

**EMERGENCY ALARM CIRCUIT SD-90641 OR SD-96052-01
ARRANGED FOR AUTOMATIC FIRE DETECTION
SINGLE ZONE**

TESTS

1. GENERAL

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1.01 This section describes a method of testing the emergency alarm circuit arranged for automatic fire detection for single zone offices per SD-90641-01 with 24 or +130 volt battery and SD-96052-01 with 48 or +130 volt battery.

D. Outgoing Alarm Circuit to Distant Office: This test checks that the alarm lamp lights and the emergency bell sounds when the tip or ring conductors are crossed with battery or ground. **5**

1.02 This section is reissued to revise Test B and to add Test E to include tests of circuits connected to commercial fire detecting equipment. Test B is also revised to include a test of the ventilating fan shutdown feature. This affects the Equipment Test List.

E. Maintenance Alarm Circuit: This test checks that the alarm lamp lights and the emergency alarms operate when the maintenance alarm loop to commercial fire detecting equipment is opened or crossed with battery or ground. **6**

1.03 The tests covered are:

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A. Station Box: This test checks that the emergency alarms operate when the slide of any station box is operated.

3

B. Zone Relays: This test checks that the emergency alarms sound if the fire detection loop or loop to commercial fire detecting equipment is opened or crossed with battery or ground. A check of the ventilating fan shutdown feature is included in this test.

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C. Incoming Alarm Circuit from Distant Office: This test checks that the emergency alarms operate and the pilot lamp lights when the cable conductors are short-circuited.

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1.04 Before testing the emergency alarm circuit arranged for automatic fire detection, notify the proper persons who may be concerned with these fire alarm signals before beginning Tests A through E and again at the completion of these tests.

Caution: *If during these tests a regular alarm should originate, the tests should be discontinued immediately so the alarm may sound in the normal manner. Notify the proper persons that a regular alarm is sounding.*

1.05 When making Tests A, B and C, the contacts of the last ZR or ZT relay in the chain circuit for the ventilating fans must be grounded. This prevents the ventilating fans from stopping each time a station box is operated or the zone relays release. In Test B, a check is made to ensure that ventilating fans will shut down if the zone relays release.

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2. INSPECTIONS

Station Boxes, Zone Relay Unit and Emergency Alarm Bells

2.01 Inspect the station boxes, zone relay unit and emergency alarm bells (loud ringing subscriber sets) for the following conditions:

- (a) Firm mounting
- (b) Proper color
- (c) Designations plainly marked
- (d) Finish in good condition
- (e) Ease in opening doors of zone relay unit.

2.02 Inspect bulletin holders, when provided, to see that they are securely mounted and that the bulletins are easily readable and up to date.

Fire Detection Loops (When Provided)

Caution: Inspections of the fire detection wire are to be made visually. This wire should not be handled except when absolutely necessary.

2.03 Inspect the red braid covered fire detection wire to see that it is held in place. Make sure that the wire has not become bent at a sharp angle or kinked excessively since, under such conditions, the wire may become broken due to vibration or slight movements. Conditions with respect to kinks and bends can be considered satisfactory if the radius of each bend is not less than approximately 1/2 inch. No attempt should be made to straighten kinks or bends. Ordinarily, pieces of fire detection wire with kinks or bends of too short a radius should be replaced.

2.04 Check to see that the fire detection wire is dressed approximately 1-1/2 inches in from the cable form in cases where it lies horizontally on skimmers. If the wire has been appreciably displaced, it should be carefully redressed to its proper position. Check also to see that where the wire is sewed to cable runs or to the underside of distributing frame shelves, the sag between the stitches which hold the wire in place is not greater than approximately 1/4 inch at any point.

2.05 See that the wire does not come closer than approximately 1/2 inch to exposed iron framework except where fiber clips or varnished tubing is provided as additional insulation. See also that the pieces of impregnated varnished tubing used to insulate the wire from metal framework are not loose and that they extend approximately 1/4 inch or more beyond the metal at each side.

2.06 Inspect the connecting blocks provided at the end of frame line-ups, distributing frames, etc, to see that the connecting wire is held firmly under the heads of the screws of the connecting blocks and that the wire does not touch the framework or the block cover.

3. APPARATUS

3.01 The apparatus for each test is shown in Table A. The details of each item are covered in the paragraph indicated by the number in parentheses.

TABLE A

APPARATUS	TEST				
	A	B	C	D	E
Cord (3.02)		1	1	1	1
Tool (3.03)		1	1		
Key (3.04)		1			

3.02 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (for making connections), as required.

3.03 Blocking and insulating tools, as required. Use tools and apply, as covered in Section 069-020-801.

3.04 Station box key, used to open and lock the individual station boxes.

4. PREPARATION

STEP	ACTION	VERIFICATION
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Tests A and B

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| 1 | Block operated D0 relay in outgoing alarm circuit to prevent alarm indications from reaching distant office. | |
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5. METHOD

STEP	ACTION	VERIFICATION
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A. Station Box

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| 2 | Ground the following contacts, depending on the SD and figure used. See 1.05.

SD-90641-01—
Fig. 13, 2B of ZR relay.
Fig. 16, 4B or 6B of ZR relay.
Fig. 17, 7B of ZR relay.

SD-96052-01—
Fig. 8, 2B of ZR relay.
Fig. 14, 5B of ZR relay. | |
| 3 | To operate station box—
Pull down slide as far as it goes. | Emergency alarm bells sound. |
| 4 | To restore station box—
Open cover, push slide up, close and lock. | Emergency alarm bells silenced. |
| 5 | Repeat Steps 3 and 4 until all station boxes have been tested. | |
| 6 | Remove blocking tool from D0 relay. | |
| 7 | Remove ground from contact of ZR relay. | |

B. Zone Relays

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| 2 | Ground the following contacts, depending on the SD and figure used. See 1.05.
SD-90641-01—
Fig. 13, 2B of ZR relay.
Fig. 16, 4B or 6B of ZR relay.
Fig. 17, 7B of ZR relay.
SD-96052-01—
Fig. 8, 2B of ZR relay.
Fig. 14, 5B of ZR relay. | |
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STEP	ACTION	VERIFICATION
3a	If zone relays are connected to fire detection loop— Connect ground to screw terminal of one of the connecting blocks in fire detection loop.	Emergency alarm bells sound.
4b	◆If zone relays are connected to loop to commercial fire detecting equipment— Connect ground to ZR punching in zone alarm relay casing.	Emergency alarm bells sound.
5	Remove ground which was applied in Step 3A or 4B.	Emergency alarm bells silenced.◆
6a	If zone relays are connected to fire detection loop— Connect battery to screw terminal of one of the connecting blocks in fire detection loop. <i>Note:</i> Connect 24 volts with SD-90641-01 or 48 volts with SD-96052-01 obtained from test battery supply or from circuit side of 1-1/3 ampere fuse.	Emergency alarm bells sound.
7b	◆If zone relays are connected to loop to commercial fire detecting equipment— Connect battery to ZT punching in zone alarm relay casing.	Emergency alarm bells sound.
8	Remove battery which was applied in Step 6a or 7b.	Emergency alarm bells silenced.◆
9	Remove ground from contact of ZR relay.	
10	◆Insulate the following contacts, depending on the SD and figure used. Sd-90641-01— Fig. 13, 1B and 2B, of ZR relay. Fig. 16, 4B, 5B, 6B, 7B of ZT relay. Fig. 17, 4B, 5B, 7B, 8B of ZT relay. SD-96052-01— Fig. 8, 1B and 2B of ZR relay. Fig. 14, 7T, 8T, 5B 6B of ZT relay.	Ventilating fans shut down.
11	Remove insulators from ZR or ZT relays.	Ventilating fans running.◆
12	Remove blocking tool from D0 relay.	

C. Incoming Alarm Circuit from Distant Office

- 1 Ground the following contacts, depending on the SD and figure used. See 1.05.

STEP	ACTION	VERIFICATION
	SD-90641-01— Fig. 13, 2B of ZR relay. Fig. 16, 4B or 6B of ZR relay. Fig. 17, 7B of ZR relay.	
	SD-96052-01— Fig. 8, 2B of ZR relay. Fig. 14, 5B of ZR relay.	
2	At MDF— Short-circuit tip and ring conductors from distant office.	D0 pilot lamp lights, if provided. Emergency alarm bells sound.
3	Remove short circuit from tip and ring conductors.	D0 pilot lamp extinguished. Emergency alarm bells silenced.
4	Remove ground from contact of ZR relay.	
D. Outgoing Alarm Circuit to Distant Office		
1	Notify distant office that a test of alarm circuit is to be made, and have DP relay blocked operated in the incoming alarm circuit.	
2	Connect ground to tip conductor of pair to distant office.	Emergency alarm bells sound. ODO lamp lights, if provided, in annunciator control circuit. Major alarm sounds.
3	Remove ground from tip conductor.	Emergency alarm bells silenced. ODO lamp extinguished. Major alarm silenced.
4	Connect 24-volt battery with SD-90641-01 or 48-volt battery with SD-96052-01 to ring conductor of the same pair.	Same as Step 2.
	Note: Where SD-90641-01 or SD-96052-01 has been modified for long range operation to a distant office, use +130 volt battery in making this test.	
5	Remove battery from ring conductor.	Same as Step 3.
6	Connect ground to ring conductor of pair to distant office.	Same as Step 2.
	Note: Check with distant office to verify that signal was received. D1 relay operates.	
7	Remove ground from ring conductor.	Same as Step 3.

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STEP	ACTION	VERIFICATION
8	Connect 24-volt battery with SD-90641-01 and 48-volt battery with SD-96052-01 to tip conductor of pair to distant office. <i>Note:</i> Where SD-90641-01 or SD-96052-01 has been modified for long range operation to a distant office, use +130 volt battery when making this test.	Same as Step 2. <i>Note:</i> Check with distant office to verify that signal was received. D1 relay operates.
9	Remove battery from tip conductor.	Same as Step 3.
10	Notify distant office that test is concluded and to remove blocking tool from DP relay.	
E. Maintenance Alarm Circuit		
1	Connect ground to 6 punching at terminal strip on unit.	M lamp lighted. Emergency alarm bells sound. <i>Note:</i> In some panel type offices, AP lamp is also lighted.
2	Remove ground from 6 punching.	All lamps extinguished. Emergency alarm bells silenced.
3	Connect battery to 5 punching at terminal strip on unit. <i>Note:</i> Connect 24 volts with SD-90641-01 or 48 volts with SD-96052-01 obtained from test battery supply or from circuit side of 1-1/3 ampere fuse.	M lamp lighted. Emergency alarm bells sound. <i>Note:</i> In some panel type offices, AP lamp is also lighted.
4	Remove battery from 5 punching.	All lamps extinguished. Emergency alarm bells silenced.