

**DISTRIBUTION FUSE, INDIVIDUAL, AUDIBLE
AND VISUAL ALARM CIRCUIT SD-56230-01
FOR USE WITH TD RADIO SYSTEMS**

1. GENERAL

1.01 This section describes a method of testing the fuse alarms, individual alarms, local audible and visual alarms and alarm control circuits for use with TD radio systems shown on SD-56230-01.

1.02 The tests and the features tested are:

(A) Local Audible Alarm Switching Circuit

This test checks:

- (a) Signals given when ALM key is in OFF position
- (b) Signals given when ALM key is in ON position.

(B) 24V Signal, 24V ABS, 130V ABS or Plate, 250V Plate, 12V Distribution Fuse and Circuit Breaker Alarms

This test checks:

- (a) Operation of fuse alarm relays
- (b) Operation of local audible and visual alarms
- (c) Operation of A relays in station alarm sending circuit.

(C) 24V Alarm Battery Failure Alarm

This test checks:

- (a) Operation of local audible and visual alarms
- (b) Transfer to 24V signal battery.

(D) Room Thermostat's Individual Alarm

This test checks:

- (a) Operation of local audible and visual alarms

(b) Operation of A relays in station alarm sending circuit

(c) Operation of alarm cutoff.

(E) Waveguide Gas Pressure or Dynamic Air Pressure Individual Alarm

This test checks:

- (a) Operation of local audible and visual alarms
- (b) Operation of A relays in station alarm sending circuit
- (c) Operation of alarm cutoff.

(F) Open Door Individual Alarm

This test checks:

- (a) Operation of local visual alarm
- (b) Operation of A relays in station alarm sending circuit.

(G) Oven Temperature Individual Alarm

This test checks:

- (a) Operation of local audible and visual alarms
- (b) Operation of A relays in station alarm sending circuit
- (c) Operation of alarm cutoff.

(H) Channel Individual Alarm Control Circuit

This test checks:

- (a) Timing intervals
- (b) Operation of local audible and visual alarms
- (c) Operation of A relays in station alarm sending circuit.

- (d) Operation of alarm cutoff
- (e) Operation of sensitrol re-set.

(I) Obstruction Lighting Alarm Circuit Without Side Lamp, Distinctive Flasher Failure Alarms and Alarm Cutoff

This test checks the operation of the local audible and visual alarms and of A relays in station alarm sending circuit when:

- (a) One top lamp is extinguished
- (b) Both top lamps are extinguished
- (c) Flasher fails.

(J) Obstruction Lighting Alarm Circuit With Side Lamp, Distinctive Flasher Failure Alarms and Alarm Cutoff

This test checks:

- (a) Operation of local audible and visual alarms and of A relays in station alarm sending circuit when:
 - (1) One top lamp is extinguished
 - (2) Both top lamps are extinguished
 - (3) Flasher fails with lamps extinguished
 - (4) Flasher fails with lamps lighted
 - (5) Side lamps are extinguished
- (b) Operation of alarm cutoff.

(K) Tube Cooling Blower Failure Alarm

This test checks:

- (a) Operation of d-c blower
- (b) Effect of pressure failure
- (c) Operation of alarm cutoff
- (d) Operation of alarm release.

1.03 The tests on the obstruction lighting circuit should not be made at a time when extinguishing the lamps may endanger air navigation.

1.04 When performing test (A), an assistant is required in the other floors in the building to which the alarm indications are transferred when the radio station is unattended.

1.05 The tests covered herein assume the use of distinctive audible alarms. Where a non-distinctive alarm is provided, substitute this alarm for the major and minor alarms shown in the Test Table.

1.06 In performing tests requiring the operation of relays, the relays should be operated manually unless otherwise specified.

2. APPARATUS

2.01 The apparatus required for each test is shown in the following list. The details for each item are covered in the indicated paragraphs.

Apparatus	No. Required for Tests						
	(A)	(B)	(C)	(D)	(E)	(G)	(H) (J)
Voltmeter (2.02)	-	-	1	-	-	-	-
Timer (2.03)	-	-	-	-	-	-	1
Testing Cord (2.04)	1	-	-	1	1	1	-
Testing Cord (2.05)	-	-	1	-	-	-	1
Testing Cord (2.06)	-	-	1	-	-	-	1
Testing Cord (2.07)	-	-	-	-	-	-	1
Testing Cord (2.08)	-	1	1	-	-	-	-
Testing Cord (2.09)	-	1	-	-	-	-	-

2.02 Weston model 1 d-c voltmeter 150 volt scale.

2.03 S1 timer (Standard Electric Time Co.) with 24V clutch.

2.04 No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B), one No. 365 tool and one No. 419A tool (for use in establishing test connections between ground and relay springs or terminals.)

2.05 No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B), one No. 364 tool and one No. 365 tool (for use in establishing test connections between the voltmeter or clutch and terminals.)

2.06 No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B), one No. 364 tool and one No. 419A tool (for use in establishing test connections between the voltmeter or clutch and relay springs or terminals.)

2.07 No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B) and two No. 419A tools (for use in establishing test connections between relay springs.)

2.08 WIAF cord equipped with two No. 360A tools, one No. 365 tool and one

No. 419A tool (for use in establishing test connections between battery and relay terminals.)

2.09 WIAF cord equipped with two No. 360A tools and two No. 365 tools (for use in establishing test connections between circuit terminals.)

3. METHOD

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>Preparation for All Tests</u>		
1	Block operated P3 relay in station alarm sending circuit	
2	Operate ALM switch to ON	AG, ML lamps lighted
<u>(A) Local Audible Alarm Switching Circuit</u>		
3	Momentarily operate R relay in order wire circuit	Incoming signal buzzer sounded
4	Operate ALM switch to OFF	AG, ML lamps extinguished Incoming signal buzzer silenced
5	Connect ground to 2T of LA1 relay	In each of other floors in same building where alarm appears: Floor pilot lamps lighted Minor audible alarms sounded
6	Disconnect ground from 2T of LA1 relay	Floor pilot lamps extinguished Minor audible alarms silenced
7	Connect ground to 4B of LA1 relay	In each of other floors in same building where alarm appears: Floor pilot lamps lighted Major audible alarm sounded
8	Disconnect ground from 4B of LA1 relay	Floor pilot lamps extinguished Major audible alarm silenced
9	Remove blocking tool from P3 relay	
<u>(B) 24V Signal, 24V ABS, 130V ABS or Plate, 240V Plate, 12V Distribution Fuse and Circuit Breaker Alarms</u>		
3	Momentarily connect battery to each fuse alarm bar in turn for each equipment group of fuse mountings and for each voltage except 250V	Minor or major audible alarm sounds momentarily
4	Block operated an FA1 relay	ALM SMD SIG or MISC BAY SIG lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A22 relay in station alarm sending circuit operated
5	Remove blocking tool from FA1 relay	ALM SMD SIG or MISC BAY SIG lamp extinguished Floor pilot lamps extinguished Minor audible alarm silenced

SECTION 201-637-501

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
6	Momentarily operate AG relay in indication sending circuit	A22 relay in station alarm sending circuit released
7	Repeat test steps 4 to 6 for all other FA1 relays	
8	Block operated AB relay	ALM SND ABS or MISC BAY ABS lamp lighted Floor pilot lamps lighted Major audible alarm sounded A21 relay in station alarm sending circuit operated
9	Remove blocking tool from AB relay	ALM SND ABS or MISC BAY ABS lamp extinguished Floor pilot lamps extinguished Major audible alarm silenced
10	Momentarily operate AG relay in indication sending circuit	A21 relay in station alarm sending circuit released
11	Repeat test steps 8 to 10 for all other AB relays	
12	Block operated FA2 relay	FA, ALM SND ABS, IF PATCH 1-2, MON BAY, FM TERM 1-2, FM TERM 3-4 or MISC BAY SIG lamp lighted Floor pilot lamps lighted Major audible alarm sounded A20, A21 or A22 relay in station alarm sending circuit operated
13	Remove blocking tool from FA2 relay	Lamps lighted in step 12 extinguished Major audible alarm silenced
14	Momentarily operate AG relay in indication sending circuit	A20, A21 or A22 relay in station alarm sending circuit released
15	Repeat test steps 12 to 14 for all other FA2 relays	
16	Connect 24V battery to 5B of FA3 relay	FA, MON BAY, FM TERM 1-2 or FM TERM 3-4 lamp lighted Floor pilot lamps lighted Major audible alarm sounded A20 relay in station alarm sending circuit operated
17	Remove battery from 5B of FA3 relay	Lamps lighted in step 16 extinguished Major audible alarm silenced
18	Momentarily operate AG relay in indication sending circuit	A20 relay in station alarm sending circuit released
19	Repeat test steps 16 to 18 for all other FA3 relays	
20	Momentarily connect terminal 3 of terminal strip TS2 to terminal 5 of terminal strip TS1 at each FM transmitter in turn	Major audible alarm sounds momentarily
21	Momentarily connect terminals 3 and 4 of terminal strip TS1 at each FM receiver in turn	Major audible alarm sounds momentarily
22	Momentarily operate each BC0 key	BG lamp lights momentarily

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
23	Momentarily connect terminal 3 of terminal block TB1 to terminal 6 of terminal block TB2 at each radio transmitter-receiver bay in turn	Major audible alarm sounds momentarily
24	Block operated FA4 relay	FA, FM TERM 1-2, FM TERM 3-4, IF PATCH 1-2, or MON BAY lamp lighted Floor pilot lamps lighted Major audible alarm sounded A20 relay in station alarm sending circuit operated
25	Remove blocking tool from FA4 relay	Lamps lighted in step 24 extinguished Major audible alarm silenced
26	Momentarily operate AG relay in indication sending circuit	A20 relay in station alarm sending circuit released
27	Repeat test steps 24 to 26 for all other FA4 relays	
28	Remove blocking tool from P3 relay	

(C) 24V Alarm Battery Failure Alarm

3	Connect 24V battery to 10B of BF relay	FA lamp lighted in 24V charge and discharge circuit ALM SND ABS lamp lighted Floor pilot lamps lighted Major audible alarm sounded BF1 relay operated
4	Connect ground to positive terminal of voltmeter	
5	Connect momentarily negative terminal of voltmeter to 5B of BF relay, to 8B of BF relay, to 4B of BF1 relay, to 7B of BF1 relay in turn	Voltage is 20 to 28 volts
6	Disconnect ground from voltmeter	
7	Disconnect battery from 10B of BF relay	Lamps lighted in step 3 extinguished Major audible alarm silenced BF1 relay released
8	Remove blocking tool from P3 relay	

(D) Room Thermostat's Individual Alarm

3	Connect ground to 1B of A1 relay associated with circuit under test	ROOM TEMP lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A38 relay in station alarm sending circuit operated
4	Momentarily operate ACO key	Floor pilot lamps extinguished Minor audible alarm silenced
5	Disconnect ground from 1B of A1 relay	ROOM TEMP lamp extinguished
6	Momentarily operate AG relay in indication sending circuit	A38 relay in station alarm sending circuit extinguished
7	Remove blocking tool from P3 relay	

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>(E) Waveguide Gas Pressure or Dynamic Air Pressure Individual Alarm</u>		
3	Connect ground to 1B of A1 relay associated with circuit under test	W.G. Gas Fail lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A39 relay in station alarm sending circuit operated
4	Momentarily operate ACO key	Floor pilot lamps extinguished Minor audible alarm silenced
5	Disconnect ground from 1B of A1 relay	W.G. Gas Fail lamp extinguished
6	Momentarily operate AG relay in indication sending circuit	A39 relay in station alarm sending circuit released
7	Remove blocking tool from P3 relay	
<u>(F) Open Door Individual Alarm</u>		
3	Open a door equipped with door switch	OPEN DOOR lamp lighted A36 relay in station alarm sending circuit operated
4	Close door	OPEN DOOR lamp extinguished
5	Repeat test steps 3 and 4 for all other doors equipped with door switches	
6	Momentarily operate AG relay in indication sending circuit	A36 relay in station alarm sending circuit released
7	Remove blocking tool from P3 relay	
<u>(G) Oven Temperature Individual Alarm</u>		
3	Connect ground to terminal 7 of TB2 terminal block in radio transmitter-receiver bay	OVEN TEMP lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A37 relay in station alarm sending circuit operated
4	Momentarily operate ACO key	Floor pilot lamps extinguished Minor audible alarm silenced
5	Disconnect ground from terminal 7 of TB2 terminal block	OVEN TEMP lamp extinguished
6	Momentarily operate AG relay in indication sending circuit	A37 relay in station alarm sending circuit released
7	Remove blocking tool from P3 relay	
<u>(H) Channel Individual Alarm Control Circuit</u>		
3	Connect S1 timer to 110V a-c supply	
4	Connect 24V battery to negative terminal of timer clutch	
5	Connect positive terminal of timer clutch to 2T of G relay	

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
6	Operate ST relay and hold operated	Timer starts
7	Release ST relay when timer stops	Interval measured by timer is 3.8 to 8.8 seconds
8	Remove 24V battery from negative terminal of timer clutch	
9	Disconnect positive terminal of timer clutch from 2T of G relay	
10	Connect ground to positive terminal of timer clutch	
11	Connect negative terminal of timer clutch to 5B of T1 relay	
12	Operate ST relay and hold operated	Timer starts
13	Release ST relay after timer stops	Interval measured by timer is 0.9 to 1.9 seconds
14	Disconnect S1 timer connections	
15	Remove 358A plug from J1 jack for one of the channels at the OUTPUT MONITOR panel	CHANNEL LOW OUTPUT lamp lighted Floor pilot lamps lighted Major audible alarm sounded Associated A1-A18 relays in station alarm sending circuit operated
16	Momentarily operate ACO key	Floor pilot lamps extinguished Major audible alarm silenced
17	Insert 358A plug in J1 jack	
18a	If station is equipped for sending alarms, momentarily operate F1 and P4 relays in indication sending circuit	CHANNEL LOW OUTPUT lamp extinguished
19b	If station is not equipped for sending alarms and has no SR key, momentarily operate RESET key in transmitter control circuit	CHANNEL LOW OUTPUT lamp extinguished
20c	If station is not equipped for sending alarms and is equipped with SR key, momentarily operate SR key	CHANNEL LOW OUTPUT lamp extinguished
21	Repeat test steps 15 to 20 for all other channels	
22	Momentarily operate AG relay in indication sending circuit	A1-A18 relays in station alarm sending circuit released
23	Remove blocking tool from P3 relay	
<u>(I) Obstruction Lighting Alarm Circuit Without Side Lamp, Distinctive Flasher Failure Alarms and Alarm Cutoff</u>		
3	Operate TST or TST A switch in obstruction lighting circuit	LPA OFF lamp lighted Floor pilot lamps lighted Minor audible alarm sounded within interval of 9 to 12 minutes T1 and T2 time delay relays operated A24 relay in station alarm sending circuit operated

SECTION 201-637-501

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
4	Operate TST B switch, LINE TOP switch or TWR LTG LINE switch in obstruction lighting circuit	LPB OFF lamp lighted Major audible alarm sounded Minor audible alarm silenced A23 relay in station alarm sending circuit operated
5	Release switches operated in steps 3 and 4	LPA OFF lamp extinguished LPB OFF lamp extinguished Floor pilot lamps extinguished Major audible alarm silenced
6	Momentarily operate AG relay in indication sending circuit	A23, A24 relays in station alarm sending circuit released
7	Block operated L2, L3 relays	LPB OFF lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A24 relay in station alarm sending circuit operated
8	Remove blocking tool from L2 relay	LPB OFF lamp extinguished Floor pilot lamps extinguished Minor audible alarm silenced
9	Operate TST F switch if provided in obstruction lighting circuit	LPA, LPB lamps lighted
10	Release TST F switch	LPA, LPB lamps extinguished
11	Remove blocking tool from L3 relay	
12	Momentarily operate AG relay in indication sending circuit	A24 relay in station alarm sending circuit released
13	Remove blocking tool from P3 relay	

(J) Obstruction Lighting Alarm Circuit With Side Lamp, Distinctive Flasher Failure Alarms and Alarm Cutoff

3	Operate TST or TST A switch in obstruction lighting circuit	T1, T2 time delay relays operated LPA OFF lamp lighted Floor pilot lamps lighted Minor audible alarm sounded within interval of 9 to 12 minutes A24 relay in station alarm sending circuit operated
4	Momentarily operate ACO key	Floor pilot lamps extinguished Minor audible alarm silenced
5	Connect 3T to 9T of L3 relay	
6	Operate TST B switch, LINE TOP switch or TWR LTG LINE switch in obstruction lighting circuit	Major audible alarm sounded LPB OFF lamp lighted Floor pilot lamps lighted A23 relay in station alarm sending circuit operated
7	Momentarily operate ACO key	Floor pilot lamps extinguished Major audible alarm silenced
8	Release switches operated in steps 3 and 6	LPA, LPB lamps extinguished

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
9	Momentarily operate AG relay in indication sending circuit	A23, A24 relays in station alarm sending circuit released
10	Block operated L2 relay	LPB OFF lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A24 relay in station alarm sending circuit operated
11	Remove blocking tool from L2 relay	LPB OFF lamp extinguished Floor pilot lamps extinguished Minor audible alarm silenced
12	Operate TST F switch in obstruction lighting circuit	FLASH FAIL lamp lighted Floor pilot lamp lighted Major audible alarm sounded A23 relay in station alarm sending circuit operated
13	Momentarily operate ACO key	Floor pilot lamps extinguished Major audible alarm silenced
14	Release TST F switch	FLASH FAIL lamp extinguished
15	Momentarily operate AG relay in indication sending circuit	A23, A24 relays in station alarm sending circuit released
16	Operate TST G switch in obstruction lighting circuit	FLASH FAIL lamp lighted Floor pilot lamps lighted Major audible alarm sounded Associated A relay in station alarm sending circuit operated
17	Momentarily operate ACO key	Floor pilot lamps extinguished Major audible alarm silenced
18	Release TST G switch in obstruction lighting circuit	FLASH FAIL lamp extinguished
19	Momentarily operate AG relay in indication sending circuit	Associated A relay in station alarm sending circuit released
20	Operate TST S1 switch in obstruction lighting circuit	SIDE FAIL lamp lighted Floor pilot lamps lighted Minor audible alarm sounded A24 relay in station alarm sending circuit operated
21	Momentarily operate ACO key	Floor pilot lamps extinguished Minor audible alarm silenced
22	Release TST S1 switch	SIDE FAIL lamp extinguished
23	Momentarily operate AG relay in indication sending circuit	A24 relay in station alarm sending circuit released
24	Repeat test steps 20 to 23 for all other side light circuits	
25	Remove connection between 3T and 9T of L3 relay	
26	Remove blocking tool from P3 relay	

SECTION 201-637-501

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>(K) Tube Cooling Blower Failure Alarm</u>		
3	Operate AC FAIL TST switch	D-c blower started after approximately 8 seconds
4	Release AC FAIL TST switch	D-c blower stopped after approximately 8 seconds
5	Operate PRESS FAIL TST switch	BLO FAIL, AIR FAIL lamps lighted after approximately 15 seconds Floor pilot lamps lighted Major audible alarm sounded TH, TH1, LU, LU1 relays operated D-c blower started A40, A41 relays in station alarm sending circuit operated
6	Momentarily operate ACO key	Floor pilot lamps extinguished Major audible alarm silenced
7	Release PRESS FAIL TST switch	AIR FAIL lamp extinguished
8	Momentarily operate AG relay in indication sending circuit	A41 relay in station alarm sending circuit released
9	Momentarily operate RLS switch	BLO FAIL lamp extinguished D-c blower stopped
10	Momentarily operate AG relay in indication sending circuit	A40 relay in station alarm sending circuit released
11	Remove blocking tool from P3 relay	