CD-81577-01
ISSUE 5B
APPENDIX 6D
DWG ISSUE 13D

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
J86812A & B

CHANGES

B. Changes in Apparatus

B.1

Superseded	Superseded By
Ring G Freq Gen, Fig. 2B "H" Option	Ring G Freq Gen, Fig. 2B "G" Option

D. Description of Changes

D.1 On sheet 2, Fig. 2B, option "H" was assigned to 107D Freq Gen "Mfr Disc." and was superseded by 112A Freq Gen option "G" AT&TCo Std . The former will be rated Manufacture Discontinued and it is electrically identical with 112A.

D.2 On sheet 1 circuit notes 102 and 103 were changed to include D.1.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2433-DHS
WE DEPT 81450-SDL-RB

Printed in U.S.A.

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
J86812A & B

CHANGES

B. Changes in Apparatus

B.1 Superseded	Superseded By
Line Switch, Cutler-Hammer No. 7322, Fig. 2	Line Switch, Cutler-Hammer No. 7321, Fig. 2

D. Description of Changes

D.1 Fig. 2 was changed to supersede No. 7322 by No. 7321 Cutler-Hammer switch.

D.2 Circuit note 103 was changed to show the Cutler-Hammer No. 7321 switch as AT&TCo "Standard" and the Cutler-Hammer No. 7322 switch as Mfr Disc. for application in this circuit.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2433-DHS
WE DEPT 8145-SDL-RB

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
J86812A&B

CHANGES

A. Changed and Added Functions

A.1 This circuit has been revised to provide optional arrangements for use in the 400 Switching System, 756A PBX and the new 558A PBX. The wiring has been changed so that the options can be selected by strapping terminals at the terminal strip. Under the present arrangement it is necessary to alter the shop wiring to adapt this circuit for the 756A PBX. The possibility of damaging the unit under this procedure is eliminated by this change.

D. Description of Changes

D.1 Wiring option "N" was added to remove the hard wired ±10V ac from the interrupter and to free a terminal for access to the inverter.

D.2 Wiring option "M" was added to maintain continuity of the ground and to connect the interrupter to the terminal strip. The 756A PBX uses this unit with these options.

D.3 Added options "J" and "K" to circuit note 102. Option "J" provides interrupted ground for the 558A PBX, and option "K" provides interrupted ±10V ac for the 400 Switching System.

D.4 Added options "J", "K", "M" and "N" to circuit note 103.

D.5 Added options "J", "K", "M" and "N" to option Index.

D.6 Added BSP number to supporting information.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 8143-JRP-TRC-[illegible]
DEPT 5147-RRG

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
J86812A & B

CHANGES

B. Changes in Apparatus

B.1	Superseded	Superseded By
	Sprague Capacitors C5 & C6 in Fig. 5 D39159 ("R" option)	KS-20133,L9 Capacitor ("Q" option)

D. Description of Changes

D.1 Options "Q" and "R" were added to the drawing.

D.2 In Fig. 2, L1 inductor was changed to 293Y. This is a "NO RECORD" change as it was erroneously listed as 239Y on issue 9D and was never manufactured incorrectly.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5143-HMK-DET-EAF

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
J86812A & B

CHANGES

A. Changed and Added Functions

A.1 An additional dc output (-96 volts) is provided for operation of the "Make Busy and Busy Display" test feature.

B. Changes in Apparatus

B.1 Added

Fig. 6, "S" Option, -96 Volt Applique

D. Description of Changes

D.1 An applique is provided, "S" option, to add a -96 Volt dc output having a low ac ripple content.

D.2 Circuit notes 102, 103 and the option index are revised. Information note 302 is added. The Maintenance Specification BSP number is added to the drawing.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5153-SR-DET-EAF

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
FOR SWITCHING SYSTEM 400
J86812 A & B

CHANGES

B. Changes in Apparatus

B.1	Superceded	Superceded By
	410A Transformer	410B Transformer
	"V" option	"T" option

D. Description of Circuit Changes

D.1 This drawing is reissued to rate the use of the 410A transformer, T1, "MFR DISC", replaced by the 410B transformer.

D.2 Circuit note 103 and the option index are revised.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5153-SR-DET-EAF

POWER SYSTEMS
POWER SUPPLY CIRCUIT
AC, DC & RINGING SUPPLY
FOR SWITCHING SYSTEM 400
J86812A & B

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 To provide power, ringing and tones for Switching System 400.

2. GENERAL DESCRIPTION OF OPERATION

2.01 The 105 to 129 volts commercial ac power is supplied from a nearby outlet through the plug, cord and line switch to the input distribution point, TS1. Output distribution is on TS2, J1 and J2.

SECTION II - DETAILED DESCRIPTION

1. -48V RECTIFIER

1.01 Negative 48 volts dc power is supplied by the KS-19642 rectifier. Capacitors C5 and C6 in the switching system are provided on the -48V output as protection against power failures of less than 0.25 second duration.

2. POSITIVE 48V DC SUPPLY

2.01 Positive 48 volts dc supply is provided from the output of the T1 transformer, rectified by CR1 diode, and filtered, by capacitors C3 and C4 to reduce output noise.

3. ±10V AC SUPPLY

3.01 10 volts 60 cps is obtained from a tap on the secondary winding of the T1 transformer. To maintain the outputs of T1 transformer within working limits the input winding is equipped with taps for nominal 111-, 117-, or 123-volt service.

4. FREQUENCY GENERATOR RING G

4.01 Ringing is supplied by the RING G frequency generator that converts 60 to 20 cps and connects to a circuit consisting of C1 capacitor and winding (1-2) of L1 inductor. This circuit resonates at about 460 cps and is shock excited by the current pulses due to an abrupt drop in voltage across the V1 gas tube each time the tube fires. The current through the tube is controlled by the circuit consisting of C2 capacitor, R1 resistor and winding (3-4) of L1 inductor. With the circuit constants used, the tube fires twice on each positive and negative half cycle supplying 40 pulses per second. The resulting output is 460 cps modulated at 40 cps which produces a pleasing tone.

5. FREQUENCY GENERATOR LT

5.01 Low Tone is supplied by the LT frequency generator that converts 60 to 600 cps modulated at 120 cps. On lead "[LT1]" the output is approximately 2 volts and is interrupted at 60 IPM to provide busy tone.

6. TONE GENERATOR TT

6.01 TOUCH-TONE dial tone is provided by the 404C tone generator. On lead "[TT1]" the output is approximately 1.75 volts for dial tone.

7. INTERRUPTER INT

7.01 A small 10 volt ac motor in the INT interrupter drives a series of cams through a gear arrangement. The rotating cams open and close contacts to provide various timing pulses as shown in Table A.

8. ALARMS

8.01 Provisions for fuse failure alarms are supplied on -48 volts to the ringing circuit and 10 volts ac to the output and interrupted circuits.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 AC Input:

105 to 129 volts 60 cps.

1.02 Outputs

(a) DC Outputs

Nominal Volts	Voltage Range Volts	Load Range Amperes
-48	-45 to -52.6	0.5 to 8.0 normal 12 intermittent
+48	40 to 60	0.1

(b) AC Output

Nominal Volts	Voltage Range Volts	Load Range Amperes
±10,60 cps	8 to 11	2.1

1.03 Output

Nominal Volts DC		
-48	Noise max. 34 dbrnc BRDG	
	Ripple max. 0.050 peak to peak at 8 Amp load	
+48	Noise max. 52 dbrnc BRDG	
	Ripple max. 1.0V rms	

1.04 AC Outputs (Ringing and Tone Supply)

(a) Ringing - 75 to 100 volts, 20 cps

(b) Busy Tone - 2.0 volts, [LT1]

(c) TOUCH-TONE Dial Tone - 1.75 volts, [TT1]

2. FUNCTIONAL DESIGNATIONS

None

3. FUNCTIONS

3.01 This circuit is designed to perform the following functions:

(a) To provide -48 volts dc for relay and talking power for switching systems with no reserve battery.

(b) To provide +48 volts dc for direct station selection.

(c) To provide 10 volts ac for lamps in sets and interrupted power.

(d) To provide low tone for busy tone.

(e) To provide TOUCH-TONE dial tone.

(f) To provide 20 cps ringing current with an audible ringing tone of 460 cps modulated at 40 cps.

(g) To provide machine ringing.

(h) To provide signaling interruptions.

4. CONNECTING CIRCUITS

4.01 This power supply connects to SD-69471-01 No. 1 Slide Equipment and other switching circuits.

SECTION IV - REASONS FOR REISSUE

CHANGES

B. Changes in Apparatus

B.1 Superseded	Superseded By
C5, C6, C7 Capacitors, KS-19076, 7000 uf each- Fig. 3	C5, C6 Capacitors, Sprague D39159 16,000 uf each- Fig. 5
C5, C6, C7 Capacitors, KS-19319, 7000 uf each- Fig. 4	C5, C6 Capacitors, Sprague D39159 16,000 uf each- Fig. 5

D. Description of Changes

D.1 Figs. 3 and 4 were rated "Mfr Disc." replaced by Fig. 5 which was added to the drawing.

D.2 Circuit note 103 was brought up to date to add reference to changes on issues 3D and 4D.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5153-HMK-DET-EAA