COMMON SYSTEMS
DIAL TONE SPEED INDICATING CIRCUIT
FOR USE IN DIAL OFFICES

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Prior to this issue no equipment designation was shown in the title box and it was shown on first line of ckt. reg. table as (DT SPEED IND).

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-MHK-RLL-AB

COMMON SYSTEMS
DIAL TONE SPEED INDICATING CIRCUIT
FOR USE IN DIAL OFFICES

CHANGES

B. CHANGES IN APPARATUS

B.1 Removed

U901 Relay (D)
18AM Resistance (B)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Relay (D) and resistance (B) are removed and are shown on the associated dial tone speed register circuit since a change in the functions of the dial tone speed register circuit made this shift in apparatus more economical.

D.2 The lamps in Fig. 3 were designated A2 to A6 and B2 to B6.

D.3 The keys in Figs. B and C were designated A.

D.4 "See Note 104" is added at arcs B4 and T4.

D.5 The circuit rating was "AT&TCo. Provisional".

All other headings under "Changes", No change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is for use in giving a visual indication as to the number of subscriber originated calls which must wait more than three seconds before receiving dial tone.

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.01 To start circuit under control of a start key.

3.02 To render start key ineffective unless selectors are normal.

3.03 To start the associated dial tone speed register circuit.

3.04 To light a white or green lamp to indicate the particular test cycle at any particular time.

3.05 To light a white lamp to indicate the progress of any particular test cycle.

3.06 To light a lamp to indicate when a test call does not receive dial tone within three seconds.

3.07 To keep the indicating lamp of any previous test cycle lighted while testing on a succeeding cycle.

3.08 To extinguish the indicating lamp of any preceding cycle when returning to that group of indicating lamps on a subsequent test cycle.

3.09 To bring in an alarm when a predetermined number of calls which require more than three seconds to receive dial tone is recorded.

3.10 To maintain this alarm until an alarm cut-off key is operated.

3.11 To provide for unit testing keys by means of an individual key per unit.

3.12 To cancel registrations in the dial tone speed register circuit when a unit key is operated.

3.13 To change the initial timing period of the dial tone speed register circuit when this circuit is in use.

3.14 To light a lamp in the dial tone speed register circuit to indicate that this circuit is in use and the alarm locked-in feature should not be operated.

3.15 To make the alarm locked-in feature of the dial tone speed register circuit ineffective when this circuit is in use.

3.16 To skip all test arcs of the dial tone speed register circuit when its associated unit key is not operated.

3.17 To provide an extension alarm lamp and buzzer.

4. CONNECTING CIRCUITS

4.1 Dial Tone Register Circuit - SD-96403-01.

DESCRIPTION OF OPERATION

5. STARTING OF TESTS

To start this circuit for testing the (ST) key of Fig. 2 should be operated. The (ST) key is ineffective in

starting this circuit if either of the selectors (T) or (B) is off-normal. When the start key is operated and selectors (T) and (B) are normal, relay (ST) operates. Relay (ST) operated, locks independently of the (T) or (B) selectors, connects ground to lead "ST" and connects leads "A" and "B" together to start the dial tone speed register circuit, disconnects lead "G" from lead "F" and connects it to lead "E" to give the required timing of the dial tone speed register circuit, connects lead "ST1" to the (W) and (Z) relays for switching from the top to the bottom control equipment and vice versa, connects lead "D" for controlling the stepping of the selectors, operates relay (T), connects battery for controlling the lamps and buzzer, provides ground for controlling the (W) and (Z) lockup circuit, removes ground from lead "J" to render the operation of the (SD) key in the dial tone speed register circuit ineffective and connects ground to lead "H" to light a lamp to indicate that this circuit is in use. Relay (T) operated lights the (T) lamp to indicate that this test cycle will indicate on the top row of lamps. This circuit is now in a position to receive dial tone speed indications from the register circuit.

6. RECORDING OF CALLS WHICH REQUIRE MORE THAN THREE SECONDS TO RECEIVE DIAL TONE

When dial tone is not received within three seconds the dial tone speed register circuit will connect direct ground to lead "D" operating stepping magnet (T). When ground is removed from lead "D", the (T) stepping magnet releases causing the (T) selector to step to the first terminal. When the (T) selector steps to the first terminal the (T1) indicating lamp lights. The register circuit continues to test lines in the usual way and every time a test call requires more than three seconds to receive dial tone the "D" lead is grounded as described above, causing the (T) selector to take one step, causing the indicating lamps (T1) to (T20) to light depending upon the number of such calls. As the selector advances, the previous (T) lamp is extinguished and the next (T) lamp remains lighted so that at the end of the test cycle, the last lamp which remains lighted indicates the number of test calls in that cycle which did not receive dial tone within three seconds.

7. ADVANCING FROM ONE TEST CYCLE TO ANOTHER

At the end of every test cycle the dial tone speed register circuit will connect ground momentarily to lead "ST1" causing relay (W) to operate. When ground is removed from lead "ST1", relay (Z) operates. Relay (Z) operated, releases relay (T) and transfers the control from the (T) stepping magnet to the (B) stepping magnet. Relay (T) released operates relay (B) and extinguishes the (T) lamp. Relay (B) operated, lights the (B) lamp as an indication that the bottom row of indicating lamps will now indicate calls which require more than three seconds to receive dial tone on this cycle and locks under control of the (T) selector if it is off normal. The circuit now functions to receive indications from the dial tone speed register circuit in the same manner as described for the previous cycle. In this case ground on lead (D) will cause the (B) selector to step. At the completion of this cycle ground is again connected momentarily by the dial tone speed register circuit to lead "ST1" causing relay (W) to release. When ground is disconnected from lead "ST1" relay (Z) releases. With relay (Z) released and relay (B) operated the (T) selector is restored to normal. Relay (Z) released also transfers the control of the stepping from selector (B) to selector (T) and extinguishes any lamps that were previously lighted in the top row of indicating lamps. When the (T) selector restores to normal relay (B) releases in turn extinguishing the (B) lamp and causing relay (T) to operate. Relay (T) operated locks under control of selector (B) if it is off normal and lights the indicating lamp to indicate that the top row of indicating lamps will now indicate the test calls in this cycle which require more than three seconds to receive dial tone. The lamps in the bottom row now remain lighted under control of the normal (Z) relay. The circuit proceeds to operate in succeeding cycles as just explained above.

8. ALARM CONDITIONS

This circuit may be arranged to bring in an alarm when a predetermined number of test calls wait more than three seconds to receive dial tone. When selector (B) or (T) reaches a predetermined point the (ALM) relay operates and locks under control of the alarm cut-off key (ACO) in Fig. 2. This alarm condition remains locked in as long as the (ACO) key remains normal. The (ALM) relay operated lights the alarm lamp and operates the buzzer. Extension alarm lamps and buzzers per Fig. E may be provided in multiple with the lamp and buzzer of Fig. 2 as required. When the (ACO) key is operated the (LOT) and (LOB) relays operate. One of these relays will lock to an off-normal selector and will release the (ALM) relay. The (ALM) relay released extinguishes the alarm lamp and silences the buzzer. When the (ACO) key is restored to normal the (LOT) or (LOB) relay will release.

9. PROGRESS LAMPS - FIG. 3

One lamp per Fig. 3 is provided for each test arc in the dial tone speed register circuit. As the dial tone speed register circuit advances from one test arc to another ground also advances from one lamp to another and the lamp of Fig. 3 which is lighted in any particular moment indicates which test arc in the dial tone speed register circuit is in use at the particular moment.

10. UNIT TESTING

This circuit is so arranged that individual keys can be provided for each particular unit which is to be tested. These keys are shown in Figs. A, B and C. When unit testing is used only those test arcs associated with an operated unit key are tested and when the dial tone speed register circuit advances to test arcs where the unit key is normal ground through the progress lamp of Fig. 3 is connected to the (SKA) relay of Fig. D which operates. The (SKA) relay operated connects ground to lead "L" to the dial tone speed register circuit causing tests on those particular arcs to be skipped. When a unit key is operated ground is removed from lead "L" to prevent registrations from being recorded in the dial tone speed register circuit. When unit keys are used the start key (ST) should not be operated. When the start key only is operated and the units keys are not used registrations in the dial tone speed register circuit take place in the usual manner.

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