

DISTRICT JUNCTOR TEST CIRCUIT
MISCELLANEOUS TESTS

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1. GENERAL INFORMATION

1.1 Description of Test: This section describes a method of checking the timing circuits, making resistance measurements and miscellaneous tests on the district junctor test circuit SD-25158-01.

2. RECORDS

2.1 ID-1313 and ID-1315 trouble records are required to record the results of these tests. For further information on records see Section 3 of Handbook 50.

3. TEST EQUIPMENT

3.1 Test Sets Required

<u>Amt</u>	<u>Code</u>	<u>Description</u>	<u>With ITE</u>
1	ITE-1883	Wheatstone Bridge	
	or		
1	ITE-4442	Volt-Ohmmeter	
1	ITE-4145	Sl Timer	
1	R-1824	Portable Pencil Lamp	/4023
1	R-9572	Test Receiver	/4023
1	4029	Pulse Checking Set	
1	8253	Contact Protection Test Set	/4023

3.2 Cords and Plugs Required

<u>Amt</u>	<u>ITE</u>	<u>Lgth</u>	<u>Cdrs</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
2	9601	12'	3	110 Plug	110 Plug	/4023
1	9639	12'	3	310 Plug	Banana Plugs	/4023
2	258C			Plugs		

/ Crossbar Test Accessory Kit

4. RESISTANCE MEASUREMENTS

Using the Wheatstone Bridge ITE-1883 or Volt-Ohmmeter ITE-4442 as described in Section 2 of Handbook 50, check resistance paths as follows:

<u>Dwg. Fig.</u>	<u>Wir- ing</u>	<u>Resistance</u>	<u>Purpose</u>	<u>Connections</u>		<u>Relays Blocked Operated</u>	<u>Res. Measurement</u>		
				<u>X1</u>	<u>X2</u>		<u>Rated</u>	<u>Min.</u>	<u>Max.</u>
5	X	AB, 260 ohm wdg. AA & Z in par. with L, M, N, 2140 ohm wdg. P & R	0 (S) Non-Coin D.J.	Pchg. 1 T.S. for (G) 0-9 rel.	Pchg. 2 T.S. for (G) 0-9 rel.	TR1, OS, & DT1	1983	1963	2003
5	X	L, M, N, 2140 ohm wdg. P & R	R (S) Non-Coin D.J.	"	"	TR1, OS, DT1 & RS	6640	6584	6696
5	X, AA	U, W, X, & Y in par. with L, M, T & S	0 (S) Coin D.J.	"	"	TR1, OS, DT1 & RCN	1630	1616	1646
5	X, AA	L, M, T & S	R (S) Coin D.J.	"	"	TR1, OS, DT1, RS, RCN	4625	4579	4671
5	X, BB	U & W in par. with L, M, T	0 (S) Coin D.J.	"	"	TR1, OS, DT1, RCN	1235	1223	1247
5	X, BB	L, M, T	R (S) Coin D.J.	"	"	TR1, OS, DT1, RS, RCN	3740	3698	3772
5	X	AC in parallel with AE, AF	0 (S) Non-Coin D.J.	"	"	TR1, OS, DT1, UA,	3030	3000	3060

Dwg. Fig.	Wiring	Resistance	Purpose	Connections		Relays Blocked Operated	Res. Rated	Measurement	
				X1	X2			Min.	Max.
5	X	AE, AF	R (S) Non-coin DJ	Pchg. 1 T.S. for (G) 0-9 rel.	Pchg. 2 T.S. for (G) 0-9 rel.	TR1, OS, DT1, RS & UA	9734	9634	9834
5	X	L, M, AG in parallel with Z, AA, AB, AH	0 (S) Coin D.J.	"	"	TR1, OS, DT1, UAC	1790	1783	1807
5	X	L, M and AG	R (S) Coin D.J.	"	"	TR1, OS, DT1, RS, UAC	4795	4747	4843
5		K & V	Dial Loop	"	"	TR1, DT1 & PU	1600	1584	1616
7		M & N	0 (LT) Coin D.J.	Pchg. 1 T.S. for (G) 0-9 rel.	Grd.	TR1, ST & LT. Operate Keys OLT & CN-CON	4885	4836	4934
7		K, L, M & N	NO (LT) Coin D.J.	"	"	TRL, ST & LT. Operate keys NO-LT & CN-CON	6855	6786	6924
7		2140 ohm wdg. of H Res. & wdg. of TCB relay	0 (CB) Coin D.J.	"	1 & 2T contact of DSC relay	TR1 & CB. Operate OCB key	2590	2534	2646
7		H & J & wdg. of TCB relay	NO (CB) Coin D.J.	"	"	TR1 & CB. Operate NO CB key	4158	4087	4229
5	Z	F & G	R (CS)	Pchg. 63 MISC TS	Pchg. 73 MISC TS	Insulate B contact of BB Int.	319000	315800	322200
5	ZI	F	"	"	"	"	100600	99600	101600
5	ZJ	C, D & 1/2E	0 (CS)	48 CB relay	"	"	9521	9426	9616
5	ZH	C, D, J	0 (CS)	"	"	"	6600	6534	6666
5	XR	C, D, AJ	0 (CS)	"	"	"	7881	7797	7965
C		★C1 to C7	AMA	TOP C1 Res.	BOT. C7 Res.		1052	1041	1063
C		★S1 to S3	"	TOP S1 Res.	BOT. S3 Res.		132	131	133
C		★G1 to G5	"	TOP G1 Res.	BOT G5 Res.		1150	1138	1161
C		★G6 to G8	"	TOP G6 Res.	BOT G8 Res.		132	131	133
C		TRS	"	TOP TRS Res.	BOT TRS Res.		200	198	202
C		E and E1	"	3T MR3 Rel.	#7 TRS Key		1320	1307	1333
C		G	"	5 BOT TC1 Rel	#3 TRS Key		1600	1584	1616
C		B	"	TOP B Res.	BOT B Res.		1400	1386	1414
C		C	"	TOP C Res	BOT C Res		1400	1386	1414

Dwg. Fig.	Wiring	Resistance	Purpose	Connections		Relays Blocked Operated	Res. Measurement		
				X1	X2		Rated	Min.	Max.
C		CAL	AMA	TOP CAL Res	BOT CAL Res		100	99	101
C		F	"	TOP F Res	BOT F Res		2000	1980	2020
C		1/2 of G0	"	4B TC1 Rel	6B TC1 Rel		1300	1287	1313

★See notes 1 & 2 SD-25158-0111

The A,B,C,D,E and F straps should not be installed until these measurements are made. Insert a 258c dummy plug in jack TRS before making these tests.

5. CONTACT PROTECTION

5.1 Verify the contact protection circuits for selectors G, S, H, TA, D, TST and MT using the method described in Handbook 50, Section 2, circuit condition 1. These circuits may be checked any one against the other and connections should be made to the #2 interrupter spring or to the inner winding terminal of the selectors. Interrupter spring must be insulated in checking G, H and S selectors.

5.2 Check contact protection circuit of P relay at terminal 2 per condition 2 of same handbook section.

6. FUSING

NOTE: insulate 3T-4T contacts of relay MCH, before making the check for crossed fuses.

6.1 Using a test receiver check each fuse post for absence of battery and ground.

6.2 Using fuses of correct type as indicated by circuit and equipment drawings install the following fuses one at a time and check that each is associated with the correct circuit and is free from crosses with other unfused circuits.

Fuse	Equipment
A	Winding, Step Magnet TA
B	Winding, Relay BT1, BT2 or BT3
C	Winding, Step Magnet H or S
D	Winding, Step Magnet D or TST
E	Winding, Relay FC or CHG
F	Winding, Relay CD1 or CD2 and winding of TC1 relay if Fig. C is specified
TBS	Test Battery Supply

7. MISCELLANEOUS CIRCUITS

7.1 Check miscellaneous circuits not checked on the tests as follows:

- (1) Test Battery Supply.
- (2) Fuse Alarm. Check that the fuse alarm is not stopped when the FA lamp is burned out or removed.
- (3) Frame Line Circuit.
- (4) Spare Jack (B) to MDF.
- (5) Transmission Test Jack (OS)

7.2 (Coin) Check for absence of ground on 2B of SD relay when the ST key is normal.

8. TEST OF TCS, TCL AND SL JACKS (FIG. C)

8.01 Connect ground through an R-1824 portable pencil lamp to 1B of the BLK relay and it should operate. Insert a 258C plug into the TCL jack, the BLK relay should release. Remove the plug and note that BLK reoperates.

8.02 Insert a 258C plug into the SL jack note that the BLK relay should again release. Remove the plug and it should reoperate.

8.03 Remove the ground from 1B of the BLK relay which should release.

NOTE: When making the following tests the R-1824 lamp can be used for checking direct battery or ground, otherwise a tester's receiver, R-9592, should be used.

8.04 Insert a 258C plug into the TCL jack. Check for the presence of direct ground on 1T of the TBL relay. Remove the plug and the ground should be removed. Insert the plug into the SC jack and repeat this test.

8.05 Check the sleeves of the TCS, TC1 and SL for the absence of battery or ground.

8.06 Insert an R-9639 cord into the TCS jack. Operate and hold the TCC key. Check for the presence of direct battery on the tip of the cords and the CAL resistance. Release the key and this direct battery should be removed.

8.07 Check for the presence of direct ground on 1B of PCH relay, 6B of RG relay and on the ring of the cord. Insulate 1B and 2B of TM2 relay and the ground should be removed from the ring of cord. Remove the insulator from the TM2 relay and the cord from the TCS jack. Check that the ground is removed from the PCH and RG relays.

8.08 Insert the R-9639 cord into the TCL jack. Operate and hold the TCC key. Check the tip of cord and the bottom of the CAL resistance for direct battery. Release the TCC key and this battery should be removed.

8.09 Check for the presence of direct ground at the bottom of the C7 and F resistances and 6B of the RG relay. Remove the cord from the TCL Jack and this ground should be removed.

8.10 Insert the R-9639 cord into the SL jack. Check for direct battery on the tip of cord.

9. TIMING TESTS

9.1 Dial Pulsing Circuit

9.11 Using ITE-9601 cord connect 48 volt-battery to ITE-4029 Pulse Checking Test Circuit. Connect P terminal of test set of 2B of CI relay and PG terminal to 1T of PU relay.

9.12 Calibrate test set. Refer to Handbook 50, Section 5 for instructions covering the operation of the test set.

9.13 Start pulsing by grounding 6T of CI relay. Measure pulses per second and per cent break.

9.14 The requirements are specified on the circuit requirements table.

9.15 Remove the connections made in 9.11.

9.2 Timing M.R. Pulse

9.21 Connect battery and ground to ITE-4029 Pulse Checking Set. Connect P terminal to contact 2T of the TM2 relay.

9.22 Insulate 4 and 7 contacts of MR relay. Block TM2 relay normal. Connect ground to contact 7 of MR relay.

9.23 Connect #70 punching on MISC T.S. to contact 4 of MR relay. TM1 relay should pulse with the PC interrupter.

9.24 Calibrate test set (See Paragraph 9.12).

9.25 Measure pulses per second and per cent break.

9.26 Remove connections between punching 70 and contact 4 of MR relay. Remove insulation from the contacts of MR relay and ground connection from contact 7 of MR relay. Connect P terminal of pulse checking set to #70 punching on MISC T.S. and measure pulse per second and per cent break. (Pulses per second will be same as in 9.25.)

9.27 Compute time as follows:

$\frac{\% \text{ Break Par. 7.26} - \% \text{ Break Para. 7.25}}{100 \times \text{pulses per second}}$

time in fraction of second.

9.28 Requirement: The time shall be Max. 0.200, Min. 0.165 second.

9.3 Timing Test of TM1 and TRS relays

9.31 Connections A, B, C, D, E and F (Figure C) are for the purpose of adjusting the Biasing Resistances which regulate the speed of the condenser timed relays (TM1) and (TRS) needed for checking the adjustments of the district junctor TC, S and SI relays. Notes 1 and 2 of SD-25158-0111 explain in detail the method to be used for regulating the speed of relays (TM1) and (TRS).

10. REGISTERS

NOTE: These registers may be verified during the routine and supplementary tests on the districts, if desired.

Check that:

(a) CT register records the number of district junctor circuits tested (REP key normal).

(b) RST register records the number of repeat tests made on district junctor circuits (REP key operated).

(c) PB register records the number of busy district junctor circuits passed without testing (REP key normal and APB key operated).

(d) ST register records the number of "class of test" test calls (as an LC test or an OPR test).

→ Arrowed lines indicate new or changed information.

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Engineer of Installation

Reason for Reissue:
Add resistance measurement in Paragraph 4.

Replaces Section 121.1 dated 1- 5 56.