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TECHNICAL FOLDER

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IN ORDER TO REDUCE DELAYS IN THE PUBLICATION OF THIS TECHNICAL FOLDER IT HAS NOT BEEN SUBJECTED TO DETAILED VETTING. ALTHOUGH EVERY EFFORT HAS BEEN MADE TO ENSURE THAT THE TECHNICAL CONTENT IS CORRECT, IT IS POSSIBLE THAT ERRORS MAY BE FOUND OR IMPROVEMENTS CAN BE MADE. COMMENTS ON THIS DOCUMENT ARE WELCOMED FROM ALL UNITS AND SHOULD BE SUBMITTED IN ACCORDANCE WITH EMER GEN A 045.

BASIC RADIO, THREE SET, B HARNESS IN

TRACKED VEHICLE APC FV432

TECHNICAL HANDBOOK - INSTALLATION INSTRUCTION

SUBJECT: Installation of UK/VRC 353, UK/VRC 321 and C42 No 3 with BID 150

INTRODUCTION

1. This instruction deals with the installation of Clansman radio sets VRC 353 and VRC 321 together with the C42 No 3 and BID 150 in basic Larkspur 'B' harness in FV 432.
2. The installation detailed in EMER Commis Inst H 205 Inst Instr No 14 must be fitted to the vehicle before commencing this installation.
3. The items comprising the installation are listed in tables 1-6 and are supplied in CES Nos 44750, 43754, 44681, 43428, 42921 (2N), 42992, 42921 (2F), 43906, 44687, 44696, 44750.

ACTION REQUIRED BY

4. a. Units affected

On receipt of the Clansman radio installation kits request REME to install the equipment. User handbook "BID 150 installations in APC FV 432" Army Code 13745 MUST accompany the vehicle to the Light Aid Detachment (L.A.D.)/Workshop.

b. REME units authorised to carry out unit, field or base repairs

- (1) Install the equipment as detailed.
- (2) Endorse the AB 413 (revised) ('A' vehicle log book) of the vehicle with the installation details.

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ESTIMATED TIME REQUIRED

5.

INSTALLATION

General

6. An interconnection diagram is given at Fig 1. Figs 2-7 are assembly diagrams required to complete the installation. Figs 8-15 show various items installed in the vehicle.

7. Reference to left hand and right hand is made with respect to the drivers position facing forward.

8. Reference to an item in the tables is made in the text by inserting the number in brackets after its title.

9. Particular reference is made throughout this instruction to the installation conversion kit, Clansman radio in Larkspur Harness in FV 432, details of which are contained in EMER Comms Inst H 205 Inst Instr No 14. This and the following publications should be readily available as this installation is implemented:-

- a. EMER Comms Inst H 205 Inst Instr Nos 1, 5, 9, 12.
- b. User handbook BID installations in APC FV 432 Army Code 13745.

10. All items of equipment removed from the vehicle during the installation should be stored for future use.

11. The earth bonding is an essential part of the installation. Poor bonding will degrade the performance leading to reduced range and susceptibility to R.F. interference. ALL earth bonding points (lead electrical, screws, tapped holes and braid contact areas) must be free from paint and degreased using an approved solvent.

SEQUENCE OF OPERATIONS

12. WARNING Before work is commenced ensure that both the automotive battery master switch and the radio master switch are SWITCHED OFF.

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13. Remove, the following items, installed as part of the installation conversion kit, Clansman radio in Larkspur harness in FV 432:-

- a. IBRA support frame 5820-99-645-2573
- b. ARFAT mounting plate 5820-99-645-2592
- c. both ARFAT mounting plates 5820-99-645-2593
- d. TUAAM mounting plate 5820-99-645-2611
- e. TUAAM mounting plate 5820-99-645-2594

These items together with their fixings should be stored for future use.

Base antenna element (4)

Re Goat

14. Remove the existing antenna base No 28 from RBS of the vehicle roof together with the attached antenna feeder (pig-tail) and store both items for possible future use.

15. Connect the straight connector end of the cable assembly RF (7) to the base antenna element (4).

16. Feed the cable assembly RF (7) down through the hole in the vehicle roof at the front RHS antenna base position.

17. Secure the base antenna element to the vehicle as shown in Fig 2. Note particularly the positioning of the gaskets.

18. Fit the antenna elements (2,3) to the antenna base.

Tuning unit automatic antenna matching (TUAAM) (13)

19. Locate TUAAM mounting bars fitted to the forward RHS wall of the vehicle as detailed in EMER Comms Inst Instr No 14. Ensure that they are orientated as shown in Fig 6.

20. Fit a lead electrical (8) as shown in Fig 6.

21. Secure the TUAAM (13) to the mounting bars as shown in Fig 15. Mounting assembly details are given in Fig 5.

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22. Connect the following harness to the TUAAM (13):-

- a. cable assembly RF (7), paras 15 and 16 refer, to 1 SK 3.
- b. lead electrical (8), para 20 refers, to the earth terminal.
- c. harness 7 pt (5820-99-645-2584) to 1 SK 1.
- d. harness coax (5820-99-645-2588) to 1 SK 2.

The harnesses given at sub paras C and D were installed as part of the installation described in EMER Comms Inst H 205 Inst Instr 14.

Front right hand sill

23. Disconnect the harnesses from the following existing harness boxes situated above the two tier rack:-

- a. the rebroadcast unit HRRB.
- b. the adaptor unit 12T.
- c. the adaptor unit E.

24. Remove these three boxes, from the vehicle together with the existing bracket assembly 3 box, FV 456882, which is secured to the vehicle at the same fixings as the adaptor units E and 12T.

25. Secure the bracket assembly for possible future use.

26. The adaptor units E and 12T are to be refitted to the vehicle in a similar position as before, but secured directly to the four bosses to which the bracket assembly 3 box was attached.

27. Method. Secure one end of the adaptor units E and 12T to the vehicle ceiling at the bosses nearest the RH wall using original fixings.

28. Align the holes of the welded support assembly (47) over the remaining holes of the adaptor units and secure the three items to the vehicle ceiling using the original fixings. The two studs of the welded support assembly should now face outward at 90° to the vehicle wall.

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29. Secure the MRRB box to the welded support assembly using nuts (51) and washers (59, 61) provided. Note that two nuts are used as spacers, Fig 7 refers.
30. Reconnect the harnesses to the MRRB box and adaptor units E and 12T referring to Fig 1 as necessary.
31. Remove the Clansman two tier rack from the vehicle. Retain fixings.
32. Fit the adaptor plate assembly (41) to the top of the two tier rack as shown in Fig 7. Fit the carrier set 82 (106) to the adaptor plate using screws (113) and washers (115, 116) provided.
33. Fit the support plate (45) to the side of the two tier rack as shown in Fig 7.
34. From the items supplied in tables 1 and 6, assemble the mounting plate impact assemblies as shown in Fig 4.
35. Fit the two impact assemblies to the bottom of the two tier rack using screws (57, 184) nuts, (51, 189) and washers (59, 61, 193, 197) provided. Leads electrical (8, 169) should be fitted to the appropriate fixings in preparation for fitting the two Clansman radio sets.
36. Refit the two tier rack in the vehicle as before using the original fixings.
37. Fit the welded support assembly (46) between the support plate (45), para 33 refers, and the vehicle roof as shown in Fig 7.
38. Fit the adaptor radio frequency antenna tuning (ARFAT) (1) to the welded support assembly (46) using the fitted fixings as shown in Fig 13 and connect the four harnesses to the ARFAT as shown in Fig 1.

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39. Fit both interconnection box radio adaptors (IBRA) (44 ) to the welded support assembly (46) as shown in Fig 11, using screws (57 ) nuts (51 ) and washers (59, 61 ) provided. Note that a nut is fitted to each screw to act as a spacer between the IBRA's and the welded support assembly (46).
40. Connect the following existing harnesses to the upper IBRA (44):-
- a. harness 2 pt FV 167346/4 (Red)
  - b. harness 12 pt FV 324095/29 (Red)
41. Connect the following existing harnesses to the lower IBRA:-
- a. harness 2 pt FV 167346/6 (White)
  - b. harness 12 pt FV 324095/20 (White)
42. Fit and secure the RT 321 (175) and the RT 353 (14) to the lower tray of the two tier rack as shown in Fig 8.
43. Connect one of each of the following harnesses between the upper IBRA (44) and the RT 353 (14).
- a. harness 2 pt (42) to plug marked 28V on the RT 353
  - b. harness 7 pt (43) to socket marked HARNESS on the RT 353
44. The remaining harnesses are to be connected between the lower IBRA (44) and the RT 321 (175) as follows:-
- a. harness 2 pt (42) to plug marked 28V on the RT 321
  - b. harness 7 pt (43) to socket marked HARNESS on the RT 321 (175).
45. Connect the leads electrical, para 35 refers, to the appropriate radio set.
46. The harnesses installed in paras 38,40,41,43 & 44 should be routed and clamped to the vehicle, using locally obtained cable clips, as necessary.

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47. Connect the following harnesses, installed as part of the installation described in EMER Comms Inst Instr No 1/4 as follows:-
- a. Harness 12 pt 5820-99-645-2581 to the socket marked TURF on the RT 353 (14).
  - b. Harness coax 5820-99-645-2587 to the socket marked ANT/TURF on the RT 353 (14).
  - c. Harness coax 5820-99-645-2580 to be connected to the socket marked RF on the RT 321 (175).
48. Fit and secure the C42 No 3 (109) and PST No 1/SUV No 12 (107) to the carrier set 82.
49. Connect the following existing harnesses to the C42 No 3 (109)
- a. harness 12 pt FV 324095/31 (black)
  - b. harness coax FV 324239/1 (black)
50. Connect the following existing harnesses to the PST No 1/SUV No 12:-
- a. harness 2 pt FV 167346/9 (blue)
  - b. lead electrical (104) to a suitable earthing point on the two tier rack.
51. Connect the harness 25 pt (105) between the PST No 1/SUV 12 and C42 No 3.

Rear right hand antenna position

52. Fit the two bar assemblies TRF long FV 246357, supplied as part of the existing basic Larkspur B harness in FV 432 as shown in EMER Comms Inst H 205 Inst Instr No 1 Fig 5. Note the position of the lead electrical.
53. Fit the tuner radio frequency No 6 (TRF No 6) (108) to the mounting bars as shown in fig 5 using nuts (111) and washers (116) provided.
54. An antenna base No 28 should be fitted at the rear RH antenna position.
55. Connect the existing antenna feeder and the lead electrical to the



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TRF No 6 and fit antenna elements (121, 122) to the antenna base No 28.

Rejector unit VHF No 3

56. Locate the plate mounting rejector unit FV 457052 at the rear interior roof of the vehicle above the door.
57. Remove this plate from the vehicle. Retain fixings.
58. Fix the studs (152) to the plate using nuts (151) provided.
59. Refit the plate complete with studs to its original position using original fixings. Fit lead electrical (143) to one of the plate fixing screws.
60. Fit and secure rejector unit (144) to the mounting plate using the blocks (141) sleeves (145) nuts (151) and washers (153) provided.
61. Connect the following existing harness to the installed rejector unit:-  
harness coax FV 324239/1 (black)
62. Connect the connector coax, No 120 (142) between the rejector unit and the TRF No 6. Route the harness along the rear vehicle wall and secure to existing cable clips.

Loudspeaker mounting plate assembly (170)

63. Disconnect the harness FV 324156/2 from the rear left hand loudspeaker.
64. Remove the loudspeaker from the vehicle.
65. Remove the loudspeaker bracket assembly and feltpad from the vehicle and store the bracket for possible future use.
66. Fit the loudspeaker to the loudspeaker mounting plate assembly (170) together with felt pad using original fixings. If damaged, a replacement

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pad should be made locally.

67. Fit the loudspeaker mounting plate assembly (170) together with the loudspeaker to the same bosses as used by the original bracket assembly and secure using original fixings or locally obtained replacements (screws 1/4 in UNF x 1/2 in hex hd, washers 1/4 in lock.) as shown in Fig 9.

68. Reconnect harness FV 324156/2 to the loudspeaker.

Tuning unit radio frequency (TURF) (177)

69. Locate the TURF mounting plate assembly (178) supplied as part of the installation kit.

70. This assembly is supplied to fit on the right hand rear wall of the vehicle but can be adjusted to fit on the left hand wall.

71. To adjust the TURF mounting plate assembly for installation on the left hand wall proceed as follows:-

a. locate the two mounting bars FV 849255 which support the four shockmounts.

b. locate <sup>and on fasten</sup> the screws which secure the bars to the bracket FV 818784.

c. turn the mounting bars complete with shockmounts and mounting plate FV 818785 through 180° and re-secure the mounting bars to the bracket using the same fixings.

72. Secure the TURF (177) to the TURF mounting plate assembly (178) using the fixing holes at the top of TURF. Fixings supplied:- screws (186), nuts (189) and washers (193, 197). This will cause the TURF to be mounted in the vertical position once installed in the vehicle.

73. Fit the TURF mounting plate assembly complete with TURF to the rear left hand wall of the vehicle as shown in Fig 9 using screws (185) and washers (193, 197) provided.

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74. Connect the harness coax 5820-99-645-2580 installed as part of the conversion kit Clansman radio in FV 432 to the TURF and fit a lead electrical (169) between the rear of the TURF and a suitable fixing, para 73 refers.

Antenna base No 31

75. Remove any existing antenna base from the rear left hand antenna position.

76. Fit the inner part of the gland assembly (165) down through the hole in the vehicle roof at the rear left hand antenna position.

77. Fit the outer part of the gland assembly (165) over the inner from the inside of the vehicle. Cut the complete assembly to size as necessary. Apply a hot soldering iron to the join of the two parts of the gland assembly to secure.

78. Assemble the nut, gland and washer set (173) on the harness (168) as shown in Fig 3 and secure the harness to the antenna base No 31 (161).

79. Remove and retain the washers and insulator bowls from the harness (168).

80. Feed the harness (168) down through the gland assembly and place the antenna base in position on the vehicle roof. Ensure that the gasket (166) is fitted between the antenna base and the vehicle roof.

81. Check that the harness (168) has been fed out of the bottom of the gland assembly (165) into the vehicle interior.

82. Secure the antenna base No 31 to the vehicle roof using screws (182) and washers (190, 196) provided.

83. Refit the washers and insulator <sup>bowl</sup> IN THEIR ORIGINAL POSITION on the harness leading down from the antenna base into the vehicle.

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84. Connect the harness (168) to the rear of the TURF (177).
85. Fit the antenna elements (162 & 163, 164) to the antenna base.

BID 150

86. Install the BID 150 as shown in Fig 12. Details of the installation are given in User handbook BID 150 installations in FV 432 Army Code 13745.
87. Where available the installation of 4 x 2 HN batteries and charging panel as detailed in EMER Comms Inst H 205 Inst Instr No 12 should be fitted.

88. Coaxial outlets

Where available the following coaxial outlets should be fitted as detailed in EMER Comms Inst H 205 Inst Instr No 9 Issue 2:-

- a. Clansman outlet:- front right hand antenna position and rear left hand rear antenna position.
- b. Larkspur outlet - rear right hand antenna position.

89. Connect LARKSPUR headgear in the normal manner, switch on the radio battery master switch and carry out a full functional check of the installation.



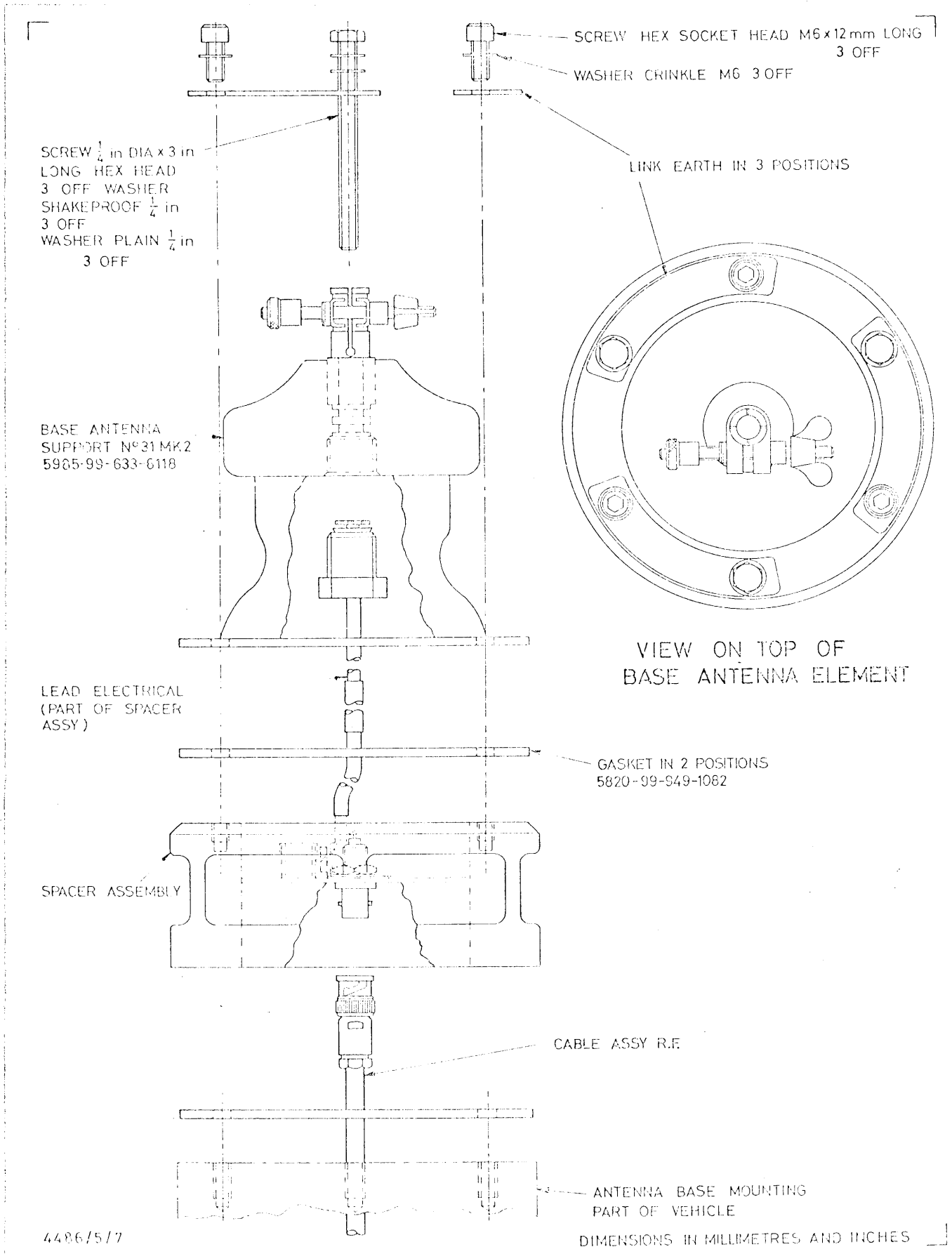


Fig 2 - Assembly details of base antenna element

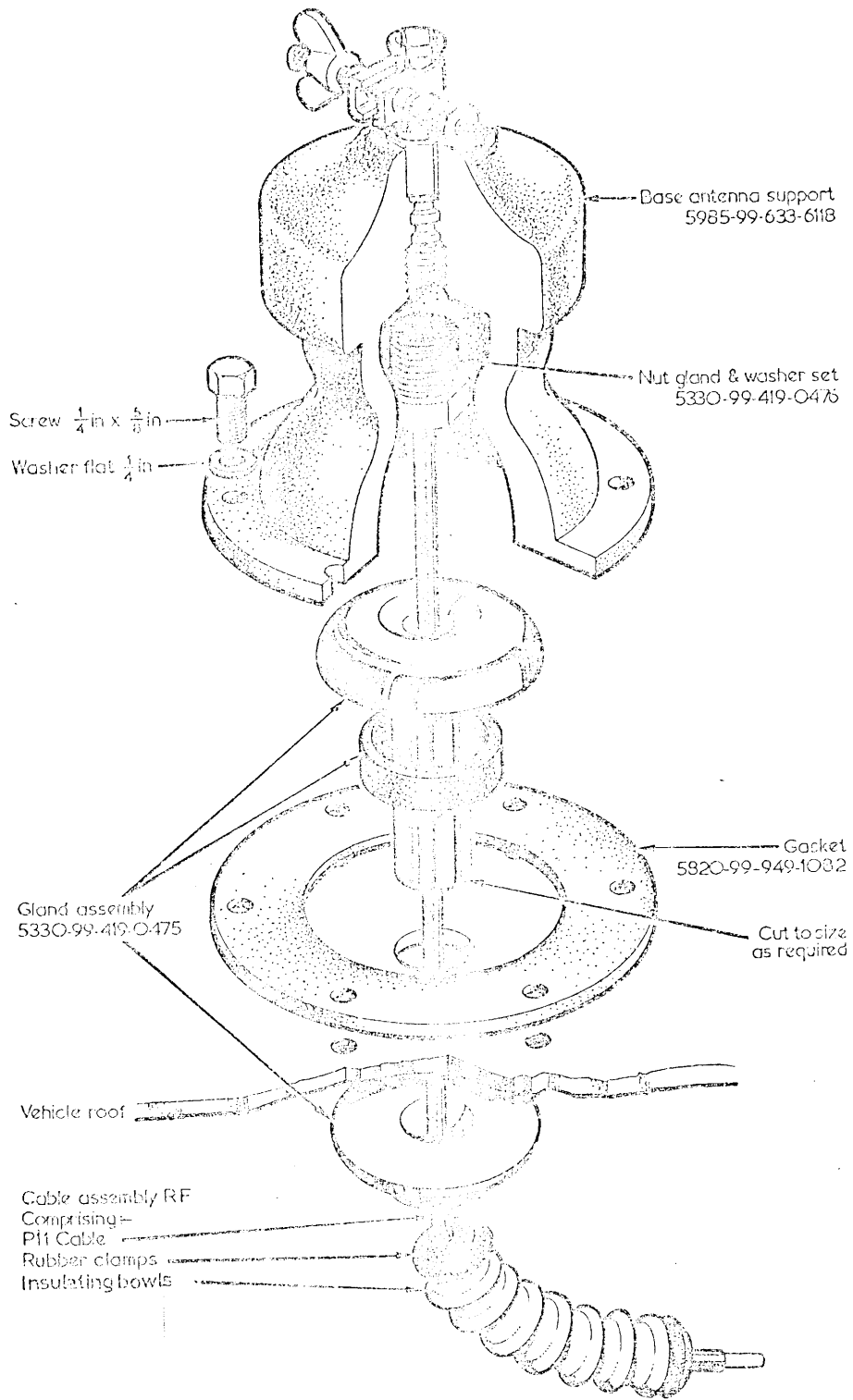


Fig 3 -- Assembly details of antenna base No 31

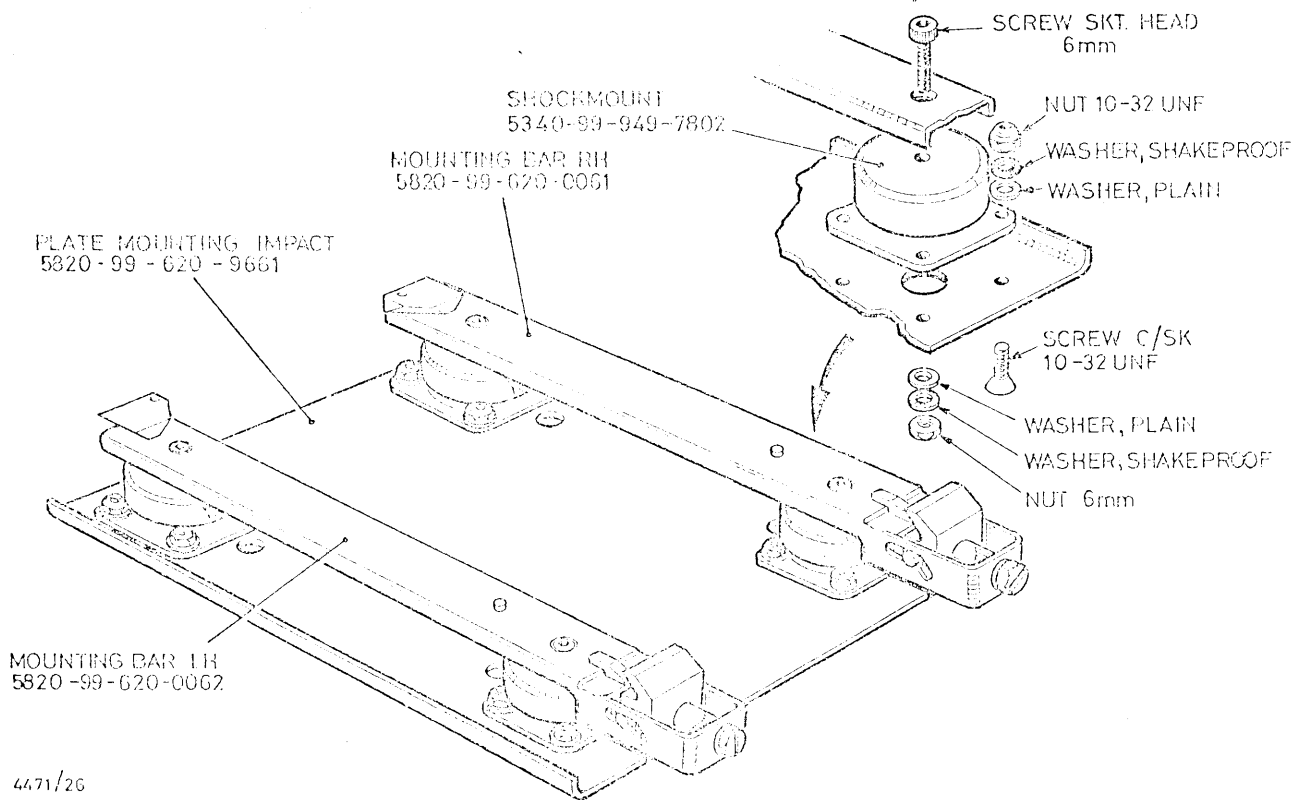
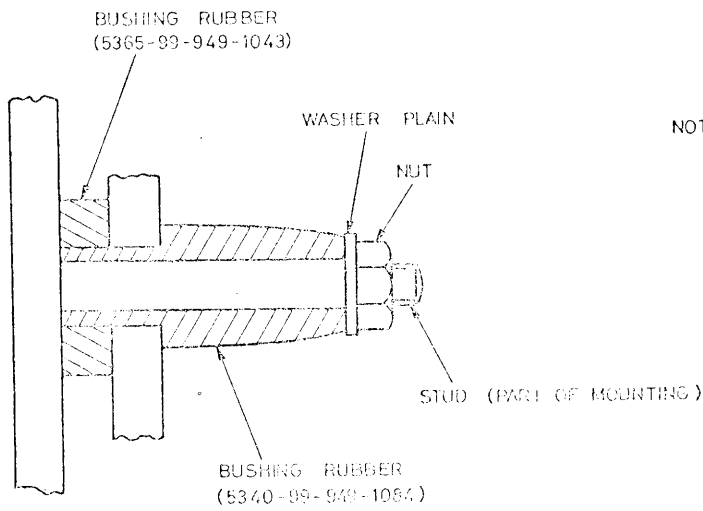
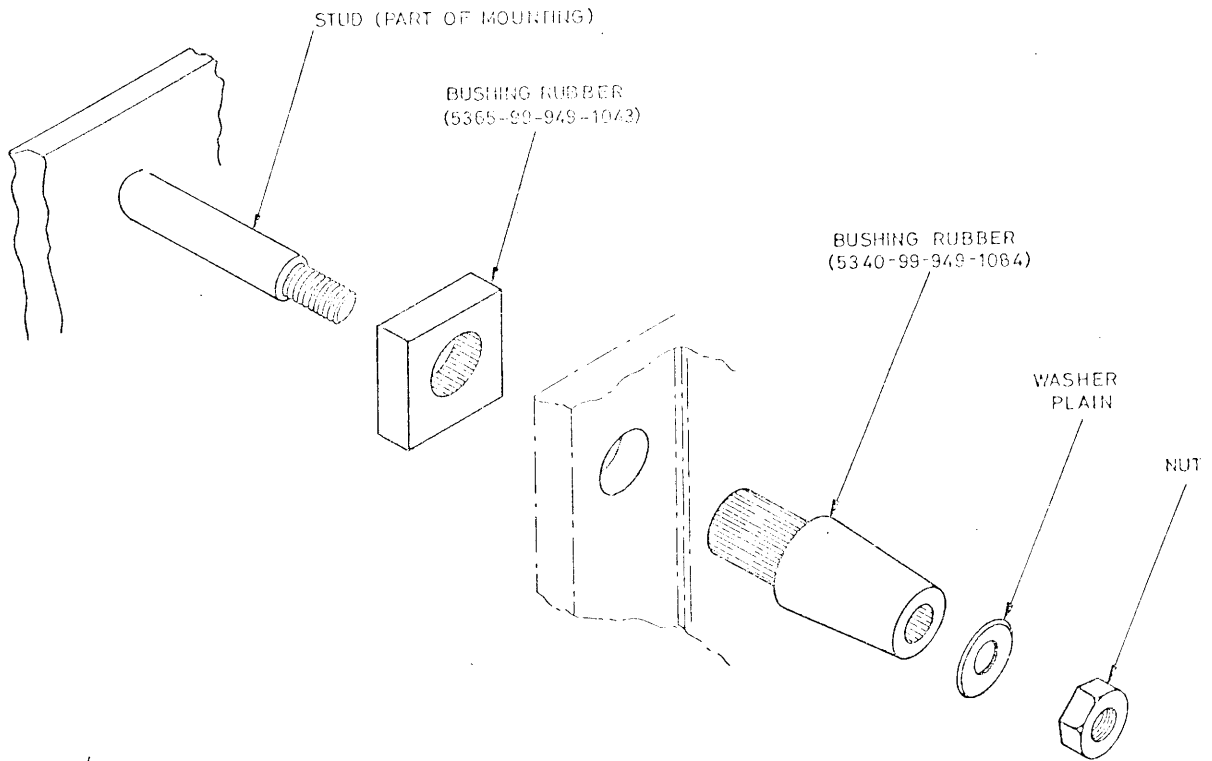


Fig 4 - Assembly details of plate mounting impact assembly





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



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Fig 5 - Assembly details of TWAAM, URF No 6 and rejector unit mountings