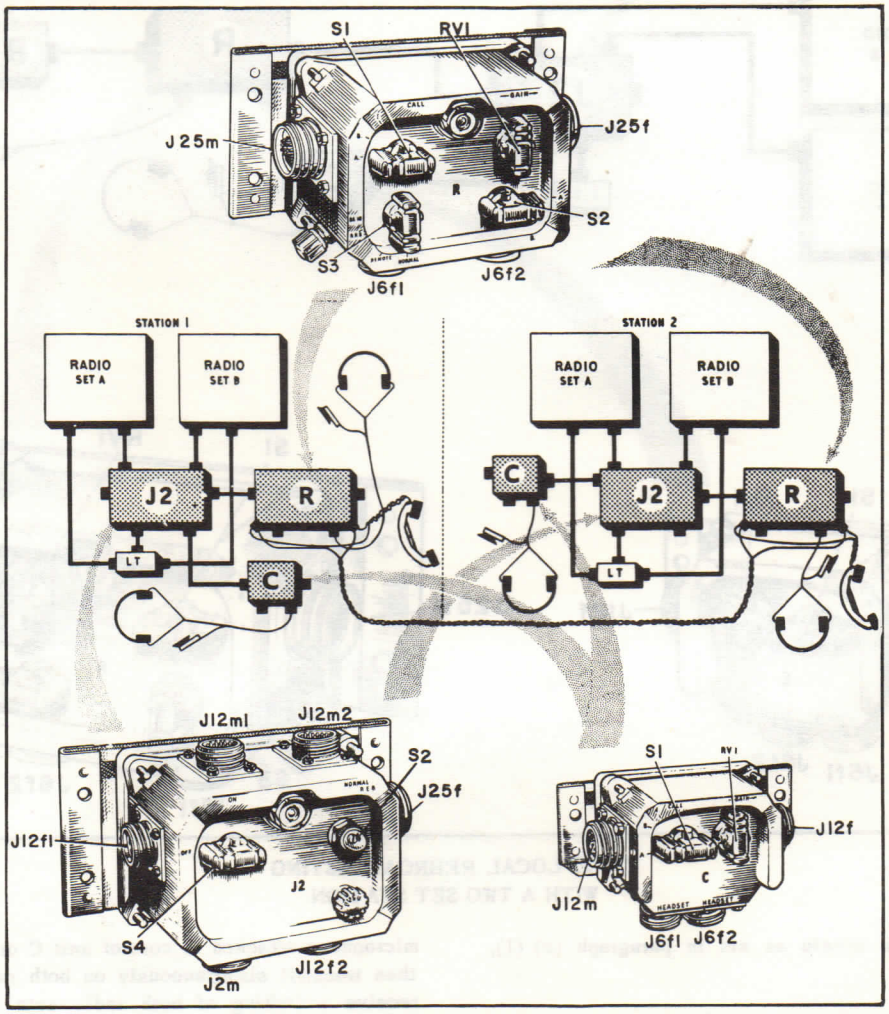


FIG 23 REMOTE REBROADCASTING WITH TWO SET STATIONS

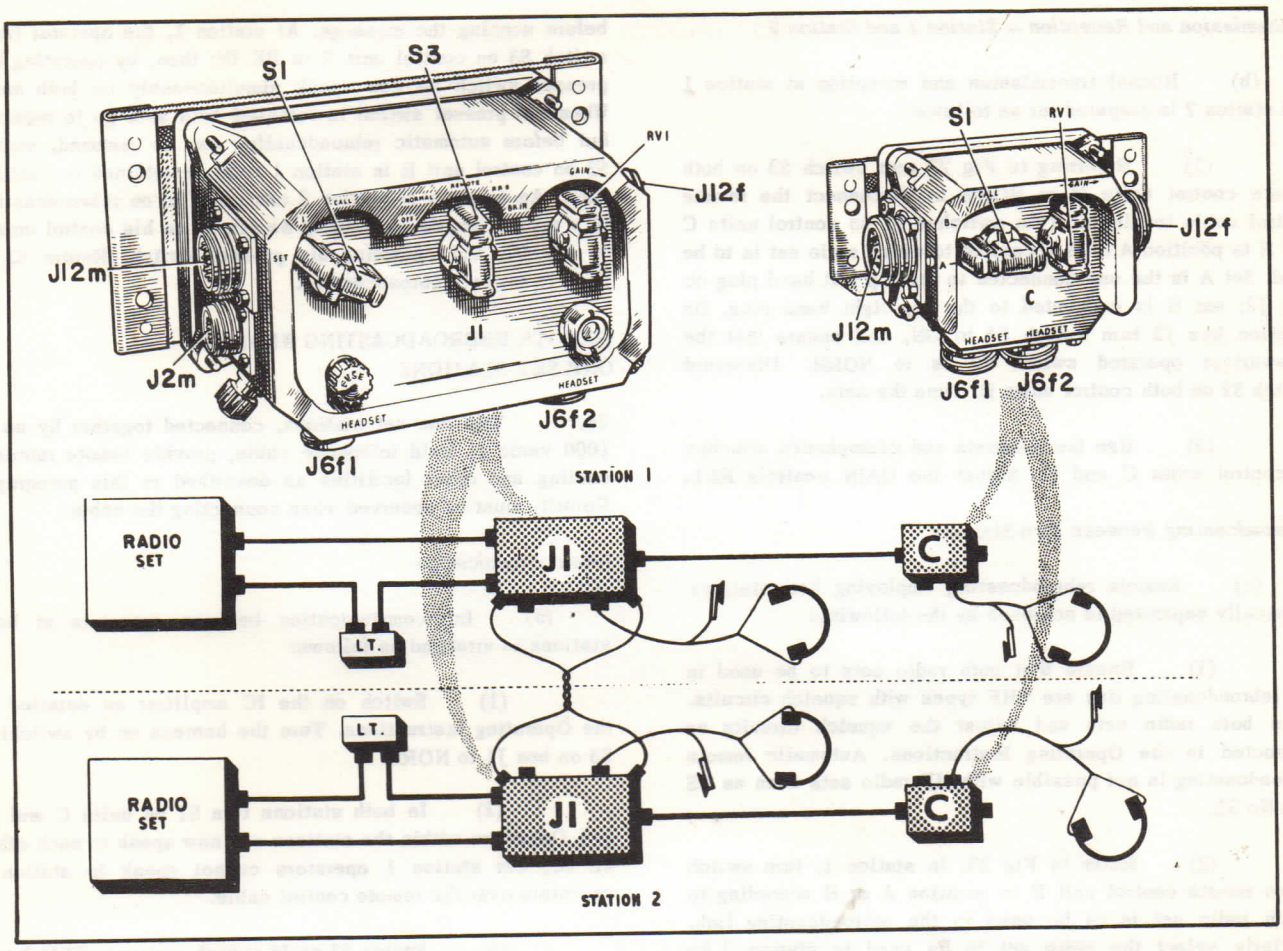


FIG 24 REMOTE REBROADCASTING
WITH TWO ONE SET STATIONS

other facilities as described in this paragraph. Polarity must be observed in connecting the field cable.

Intercommunication

(a) Intercommunication between individual operators and between station 1 and station 2 can be arranged as follows:

(1) Switch the harness on by turning switch S4 on box J2 to ON. Switch on the IC amplifier in set A as detailed in the Operating Instructions. The A set is the one connected to the top left hand plug on the J2 box.

(2) Referring to Fig 23, turn switches S1 on control units C and R to I. Turn switch S3 on unit R to NORM. On junction box J2 the screwdriver operated switch S2 is pre-set to NORM. Disregard switch S2 on both control units R. Intercommunication is now possible between operators at units C and R, within the same station. This setting of the switches electrically disconnects the remote control cable, and station 1 operators cannot speak to station 2 operators over the remote control cable. To call operators turn switch S1 on control unit C or R to CALL, then let it return to I. Adjust the GAIN controls RV1.

(3) To enable operators at station 1 to communicate with those at station 2, turn switch S3 on both control units R to REM. To call operators turn switch S1 on control unit C or R to CALL, then let it return to I. Adjust the GAIN controls RV1.

(4) When setting up for remote rebroadcasting, an alternative method of intercommunication between the two stations can be provided by the use of two remote handsets. Having attached the remote control cable to the remote terminals on each unit R, connect a remote handset to the same terminals on each unit R as shown in Fig 23. At station 1 turn switch S1 on unit R to I, and S3 to REM. At station 2 turn switch S3 on unit R to NORM and disregard switch S1. This avoids the use of the IC amplifier at station 2. Station 1 can use a standard headset if required but only the remote handset can be used at station 2. Do not speak on the remote handsets with the switches at RRB or the conversation will be transmitted over the radio sets.

Transmission and Reception – Station 1 and Station 2

(b) Normal transmission and reception at station 1 and station 2 is prepared for as follows:

(1) Referring to Fig 23 turn switch S3 on both remote control units R to NORM to disconnect the remote control cable terminals. Turn switches S1 on control units C and R to position A or B according to which radio set is to be used. Set A is the one connected to the top left hand plug on box J2; set B is connected to the top right hand plug. On junction box J2 turn switch S4 to ON, and ensure that the screwdriver operated switch S2 is to NORM. Disregard switch S2 on both control units R. Tune the sets.

(2) Use the headsets and microphones attached to control units C and R. Adjust the GAIN controls RV1.

Rebroadcasting Between Two Stations

(c) Remote rebroadcasting employing both stations physically separated is achieved by the following:

(1) Ensure that both radio sets to be used in the rebroadcasting link are VHF types with squelch circuits. Tune both radio sets and adjust the squelch circuits as instructed in the Operating Instructions. Automatic remote rebroadcasting is not possible with HF radio sets such as WS Cdn No 52.

(2) Refer to Fig 23. In station 1, turn switch S2 on remote control unit R to position A or B according to which radio set is to be used in the rebroadcasting link. Similarly select the radio set to be used in station 2 by means of switch S2 on remote control unit R in that station.

(3) In both stations, turn switch S3 on control unit R to RRB.

(4) Disregard switches S1 on control units C and R.

(5) When the selected radio sets are switched on, a two way automatic rebroadcast link is established. Signals received by station 1 are rebroadcast by station 2, and vice versa. When no signals are being received both sets remain in the receive condition, but when a signal is received at one set the other set is automatically switched to transmit.

(6) Do not operate pressel switches on headsets connected to a control unit switched to a set position, or rebroadcasting will be interrupted. By turning switches S1 to I, intercommunication is possible between operators within a station, but not between stations.

Break In

(d) Operators at either relay station may break in on automatic rebroadcasting and speak over both transmitters. They must wait until there is no traffic over the relayed link before sending the message. At station 1, the operator turns switch S3 on control unit R to BK IN; then, by operating his pressel switch he can speak simultaneously on both sets. When the pressel switch is released both sets go to receive, but before automatic rebroadcasting can be resumed, switch S3 on control unit R in station 1 must be returned to position RRB. An operator at station 2 can break in on rebroadcasting in a similar manner by turning switch S3 on his control unit R to BK IN, and operating his pressel switch. Return S3 to RRB to resume rebroadcasting.

REMOTE REBROADCASTING WITH TWO ONE SET STATIONS

24. Two one set stations, connected together by up to 1000 yards of field telephone cable, provide remote rebroadcasting and other facilities as described in this paragraph. Polarity must be observed when connecting the cable.

Intercommunication

(a) Intercommunication between operators at both stations is arranged as follows:

(1) Switch on the IC amplifier as detailed in the Operating Instructions. Turn the harness on by switching S3 on box J1 to NORM.

(2) In both stations turn S1 on units C and J1 to I. Operators within the stations can now speak to each other on IC, but station 1 operators cannot speak to station 2 operators over the remote control cable.

(3) Switch S3 on J1 at each station to REM. Intercommunication is now possible between all operating positions in both stations. To call any operating position, switch S1 on unit C or J1 to CALL position, then allow it to return to I. Adjust GAIN controls RV1.

Transmitting and Receiving

(b) Normal transmitting and receiving can be obtained in the following manner:

(1) In both stations turn switch S1 on junction box J1 to SET, and switch S3 to NORM, thus switching on the harness and disconnecting the remote control cable. On control unit C turn switch S1 to position B. In a one set station a stop is fitted to this switch to prevent it being turned to position A. Tune the radio set as detailed in its Operating Instructions.

(2) Use headsets and microphones attached to control units C and box J1. Adjust GAIN controls RV1 on both units.

Remote Rebroadcasting

(c) Remote rebroadcasting is possible using the following method:

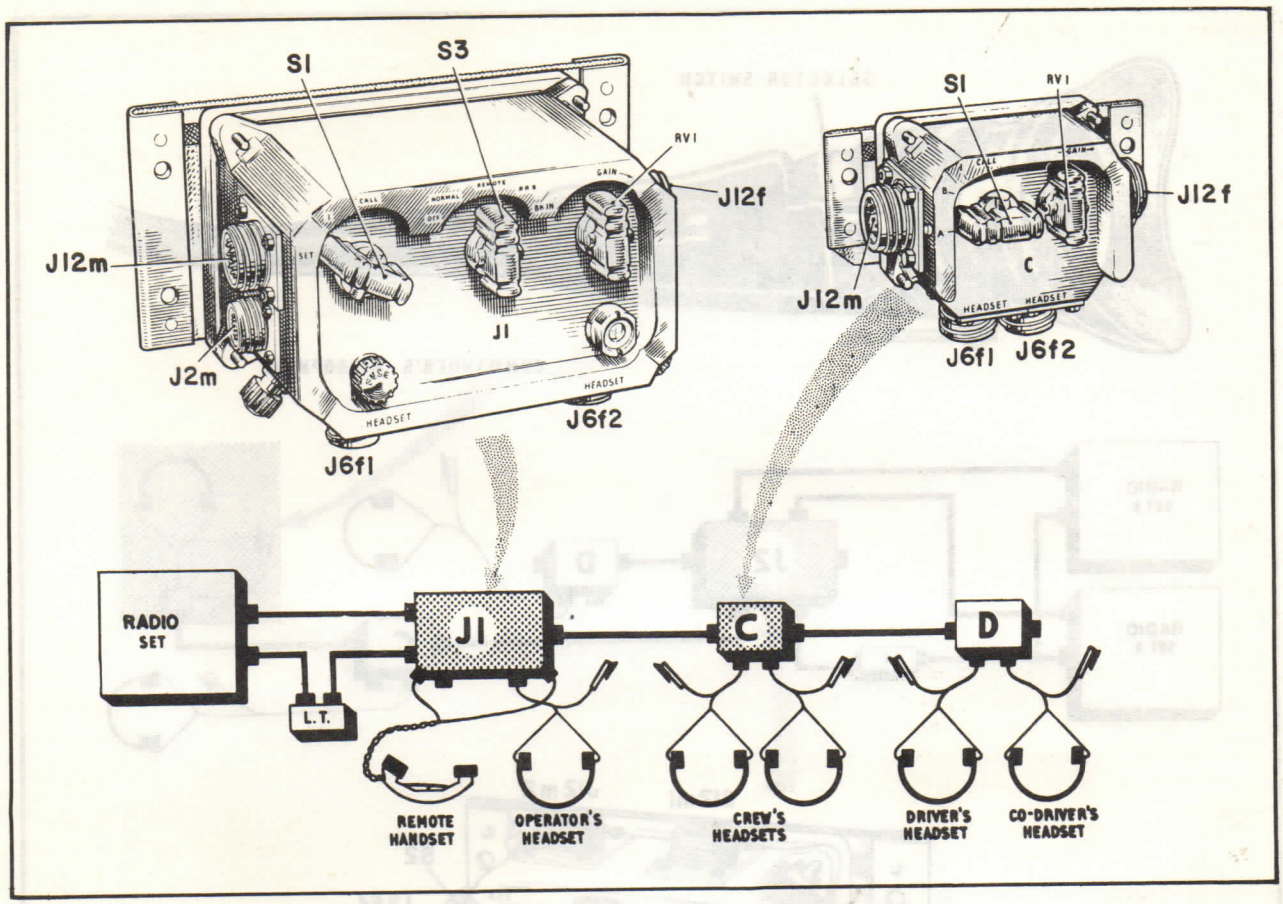


FIG 25 ONE SET STATION WITH REMOTE HANDSET

(1) Switch on and tune the radio set in each station as detailed in the Operating Instructions. Ensure that squelch circuits are correctly adjusted.

(2) On box J1 in both stations, turn switch S3 to RRB and switch S1 to SET. Ensure that both units C remain switched to B. An automatic two-way rebroadcast link is now established between the two stations, and signals received on either radio set are simultaneously retransmitted on the other set.

Break In

(d) Operators at either relay station can break in on rebroadcasting provided that no traffic is being sent over the relay link. Switch S3 on box J1 is turned to BK IN. Other switches remain as for remote rebroadcasting. When the operator presses his pressel switch, he can transmit simultaneously on both radio sets. To resume rebroadcasting, switch S3 is returned to RRB.

ONE SET STATION WITH REMOTE HANDSET

25. A one set station with a remote handset provides the following facilities:

Intercommunication

(a) Intercommunication between operators is established as follows:

(1) Switch the harness on by turning switch S3 on box J1 to NORM. Turn on the IC amplifier as detailed in the Operating Instructions.

(2) Referring to Fig 25, turn switch S1 on junction box J1 to I. Turn switches S1 on operator's control unit C and driver's control unit D to I. Intercommunication is now possible between operators at units C, D and J1, but the remote control cable terminals are disconnected.

(3) If the remote handset is to be included in the IC conversation, turn switch S3 on box J1 to REM.

(4) To call operators on the harness, including the remote operator, turn switch S1 on units C, D or J1 to CALL, then let it return to I.

(5) To call operators on the harness from the remote point, press the CALL button on the remote control handset.

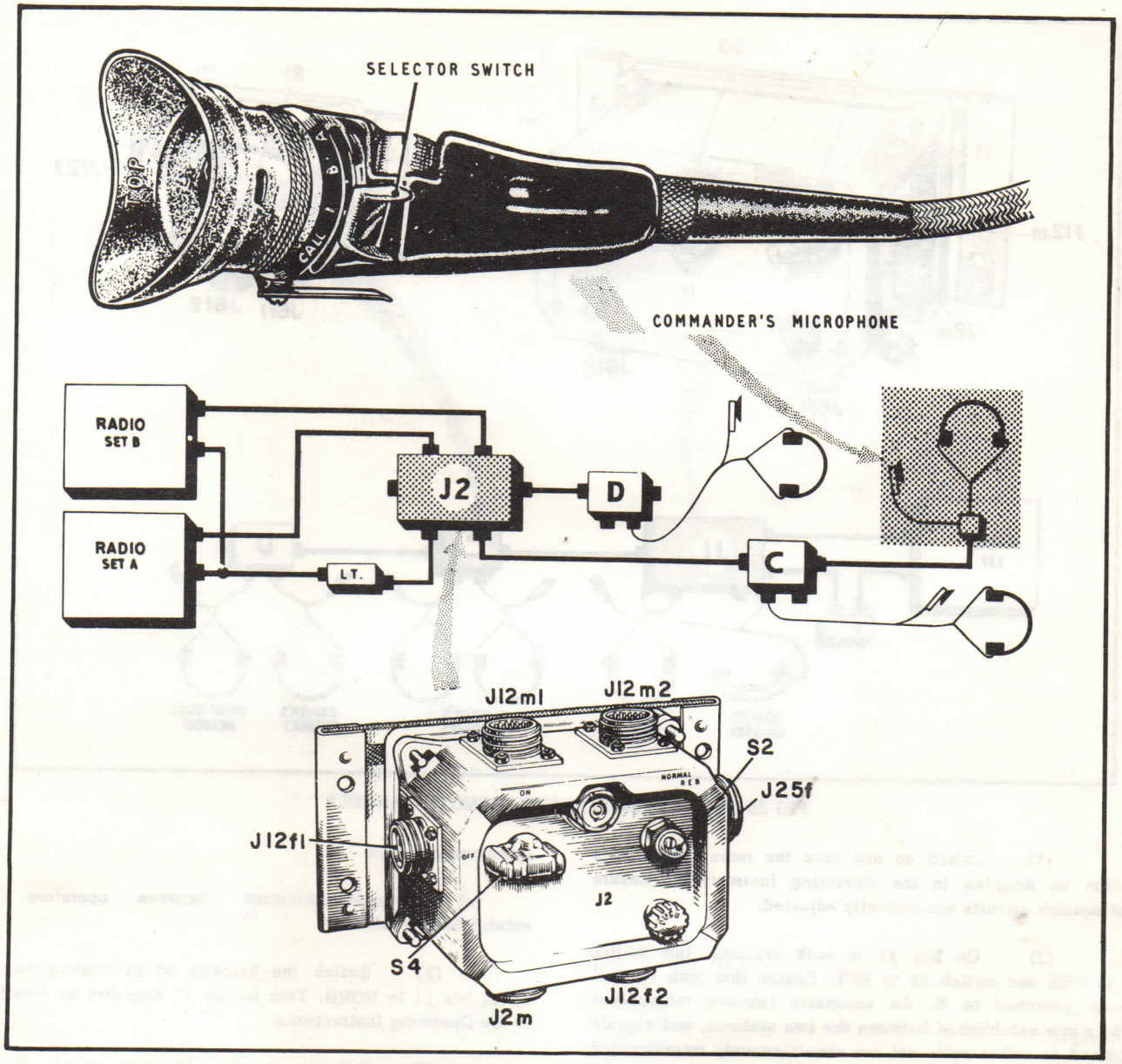


FIG 26 TWO SET STATION USING A
COMMANDER'S HEADSET

(6) Adjust GAIN controls RV1 on units C, D and J1.

Transmitting and Receiving

(b) Normal transmission and reception is provided by the following sequence:

(1) Switch the harness on by turning switch S3 on box J1 to NORM. Tune the radio set as detailed in the Operating Instructions.

(2) Referring to Fig 25, turn switch S1 on junction box J1 to SET. Turn switch S1 on control unit C to position B. Position B is always used when the operator's control unit C is fitted in a one set station.

(3) Use the headsets and microphones connected to units C and J1.

(4) Adjust GAIN control RV1 on units C and J1.

Remote Control

(c) The radio set may be remotely controlled using the remote handset:

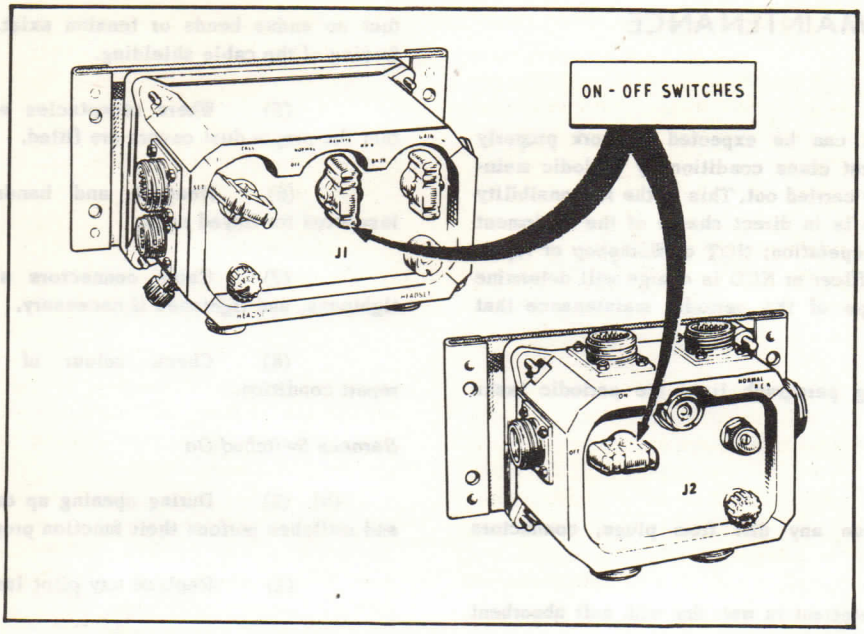


FIG 27 ON-OFF SWITCHES

(1) Tune the radio set as detailed in the Operating Instructions.

(2) Referring to Fig 25, switch S1 on junction box J1 to SET, and turn switch S3 to REM. On the operator's control unit C, turn switch S1 to position B.

(3) The remote control handset incorporates a transmit-receive pressel switch. This handset is connected directly to the radio set, which is now controlled from the remote position.

(4) Operators at units C and J1 can listen to the traffic from the remote handset. If they wish to speak they can break in by pressing their pressel switches.

COMMANDER'S HEADSET IN A TWO SET STATION

26. The Commander's headset provides the Commander with transmit and receive facilities on either radio set plus intercommunication with all operators. Choice of set or IC is selected from the switch on the microphone. The selector switch has a spring loaded CALL position as shown in Fig 26. The 12 contact plug from the commander's headset can be connected directly to a junction box J1 or J2, or to a control unit operator's C, as indicated in Fig 26, or to the similar socket on a control unit driver's D. All other units are connected in the normal way for a two set station.

Intercommunication

(a) The Commander can speak over the intercommunication system to all his operators. The sequence, with the harness switched ON (S4 on box J2 to ON) and the IC amplifier ON is:

(1) Call the operators by holding the microphone selector switch in the CALL position. A buzzing noise will be heard over all other signals on the harness regardless of the position of other switches. Allow the switch to return to the I position. The Commander can then talk to all other operators whose junction box or control units are switched to I. The pressel switch must be pressed when speaking.

Transmission and Reception

(b) With the harness switched ON (S4 on box J2 to ON) and the sets tuned, transmission and reception on the Commander's headset is accomplished as follows:

(1) Set the selector switch on the microphone to position A or B according to which radio set is to be used.

(2) The Commander's headset can be operated in the same way as a standard operator's headset. Use the microphone selector switch to change over from set to set; this switch selects the set to be used regardless of the position of the selector switch on the control unit.

SWITCHING OFF

27. The control harness is switched OFF by the switches shown in Fig 27. Switch off the set(s).

STOWAGE

28. Remote control equipment, headsets and handsets not in use must be disconnected and stowed in their proper places in the station.

UNIT MAINTENANCE

UNIT SERVICING

29. No equipment can be expected to work properly unless it is kept in first class condition by periodic maintenance, conscientiously carried out. This is the responsibility of the NCO or man who is in direct charge of the equipment and responsible for its operation; NOT of Workshop or repair personnel. The Signal officer or NCO in charge will determine the timetable and scope of the periodic maintenance that operators will follow.

30. The following paragraph lists the periodic tasks to be performed:

Harness Switched Off

(a) (1) Remove any dirt from plugs, connectors and knobs.

(2) If equipment is wet, dry with soft absorbent cloths.

(3) Ensure that all mounting hardware is tight and properly secured.

(4) Ensure that all cables are complete and that no undue bends or tension exist, and that there is no fraying of the cable shielding.

(5) Where receptacles are not in use, ensure that the proper dust covers are fitted.

(6) Headset and handset cords should be inspected for frayed ends.

(7) Cable connectors should be checked for tightness, and tightened if necessary.

(8) Check colour of desiccators. If pink, report condition.

Harness Switched On

(b) (1) During opening up drill check that controls and switches perform their function properly.

(2) Replace any pilot lamps which do not light.

NOTE

When any of the checks indicate an unsatisfactory condition it must be reported immediately to the NCO or officer in charge.

FAULT LOCATION

31. Fault location is tabulated in Fig 28.

Symptom	Possible Fault	Remedy
No sidetone in headset	Headset not connected	Connect headset
	Harness switches not correctly set	Check switch settings
	Control boxes not connected	Connect boxes
	Faulty handset or headset	Change
	Fault in control boxes	Report fault
Harness not selecting required facility	Harness not connected to power source	Connect harness
	Blown fuse in control box.	Replace with new fuse.
	Internal fault	Report fault.
Fuses repeatedly blowing	Internal fault	Report fault
Faults which might denote inadequate design or those which recur should be reported in accordance with EME Manual GEN H206.		

FIG 28 FAULT LOCATION

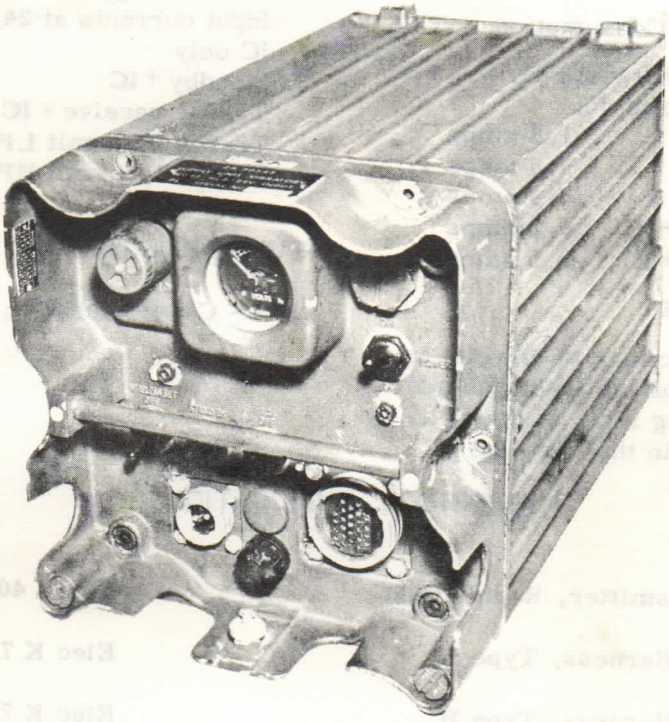
END

POWER SUPPLY, VIBRATOR, NO 12, MK 2, 24V INPUT

5820-99-949-1086

DATA SUMMARY

HQ 6001 - Wireless/42 TD 0104 (7238)



General View of Equipment

INTRODUCTION

PURPOSE

This power supply is designed to provide, from a 24 vdc source, input voltages for the RECEIVER-TRANSMITTER, RADIO, C42.

DESCRIPTION

This unit is housed in a sealed light alloy case which contains a desiccator to absorb any excess moisture. The input voltage is metered. The unit must be used in conjunction with Radio Control Harness, Type A or Type B, since each of these harnesses contains a relay which controls the output voltage of this power supply.

DATA

PERFORMANCE

This unit when loaded with a radio set C42 on high power (max load) and with an input voltage of 23 volts, will supply the following outputs:

Output Socket	Nominal Voltage	Nominal Current
A	+ 350 dc	130 ma
B	+ 175 dc	145 ma
FLQV	6.3 ac	3.3 amp
J	+ 12 dc	350 ma
M	12 ac	480 ma

Output Socket	Nominal Voltage	Nominal Current
R	12 ac	180 ma
W	6.3 ac	350 ma
Z	6.3 ac	850 ma
XY	6.3 ac Balanced to ground	500 ma
D	+23 dc	373 ma

Power Requirement and Consumption

Input Voltage 20.7-29.0 volts dc.
Input Current at 23 volts dc:

IC only	1.8 amps
Standby + IC	3.6 amps
Traffic receive + IC	5.3 amps
Traffic transmit LP + IC	6.2 amps
Traffic transmit HP + IC	9.0 amps

NOTE

The use of an input voltage of 23 volts is desirable since this voltage is conveniently below the operating level of the voltage regulating relay in the harness.

PHYSICAL DATA

Width	Height	Depth	Weight
8 in	8 1/2 in	14 1/2 in	40 lb

POWER REQUIREMENT AND CONSUMPTION

Input voltage 20.7-29.0 volts dc.
Input currents at 24.0 volts dc:

IC only	1.9 amps
Standby + IC	3.8 amps
Traffic receive + IC	3.5 amps
Traffic transmit LP + IC	6.5 amps
Traffic transmit HP + IC	9.4 amps

TUBES ELECTRON

2 - CV 469 (used in delay circuit)

AUTHORIZED PUBLICATIONS

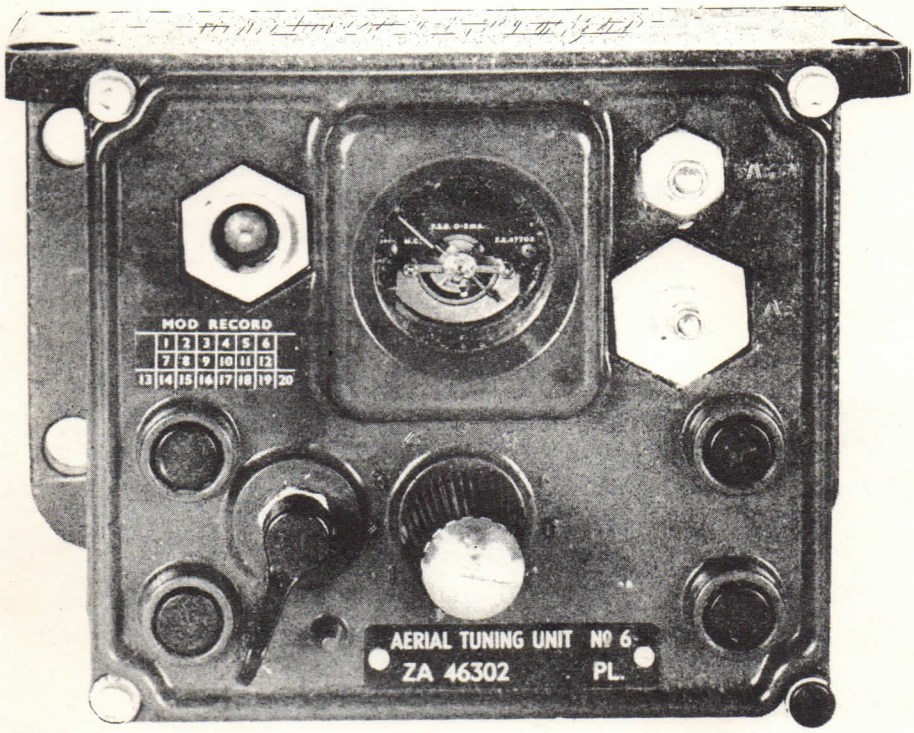
Receiver-Transmitter, Radio, C42	Elec I 400-409
Radio Control Harness, Type A	Elec K 770-779
Radio Control Harness, Type B	Elec K 760-769
Tuner, Radio Frequency, Aerial, No 6	Elec K 550-559
Issue Scale Field	M/W&L/187
Canadian Basic Scale	C 120-14

END

TUNER, RADIO FREQUENCY, AERIAL NO 6

5820-99-949-0858

DATA SUMMARY



General View of Equipment

INTRODUCTION

PURPOSE

This tuner matches RECEIVER-TRANSMITTER, RADIO, C42 to an 8 ft vertical rod.

DESCRIPTION

This unit is housed in a fully sealed light alloy case which contains a desiccator to absorb any moisture which may leak into the case.

The tuner matches the C42 output cable to the whip antenna and has a single tuning control and a built-in tuning-indicator meter.

DATA

PHYSICAL DATA

Width	Height	Depth	Weight
7 1/2 in	6 in	6 1/2 in	6 lb

AUTHORIZED PUBLICATIONS

Receiver-Transmitter, Radio, C42 — Elec I 400-409
Radio Control Harness, Type A — Elec K 770-779
Radio Control Harness, Type B — Elec K 760-769
Power Supply, Vibrator No 12, Mk 2, 24 v input — Elec K 240-249
Issue Scale Field — M/W&L/187
Canadian Basic Scale — C120-14

END

HQ 6001 - Wireless/42 TD 0291A (7237)

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
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