

CIRCUIT DESCRIPTION

**CD-81577-01
ISSUE 3D
APPENDIX 2B
DWG ISSUE 5B**

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

CHANGES

B. Changes in Apparatus

<u>B.1</u>	<u>Superseded</u>	<u>Superseded By</u>
	J87205B, L1 Rectifier ("Z" Option)	KS-19642 Rectifier ("Y" Option)

D. Description of Changes

- D.1 "Y" and "Z" options were added to the dwg.**
- D.2 The J87205B, L1 rectifier has been replaced by the KS-19642 rectifier.**

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5153-HMK-DET-SPF

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

CHANGES

B. Changes in Apparatus

<u>B.1 Superseded</u>	<u>Superseded By</u>
C5 - KS-19076 Capacitor - Fig. 3	C5 - KS-19319 Capacitor - Fig. 4
C6 - KS-19076 Capacitor - Fig. 3	C6 - KS-19319 Capacitor - Fig. 4
C7 - KS-19076 Capacitor - Fig. 3	C7 - KS-19319 Capacitor - Fig. 4

D. Description of Changes

- D.1 Added Fig. 4 showing KS-19319 capacitors (C5 thru C7).
- D.2 Fig. 3, showing KS-19076 capacitors (C5 thru C7), rated "A&M Only".

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5153-FVK-DET-LW

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

CHANGES

D. DESCRIPTION OF CHANGES

- D.1 Switching System 400 has replaced all references to 759A PBX.
- D.2 The 107D has replaced the 107C Frequency Generator.
- D.3 The interrupter circuit and timing chart was changed to agree with KS-15984, L1.

1. PURPOSE OF CIRCUIT

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

2. WORKING LIMITS

- 2.1 AC Input 105-129 Volts, 60 cps.
- 2.2 Output
- 2.21 -48V 45-52.6V .5-8 amp Normal
12 amp Intermittent
- Noise max. 39 DBRN C-Message Bridge Connection.
Ripple max. 60 mv rms.
- 2.22 +48V 40-60V 0.1 Amp
- Noise max. 52 DBRN C-Message Bridge Connection.
Ripple max. 1V rms.
- 2.23 ±10V 8-11V 2.1 amp 60 cps
- 2.24 20 cycle 75-100 Volts Ringing
- 2.25 Low tone 0.5 Volts Dial tone
- 2.26 Low tone 2.0 Volts Busy tone

3. FUNCTIONS

To provide: negative 48 volts dc for relay and talking power for switching systems with no reserve battery; positive 48 volts dc for direct station selection; 10 volts ac for lamps in sets and interrupter power; low tone for dial and busy tones; audible ringing of 460 cps modulated at 40 cps superimposed on the 20-cycle output; machine ringing; signaling interruptions.

4. CONNECTING CIRCUITS

This circuit was designed to connect to the switching circuits.

DESCRIPTION OF OPERATION

5. GENERAL

- 5.1 105-129 Volts commercial ac power is supplied from a nearby outlet thru the plug, cord and line switch to the input distribution point, TS1. Output distribution is on TS2 and J1.
- 5.2 Negative 48 Volt dc power is supplied by the J87205B rectifier explained in CD-81564-01. Three 7000 microfarad capacitors in the switching system are provided on the -48V output as protection against power failures of less than 0.25 second duration.
- 5.3 Positive 48-volt dc is provided from the output of the (T1) transformer rectified with a 426A diode and filtered with 2000 microfarads to reduce output noise.
- 5.4 10 Volts, 60 cps is obtained from a tap on the secondary winding of the (T1) transformer. To maintain the outputs of the (T1) transformer within working limits the input winding is equipped with taps for nominal 111, 117, or 123 volt service.
- 5.5 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 the L1A winding of (L1). This circuit resonates at about 460 cps and is shock excited by the current pulses due to an abrupt drop in voltage across the gas tube (V1) each time the tube fires. The current through the tube is controlled by the circuit consisting of (C2), (R1) and the L1B winding of (L1). 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.
- 5.6 Low Tone is supplied by the (LT) frequency generator that converts 60 cps

to 600 cps modulated at 120 cps. The LT1 output is approximately 2 volts and is interrupted at 60 IPM to provide busy tone. The LT2 output is approximately 0.5 volt for dial tone.

5.7 A small 10 volt ac motor in the interrupter (INT) 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.

6. ALARMS

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

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DEPT. 5152-WWH-LDF-C3