

PROTECTORS AND PROTECTOR MOUNTINGS
C-, E- AND SIMILAR TYPE
HEAT COIL AND PROTECTOR SPRING CONTACT TESTS

1. GENERAL

1.01 This section describes a method of testing heat coil washers or caps and heat coil protector spring contacts for excessive resistance without removing the coils from service.

1.02 This section is reissued to

- (a) Include in the title the types of protector mountings covered
- (b) Convert section to Step-Action format.

This reissue affects Equipment Test List.

1.03 The tests covered are as follows.

A. Resistance Test: This test checks the heat coil protector spring contacts for excessive resistance without removing the heat coils from the protector mountings.

B. Short-Circuit Test: This test checks if heat coil windings are short-circuited to an extent which makes them unfit for service.

1.04 Office records shall be consulted to determine the total resistance of the type of heat coil to be tested.

1.05 The 22B test set is described in Section 100-100-102.

1.06 Defects found in the performance of tests shall be recorded on the proper form according to local practice.

2. APPARATUS

Tests A and B

2.01 One 22B test set, test clips, and cords furnished with test set.

2.02 One battery (dry cell or storage battery that will deliver 2 or 3 volts at 0.3 amperes without appreciable voltage drop).

3. PREPARATION

STEP	ACTION	VERIFICATION
1	At 22B test set— Remove heat coil which may be in protector mounting on test set.	
2	Set switch 1 to K.	
3	Set switch 2 to O.	
4	Connect external battery to BATT terminals.	
5	Connect test leads to binding posts labeled LEADS.	
6	Short-circuit test leads.	Buzzer in test set sounds.

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STEP	ACTION	VERIFICATION
7a	If buzzer does not sound— Rotate variable resistance R until buzzer sounds.	Buzzer in test set sounds.
8	Rotate variable resistance R until buzzer is silenced.	Buzzer in test set silenced.
	<i>Note:</i> If buzzer in test set does not sound in Step 6 or 7a, dry cell in test set may be defective and should be replaced.	

4. METHOD

A. Resistance Test

9	Set switch 1 to type of heat coil to be tested.	
10	Set switch 2 to C.	
11	Rotate variable resistance R until buzzer just sounds.	Buzzer in test set sounds.
12	Separate test leads short-circuited in Step 6.	Buzzer in test set silenced.
13	Set switch 1 to K.	
14	Set switch 2 to O.	

Note 1: The test set is now adjusted to determine whether a resistance placed between the test leads is above approximately 0.6 ohm plus the resistance of the type of heat coil for which the set was adjusted. The set must be readjusted for each type of heat coil to be tested.

Note 2: If it is desired to work a resistance higher than 0.6 ohm plus the resistance of the heat coil, an external resistance of the desired value (up to about 9 ohms for 3-volt battery) should be connected to binding posts marked O and X. Place switch lever 1 on K and 2 on X and adjust variable resistance as described above. The test set will then be adjusted to determine whether a resistance placed between the test leads is above the value selected.

15	Momentarily connect test leads across heat coil to be tested (one lead to cross-connection lug and other lead to cable lug).	Buzzer in test set sounds.
		<i>Note:</i> If buzzer does not sound, resistance is in excess of proper value.

STEP	ACTION	VERIFICATION
16	Repeat Step 14 for all heat coils to be tested.	
	<i>Note:</i> The test set may give a false indication on a busy line. For this reason, the test should be repeated (at a later time) on all lines giving an indication of abnormal resistance on the first test.	
17	When all coils have been tested and if no further tests are to be performed— Disconnect battery from BATT terminals and test leads from binding posts.	

B. Short-Circuit Test

9	Place dummy heat coil into protector mounting on test set.	
10	Set switch 1 to type of heat coil to be tested.	
11	Set switch 2 to B.	Buzzer in test set sounds.
12b	If buzzer does not sound in Step 11— Rotate variable resistance R until buzzer sounds.	Buzzer in test set sounds.
13	Rotate variable resistance R until buzzer is just silenced.	Buzzer in test set silenced.
14	Note position of variable resistance R when buzzer is just silenced.	
15	Set switch 2 to A.	
16	Rotate variable resistance R until buzzer just sounds.	Buzzer in test set sounds.
17	Note position of variable resistance R when buzzer just sounds.	
18	Place variable resistance R midway between positions noted in Steps 14 and 17.	
19	Set switch 1 to K.	
20	Set switch 2 to O.	
21	Remove dummy heat coil from protector mounting on test set.	Buzzer in test set silenced.

Note: The test set is now adjusted so that when a heat coil with cleaned contacts is

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STEP	ACTION	VERIFICATION
	placed in the mounting, the buzzer will operate if the winding is short-circuited to an extent which makes the coil unfit for service.	
22	Place heat coil to be tested into protector mounting on test set.	Buzzer in test set silenced. <i>Note:</i> If buzzer sounds, heat coil is defective.
23	Remove heat coil from protector mounting on test set.	
24	Repeat Steps 22 and 23 for each heat coil to be tested.	
25c	If no further tests are to be performed— Disconnect battery from BATT terminals and test leads from binding posts.	