PREPARATORY OPERATIONS

CABLE RETAINING BRACKETS

CONTENTS

1. GENERAL

1.1 Scope of Section

1.11 This section covers details on the description and mounting of cable retaining brackets for ladder type cable rack.

1.2 General Information Pertaining to Arrangement of Tools, Precautions, Verification, Specifications and Drawings and Figures

1.21 Refer to Section 1 of this handbook for information pertaining to these items.

1.3 General Information

1.31 Cable retaining L and U shaped brackets P-449907, P-449908 and P-449909 (See Figures 1 and 2) are used with ladder type cable racks in carrier offices where high-level transmission lines are to be separated from low level transmission lines. They are also used in small offices where concentration of cables is small. These brackets are furnished as equipment and are ordered in the specification.

CAUTION: "SNAP-ON" BRACKETS ARE NOT DESIGNED TO WITHSTAND MUCH IMPACT LOADING AND SHALL NOT BE USED TO FORM TROUGHS IN WHICH CABLES ARE PULLED OR DRAGGED.

2. INSTALLING EQUIPMENT

2.1 Tools and Supplies

2.11 The tools and supplies generally used for operations covered by these methods are as follows:

2.111 Tools

Code	Description	Note
R-2192	Mallet, Rubber	1
*R-3208	Screwdriver, Cabinet, 3"	1
R-2712	Strap, 5/8"	2

* Indicates tool generally available in kit used on job.

NOTE 1: Used in placing cable brackets on cable rack cross straps.

NOTE 2: Web strap 3 feet long, 5/8 inch wide, provided with a self-locking buckle used for temporarily holding the cables in place on the rack until other can be run or stitches made where required. Usually ten straps are required for each one hundred lines on small dial offices, while on larger offices, several hundred may be required.

2.112 Supplies

R-2916 Twine
R-4450 PVC Insulator

3. DESCRIPTION OF CABLE RETAINING BRACKETS FOR LADDER TYPE CABLE RACK

3.1 Single Brackets

3.11 Brackets, P-449908 and P-449909, five and seven inches high respectively, are single brackets and are used two or more on a cross strap as shown in Figure 1 and 2.

3.12 The bracket used will depend on the ultimate depth of the cables in the run.

3.13 Use two brackets on cross straps of cable racks as illustrated in Figure 1 except.

(a) Where additional brackets are necessary to separate two runs of cable on the same rack as shown in Figure 2.

(b) As covered in Paragraph 4.23.

3.2 Double Brackets

3.21 Double brackets, P-449907 shown in Figure 3, are provided primarily for use on 5" racks but may be used on larger racks also.

4. MOUNTING CABLE RETAINING BRACKETS ON LADDER TYPE CABLE RACK

4.1 Mounting on Cable Rack

4.11 Mount the cable retaining brackets on the cable rack cross straps, before the cables are run as shown in Figures 4 and 5.

4.12 Avoid using cable retaining brackets installed on cable racks, as a support. They may be dislodged by a pull or a jerk.

4.13 Care is necessary while installing the brackets to insure against their falling and damaging equipment and wiring.

4.2 Location On Rack

4.21 Where cable retaining brackets P-449907, P-449908 or P-449909 are used, these brackets shall be located on alternate straps of the cable rack.

4.22 Place the brackets on the straps next to turns to facilitate making the turns.

4.23 Place additional brackets as necessary to provide supports for cables turning off to bays.

4.3 Location On Cross Strap

4.31 Place the P-449908 and P-449907 brackets, so as to allow the use of the full width of the rack where there are sufficient cables to form a full basic layer as shown in Figure 1. Where the amount of cable is less than a layer, move the brackets so they hold the cables in their proper position.

5. PROTECTION TO PREVENT INJURY TO CABLES

5.1 Cables Breaking Off Cable Racks

5.11 When cables turning off the cable rack are in contact or in close proximity to the cable retaining brackets, place an R-4450 PVC Insulator on the cable retaining bracket as shown in Figure 7.

NOTE: Place the protection initially when it is obvious that the subsequent addition of cables or other activity in the immediate area may force the cables into contact with the edges of the retaining brackets.

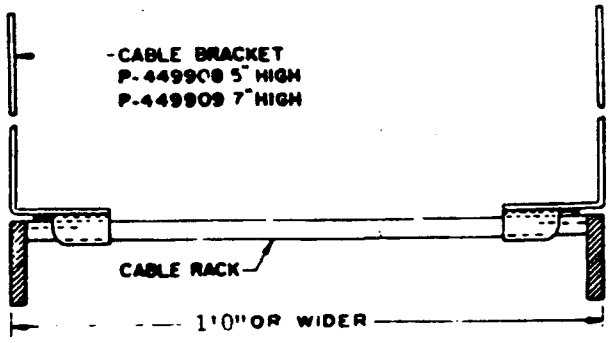


FIG. 1 SINGLE CABLE RETAINING BRACKETS ON CROSS STRAPS (PARS. 3.11, 3.13)

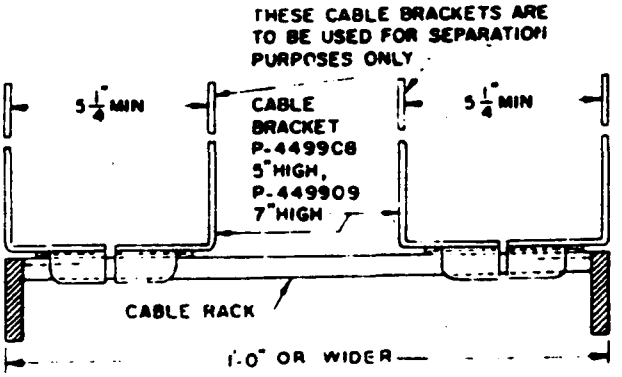


FIG. 2 SINGLE CABLE RETAINING BRACKETS ON CROSS STRAPS (PAR. 3.11)

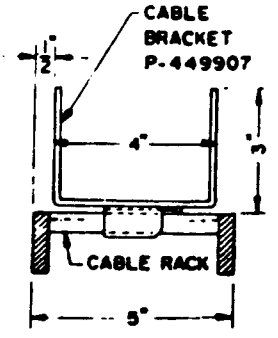
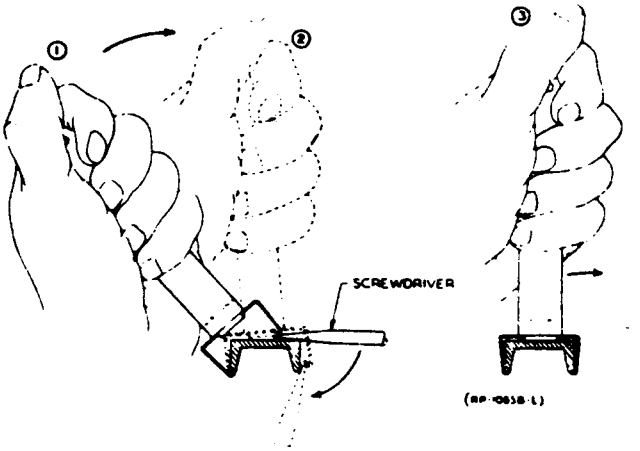


FIG. 3 DOUBLE BRACKETS (PAR. 3.21)



① PLACE BRACKET IN POSITION ON CROSS STRAP WITH ONE EDGE LOCKED UNDER STRAP, AND HOLDING THE BRACKET FIRMLY, PLACE THE END OF A SMALL SCREWDRIVER UNDER THE FREE EDGE OF THE BRACKET

② PRESS LIGHTLY DOWNWARD WITH FORWARD PRESSURE ON THE BRACKET UPRIGHT UNTIL THE FREE EDGE OF THE BRACKET SLIPS OVER THE EDGE OF THE CROSS STRAP, THEN REMOVE SCREWDRIVER FROM UNDER THE BRACKET.

③ PLACE PRESSURE ON UPRIGHT OF BRACKET UNTIL IT SNAPS INTO POSITION ON CROSS STRAP

FIG. 4 MOUNTING CABLE RETAINING BRACKETS USING SCREWDRIVER (PAR. 4.11)

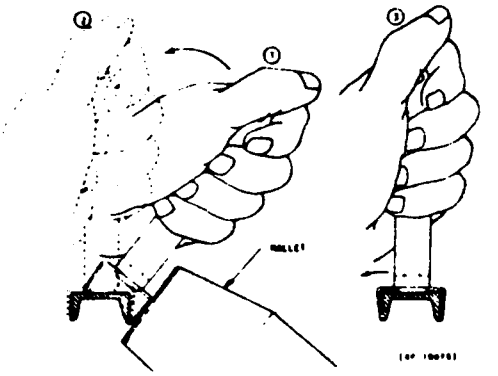


FIG. 5 MOUNTING CABLE RETAINING BRACKETS USING RUBBER MALLET (PAR. 4.11)

5.2 At Cable Rack Intersections

5.21 Where cables bend sharply across the cable retaining brackets, they shall be protected by applying an R-4450 PVC Insulator to the bracket.

5.22 Place the insulators initially on all brackets next to turns to protect ultimate cabling.

6. REMOVING CABLE RETAINING BRACKETS

6.1 Single and Double Retaining Brackets

6.11 Insert the end of a small screwdriver between tong of the retaining bracket and bottom edge of the cable rack cross strap as illustrated by the dotted figure of the tip of the screwdriver in Figure 6. Exert pressure in direction as shown until the entire edge of the cable retaining bracket tong has been removed from the vertical side of the cable rack cross strap. Remove the screwdriver, and release other locked edge.

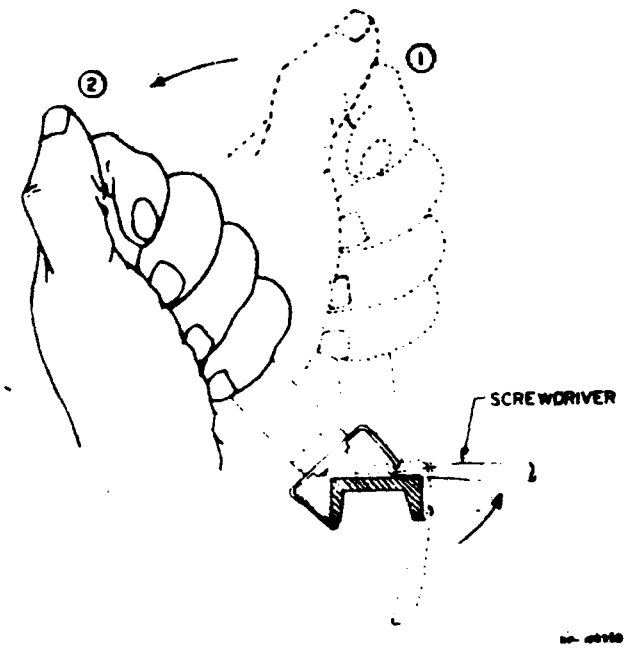


FIG. 6 REMOVING CABLE RETAINING BRACKETS USING SCREWDRIVER (PAR. 6.11)

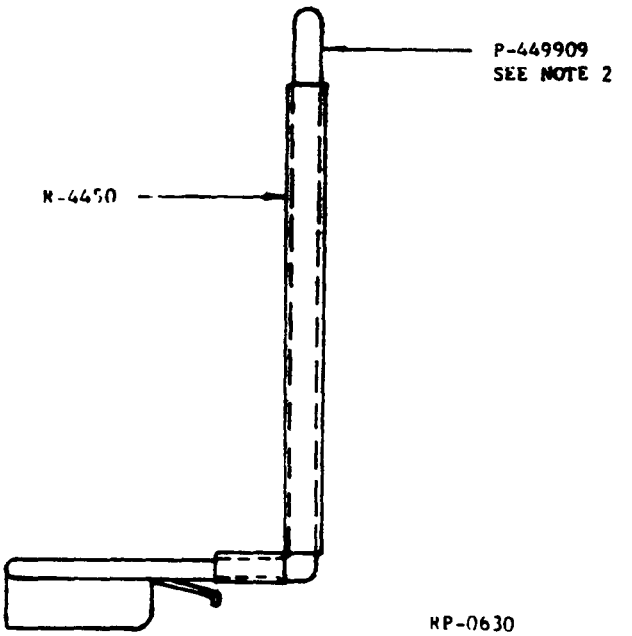


FIG. 7

R-4450 PVC INSULATOR APPLIED TO CABLE RETAINING BRACKET (PAR. 5.11)

NOTE 1. BEND THE R-4450 AT THE SCORING. SLIDE THE INSULATOR OVER THE RETAINING BRACKET WITH THE SMALL SECTION DOWNWARD. PUSH DOWN FIRMLY ON THE R-4450 INSULATOR UNTIL THE SMALLER SECTIONS SLIPS OVER THE HORIZONTAL PORTION OF THE BRACKET.

NOTE 2. WHEN USING THE R-4450 INSULATOR ON P-449908 AND P-449907 BRACKETS, CUT THE LARGE SEGMENT OF THE INSULATOR TO FIT THE RETAINING BRACKET - (USE THE R-4131 8" CABLE CUTTER).

7. VERIFICATION

	VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS	REFERENCE Par.No.	REFERENCE Fig.No.
7.1	Brackets to be Placed on Horizontal Ladder Type Racks		
7.11	Five or seven inch brackets used according to ultimate depth of cable run.	3.12	1, 2
7.12	Five or seven inch brackets used on cable rack 12" or more in width. Proper number of brackets placed on strap.	3.13	1, 2
7.13	All type brackets placed at alternate straps.	4.21	
7.14	Additional brackets placed on straps next to turns.	4.22	
7.15	Five or seven inch brackets placed so as to allow the use of the full width of the rack where there are sufficient cables to form a full basic layer. Brackets moved to proper position when there is less than a layer of cables.	4.31	1
7.2	Cable Protection		
7.21	R-4450 PVC Insulators applied to retaining brackets when cable turning off the rack are in contact or close proximity to the brackets.	5.11	7
7.22	Cables bending around cable retaining brackets protected by the application of an R-4450 Insulator to the bracket.	5.21	7
7.23	R-4450 PVC Insulators applied to brackets next to turns.	5.22	7

[Vertical lines at side of paragraph indicates requirements.

► Arrowed lines indicate new or changed information.

Engineering Planning Manager
Common Installation Engineering

Reason for Reissue:
Add Paragraph 5. - Protection to prevent injury to cables