

## 188-TYPE PROTECTORS

### DESCRIPTION AND INSTALLATION

CONTENTS	PAGE
1. GENERAL . . . . .	1
2. DESCRIPTION . . . . .	1
3. INSTALLATION . . . . .	5
A. Locating Terminals . . . . .	5
B. Mounting 188-Type Protector and 110-Type Hardware Where Mechanical Protection Is Required . . . . .	6
C. Mounting 188-Type Protector and 110-Type Hardware Where Mechanical Protection Is Not Required . . . . .	14

1.03 For additional information on 110-type hardware, refer to the following sections of the Bell System Practices.

- ◆ 462-265-213—110-Type Connecting Blocks—Wiring—Building Entrance Terminals
- 631-460-205—110-Type Connecting Blocks—Description and Installation—Building Entrance Terminals
- 636-300-050—3-, 4-, and 5-Type Protector Units—Description and Use.◆

#### 1. GENERAL

1.01 This section covers the description and installation of the 188-type modular protectors used as station protectors in buildings served by exposed cable.

1.02 This section is reissued to include 188B-type modular protectors, 4B-type protector units, and 110-type connectors which replace the 88-type connectors. Revision arrows are used to emphasize the more significant changes.

#### 2. DESCRIPTION

2.01 ◆The 188-type modular protectors (Fig. 1 and 2) are combination protector and terminating field intended for use with the 110-type connection hardware. The protectors provide electrical protection at building entrance terminals for 50 or 100 exposed feeder cable pairs by using the 3B- or 4B-type protector units. The protector units are not furnished with the protector and must be ordered separately. The 3B3A or 4B3C protector units (red housing) may be used to designate those circuits requiring special service protection (SSP).◆

**NOTICE**

This document is either  
AT&T - Proprietary, or WESTERN  
ELECTRIC - Proprietary

Pursuant to Judge Green's Order of August 5, 1983, beginning on January 1, 1984, AT&T will cease to use "Bell" and the Bell symbol, with the exceptions as set forth in that Order. Pursuant thereto, any reference to "BELL" and/or the BELL symbol in this document is hereby deleted and "expunged".

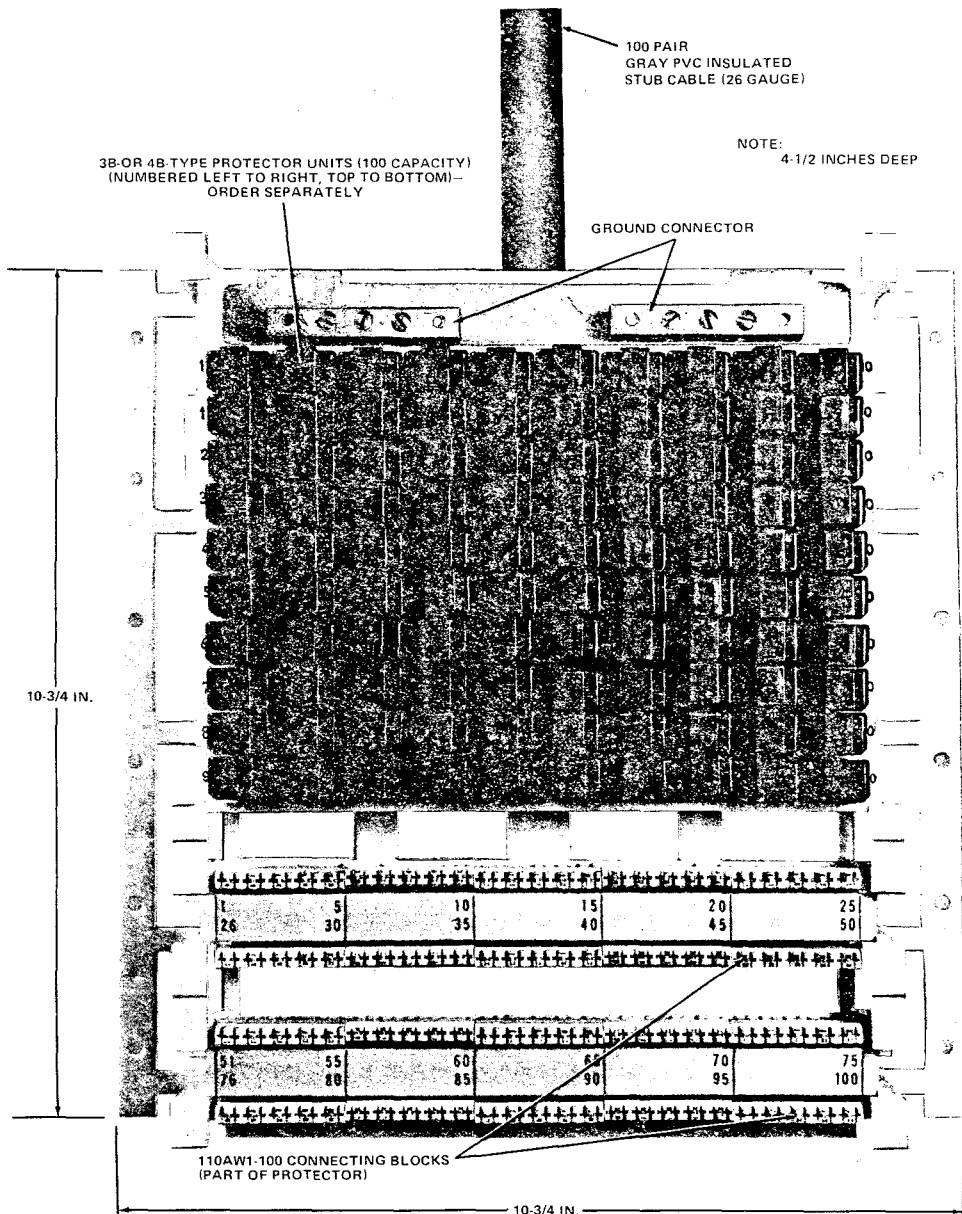


Fig. 1—188A1-100 Modular Protector

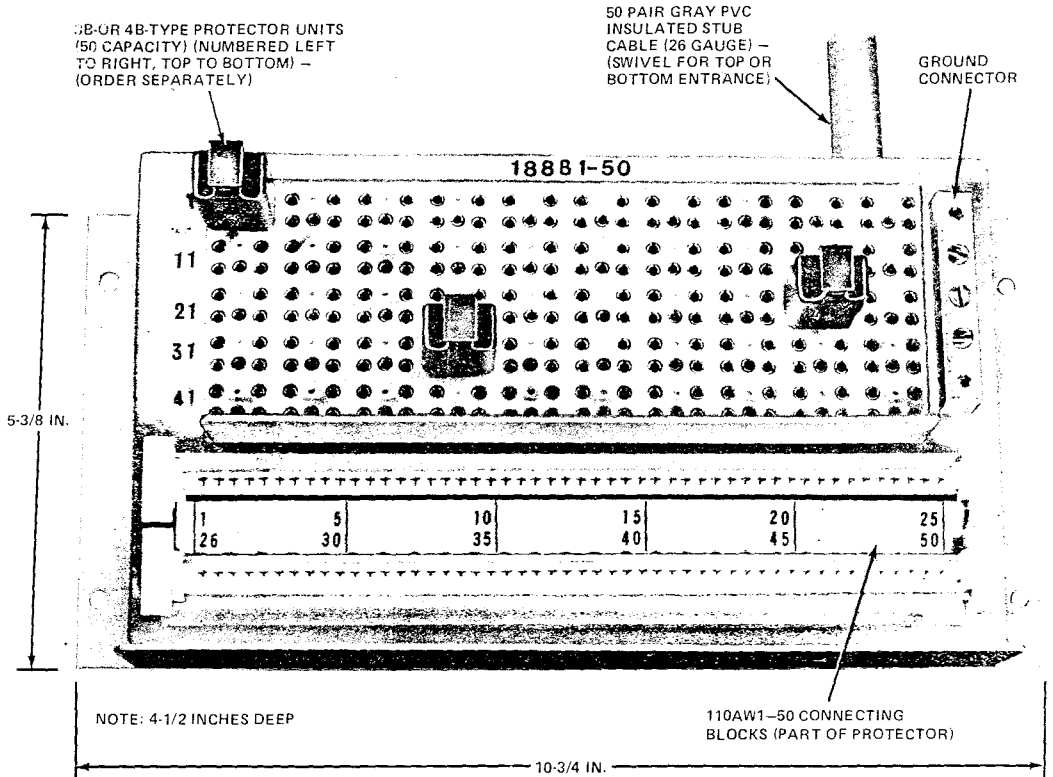


Fig. 2—188B1-50 Modular Protector

2.02 The bottom portion of the modular protector is identical to a 110-type wiring block and is factory wired to the protector portion. The method of counting the protector units is left to right and top

to bottom as shown in Fig. 1; ie, protector unit No. 1, located in top left corner, is wired to pair No. 1 on wiring block, etc. Figure 3 shows a wiring diagram for the 188-type protector.

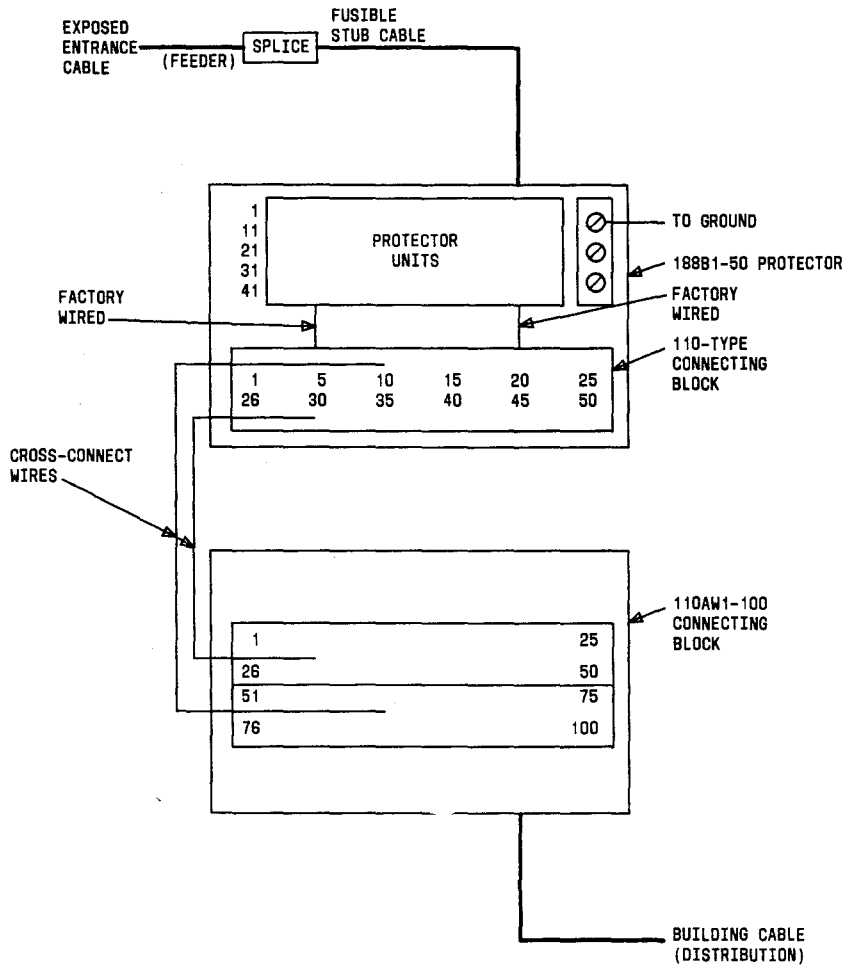


Fig. 3—Wiring Diagram for 188-Type Protector

**2.03** The protected feeder pairs are cross connected to the building cables with **F cross-connecting wires**.

**2.04** The protector is equipped with 26-gauge polyvinyl chloride (PVC) insulated stub cable. This stub is to be spliced to the exposed feeder cable to provide fusing characteristics and thus eliminate the need for splicing a fusible link into the entrance cable. The stub cable of the 188B1-50 protectors swivels to provide either a top or bottom entrance. When this stub is spliced into an exposed cable containing **400 pairs or less, a metallic splice closure must be used. A plastic closure may be used when the exposed cable is larger than 400 pairs.** These cables are judged to contain sufficient copper to act as a "heat sink" under power fault conditions.

**2.05** A three-wire ground connector is provided on each side of the protector block for strapping blocks together and for running a No. 6 ground wire to an approved ground (Section 631-400-102). The protector block **is not** equipped with a removable ground linkage for establishing an insulating joint; where an insulating joint is required, it must be provided external to the protector.

**2.06** This modular protector is available in 50- and 100-pair sizes. Characteristics are listed in Table A.

### 3. INSTALLATION

**3.01** When a building entrance terminal is served by **exposed** feeder cables, it is necessary to install protection between the exposed entrance cable and the station. This protection can be provided by using 188-type modular protectors.

**3.02** The 188-type protector and 110-type hardware may be mounted in either a cabinet furnished by the building owner or cabinets furnished by the telephone company. The terminating apparatus may also be mounted on 3/4-inch thick, AD-grade interior plywood or high density particle board (particle board used for floor underlayment is **not** suitable as density and screw-holding power is too low).

#### A. Locating Terminals

**3.03** Locate the terminal in accordance with the detail plans, complying with the points described in paragraph 3.04 insofar as practical. If the specified location does not seem feasible from an installation standpoint or is considered questionable from a maintenance standpoint, it should be referred to the engineer for review.

**3.04** Locate the terminal as follows:

- (a) Inside a building as near as practical to the cable entrance into the building
- (b) To avoid flammable material and also where it will not be in the vicinity of easily ignitable gases and dust
- (c) Where it will be least conspicuous
- (d) Where it will not project in such a manner as to be hazardous
- (e) Where good lighting conditions exist
- (f) Where it will be accessible without the use of a ladder
- (g) Where it will be possible to work without blocking a passageway

**TABLE A**  
**CHARACTERISTICS OF 188-TYPE PROTECTORS**

PROTECTOR CODE	NO. OF 3B OR 4B PROTECTOR UNITS	DIMENSIONS (INCHES)			STUB CABLE			
		LENGTH	WIDTH	HEIGHT	GAUGE (NOTE)	PAIRS	LENGTH (FEET)	OD (INCHES)
188B1-50	50	5-3/8	10-3/4	4-1/2	26	50	25	3/4
188A1-100	100	10-3/4	10-3/4	4-1/2	26	100	25	3/4

**Note:** Splice 26-gauge stub cable to exposed entrance cable

- (h) Where it will not be subjected to severe moisture under normal conditions or possible submersion in the event of a flood
- (i) Where it will not be subjected to high temperature such as occurs near radiators, uncovered steam pipes, etc
- (j) To avoid electric light and power circuits and electrical equipment (refer to Section 627-610-205 for minimum clearances)
- (k) Where it will not be damaged by moving machinery, hoists, doors, or materials handled on loading platforms, etc
- (l) On a firm mounting surface.

**B. Mounting 188-Type Protector and 110-Type Hardware Where Mechanical Protection Is Required**

**3.05** Install the required number of 3-type cable terminal sections at the terminal location as outlined in Section 631-400-101.

**Note:** Consideration should be given to location selection to ensure that adequate space is provided below and above for cables and/or splices.

**3.06** Install the 188-type protector(s), 110-type wiring blocks, and 188B1 backboard as shown in Fig. 4 through 9. The 188B1 backboard shall be placed between the 188-type protector and the 110-type blocks in each vertical column. The 110-type wiring blocks should be loosely mounted to facilitate routing of the building cable.

**Note:** When multiple columns are required, the vertical columns should be spaced **two inches apart** (measured at the connecting block feet). (See Fig. 8.)

**3.07** Remove the required length of plastic jacket and underlying metallic shield from end of **building** cable(s). Feed the building cable(s) through the entrance hole(s) in the bottom of the cable terminal section.

**3.08** Mount wiring blocks initially with the bottom slanted outward to facilitate routing of the building cable. Feed the cable binder groups behind the wiring block(s) and in color code sequence through the cable slots on each side of the wiring block(s). Place the blue-white binder group (pairs 1-25) in the top left cable slot, orange-white binder group (pairs 26-50) in the top right cable slot, etc. Binder groups entering on the left side of the wiring block shall be terminated on the **top** index strip; binder groups entering on the right side shall be terminated on the **bottom** index strip.

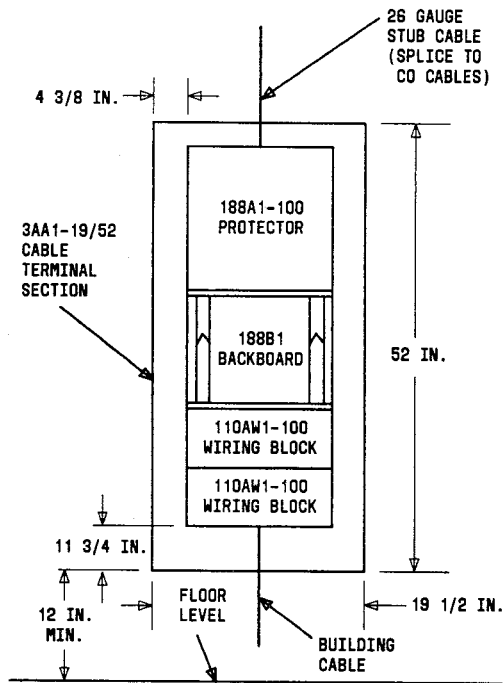


Fig. 4—100-Pair Entrance Cable—200-Pair Building Cable—Mechanical Protection Required

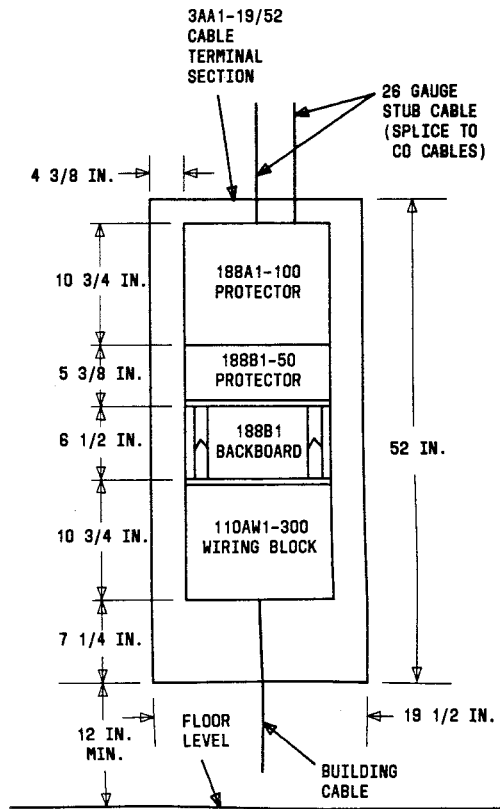


Fig. 5—150-Pair Entrance Cable—300-Pair Building Cable—Mechanical Protection Required



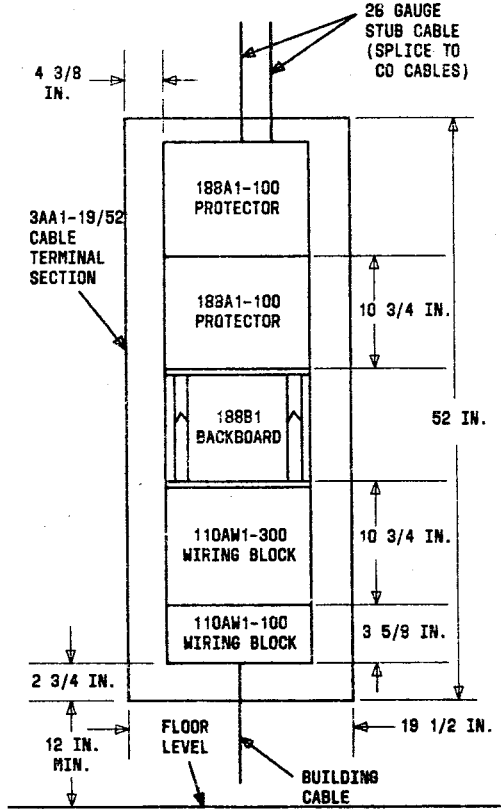


Fig. 6— $\Phi$ 200-Pair Entrance Cable—400-Pair Building Cable—Mechanical Protection Required $\Phi$

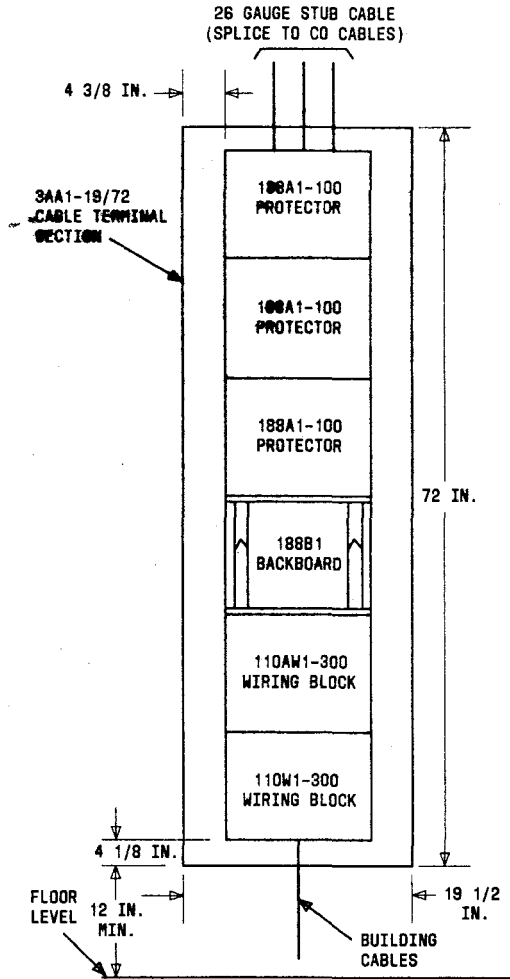


Fig. 7—300-Pair Entrance Cable—600-Pair Building Cable—Mechanical Protection Required

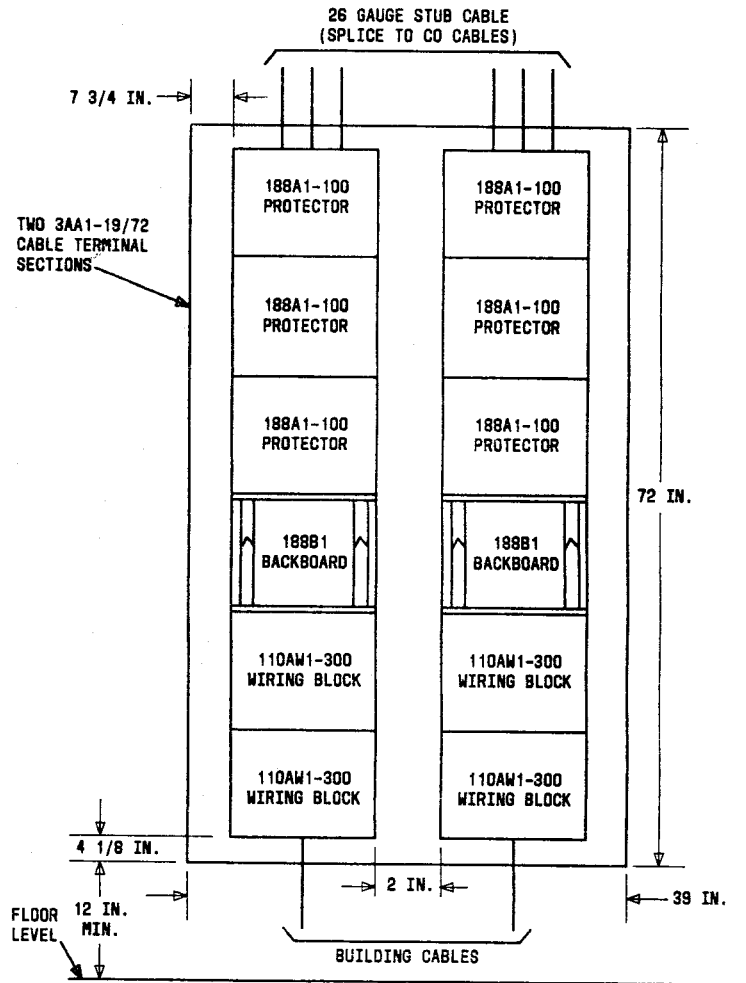
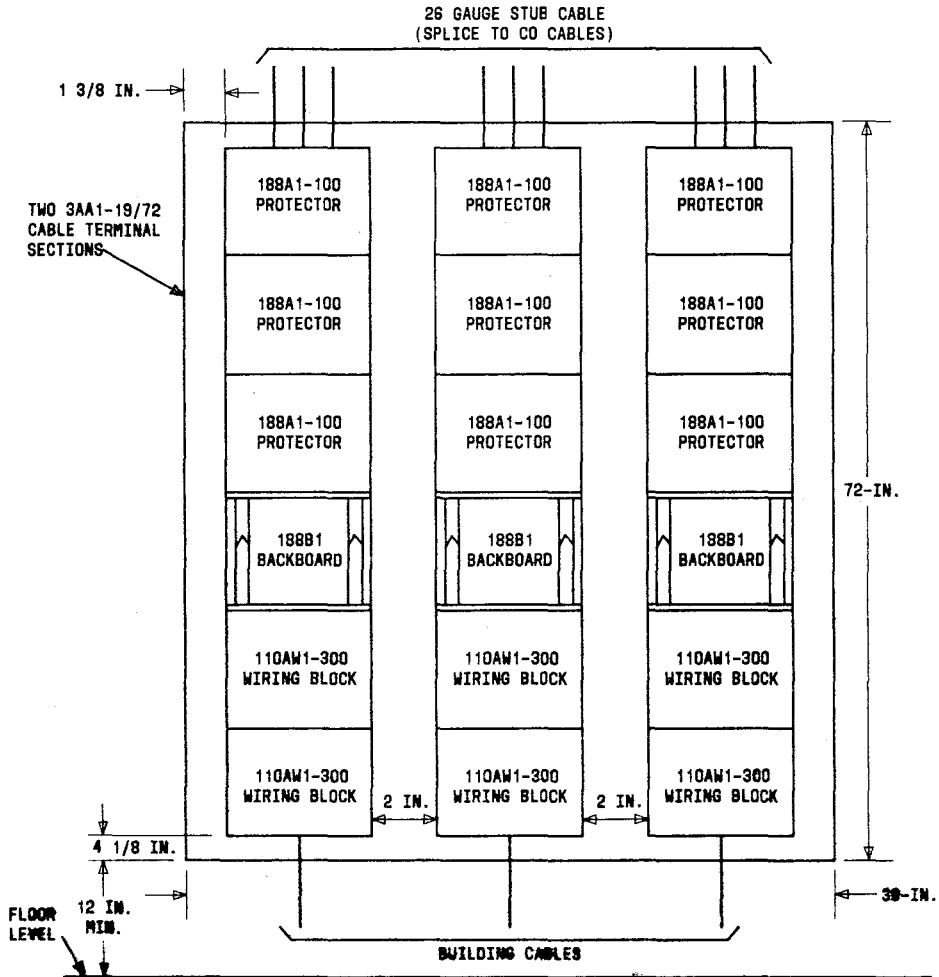


Fig. 8—600-Pair Entrance Cable—1200-Pair Building Cable—Mechanical Protection Required



**Fig. 9—1928-Pair Entrance Cable—1000-Pair Building Cable—Mechanical Protection Required**

3.09 Place the cable conductors in the index strip following the even-count color code, ie, white-blue, white-orange, etc (Fig. 10). The high tooth on

the index strip splits the pair. Light finger pressure is sufficient to cause the conductors to be held by the index strip.

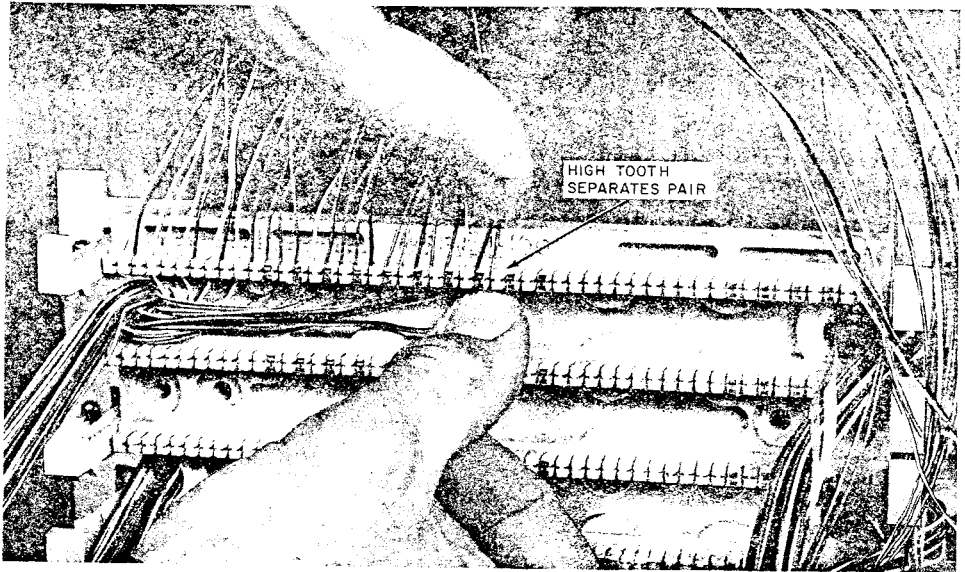


Fig. 10—Placing Conductors in Index Strip

3.10 Dress the cable conductors in the wiring slot of the wiring block, then using the 788J impact tool, seat and cut the conductors at the edge of the index strip (Fig. 11). **Exercise care to prevent cutting the wrong side.** After cutting and removing the conductors, **check the index strip to assure that no short pieces of cut conductors are wedged in the wiring slots thus preventing a solid connection when the connecting blocks are seated.**

**Note:** Conductors may be seated in the index strip using the 788B 5-pair insertion tool. Conductors must then be cut using the 788C 5-pair cutoff tool.



**Avoid movement of cables after the conductors have been seated and cut to prevent the conductors from being pulled out of the index strip prior to placing the connecting blocks.**

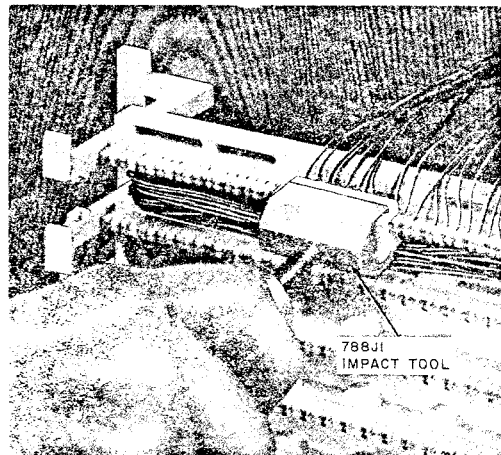


Fig. 11—Seating and Trimming Conductors

3.11 Place connecting blocks on wiring blocks in accordance with procedures covered in Section 631-460-205.

3.12 Place #110A retainers on the bottom of the #110-type connector portion of the 188-type protector(s) and on the top or bottom of the building #110-type wiring blocks.

3.13 Install bond clamp on building cable(s) in accordance with the procedures covered in Section 081-852-118.

3.14 Splice the 26-gauge stub cable from the 188-type protector to the exposed central office feeder cable. Where an exposed plastic sheath feeder cable containing **400 pairs or less** is spliced to a protected terminal inside the building, **the splice must be enclosed in a metallic splice case** to provide an adequate current carrying capacity across the splice. The cross section of these smaller size cables does not provide an adequate current carrying capacity to protect the splice in the event of a power contact. On plastic sheath cables containing **more than 400 pairs**, either a metallic or plastic splice closure may be used.

**Note:** Waterproof cable must not be used for general distribution within buildings. It may be used as an entrance facility provided a transition to fire-retardant sheath cable is made within a metallic, sealed splice case within 50 feet of the building entrance and prior to appearance of pairs in any terminal or cabinet. It should never be fanned out and terminated directly on protector and/or connectors within buildings.

3.15 The exposed entrance cable must be grounded within 50 feet of the building entrance to provide adequate protection of the building against fire. The method of providing this grounding is outlined in Section 631-400-102. Run a No. 6 ground wire from the ground connector on the 188 protector to protector ground. See Section 631-400-102 for selection of proper ground.

**C. Mounting 188-Type Protector and #110-Type Hardware Where Mechanical Protection Is Not Required**

3.16 Starting at the left-hand side of the selected area, mount the 188-type protector(s) to this surface (Fig. 12 through 15).

3.17 Mount the 188B1 backboard(s) and the #110-type wiring blocks as shown in Fig. 12 through 15.

3.18 When the equipment configuration dictates the use of more than one column, the additional columns should be spaced approximately **two inches apart** (measured at the mounting feet).

3.19 Install bond clamp on building cable(s) in accordance with the procedures covered in Section 081-852-118.

3.20 Feed the building cable binder groups behind the wiring blocks and place the cable conductors and connecting blocks on the wiring blocks as outlined in paragraphs 3.08 through 3.12.

3.21 Splice the 26-gauge stub cable(s) to the central office feeder cable as outlined in paragraph 3.14.

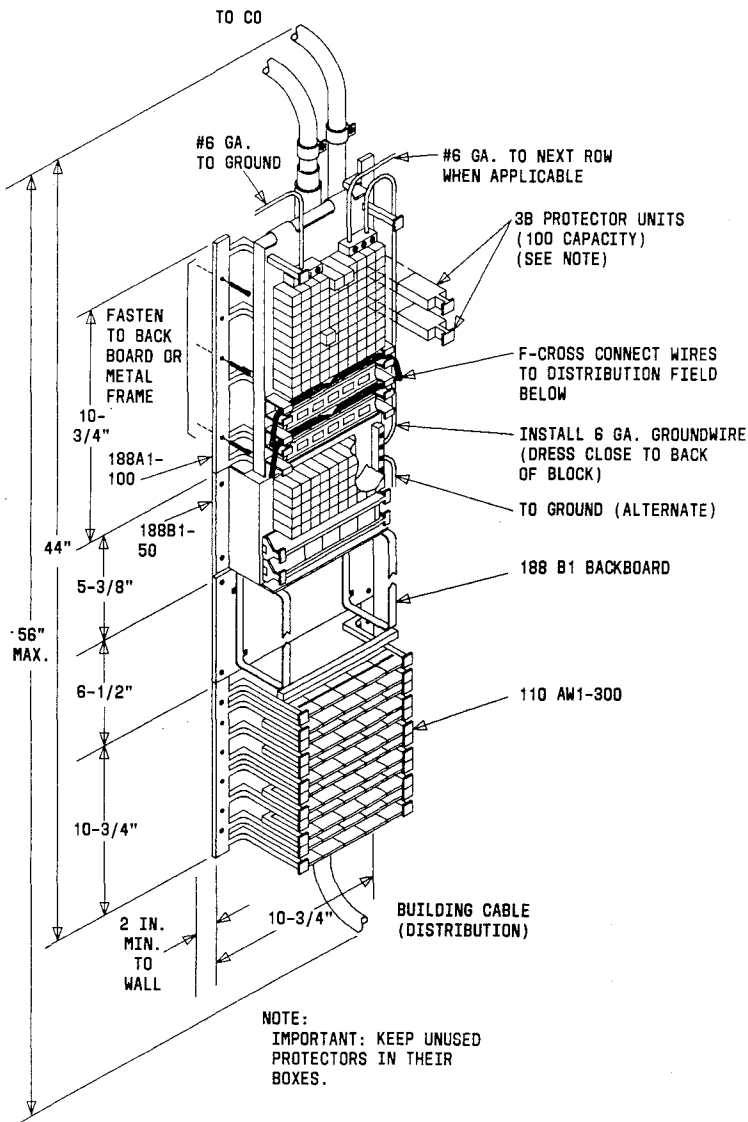


Fig. 12—150-Pair Entrance Cable—300-Pair Building Cable—Mechanical Protection Not Required

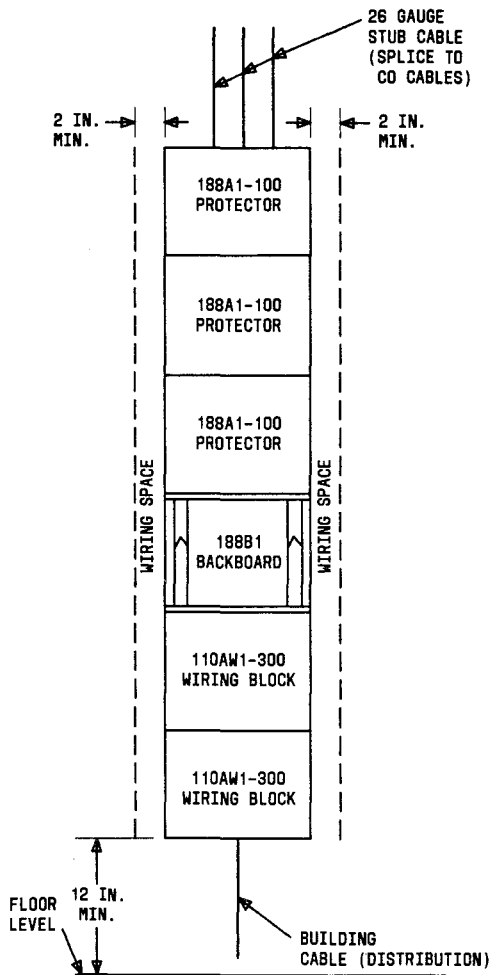


Fig. 13—300-Pair Entrance Cable—600-Pair Building Cable—Mechanical Protection Not Required



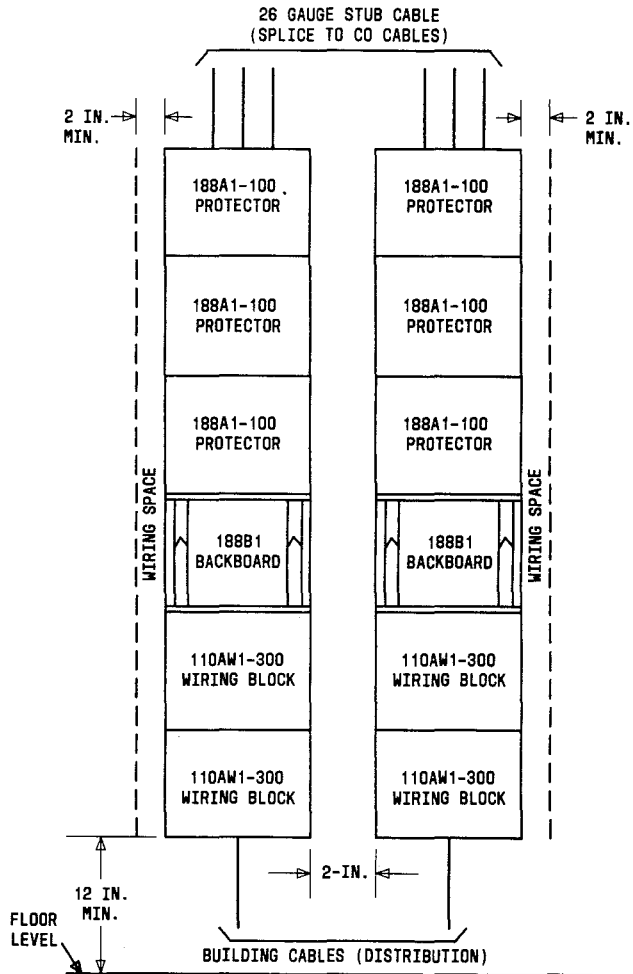


Fig. 14—600-Pair Entrance Cable—1200-Pair Building Cable—Mechanical Protection Not Required

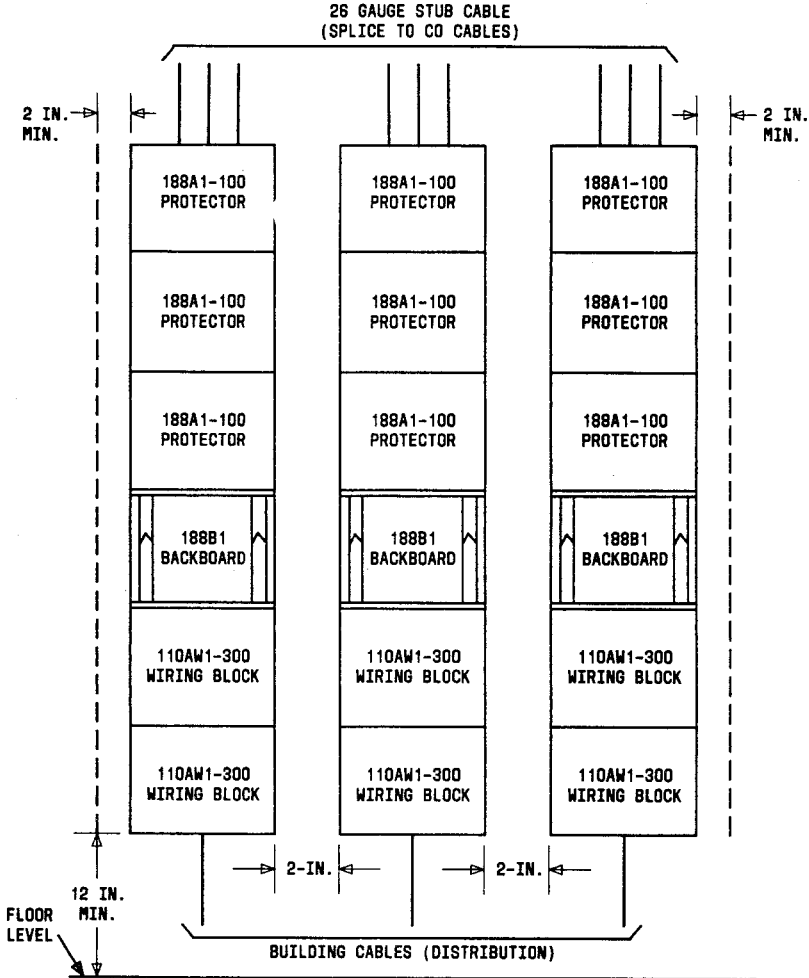


Fig. 15—900-Pair Entrance Cable—1800-Pair Building Cable—Mechanical Protection Not Required\*