

SECURING CABLE AND WIRE
MANNER OF SECURING CABLE AND WIRE

CONTENTS

1. GENERAL
 - 1.1 Scope of Section
 - 1.2 General Information Pertaining To Arrangement of Tools, Precautions, Verification, Specs and Drawings, and Figures
2. INSTALLING EQUIPMENT
3. MANNER OF SECURING CABLE
 - 3.1 Clipping on Ladder Type Cable Racks
 - 3.2 Clipping on Vertical or Inverted Cable Racks
 - 3.3 Sewing on Cable Racks
 - 3.4 Securing Switchboard Cable in Power Rooms
 - 3.5 Securing Cable Splices
 - 3.6 Securing Cable To Spiral Turns
4. CLAMPING ON CABLE RACKS
 - 4.1 Clamping on Spiral Turns
- 4.2 Inverted Horizontal Runs By Auxiliary Supports
- 4.3 Vertical Runs by Auxiliary Supports
5. SECURING ON CABLE RACKS WITH CABLE RETAINING BRACKETS
6. SECURING BETWEEN CABLE RACK AND BUTT LOCATION
7. SECURING AT VERTICAL SIDE OF DISTRIBUTING FRAMES
8. SECURING AT HORIZONTAL SIDE OF DISTRIBUTING FRAMES
 - 8.1 Along Transverse Arms With R-4265 Cable Ties
 - 8.2 Under Transverse Arms With U Clips
9. MANNER OF SECURING WIRES RUN WITH SWITCHBOARD CABLE
10. VERIFICATION

1. GENERAL

1.1 Scope of Section

1.11 This section contains general basic information, requirements and methods, and reference to the complete information, concerning the manner of securing switchboard cable and wire on cable racks by clipping or sewing.

1.12 All cables on ladder type cable racks, except short multiple cables in switchboards and desks and cables supported by fanning rings or distributing rings, shall be adequately secured to supports, either by means of cable clips or twine.

1.2 General Information Pertaining To Arrangement of Tools, Precautions, Verification, Specs and Drawings and Figures

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

2. INSTALLING EQUIPMENT

2.1 The tools and supplies normally required for the operations covered in this section are covered in Section 300 of this handbook.

3. MANNER OF SECURING CABLE

3.1 Clipping on Ladder Type Cable Rack

3.11 Secure cable on cable racks with adjustable flat type clips KS 5370-01 type when furnished, except where special methods of securing are specified.

3.12 Where it is uneconomical to clip because of irregular size of the cable or access to the cable rack is too limited to permit damage to the cable cover, sewing is permitted.

3.2 Clipping on Vertical or Inverted Cable Racks

3.21 Complete groups of cable on all new vertical or inverted racks are to be clipped. Arrange to obtain clips for these racks if they have not been furnished.

3.22 Incomplete groups, except the bottom layer, shall be securely fastened with approved twine.

3.23 Incomplete groups in the first layer of cable on new vertical racks must be clipped.

3.3 Sewing On Cable Racks

3.31 Cable shall be secured by sewing under the following conditions:

(a) On additions to runs previously sewed or clipped where the amount of cable to be added, the size, and length of the run or the formation of the present cables would make clipping uneconomical or result in a poor appearance of the finished run.

(b) On incompleated groups of cables in vertical and inverted horizontal runs except the layer resting against the cross strap.

(c) Where cables turn through the rack, cables are to be sewed to the last cable rack strap, except on clipped runs where this strap is a normal clip location.

(d) Where cables are not at right angles to supports and the angle is such to make clipping impracticable.

(e) Where cables are fastened to the underside (Flange side) of the rack straps.

(f) At intersections of cable racks where cables meet or cross (sewing permits spreading and arranging cables to prevent excessive piling).

(g) Where no 0 or larger armored cables and runs containing various sizes of armored cables are fastened to the cable racks.

(h) where access to cable racks is considered too limited to permit installing clips with sufficient insurance against incorrect assembly and consequent possible damage to cables.

3.4 Securing Switchboard Cable in Power Rooms

3.41 Secure switchboard cable in power rooms by sewing.

3.42 In rooms containing combinations of Power Equipment Bays and Frames and other than Power Equipment Bays and Frames clipping is not permitted over such equipment where a service hazard exists. Using clips over generator set rectifiers with open tops, generator control bays, batteries etc. is considered hazardous to service. Consideration should be made for future power equipment; these cables should be sewed to reduce the possibility of service hazard in the future.

3.5 Securing Cable Splices

3.51 On the portion of cable runs where present or future cable splices are specified sewing is required.

6 Securing Cable To Spiral Turns

3.61 Sewing is required on all spiral and 90-degree double turns.

4. CLAMPING ON CABLE RACKS

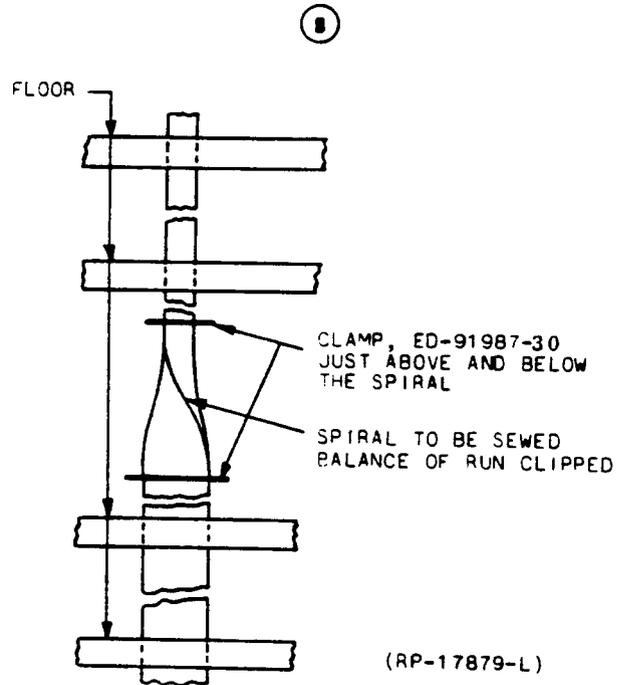
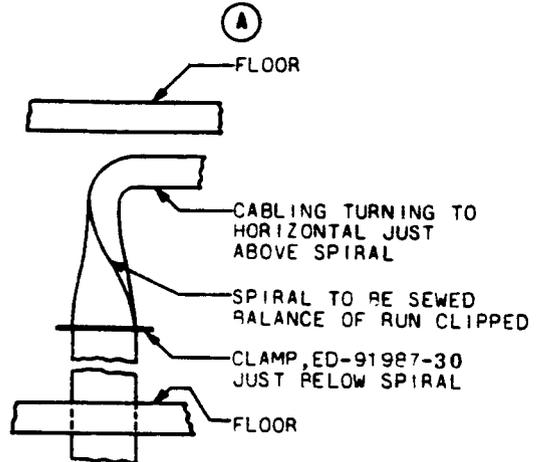
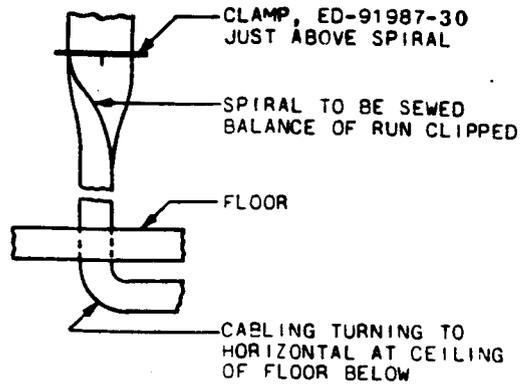
4.1 Clamping on Spiral Turns

4.11 Clamps per ED-91987-30 should be provided for spiral cable runs as follows.

4.12 If the vertical cable run turns to a horizontal position near the ceiling of the floor below the one on which the spiral is located in Figure 1, View A, one clamp should be placed immediately above the spiral.

4.13 If the vertical cable run turns to a horizontal position immediately above the spiral the clamp should be placed below the spiral as shown in Figure 1, View B.

4.14 If the spiral is placed in a straight vertical run, so that the run continues the distance between two adjacent floor lines or more beyond the spiral in both directions, a clamp should be placed directly above and below the spiral as shown in Figure 1, View C.



(RP-17879-L)

FIG. 1 ARRANGEMENT OF CLAMPS ON SPIRAL CABLE (PARS. 4.11 to 4.14)

4.15 Supplementary clamps are not required on horizontal spirals or 90° double turns.

4.2 Inverted Horizontal Runs by Auxiliary Supports

4.21 Inverted horizontal cable runs are to be equipped with auxiliary supports as shown in Figure 2. These auxiliary supports are to clamp the cables firmly but should not be so tight as to distort the cables.

4.22 Place supports on all underhung sewed runs and on all underhung clipped runs or portions thereof which are three or more clips in depth.

4.23 Space the supports along the run at approximately 10'-0" intervals for runs less than 100 square inches in approximate cross-sectional area and at approximately 6'-0" intervals for larger runs.

4.3 Vertical Runs by Auxiliary Supports

4.31 Place auxiliary supports on vertical runs as indicated on cable plan drawings, when furnished in the job specifications. See Figure 2.

4.32 On additions to existing sewed vertical runs, clamps per ED-91987-30, when furnished in the job specification, should be added wherever the pileup including the addition exceeds approximately 4".

4.33 Inverted horizontal cable runs which are three or more clips in depth should be equipped with auxiliary supports.

5. ON CABLE RACKS WITH CABLE RETAINING BRACKETS

5.1 Cables are secured with cable retaining brackets on horizontal cable racks only when called for in the job specifications. Cables placed in cable retaining brackets are not to be otherwise secured except in certain locations such as at turns and intersections where they are to be sewed. See Section 330 of this handbook.

6. BETWEEN CABLE RACK AND BUTT LOCATION

6.1 Refer to Section 340 of this handbook for methods of securing cable at locations between the cable rack and the cable butt.

7. AT VERTICAL SIDE OF DISTRIBUTING FRAMES

7.1 Cables on the vertical side of all distributing frames are to be secured with R-4265 Nylon Cable Ties or approved twine.

8. AT HORIZONTAL SIDE OF DISTRIBUTING FRAMES WITH NYLON CABLE TIES AND U CLIPS

8.1 Along Transverse Arms With R-4265 Nylon Cable Ties

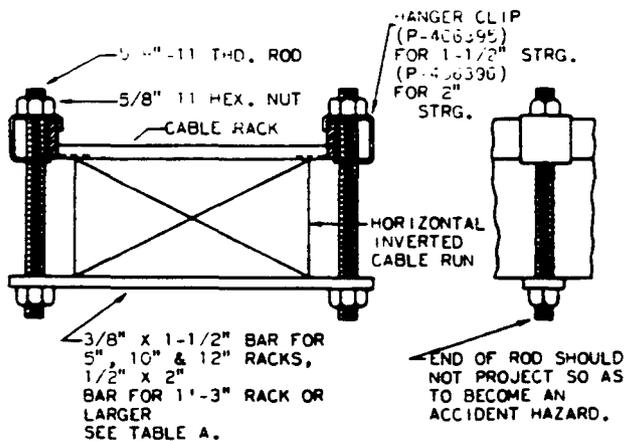
8.11 Cables passing from the vertical side of distributing frames to the terminal strips on the horizontal side are, ordinarily, to be secured to and along the transverse arms with R-4265 Nylon Cable Ties. Refer to Section 340 of this handbook.

8.2 Under Transverse Arms With U Clips

8.21 Cables passing along the horizontal side of distributing frames are, ordinarily, to be secured under the transverse arms with U clips. Refer to Section 340 of this handbook.

9. MANNER OF SECURING WIRES RUN WITH SWITCHBOARD CABLES

9.1 Secure wires run with switchboard cables in the same manner as the switchboard cable with which they are run.



SIZE OF RACK	PIECE PART NUMBER
10"	P-401760
12"	P-411735
1'-3"	P-401761
1'-8"	P-401762
2'-1"	P-401763

TABLE A

FIG. 2 AUXILIARY SUPPORTS (PARS. 4.2, 4.3)

10. VERIFICATION

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS	REFERENCE	
	PAR. NO.	FIG. NO.
10.01 Incomplete groups on vertical and inverted horizontal runs secured with approved twine (except bottom layer)	3.22	
10.02 Incompleted groups on the bottom layer of vertical and inverted horizontal runs secured with clips in regular manner using start or regular clips ascending to the size of the group.	3.23	
10.03 Cables at splices are to be secured with twine.	3.5	
10.04 Sewing is required on all spiral and 90° double turns.	3.6	
10.05 If the vertical cable run turns to a horizontal position near the ceiling of the flow below the one on which the spiral is located one clamp should be placed immediately above the spiral.	4.12	1A
10.06 If the vertical cable run turns to a horizontal position immediately above the spiral the clamp should be placed below the spiral.	4.13	1B
10.07 If the spiral is placed in a straight vertical run, so that the run continues the distance between two adjacent floor lines or more beyond the spiral in both directions a clamp should be placed directly above and below the spiral.	4.14	1C
10.08 On inverted horizontal runs equipped with supports cables will be firmly clamped but not distorted.	4.21	
10.09 Supports will be placed on all underhung sewed or clipped runs three clips or more in depth.	4.22	
10.10 Supports will be placed at 10 feet intervals for runs less than 100 square inches in cross-sectional area and at 6 feet intervals for longer runs.		
10.11 Auxiliary supports on vertical runs will be placed as indicated on cable plan drawings.	4.31	2
10.12 On additions to existing sewed vertical runs, clamps will be added whenever pile up including addition exceeds approximately 4".	4.32	
10.13 Inverted horizontal cable runs three or more clips in depth will be equipped with auxiliary supports	4.33	
10.14 Cables are secured with cable retaining brackets on horizontal cable racks only when called for in the job specifications.	5.1	
10.15 Cables between the cable rack and the butt location are to be secured to the supports at frames, bays, racks and switchboards.	6.1	
10.16 Cables on the vertical side of all distributing frames are to be secured with R-4265 Nylon Cable Ties or approved twine.	7.1	

→ Arrowed lines indicate new or changed information.

[Vertical line at side of paragraphs indicates requirements.

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Reason for Reissue:
To clarify cable securing requirements at distributing frames.