

3-, 4-, AND 5-TYPE PROTECTOR UNITS TEST PROCEDURES USING KS-20100 AND 182A TEST SETS

1. GENERAL

1.01 This section describes the method for testing protector units used on 302-, 303-, and 305-type connectors using the KS-20100 test set and the 182A test set. Test procedures for the 4C-type protector units, which are used exclusively on the COSMIC II frame, are covered in Section 201-222-112.

1.02 This section is reissued to include the new standard codes now used for the 3-, 4-, and 5-type protector units. Revision arrows are used to emphasize the more significant changes. The Equipment Test List is not affected.

1.03 This test checks the protectors for:

- (a) Tip and ring continuity
- (b) Shorted carbon blocks
- (c) Defective semiconductor switches in the 4A11C or 4B11C protector unit.

1.04 A provision is made for clearing out the air gap between carbon blocks with the KS-20100 test set when shorted by carbon dust or particles.

1.05 The circuitry of the KS-20100 L1, L2 (Mfr Disc) and L5 test sets is identical (Fig. 1). The L1 test set is an integral component of modular protector frames (Fig. 2). The L2 test set is housed in a conduit box for wall mounting (Fig. 3). The L5 test set is also wall mounted.

1.06 The 182A test set is also housed in a conduit box for wall mounting (Fig. 4). A block diagram of the 182A test set is shown in Figure 5.

1.07 Internal connections of protector units for 302-, 303-, and 305-type connectors are shown in Figure 6.

1.08 The protector units are listed in Table A showing the new standard and equivalent superseded codes, housing color, protection devices (if any), and the circuit application of each protector.

TESTING 4A11C OR 4B11C PROTECTOR UNITS

1.09 The 182A test set is first used to test for tip and ring continuity and for shorted carbon protector blocks on 4A11C or 4B11C protector units. It also tests the function of the 410A switch. The 182A test set does not differentiate between failures of these components.

1.10 Protector units which "pass" the test on the 182A test set may be returned to service without further testing.

1.11 The 4A11C or 4B11C protector units which fail the test on the 182A test set must also be tested with the KS-20100 test set.

1.12 Protector units with shorts which "burnout" successfully when tested on the KS-20100 test set must be retested, using the 182A test set.

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

1.13 The 429F or 4B9C reversing plug and protector units other than the 4A11C or 4B11C are tested, using the KS-20100 test set only.

1.14 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 of this section indicates an action which may or may not be required, depending on local conditions. The condition under which a lettered step or a series

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of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

1.15 Discard defective protector units except for the 4A11C or 4B11C protector unit (mini-bridge lifter). Return defective 4A11C or 4B11C protector units to the appropriate Western Electric Company repair facility for repair or replacement.

2. APPARATUS

2.01 KS-20100 L1, L2 or L5 test set and 182A test set.

3. PROTECTOR UNIT TESTS

3.01 When testing 4A11C or 4B11C protector units, perform Steps 1 through 15. When testing 3-, 4-, or 5-type protector units or the 429F or 4B9C reversing plug, perform Steps 5 through 13.

STEP	ACTION	VERIFICATION
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4A11C or 4B11C PROTECTOR UNITS (MINI-BRIDGE LIFTER) ONLY

1 Insert 4A11C or 4B11C protector unit to be tested into protector jack on 182A test set.

Warning: Do not attempt to test protector unit while disassembled. Hazardous voltages are present in the protector unit during tests.

2 Depress TEST pushbutton.

Note 1: A momentary flash of the red FAIL indicator that may occur at the instant the TEST pushbutton is depressed should be ignored.

Note 2: If neither indicator lights when the pushbutton is depressed, check the 1/4 AMP fuse. If fuse is good, determine if ac supply to test set is present. If ac supply is present and the 1/4 AMP fuse is good, test set is defective.

3a If green PASS indicator lighted, go to Step 15.

4b If red FAIL indicator lighted, go to Step 5.

ALL PROTECTOR UNITS (INCLUDING 4A11C or 4B11C MINI-BRIDGE LIFTER)

5 Observe the KS-20100 test set.

No pushbuttons lighted.

6 Momentarily depress CONTINUITY R pushbutton.

CONTINUITY R pushbutton lighted while depressed. (See note in Step 8.)

7 Momentarily depress CONTINUITY T pushbutton.

CONTINUITY T pushbutton lighted while depressed. (See note in Step 8.)

8 Momentarily depress GROUND pushbutton.

GROUND pushbutton lighted while depressed.

STEP	ACTION	VERIFICATION
	<p>Note: If, in the above steps, none of the pushbuttons light, check 1/4 AMP fuse. If fuse is good, determine if ac supply to test set is present.</p>	
9	<p>Insert protector unit or reversing plug to be tested into protector jack on test set.</p>	<p>CONTINUITY T and R pushbuttons lighted. GROUND pushbutton extinguished.</p> <p>Note: If either or both CONTINUITY pushbuttons do not light, protector unit is defective. Refer to paragraph 1.15.</p> <p>Note: If GROUND pushbutton is lighted, proceed to Step 11d.</p> <p>If protector unit housing is green— All lamps remain extinguished. If either or both CONTINUITY lamps light, unit is defective and should be discarded.</p>
10c	<p>If requirements of Step 9 are met— Remove protector unit from protector jack on test set and go to Step 1 or 5 (see paragraph 3.01).</p>	
11d	<p>If GROUND pushbutton is lighted in Step 9— Momentarily depress BURN OUT pushbutton for 2 or 3 seconds.</p>	<p>GROUND pushbutton extinguished.</p>
12e	<p>If GROUND pushbutton does not extinguish— Repeat Step 11d several times.</p>	<p>Note: If GROUND pushbutton does not extinguish, protector carbons are defective or heat coils have operated. Refer to paragraph 1.15.</p>
13	<p>Remove protector unit from protector jack on the KS-20100 test set.</p>	
<p>4A11C OR 4B11C PROTECTOR UNIT (MINI-BRIDGE LIFTER) ONLY</p>		
14	<p>Repeat Steps 1 and 2.</p>	
15	<p>Remove protector unit from protector jack on 182A test set.</p>	

◆ TABLE A ◆

PROTECTOR UNITS (NOTE 1)

STANDARD CODE	SUPERSEDED CODE	HOUSING COLOR	PROTECTOR BLOCKS (1 PAIR EACH)	NOTE 5 HEAT COILS (2 EACH)	FUSIBLE ALLOY DISCS	CIRCUIT APPLICATION	LIST NO. OF KS-14174 DESIGNATION PIN
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	* 4 7 5 * 4 7 5
4B1C 4B2C ² 4B3C 4B4C 4B1C 4B2C ² 4B3C 4B4C	4A1C ⁴ 4A2C ⁴ 4A3C ^{2 *} 4A4C 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	* 4 7 5 * 4 7 5
4B9C	429F Plug ⁴	White (Black X)	32A & 33B	82B	No	Reverse Tip & Ring	
4B11C	4A11C	Orange	32A & 33B	82B	No	Minibridge Lifter	2
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	* 4 7 5 * 4 7 5

Note 1: All protector units have gold-plated contact pins unless otherwise noted.

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 two 32B protector blocks.

Note 5: Codes shown are for 4B-type protector units.

* No designation pin is used for a standard circuit.

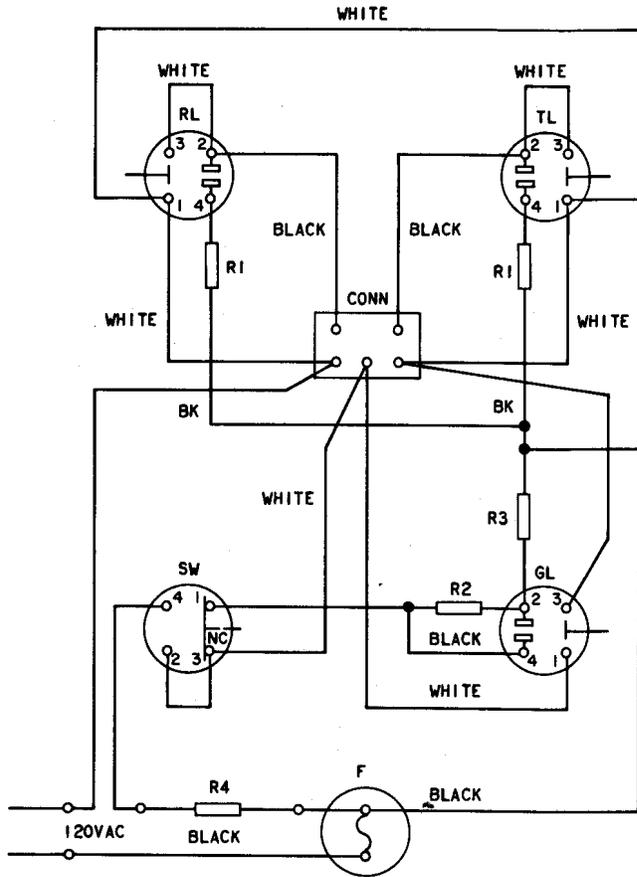


Fig. 1—KS-20100 Test Set Schematic Diagram

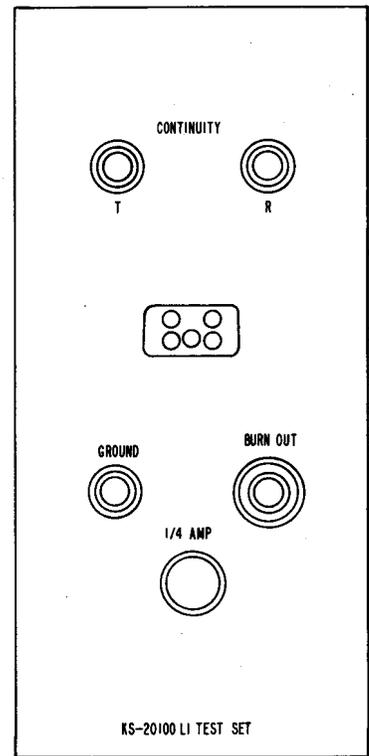


Fig. 2—KS-20100 L1 Test Set

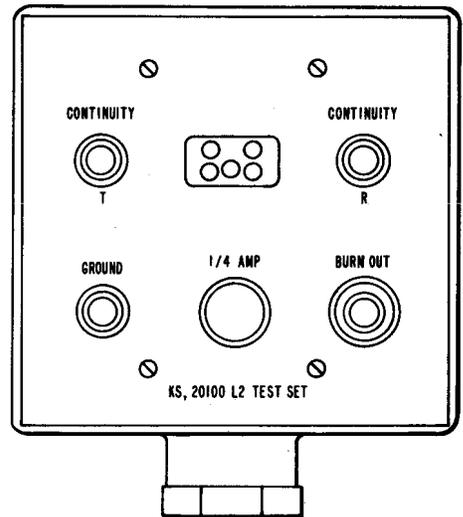


Fig. 3—KS-20100 L2 Test Set

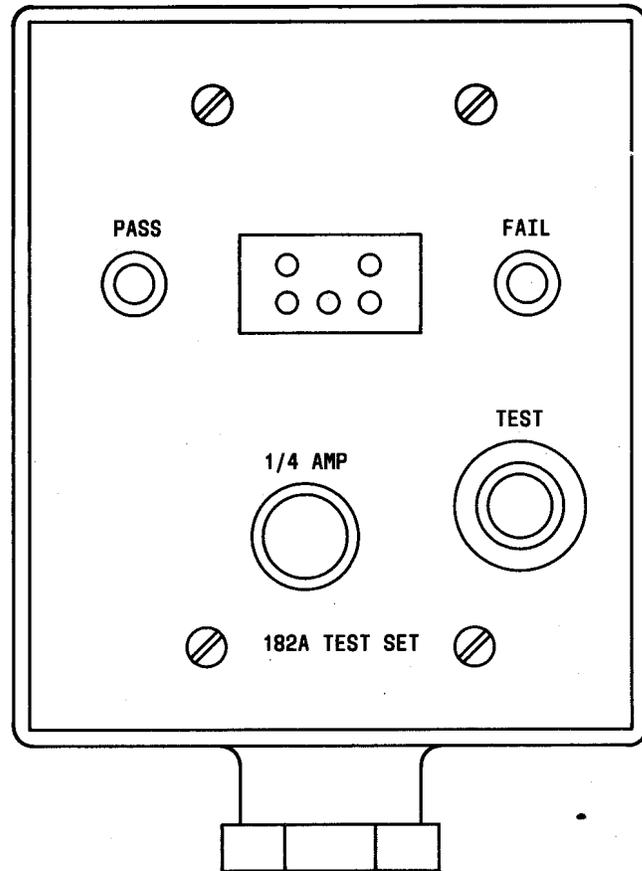


Fig. 4—182A Test Set

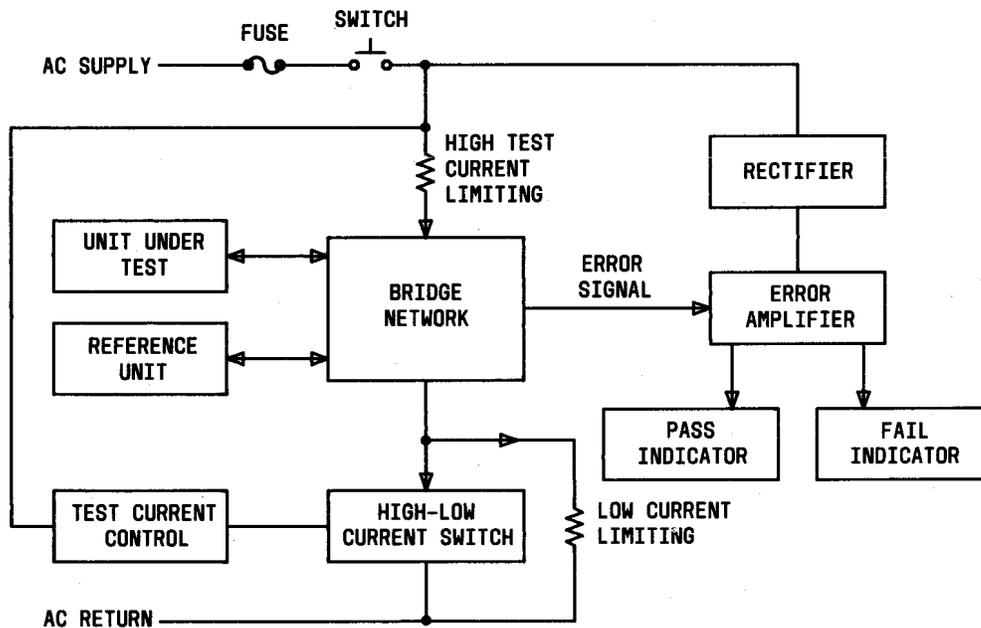
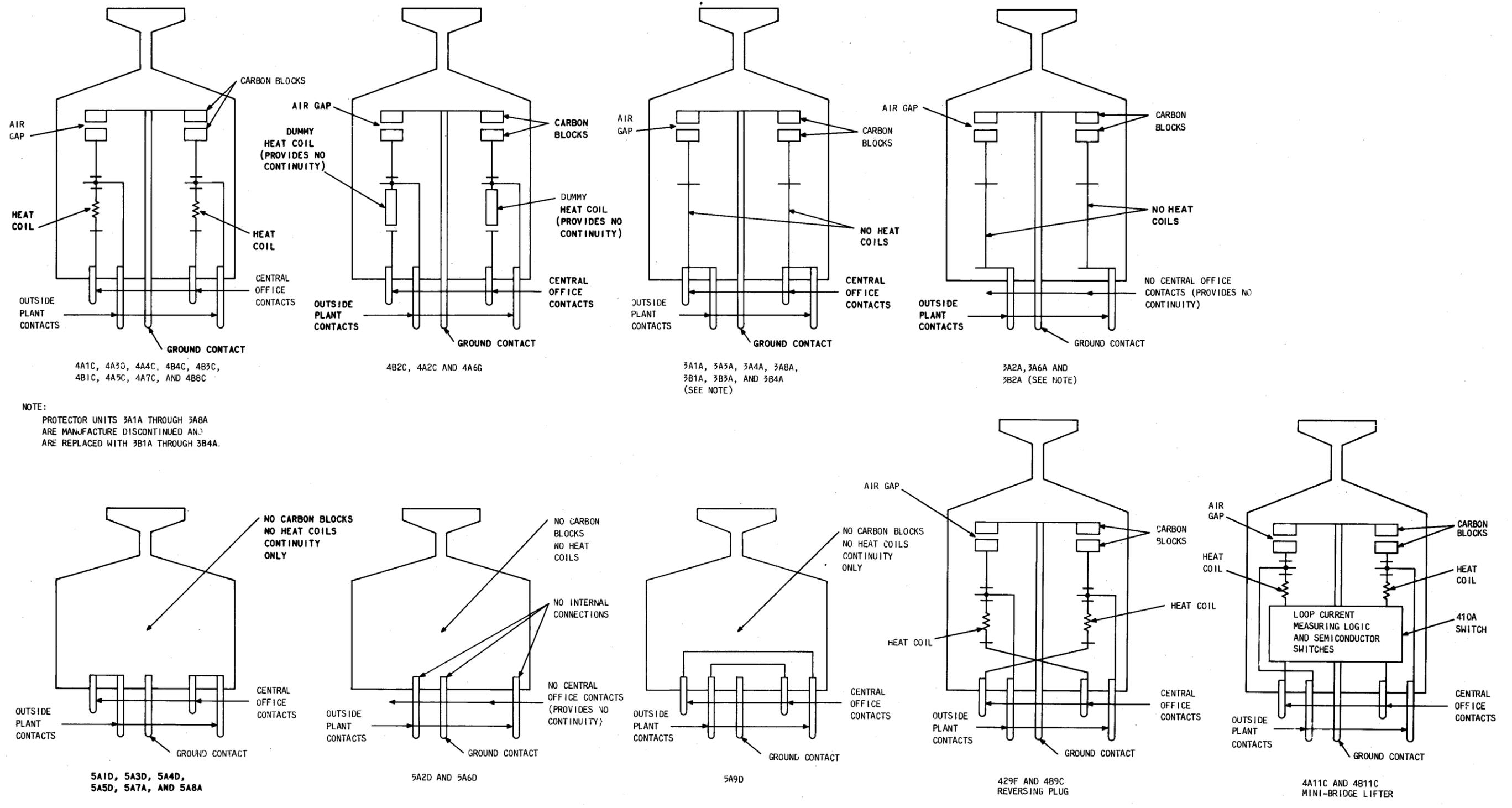


Fig. 5—182A Test Set Block Diagram



NOTE:
 PROTECTOR UNITS 3A1A THROUGH 3A8A
 ARE MANUFACTURE DISCONTINUED AND
 ARE REPLACED WITH 3B1A THROUGH 3B4A.

Fig. 6—Internal Connections 3A-, 3B-, 4A-, 4B-, 5A-Protector Units, 429F or 4B9C Reversing Plug, and 4A11C or 4B11C (Mini-Bridge Lifter)