

BUTTING AND STRIPPING
(PVC) COVERED SWITCHBOARD CABLE

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1.	<u>GENERAL</u>		methods in this section cover the sequence of operations on an individual cable of each type. However, in actual practice consideration should be given to the performance of like operations at a location at one time.
1.1	<u>Scope of Section</u>		
1.11	This section covers the methods and requirements for butting and stripping switchboard cables. Butting and stripping coaxial and twin conductor shielded office cables (such as 720, 724, 754, etc.) is covered in the 700 series of sections of Handbook 9.	3.12	Where several switchboard cables on a frame are to be stripped, and are to be butted at the same location, a typical sequence would be to place the cable sheathing bag, butt-mark all the cables at one time, butt the cables and strip. Job conditions will suggest variations most suitable, i.e., on large jobs one man may be assigned to butt all cables on a line-up of frames before proceeding with the stripping operation.
1.2	<u>General Information Pertaining to Arrangement of Tools, Precautions Verifications, Specifications and Drawings, and Figures</u>		
1.21	Refer to Section 1 of this handbook for information pertaining to these items.	3.2	<u>Locating and Marking Butts of Cables</u>
2.	<u>INSTALLING EQUIPMENT</u>	3.21	<u>Locating Butts:</u> The butting location for cables serving equipment on frames or bays is generally provided on the method of cabling drawings issued for specific types of frames. In some cases, no dimensions are indicated for the distance between the last point of support for the cables and the location of the butts. In other cases, where it is desirable to avoid contact of the skimmers with adjacent metal framework or apparatus parts, dimensions may be specified in order to eliminate the need for extra protection.
2.1	<u>Tools and Supplies</u>		
2.11	Refer to Section 400 for description and general information pertaining to butting and stripping tools.		
3.	<u>PREPARATION FOR BUTTING AND STRIPPING</u>		
3.1	<u>Sequence of Operations</u>		
3.11	For convenience in describing the methods involved in butting and stripping the different types of cable, the		

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3.211 When cables are run on cable brackets or cable supports on frames or bays (except distributing frames), and the butt locations are indicated on the associated method of cabling drawings without specific dimensions, butt the cables as follows:

- (a) When the indicated butt location is close to a cable bracket or cable support, butt the cables at a point 1/4" to 1/2" below the bracket or support. This will allow sufficient space to properly secure cables to brackets at the butt locations.
- (b) When the indicated butt location is not close to a cable bracket or support, butt the cables as near to the indicated location as can be determined, given consideration to the distance required to bend the number of wires involved. When the butt location is in excess of 2" from the last cable bracket used to support the cables, a stitch placed approximately 1" above the butts will be required to secure the butts together before forming or fanning the wires as specified in Section 340 of this handbook.

3.212 When the location of the butt is not indicated in a specification or on a drawing, locate the butt as near as practicable to the point where the first wires will form out. Give consideration to (1) the distance required to bend the number of wires involved, (2) the path of the wires when formed or fanned to apparatus to avoid contact of the wires with uninsulated metal framework or apparatus parts and, (3) cable and cable butt supporting requirements. Generally, the location of the butts at a point from 1/4" to 1/2" below the cable bracket or support directly above the point where the first wires form or fan out will prove satisfactory. However, if the butts are located in excess of 2" from the last cable bracket used to support the cables, a stitch placed approximately 1" above the butts will be required to secure the butts together before forming or fanning the wires. When other cables pass the butting point,

include one or two of the larger cables within the switch to provide additional support at the butt location.

NOTE: At present, a number of the cable plan and detail drawings for frames and bays in No. 1 Tandem, and No. 4 Crossbar systems specify cables butted at individual butting locations, i.e., each cable butted at the point where wires first break out of the cable. When for any reason, these drawings are reissued, they will be changed to indicate common butt locations for all cables serving the same frame or bay upright except shop formed cables. Pending the revision of these drawings, it is permissible to butt all cables on the same frame or bay upright at a common butt location. The common butt location may be located at the uppermost cable bracket on the frame or bay upright or it may be located at the cable bracket located directly above the point where the wires first form or fan out to the apparatus.

3.213 On switchboard short multiple cables a variation of plus or minus 1/4" from the specified dimension between butts is allowable.

3.22 Marking Butts

3.221 After determining the butt location of the cable, place a pencil mark on the visible side of the cable. See Figure 1, Step 1.

3.23 Removal of Excess Length

3.231 Normally the cable end should not be more than 12" longer than the longest required skimmers. Check the length of each cable end at the time the butt is marked and if it is more than the normal length, cut off the excess with the R-1514 Cable Shears or R-4131 Cable Cutter.

4. BUTTING AND STRIPPING SWITCHBOARD CABLE

4.1 Protecting Equipment

4.11 Before stripping cables, place the R-2726 Cable Sheathing Bag directly under the cable which is to be stripped, to receive the sheathing resulting from the operations.

4.12 The cable sheathing bag is designed so it can be tied or hung directly under the cable being stripped. Where additional protection is required, use canvas.

4.2 Treatment of Butts

4.21 After the butt location has been determined and marked, per PAR. 3.2, the butt of plastic (PVC) covered cable requires no further treatment prior to the butting operation.

4.3 Cutting Sheathing at Butt Mark

4.31 All manufacturing locations have been instructed to provide a 20 mil cable jacket. Therefore, the Detail 2 Blade (FIG. 2) on the R-4366 Tool shall be adjusted for a 20 mil depth of cut prior to butting the cable. If the 20 mil setting is not sufficient to cut through the jacket, it may be necessary to set the depth of cut to 30 mils. Complete setting instructions are imprinted on the tool.

4.32 Place the tool on the cable with the Detail 2 Blade along the butt mark (FIG. 1) rotate the tool 360°.

4.33 Make careful checks to determine that the insulation on the wires is not damaged by the tool. If the insulation is damaged by the tool, adjust the blade setting to 20 mil or replace the blade.

4.34 The Detail 2 Blade may be replaced by removing the single screw in the end of the red plastic handle. Lift the entire butting device from the handle and carefully replace the blade.

4.4 Stripping Cables

4.41 After butting the cable, as covered in PAR. 4.2 and 4.3, open the sheathing at the butt by bending the cable slightly (FIG 1, Step 3). Insert the guide of the R-4366 Cable Stripper beneath the sheathing at the butt by holding the stripper at an angle to the cable as shown in FIG. 1, Step 4.

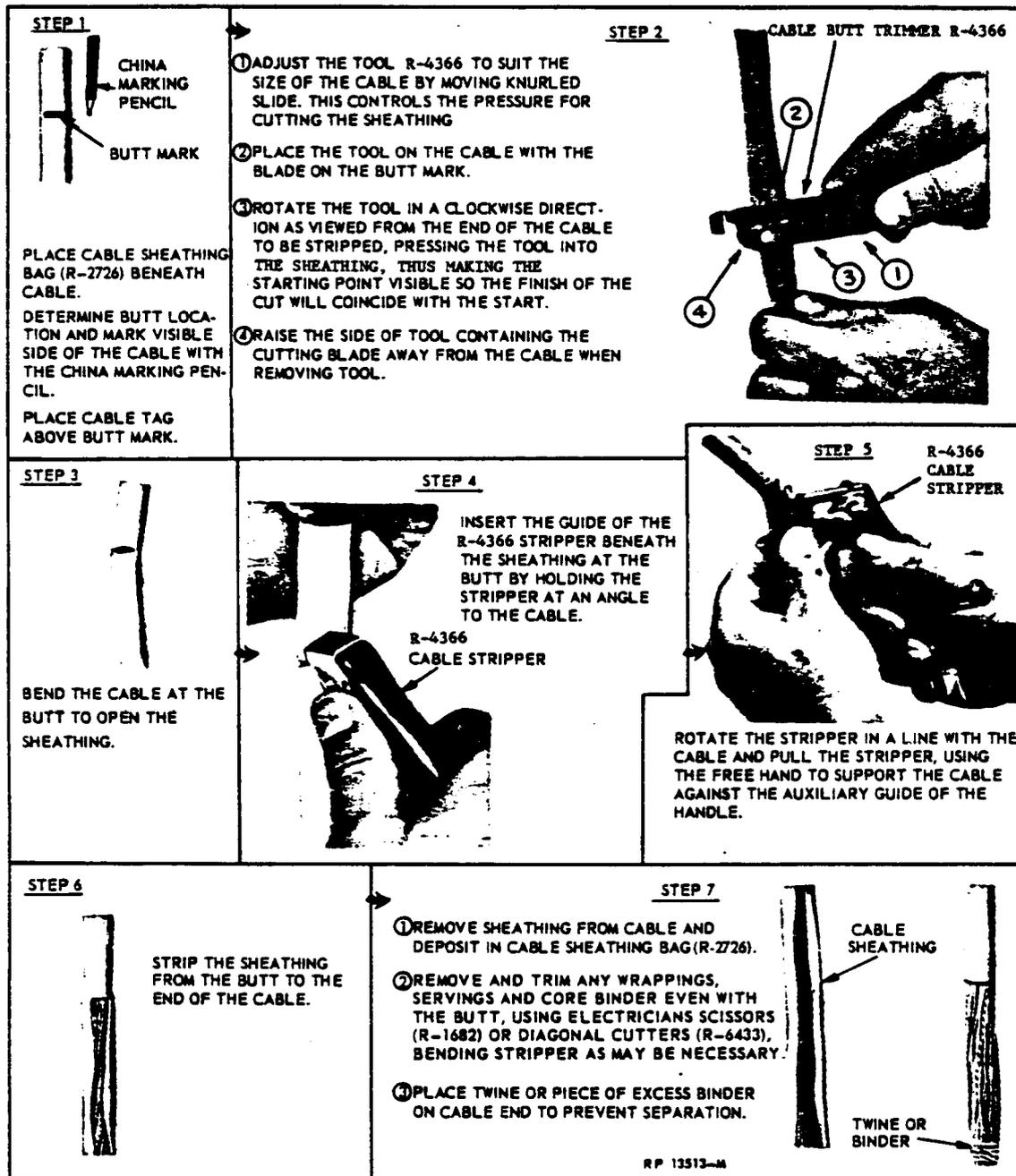
4.42 Straighten the cable to be stripped and pull the cable stripper along the cable using the free hand to guide and support the cable, as shown in FIG. 1, Step 5. With the metal guide inserted beneath the sheath and with the auxiliary guide portion of the handle sliding along the outside of the sheath, the cable stripper will cut the sheathing without snagging wires (see FIG. 3).

4.43 Hold the guiding hand slightly behind the auxiliary guide of the handle, opposite the other hand, to support the cable so the full weight of the cable does not bear on the steel guide of the cable stripper as shown in FIG. 1, Step 5. Being in contact with such a small portion of the cable, the guide may break through the sheath of plastic cable if held at an incorrect angle. Such a condition may occur if the cable is supported only by the guide.

CAUTION: DO NOT FORCE THE CABLE STRIPPER. IF THE STRIPPER SNAGS, REVERSE DIRECTION SLIGHTLY AND CONTINUE TO STRIP BY RECUTTING ADJACENT TO THE INITIAL CUT.

4.5 Removal of Sheathing

4.51 remove the sheathing, core binder, and any wrappings and servings from the cable, as shown in FIG. 1, Step 7, after the PVC covering has been slit, and place in the R-2726 Cable Sheathing Bag.



RP 13513-M

FIG. 1 BUTTING AND STRIPPING SWITCHBOARD CABLE (PARS. 3.221, 4.32, 4.41, 4.42, 4.43, 4.51, 4.822, 4.91)

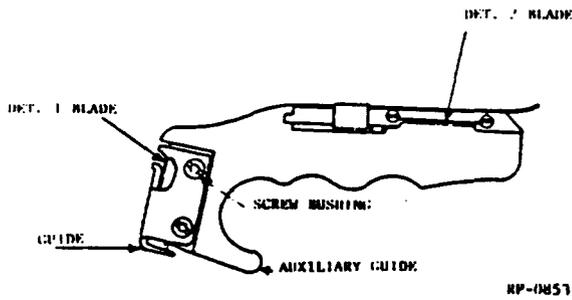


FIG. 2 R-4366 CABLE BUTT AND STRIP TOOL (PAR. 4.31)

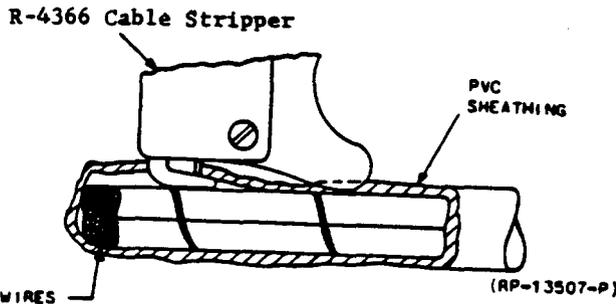


FIG. 3 OPERATION OF STRIPPER (PAR. 4.42)

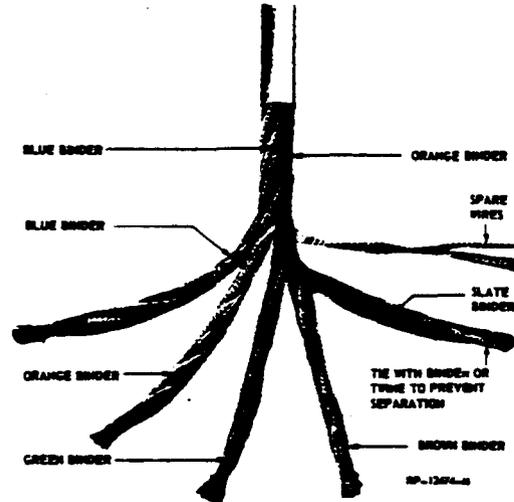


FIG. 4 SECURING GROUPS OF WIRES TOGETHER IN SECTIONAL CABLES (PAR. 4.811, 4.823)

4.6 Removal of Pressboard Center

4.61 Switchboard cables having pressboard centers should have the pressboard terminated approximately at the line of butt. In no case should the pressboard be 1/4" beyond the line of butt.

4.7 Treatment of Strippers and Wires

4.71 Grouping Wires in Sectional Type Cables

4.711 Separate the groups of wires having colored binders in sectional type cables and cut off the excess wire (12" beyond longest skinner) of FIG 4 to facilitate the forming operation.

4.7111 Keep scrap wire ends separate from the removed cable sheathing and dispose of them with other scrap copper wire.

4.72 Preventing Separation of Wires

4.721 The wires in cables will tend to separate after the cable is stripped, making it difficult to locate wires of pairs.

4.722 Single Group Cables - Hold stripper wires together at the end with twine or a piece of the binder (see FIG. 1, Step 7).

4.723 Sectional Cables - Secure each group of wires at the end with twine (leaving a piece of the correct group color binder, for identification purposes (see FIG. 4).

4.7231 After tying the ends of the groups, remove all remaining binders between the butt and the ties.

4.8 Trimming of Butts

4.81 Trim any and all wrappings, servings and binders even with the butt (see FIG. 1, Step 7).

5. VERIFICATION

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		PAR. NO.	FIG. NO.
5.1	<u>Locating Butts</u>		
5.11	When specific dimensions are not indicated on the method of cabling drawing, cables butted 1/4" to 1/2" below the bracket or support.	3.211(a)	
5.12	When butt location is in excess of 2" from the last cable bracket used to support cables, a "Chicago" stitch placed approximately 1" above butts.	3.211(b)	
5.13	When butt location is not specified on a specification or drawing, cable butted as near as practicable to point where first wires form out.	3.212	
5.2	<u>Cutting Sheathing at Butt Mark</u>		
5.21	Insulation of wires not damaged at butt.	4.33	
5.3	<u>Treatment of Strippers</u>		
5.31	Sheathing, and all servings, wrappings, and binders removed from stripper and trimmed at butt.	4.51 4.7231 4.81	
5.4	<u>Flat Type Cable</u>		
5.41	Pressboard not allowed to project more than 1/4" beyond line of butt.	4.61	

No arrows are shown due to extensive changes.

[Vertical lines at side of paragraph indicates requirements.

Engineering Planning Manager
Common Installation and Services

Reason for Reissue:

To add reference to the R-4366 Cable Butt and Strip Tool.