

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

DESCRIPTION

1. GENERAL

1.01 This section covers the description, use, and repair procedures of the 3-, 4-, and 5-type plug-in protector units, 4B9C protector unit (reversing plug), and 4B11C protector unit (minibrige lifter). These protector units are used in the 302-, 303-, 305-, and 308-type connectors.

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

1.03 The 3-, 4-, and 5-type plug-in protector units, reversing plugs, and minibrige lifters are not included with the various connectors and must be ordered separately.

1.04 All standard plug-in protector units, reversing plugs, and minibrige 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1.05 Superseded plug-in protector units, reversing plugs, and minibrige lifters are equipped with five solder-plated contact pins and are directly replaceable with the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-plated pins will eventually become intermixed into connector panels that have solder-plated socket terminals. 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 to avoid installation of protector units having solder-plated contact pins into connectors containing gold-plated socket terminals.***

1.07 When the 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 equipment (short pins)
- (c) Ground which also serves to properly orient the protector unit into the connector panel (center pin).

2. DESCRIPTION

2.01 3B-type protector units (Fig. 1) contain protector blocks and are used on circuits requiring voltage protection (carbon blocks) but not sneak current protection (heat coils). The 3B-type protector unit is a direct replacement for the 3A-type which is manufacture discontinued (MD). The 3B2A protector unit ([green housing] used to deny service) provides voltage protection for the outside plant, but does not provide continuity to the central office equipment.

2.02 4B-type protector units (Fig. 1) contain both protector blocks and heat coils. The 4B-type protector units are used on circuits requiring both voltage protection (carbon blocks) and sneak current protection (heat coils). The 4B-type protector unit is a direct replacement for the 4A-type (which is MD). The 4B2C protector unit ([green housing] used to deny service) provides voltage protection for the outside plant through protector blocks but has dummy heat coils. This protector unit does not provide continuity to the central office equipment.

2.03 The 4B9C protector unit (Fig. 2) contains a polarity reversing circuit board in addition to the standard protector blocks and heat coils for voltage and sneak current protection. This protector unit is white with a black X marked on the finger grip indicating that the tip and ring-out are reversed

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from the tip and ring-in. This protector unit is a direct replacement for the 429F reversing plug (MD).

2.04 The 4B11C protector unit (Fig. 3) is a 4B-type protector unit (orange housing) 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 minibridge lifter may be used to bridge a maximum of four outside plant subscriber lines to the same central office subscriber line. This protector unit is a direct replacement for the 4A11C minibridge lifter (MD).

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

2.06 The 5A9D plug-in protector unit (white housing) 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.

2.07 The protector units are listed in Table A showing the standard and superseded codes, housing color, protection devices (if any), and the circuit application of each protector. Beginning with the manufacture of the 3B- and 4B-type protector units, the quarter and year of manufacture appear on the plastic housing.

3. APPLICATION

3.01 Full insertion of the protector units into the connector panel interconnects outside plant with central office equipment, providing the protection previously described. Protector units with green housings do not provide this interconnection; therefore, only voltage protection is provided to

the outside plant with 3- and 4-type protector units (no protection 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.

3.02 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, voltage 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.

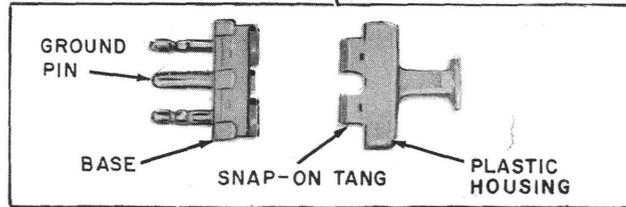
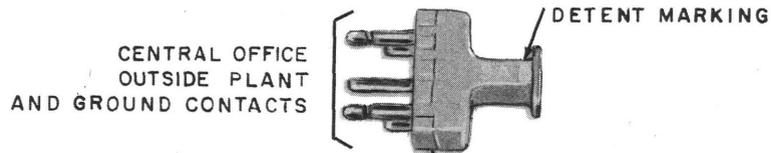
4. DESIGNATION PINS

4.01 The color of the protector unit housing identifies the type of circuit that is interconnected. In addition, a KS-14174 designation pin, having the same color as the protector unit housing, indicates the particular terminal group that is associated with the circuit. Table A shows the various list numbers of the KS-14174 designation pins which correspond to the different protector units.

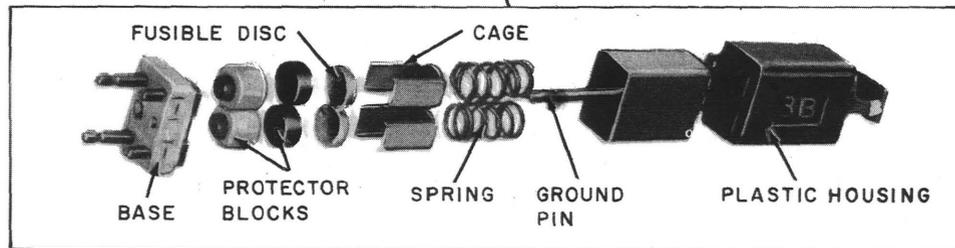
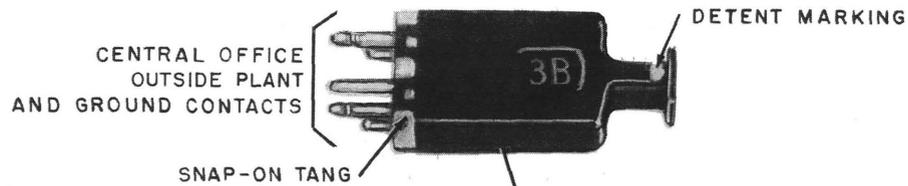
4.02 Except for the regular service (standard circuit), the designation pin is inserted in the hole provided in the terminal group of the 302-, 303-, 305- and 308-type connectors. The local office should specify when the KS-14174 designation pins are to be used, especially on the 305-type connector. Due to the mounting orientation of the 305-type connector, the designation pins are difficult to see.

5. REPAIR PROCEDURES

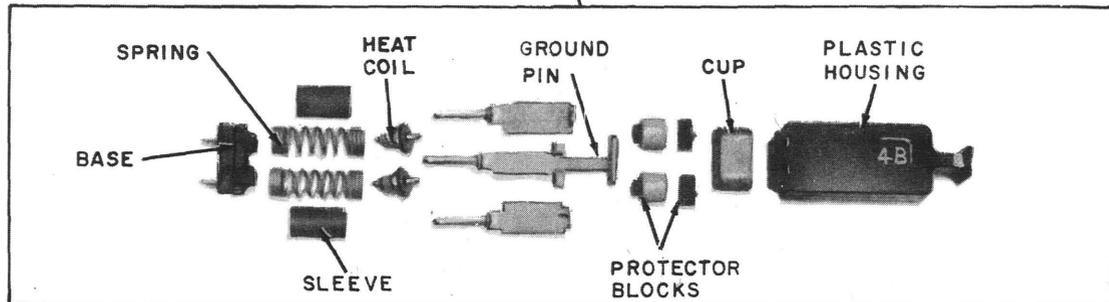
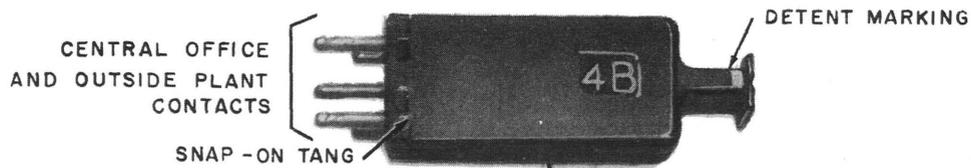
5.01 Any protector units which are defective or suspected as being defective should be discarded, except for the 4B11C (minibridge lifter) or the superseded 4A11C. Return defective 4B11C or 4A11C protector units to the appropriate Western Electric Company repair facility for repair. See Section 201-208-501 for testing of protector units.



A. 5A-TYPE PROTECTOR UNIT



B. 3B-TYPE PROTECTOR UNIT



C. 4B-TYPE PROTECTOR UNIT

Fig. 1—Protector Units

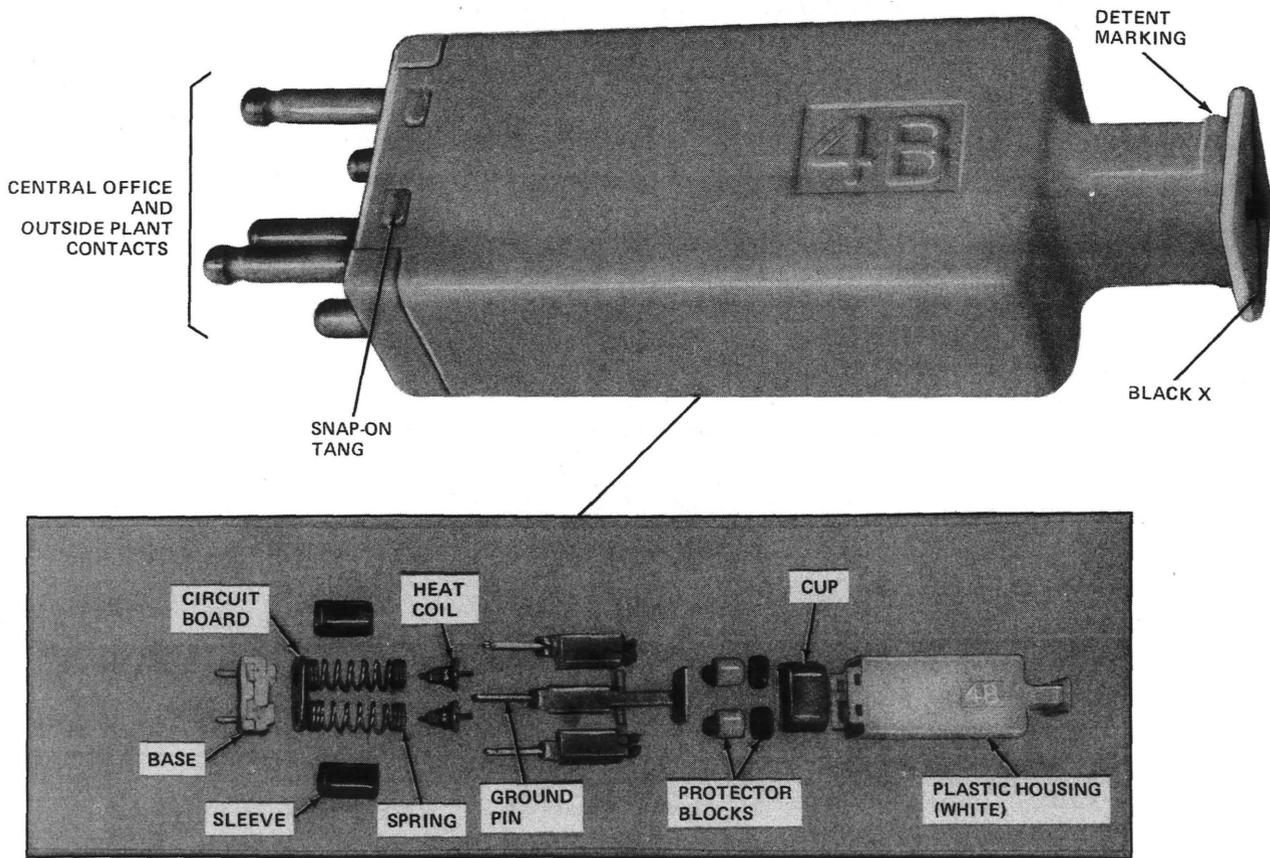


Fig. 2—4B9C Protector Unit (Line Reversing)

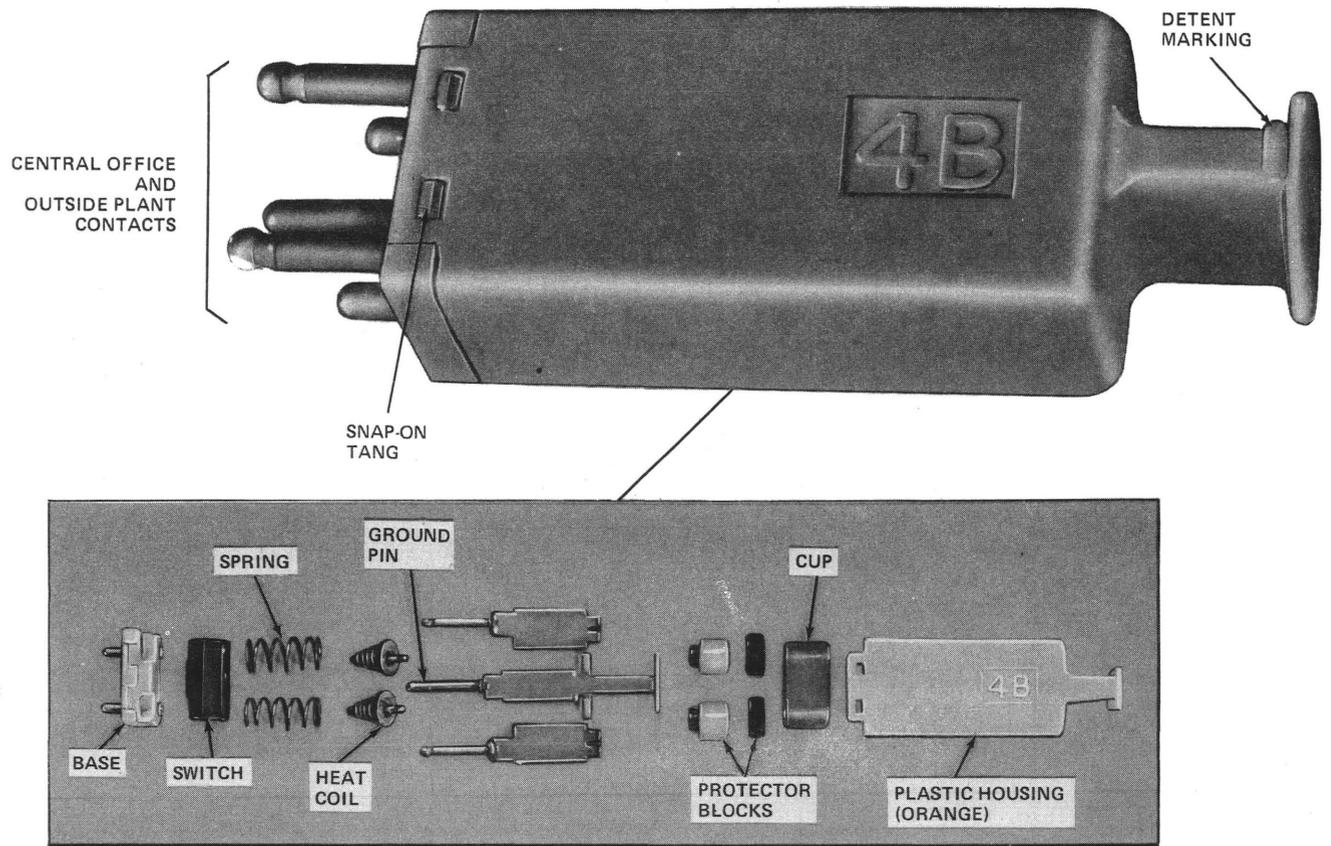


Fig. 3—4B11C Protector Unit (Minibridge Lifter)

TABLE A

PROTECTOR UNITS

STANDARD CODE	SUPERSEDED CODE	HOUSING COLOR	PROTECTOR BLOCKS (1 PAIR EACH)	HEAT COILS (2 EACH)	FUSIBLE ALLOY DISCS	CIRCUIT APPLICATION	LIST NO. OF KS-14174 DESIGNATION PIN
3B1A	3A1A	Black	32A & 33B	None	Yes	Standard Circuit	*
3B2A ²	3A2A	Green				Open Circuit	4
3B3A	3A3A	Red				Special Circuit	7
3B4A	3A4A	Yellow				PBX Battery	5
3B1A	3B5A ³	Black				Standard Circuit	*
3B2A ²	3B6A ^{2&3}	Green				Open Circuit	4
3B3A	3B7A ³	Red				Special Circuit	7
3B4A	3B8A ³	Yellow				PBX Battery	5
4B1C	4A1C ^{1&4}	Black	32A & 33B	82B	No	Standard Circuit	*
4B2C ²	4A2C ^{1&4}	Green		82A		Open Circuit	4
4B3C	4A3C ^{1,2,&4}	Red		82B		Special Circuit	7
4B4C	4A4C ^{1&4}	Yellow		82C		PBX Battery	5
4B1C	4A5C ^{3&4}	Black		82B		Standard Circuit	*
4B2C ²	4A6C ^{2&3}	Green		82A		Open Circuit	4
4B3C	4A7C ^{3&4}	Red		82B		Special Circuit	7
4B4C	4A8C ^{3&4}	Yellow		82C		PBX Battery	5
4B9C	429F Plug ^{1&4}	White (Black X)	32A & 33B	82B	No	Reverse Tip & Ring	
4B11C	4A11C ¹	Orange	32A & 33B	82B	No	Minibridge Lifter	2
5A1D	Same	Gray	None	None	No	Standard Circuit	*
5A2D ²	Same	Green				Open Circuit	4
5A3D	Same	Red				Special Circuit	7
5A4D	Same	Yellow				PBX Battery	5
5A1D	5A5D ³	Gray				Standard Circuit	*
5A2D ²	5A6D ^{2&3}	Green				Open Circuit	4
5A3D	5A7D ³	Red				Special Circuit	7
5A4D	5A8D ³	Yellow				PBX Battery	5
5A9D	5A9D ³	White (Black X)				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 2 32B protector blocks.

* No designation pin is used for a standard circuit.