TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

KS-8512-L17A 100Ω 25W Resistor (VD) (Fig. 2)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Fig. 1 connecting circuit information is added, referring to "N1" Carrier Remote Alarm Release circuit.

D.2 In Fig. 2 Option "ZL" is added and Option "ZK" removed.

D.3 Circuit Notes 101, 106, 107 and 108 have been changed to include Option "ZL".

D.4 Circuit Note 114 is added.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2741-EMH-FSE-GH

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Figs. 1, 2 & 4 connecting circuit information has been added, referring to the "O" & "ON" Remote Alarm Release circuit.

D.2 Circuit notes 101, 106 & 108 have been changed to include new options "ZJ" & "ZK."

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2722-EMH-FSE-E7

TOLL SYSTEMS
SIGNALLING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1

Superseded	Superseded By
111A Res. - 450Ω 111A Res. - 225Ω } Fig. 7	111A Res. 909Ω 111A Res. 909Ω } Fig. 8
I.R.C. 10W. Adj. Res. - Option (C) Fig. 1	KS-14272-L1 25W. Adj. Res. - Option (A) - Fig. 1
I.R.C. BW 1/2W. Res. - 5Ω - Option (P)	KS-8441 - Res. - 5 MΩ - Option (Z1)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Figure 8 is added and reference thereto is added to Notes 104, 108 and the "Options Used" table.

D.2 Options A and D are added to Fig. 1, Note 108 and the "Options Used" table.

D.3 Option D, Fig. 7 and Note 109 are rated Mfr. Disc.

D.4 Options P, ZF, ZG, ZH and ZI are added to the "Options Used" table.

D.5 Options J, K and M are removed from Note 106.

D.6 Note 113 was added.

D.7 Options P and ZI are added to Note 108.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3320-AJC-FSE-X2

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Replaced	Replaced By
IRC Type ABA, 10W 2500 ohm Adj. Res. (LF)	IRC Type AA, 10W 2500 ohm Adj. Res. (LF)
KS-8058A, 2 Meg. Res. (G)	KS-13490, L1, 2 Meg. Res. (G)
KS-8058C, 1 Meg. Res. (H)	KS-13490, L2, 1 Meg. Res. (H)
"ZB" Option	"ZB" Option
KS-8058C, 3.9 Meg. Res. (A)	KS-13490, L2, 3.9 Meg. Res. (A)
KS-8058A, 0.51 Meg. Res. (F)	KS-13490, L2, 0.51 Meg. Res. (F)
KS-8058D, 220 ohm Res. (P)	KS-13490, L3, 220 ohm Res. (P)
"N" Option	"N" Option
KS-8060C, 15000 ohm Res. (C)	KS-13492, L2, 15000 ohm Res.(C)
KS-8060A, 7500 ohm Res. (B)	KS-13492, L2, 7500 ohm Res. (B)
"ZE" Option	"ZE" Option
KS-8058C, 3.9 Meg. Res. (D)	KS-13490, L2, 3.9 Meg. Res. (D)
KS-8058C, 6800 ohm Res. (E)	KS-13490, L2, 6800 ohm Res. (E)
"R" Option	"R" Option
IRC Type AB, 10W 8 ohm Res. (J)	KS-8512, L1A, 8.2 ohm Res. (J)
"ZC" Option	"ZC" Option
KS-8060A, 51000 ohm Res. (C)	KS-13492, L1, 51000 ohm Res.(C)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 A record of resistance codes with ratings "Mfr. Disc." which are replaced by equivalent available codes is contained in circuit note 112.

D.2 Prior to this issue, reference to ED-62068-01 was not given.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350-FSF-FSS-LI

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGE

D.1 The (DC) S522 current flow values in the circuit requirement table were increased to provide greater back contact pressure.

D.2 Prior to issue 12-D these values were as shown below:

	Test ma	Readj. ma
Operate	6.1	5.8
Non-operate	4.9	5.2

All other heading, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3550-WWF-FS

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Circuit note 106 was changed to add, "or Swbd. No. 12" for option (S), and to exclude Swbd. No. 12 for option (T). Prior to this issue the usage for option (T) read "For other than toll switching system No. 4 and No. 3 toll and No. 11 swbds. of the earlier type not equipped for D-c signaling over "SG" leads". This change was made to specify the use of 48 volt Sig. Bat. in Fig. 1 for Swbd. No. 12 offices since this voltage is applied to the (SG) lead from a D-c 20 cycle signaling ckt. in this type of office.

D.2 The usage for option (V) in ckt. note 106 was modified to show "-15.0 db" in place of "-15.0 dbm".

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350 EMS-JLD

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 In Fig. 1

Superseded

4 megohm	KS-8058 Resis.	(A)
50,000 ohm	KS-8060 Resis.	(C)
4 megohm	KS-8058 Resis.	(D)
70,000 ohm	KS-8058 Resis.	(E)
0.5 megohm	KS-8058 Resis.	(F)
200 ohm	KS-8058 Resis.	(P)

Superseded By

3.9 megohm	KS-8058	C
51,000 ohm	KS-8060	A
3.9 megohm	KS-8058	C
68,000 ohm	KS-8058	C
0.51 megohm	KS-8058	A
220 ohm	KS-8058	D

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The suffix letter (A) was added to the KS number for resistances (B), (C) for (U) option, (F) and (G), the letter (C) was added for resistances (A), (C) for (N) option, (D), (E) and (H) and (D) was added for resistance (P) to denote their tolerances.

D.2 The connecting circuit information for leads (T1), (R1), (SG) and (A) was changed to omit "To Multi-station Lines Straight and Switching Bridge Ckts. or to Sig. Ckts. for use with Multi-station 4 Wire Line Ckts."

D.3 Options (ZB), (ZC) and (ZE) were added, and option (ZD) was formed part of (Z) option and (ZA) option was part of circuit undesignated.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350 EMS-RSW

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Circuit note 110 was added. This note provides minimum and maximum time intervals by means of which the combined signal receiving circuit, cut-off relay circuit and intertoll trunk circuit response times may be checked.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350-AGL-RSW

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNALING RECEIVING CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Last item in Note 109 previously showed (B,E) for max. current.

D.2 The X- conn. INF of Fig. 52 was changed to show the (F-) lead connected to the (A) cond. of the 1st ckt. instead of the 2nd ckt. and optional connection to multi-station line and signal ckts. was added.

D.3 The connecting ckt. inf. for leads (T1, R1, SG and A) of Fig. 1 was changed to add, "To Multi-Station Lines Straight and Switching Bridge Ckt. - SD-55392-01 or to Sig. Ckts. for use with Multi-Station 4-Wire Line Ckts. - SD-55647-01".

D.4 Note 202 was added.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350-EMS-RSW

TOLL SYSTEMS
SIGNALING
1000 CYCLE SIGNAL RECEIVING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

Fig. 7, 1-111A Res. 225 Ohms (LF2)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Figure 7 was added to facilitate the adjustment of the (LF) resistance.

D.2 Prior to this issue, the first part of circuit note 104 reads as follows: "Adjust the (LF) res. and provide "J", "K" or "M" option so that the current thru the (DC) relay is approximately .0085 amp. at the signal lead indicated below".

D.3 On this issue, Fig. 6 which was previously shown as part of Fig. 1 is rated "Mfr. Disc." replaced by Fig. 7 which is added.

D.4 Note 109 was added and "Y" option was added in circuit note 106.

D.5 Provision was made for connecting lead P3 in Figs. 2 and 4 to 130V tap on 152V battery supply circuit.

All other headings under "Changes", no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit was designed to receive 1000 cycle signals interrupted at a 20 cycle rate.

2. WORKING LIMITS

2.1 When "Z", "U", and "X" options are provided, this circuit will function satisfactorily when the level of the signal is within the limits of -2.0 dbm and -24.0 dbm. Zero level is assumed as 1.0 milliwatt uninterrupted 1000 cycle power.

2.2 When "Z", "N", and "X" options are provided and the associated cutoff relay circuit is equipped with a 94S repeating coil (directional selection feature) this circuit will function satisfactorily when the level of the signal across the T and R of the line side of the cutoff relay circuit is within the limits of -2.0 dbm and -24.0 dbm. Zero level is assumed as 1.0 milliwatt uninterrupted 1000 cycle power.

2.3 When "Z", "N", "V", and "X" options are provided and the associated cutoff relay circuit is equipped with a 94S repeating coil (directional selection feature), this circuit will function satisfactorily when the level of the signal across the T and R of the line side of the cutoff relay circuit is within the limits of -2.0 dbm and -17.0 dbm. Zero level is assumed as 1.0 milliwatt uninterrupted 1000 cycle power.

2.4 When "Y" and "X" options are provided, this circuit will function satisfactorily when the level of the signal is within the limits of +10.0 dbm and -7.0 dbm. Zero level is assumed as 1.0 milliwatt uninterrupted 1000 cycle power.

2.5 When "Y" and "W" options are provided and the associated cutoff relay circuit is equipped with a 94S repeating coil (directional selection feature) this circuit will function satisfactorily when the level of the signal across the T and R of the line side of the cutoff relay circuit is within the limits of -2.0 dbm and -17.0 dbm. Zero level is assumed as 1.0 milliwatt uninterrupted 1000 cycle power.

3. FUNCTIONS

3.1 To receive a 1000 cycle signal from the line and transmit a d-c signal to the associated intertoll trunk circuit or 20 cycle signaling circuit.

4. CONNECTING CIRCUITS

4.1 Cutoff relay circuit - SD-55393-01.

DESCRIPTION OF OPERATION

5. FIG. 1 - 1000 CYCLE SIGNAL RECEIVING CIRCUIT

When "Z" option is used and the circuit is equipped with three vacuum tubes, the incoming 1000 cycle signal is applied through the transformer (IN) to the grid of the vacuum tube (A) which acts as an amplifier. The transformer

(IN) is tuned by the (HF) condenser to 1000 cycles and, therefore, in conjunction with the two 9000 ohm resistances or the impedance of the directional selective repeating coil of the associated cutoff relay circuit, discriminates against currents of frequencies other than 1000 cycles. The amplified signal is then applied to the grid of the tube (D) which functions as a detector. Due to the 20 cycle interruptions of the 1000 cycle signal, the rectified output of the vacuum tube (D) results in a 20 cycle voltage being applied to the grid of the vacuum tube (P) which functions as a 20 cycle amplifier. The 20 cycle output of the vacuum tube (P) then passes through the transformer (OUT) and through the 20 cycle tuned circuit consisting of the (LF) retardation coil and the (LF) condenser, which discriminates against currents of frequencies other than 20 cycles, and is applied to the cuprous oxide varistor (LF). The varistor (LF) rectifies the 20 cycle current and this rectified current operates the (DC) relay which causes a signal to be passed to the associated 20 cycle signal circuit, intertoll trunk circuit, or cut-off relay circuit.

When "Y" option is used, the circuit functions about the same as described above except that the 1000 cycle signal is not amplified before being applied to the grid of the detector tube (D).

The (DC) jack is provided to facilitate measuring of the current through the (DC) relay, and the TST jack is provided to facilitate testing of the signal receiving circuit.

The (LF) resistance is provided as a means of controlling the current through the (DC) relay. It is supplemented by options in Fig. 6 or 7. The (LF) resistance in conjunction with either Fig. 6 or 7 permits the current thru the (DC) relay to be adjusted to approximately 0.0085 ampere at the signaling level considered as the test level for the condition under which the circuit is being used.

6. FIGS. 2, 3, 4, AND 5 - BATTERY SUPPLY

Figure 2 shows the arrangement to be provided for filament, grid, and plate supply in regulated offices and figures 4 and 5 show the arrangement to be provided in non-regulated offices. Figure 3 provides a resistance for the protection of adjacent fuses and the main discharge fuse of the 130 volt supply.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350-AEB-RSW