2-, 4-, 5-, AND 6-TYPE DIALS

SPEED AND PER CENT BREAK TESTS

1. GENERAL

1.01 This section covers methods of testing the speed of 2-, 4-, 5-, and 6-type switchboard dials by means of a dial testing circuit or a stroboscope, and a method of testing No. 5L and No. 6E dials for per cent break of the pulsing springs using pulse repeating test set per SD-64540-01. J64722A

1.02 This section is reissued to incorporate material from the addendum in its proper location.

1.03 The tests are as follows:

(A) Speed Test Using Local Test Desk Dial Testing Circuit: This test checks the speed of 2-, 4-, 5-, and 6-type dials (see Paragraph 1.05).

(B) Speed Test Using Ringer and Dial Testing Circuit: This test checks the speed of 2-, 4-, 5-, and 6-type dials (see Paragraph 1.05).

(C) Speed Test Using Stroboscope: This test checks the speed of 2-, 4-, 5-, and 6-type dials (see Paragraph 1.05).

(D) Test for Per Cent Break of Pulsing Springs: This test checks the per cent break of the No. 5L and the No. 6E dials when used on toll testboards, toll test sets, toll test panels, switchboards associated with intertoll dialing, and switchboards dialing into tandem networks.

1.04 Tests (A), (B), and (C) are optional tests.

1.05 No methods have been established for checking dial speeds of the No. 6F and No. 6G dials.

1.06 If the dials do not meet the test requirements in Tests (A), (B), and(C), proceed as outlined in Section 028-300-701.

If the dials do not meet the test requirements in Test (D), replace the dials. Replace all 6-type dials that do not meet the requirements in any of the tests.

1.07 Lettered Steps: The letters a, b, c, etc, are added to a step number to indicate that the step covers an action which may or may not be required. The conditions under which a lettered step or series of steps should be made are given in the action column and all steps governed by the same conditions are designated by the same letter. Where a test condition does not apply, the associated step should be omitted.

2. EQUIPMENT AND APPARATUS

Test (A)

2.01 Local Test Desk Dial Testing Circuit.

Test (B)

2.02 Ringer and Dial Testing Circuit.

Test (C)

2.03 No. 11A Tuning Fork.

2.04 No. 2A Target.

2.05 No. 2B Target.

Test (D)

2.06 Pulse Repeating Test Set per J64722A (SD-64540-01).

2.07 One P2J Cord equipped with two No. 310 Plugs (2P9A).

2.08 KS-6854 Screwdriver.

3. PREPARATION

TESTS (A) AND (B)

STEP	ACTION	VERIFICATION
1a	If the cord circuits are arranged with a lockout feature which prevents the dial from being connected into the cord circuit a second time on the same connection, provide a line for testing purposes by connecting the tips and rings of two adjacent spare OGT jacks together (tip to tip and ring to ring) and then to the tip and ring of a spare line relay circuit. Connect the sleeves of the two OGT jacks together and then to ground through a spare high resistance sleeve circuit. The pair of OGT jacks should be designated "Dial Speed Test Line."	
2b	If the circuits do not permit the connection from regular dial trunks to the station ringer and dial test circuit or to the local test desk test line, provide a line for testing purposes by connecting the tip and ring of a spare OGT jack to the tip and ring of a spare line relay circuit. Connect the sleeve of the OGT jack to ground through a spare high resistance sleeve circuit. The OGT jack should be designated "Dial Speed Test Line."	
3	Connect the head telephone set to the telephone jacks of the position from which the test is to be made.	
4	Exercise the dial by dialing "0" three times.	
5	Insert the plug of an idle cord into the jack of the circuit to be used for testing.	

4. METHOD

STEP	ACTION	VERIFICATION
	(A) Speed Test Using Local Test Desk Dial Testing Circuit	
6	**Establish a connection to the local test desk using the local operating methods that apply (see Paragraph 1.05).** Note: When DIAL and TALK jacks are used, insert the cord of the circuit with which the dial is associated into the DIAL jack and insert another idle cord, with the talking key operated, into the TALK jack.	Test deskman answers.
7	Advise the test deskman that a dial speed test is desired.	Dial tone heard.

STEP	ACTION	VERIFICATION
8	Arrange the cord circuit for dialing according to the local operating method that applies, and dial "0".	
9	Repeat Step 8 at least once, allowing a pause between each set of "0" pulses to permit the test deskman to reset the dial tester.	
10	Arrange the cord circuit for talking according to the local operating method that applies.	Test deskman reports results of the test.
11	Restore the cord circuit to normal and remove the head telephone set from the position.	

(B) Speed Test Using Ringer and Dial Testing Circuit

6	**Arrange the cord circuit for dialing in accordance with local operating methods and dial the "ringer and dial testing circuit" code number (see Paragraph 1.05).**	Dial tone heard.
7	**Dial digit "2" for 8 to 11 pulses per second dials, dial digit "3" for 9.5 to 10.5 pulses per second dials, and dial digit "4" for 16 to 20 pulses per second dials (see Paragraph 1.05).**	Dial tone heard.
8	Dial digit "0".	Tone is heard as follows: Speed of dial OK - ringing induction. Speed of dial fast - rapidly interrupted tone. Speed of dial slow - slowly interrupted tone.
9	Repeat Steps 7 and 8 at least once.	
10	Restore the cord circuit to normal and remove the head telephone set from the position.	

(C) Speed Test Using Stroboscope

1	**Mount the 2A or 2B target (see note) with the test values face up on dial as described in Section 028-300-701.** Note: The 2A target is used for testing 2-, 4-, 5-, and 6-type dials except for the No. 5L or the No. 6E dials when used on toll testboards, toll test sets, toll test panels, switchboards associated with inter-toll dialing, and switchboards dialing into tandem networks, in which case the 2B target is used.	
2	Slide cover forward on 11A tuning fork.	

STEP	ACTION	VERIFICATION
3	Wind dial by means of the knob on the target and sight the spot on the target.	
4	Press button on tuning fork and release dial.	Observe apparent movement of the two rows of divisions on target. If the two rows of divisions appear to rotate in opposite directions (directions indicated by arrows) dial speed is within limit indicated on target. If inside row of divisions (labeled MAX) appears to stand still or to rotate in counterclockwise direction (opposite to direction indicated by arrow) dial speed is at or above its maximum speed limit. If outside row of divisions (labeled MIN) appears to stand still or to rotate in a clockwise direction (opposite to direction indicated by arrow) dial speed is at or below its minimum speed limit.

(D) Test for Per Cent Break of Pulsing Springs

1	Connect BAT jack of pulse repeating test set to 48V battery supply jack using P2J cord.	
2	Remove dial to be tested from switchboard and place it in connecting block of pulse repeating test set.	
3	Check the per cent break meter for zero current setting (100 on the scale) and if necessary, turn the zero adjuster screw, using a KS-6854 screwdriver, until the pointer indicates zero current and then back off the screw slightly.	
4	Operate PLS-CK key, operate and hold the ADJ key operated, and by means of the ADJ potentiometer adjust the current until the per cent break meter reads "0" on the scale. Note: Step 4 should be rechecked from time to time during testing to maintain "0" setting.	
5	Release ADJ key.	
6	Operate MIN key.	
7	Adjust the MIN potentiometer until the per cent break meter reads 59.5% for No. 5L dials or 61% for No. 6E dials.	
8	Operate MAX key.	
9	Adjust the MAX potentiometer until the per cent break meter reads 67.5% for No. 5L dials or 67% for No. 6E dials.	

STEP	ACTION	VERIFICATION
10	Dial "0". Note: It may be necessary to dial "0" several times in order to accurately observe the movement of the per cent break meter needle.	Disregarding a possible slight kick at the beginning or end of the pulse train, the meter reading should either remain stationary or show a tendency to fall. If it shows a tendency to rise, the dial has a per cent break of more than the specified maximum.
11	Operate MIN key.	
12	Dial "0".	Disregarding a possible slight kick at the beginning or end of the pulse train, the meter reading should either remain stationary or show a tendency to rise. If it shows a tendency to fall, the dial has a per cent break of less than the specified minimum.