

3-, 4-, AND 5-TYPE PROTECTOR UNITS

DESCRIPTION AND USE

	CONTENTS	PAGE
1.	GENERAL	1
2.	DESCRIPTION	1
3.	USE	7
4.	REFERENCES	7

1. GENERAL

1.01 This section covers the description and use of 3-, 4-, and 5-series plug-in protector units; 4B9C protector unit (reversing plug); and 4B11C protector unit (mini-bridge lifter used with 302-, 303-, 305-, and 308-type connectors; 136-, 138-, 188-, and 189-type protectors).

1.02 When this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The 3-, 4- and 5-series plug-in protector units; reversing plugs; and mini-bridge lifters must be ordered separately.

1.04 All standard plug-in protector units, reversing plugs, and mini-bridge lifters are equipped

with four gold-plated tip and ring pins and a solder-plated ground pin.

1.05 Superseded plug-in protector units, reversing plugs, and mini-bridge lifters are equipped with five solder-plated contact pins and are directly replaceable with the protector units with gold-plated pins.

1.06 Plug-in protector units with gold plating will eventually become intermixed into connector panels using solder plating. This will occur as the existing stocks are depleted and/or as in-service solder-plated plug-in protector units are replaced by gold-plated equivalents. ***Care should be exercised in avoiding installation of protector units having solder-plated contact pins to connectors containing gold-plated contacts.***

2. DESCRIPTION

2.01 The 3-, 4-, and 5- series plug-in protector units are shown in Fig. 1. Related auxiliary devices (reversing plug and mini-bridge lifter) are shown in Fig. 2 and 3, respectively. The protector unit code, year, and quarter of manufacture appear on the plastic housing.

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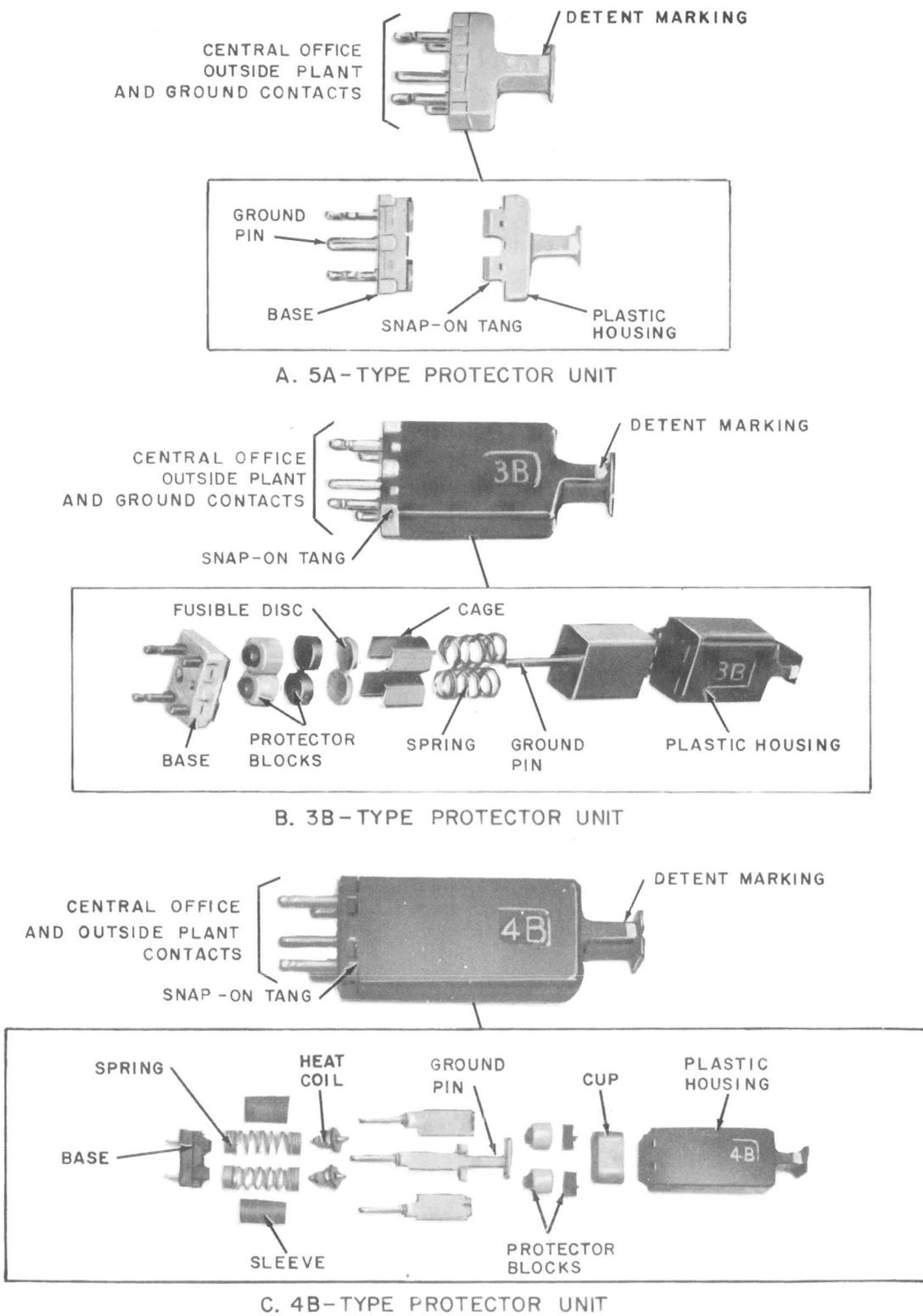


Fig. 1—Protector Units

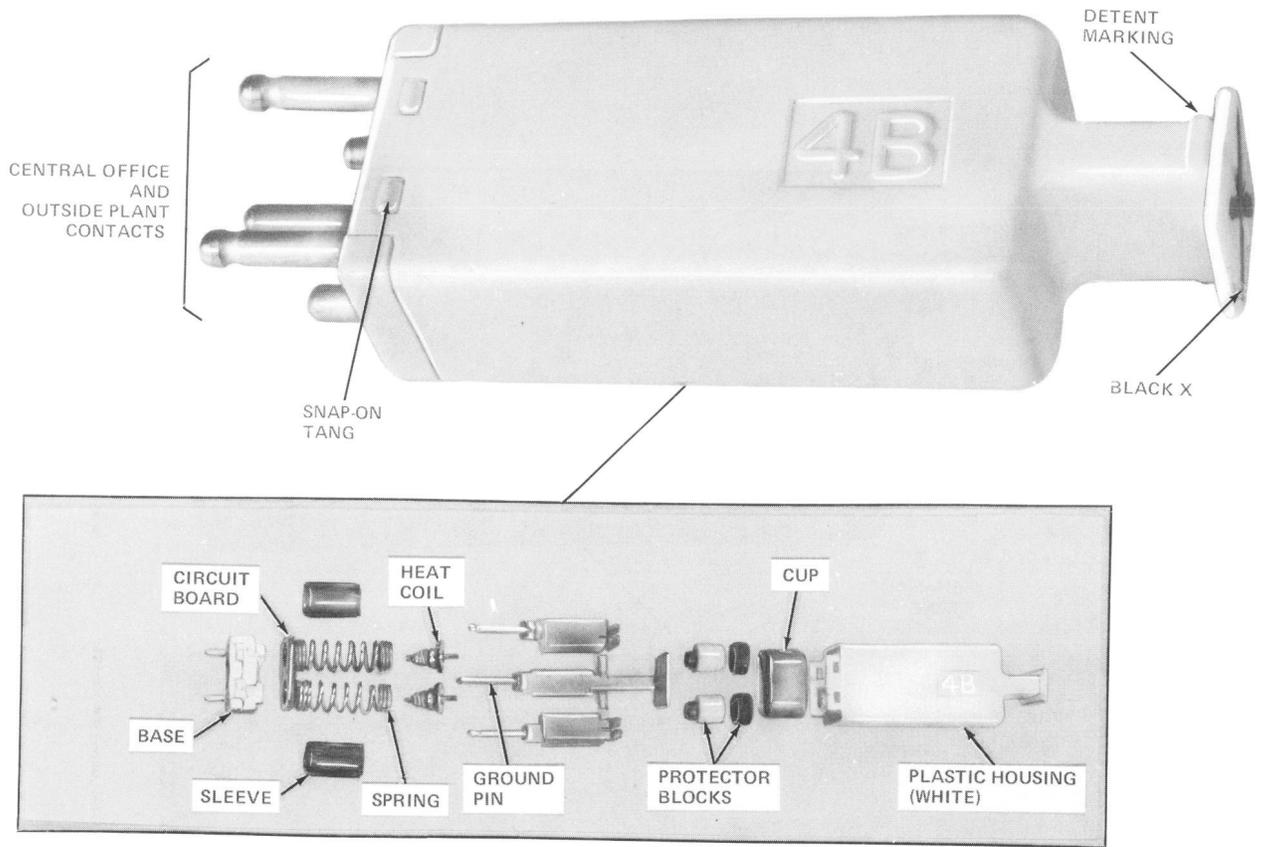


Fig. 2—4B9C Protector Unit (Line Reversing)

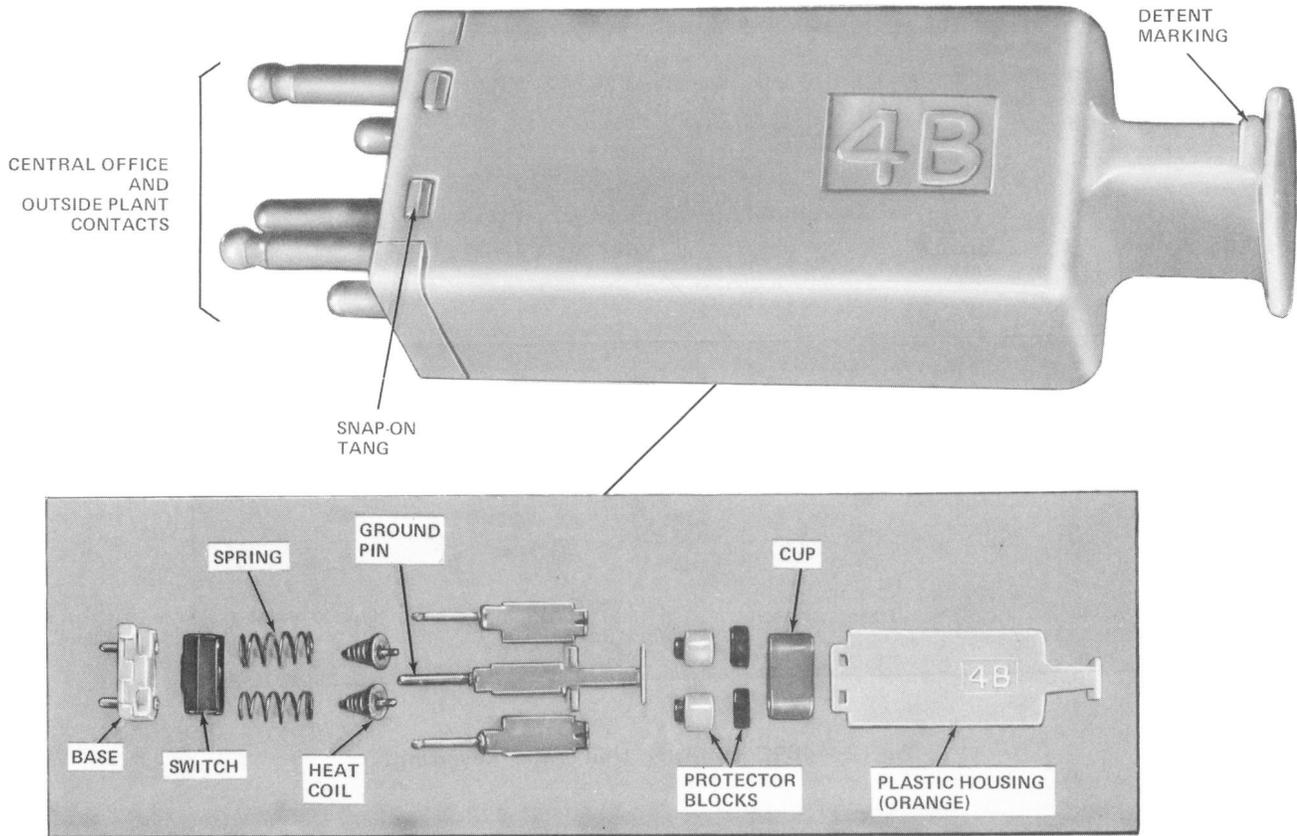


Fig. 3—4B11C Protector Unit (Mini-Bridge Lifter)

2.02 Table A describes the standard and previous codes of the 3-, 4-, and 5- series plug-in protector units; reversing plug; and mini-bridge

lifter. Table A also lists the housing color, protection devices (if any), and circuit application.

TABLE A
PROTECTOR UNITS

STANDARD CODE	SUPERSEDED CODE	HOUSING COLOR	PROTECTOR BLOCKS (1 PAIR EACH)	HEAT COILS (2 EACH)	FUSIBLE ALLOY DISCS	CIRCUIT APPLICATION
3B1A 3B2A ² 3B3A 3B4A 3B1A 3B2A ² 3B3A 3B4A	3A1A 3A2A 3A3A 3A4A 3B5A ³ 3B6A ^{2&3} 3B7A ³ 3B8A ³	Black Green Red Yellow Black Green Red Yellow	↕ 32A & 33B ↕	↕ None ↕	↕ Yes ↕	Standard Circuit Open Circuit Special Circuit PBX Battery Standard Circuit Open Circuit Special Circuit PBX Battery
4B1C 4B2C ² 4B3C 4B4C 4B1C 4B2C 4B3C 4B4C	4A1C ^{1&4} 4A2C ^{1&4} 4A3C ^{1,2,&4} 4A4C ^{1&4} 4A5C ^{3&4} 4A6C ^{2&3} 4A7C ^{3&4} 4A8C ^{3&4}	Black Green Red Yellow Black Green Red Yellow	↕ 32A & 33B ↕	82B ↕ 82A ↕ 82B ↕ 82C ↕ 82B ↕ 82A ↕ 82B ↕ 82C	↕ No ↕	Standard Circuit Open Circuit Special Circuit PBX Battery Standard Circuit Open Circuit Special Circuit PBX Battery
4B9C	429FPlug ^{1&4}	White (Black X)	32A & 33B	82B	No	Reverse Tip & Ring
4B11C	4A11C ¹	Orange	32A & 33B	82B	No	Mini-Bridge Lifter
5A1D 5A2D ² 5A3D 5A4D 5A1D 5A2D ² 5A3D 5A4D 5A9D	Same Same Same Same 5A5D ³ 5A6D ^{2&3} 5A7D ³ 5A8D ³ 5A9D ³	Gray Green Red Yellow Gray Green Red Yellow White (Black X)	↕ None ↕	↕ None ↕	↕ No ↕	Standard Circuit Open Circuit Special Circuit PBX Battery Standard Circuit Open Circuit Special Circuit PBX Battery Reverse Tip & Ring

Note 1: These protector units have gold-plated contact pins.

Note 2: No continuity between outside plant and central office.

Note 3: These protector units have solder-plated contact pins.

Note 4: Superseded 4A-type protector units and the 429F plug also have 32B (1pair each) protector blocks.

2.03 Table B shows the standard and superseded connector codes, plug-in protector unit codes, contact pin plating, and frame or equipment application for which the plug-in protector units were designed.

TABLE B
STANDARD AND SUPERSEDED CODES OF CONNECTOR/PROTECTOR UNIT SYSTEM

STANDARD CODES			SUPERSEDED CODES			
CONNECTORS AND PROTECTORS	PROTECTOR UNITS ¹	CONTACT PLATING	CONNECTORS AND PROTECTORS	PROTECTOR UNITS	CONTACT PLATING	APPLICATION
CONNECTORS 302A1-, 302B1-, & 302E1-100	3B1A thru 3B4A 4B1C thru 4B4C 5A1D thru 5A4D 4B9C, 4B11C, 5A9D	Gold ↓	CONNECTORS Same	Same 4A1C thru 4A4C Same None	Gold ↓	Modular Protector Frame (ED-1A220-31 only)
302A3-100 thru 302E3-100	3B1A thru 3B4A 4B1C thru 4B4C 5A1D thru 5A4D 4B9C, 4B11C, 5A9D	Gold ↓	302A2-100 thru 302E2-100	3B5A thru 3B8A 4A5C thru 4A8C 5A5D thru 5A8C	Solder ↓	Double-Sided Protector Frame
303A3-100 thru 303E3-100 & 303B3-50	3B1A thru 3B4A 4B1C thru 4B4C 5A1D thru 5A4D 4B9C, 4B11C, 5A9D	Gold ↓	303A2-100 thru 303E2-100 & 303B2-50	3B5A thru 3B8A 4A5C thru 4A8C 5A5D thru 5A8D None	Solder ↓	Tall & Low Profile Distributing Frame
305A1-100 thru 305D1-100	3B1A thru 3B4A 4B1C thru 4B4C 5A1D thru 5A4D 4B9C, 4B11C, 5A9D	Gold ↓	Same	Same 4A1C thru 4A4C Same	Solder ↓	Tall & Low Profile Distributing Frame
308A1-100 & 308B1-100	3B1A thru 3B4A 4B1C thru 4B4C 5A1D thru 5A4D 4B9C, 4B11C, 5A9D	Gold ↓	None	—	—	Modular Protector Frame (ED-97898-31 only)
PROTECTORS 136A24-52	3B1A	Gold	136A1A-52	3B5A	Solder	T2 Digital Transmission Equipment Protection
138A2A-50	3B1A	Gold	138A1A-50	3B5A	Solder	N2 Carrier Cabinet
188A1C-100	4B1C	Gold	188A1A-100	3B1A	Gold	Building Terminals
189A1C-100 & 189A1C-50	4B1C	Gold ↓	189A1A-100 189A1A-50	3B1A	Gold ↓	Building Terminals

Note 1: For complete listing of protector units, see Table A.

3. USE

3.01 When the plug-in protector units are properly inserted into a terminal group on the connector panel, they provide the following contacts for one pair:

- (a) Tip and ring to outside plant conductors (long pins)
- (b) Tip and ring to central office (short pins)
- (c) Ground which also serves to properly orient the protector unit relative to the connector panel (center pin).

3.02 The 3B-type plug-in protector units (Fig. 1) contain protector blocks and are used on circuits requiring voltage protection only. The 3B2A plug-in protector unit ([green] used to deny service) provides voltage protection for the outside plant, but does not provide continuity to the central office equipment.

3.03 The 4B-type (Fig. 1) plug-in protector units contain protector blocks and heat coils and are used on circuits requiring both voltage and sneak current protection. The 4B2C ([green] used to deny service) is equipped with protector blocks and insulating dummy heat coils and provides voltage protection for the outside plant, but no continuity to the central office equipment.

3.04 The 4B9C (Fig. 2) plug-in protector unit (white) contains a polarity reversing board in addition to the standard protector blocks and heat coils. The "X" marked on the finger grip indicates that the tip and ring out are reversed from tip and ring in.

3.05 The 4B11C protector unit (Fig. 3) is a 4B-type protector unit (orange) that contains bridge-lifting circuitry in addition to the standard protector blocks and heat coils (Fig. 3). This device is a semiconductor switch type bridge lifter. In the idle state, the semiconductor switches open, isolating the subscriber loop from the central office by adding impedance. In the active state, the semiconductor switches are closed, thereby removing the high impedance from subscriber loop. The mini-bridge lifter may be used to bridge a maximum of four outside plant subscriber lines to the same central office subscriber line.

3.06 The 5A-type plug-in protector units (Fig. 1) may be used to provide circuit continuity where *no* protection is required. The 5A2D ([green] used to deny service) plug-in protector unit does not provide continuity between outside plant and central office cables.

3.07 The 5A9D plug-in protector unit (white) has an "X" marked on the face of the handle to indicate that the protector unit is equipped with a polarity reversing circuit board, reversing tip and ring.

3.08 Full insertion of plug-in protector units into the connector panel interconnects outside plant with central office equipment, providing the protection previously described. Green protector units do not provide this interconnection; therefore, only voltage protection is provided to the outside plant with 3- and 4-type protector units (none with 5-type protector units). Ground, for protection purposes, is provided for the heat coils and carbon blocks through the grounding pin of the protector unit.

3.09 When the protector unit is pulled out to the detent position, the central office equipment is disconnected to isolate outside plant pairs for testing purposes. In this position, protection is still provided on the outside plant cable pair. A small white marking on the finger grip of the protector unit is exposed when the protector unit is in the detent position. Removing the protector unit from the connector removes all protection.

4. REFERENCES

4.01 The following Bell System Practices contain related information:

SECTION	TITLE
106-315-121	D, G, H, M, N, and P Test Connectors—Description and Installation
201-208-102	302-, 303-, and 305-Type Connectors and Associated Protectors, Cords, and Plugs

SECTION 636-300-050

SECTION	TITLE	SECTION	TITLE
201-208-501	302-, 303-, and 305-Type Connectors—Protector Unit Tests—Using KS20100 L1 and L2 Test Sets	201-220-301	Conventional Distributing Frames—Methods of Making Connections
		631-460-113	188-Type Protectors
201-208-802	302-, 303-, and 305-Type Connectors and Associated Protector Units—Piece Part Data and Replacement Procedures	631-460-114	189-Type Protectors
		636-210-218	Terminating Cable In Cross-Connect Cabinet N and ON Carrier
201-220-101	Conventional Distributing Frames—Description	636-210-219	136A2A-52 Protector — Description
		680-122-010	Customer Loop Bridge Lifters
201-220-102	Conventional Distributing Frames—Types or Protection	902-815-153	Mini-Bridge Lifter 4B11C Protector Type
201-220-103	Conventional Distributing Frames—Warning Markers and Guards	916-559-770	Cable Terminating Facilities — Central Office Type — General