

# POWER UNITS

## 29- AND 30-TYPE

### IDENTIFICATION, INSTALLATION, AND CONNECTIONS

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#### 1. GENERAL

1.01 The 29- and 30-type power units are intended to provide power for talking, relays, lamps, buzzers, and ringing in Key Telephone Systems.

1.02 This section is reissued to:

- Change 29E1 fuse value
- Rerate 117A Frequency Generator to Manufacture Discontinued (MD) and add the 117B Frequency Generator
- Require line voltage check
- Update Fig. 1
- Update Table A
- Revise Fig. 2 and 3
- Add Fig. 4 and 5.

This issue does not affect the Equipment Test List.

1.03 This issue of the section is based on the circuit schematic drawing: SD-81877-01, Issue 11B. For a detailed description of the operation, refer to the corresponding circuit description. If this section is to be used with

equipment or apparatus reflecting a later issue of the drawing, reference should be made to the CD and SD to determine the extent of the changes and the manner in which the section may be affected.

1.04 The 110-volt ac, 30-Hz output is provided from the 113A, 117A, or 117B frequency generators that are mounted in the power unit. The 113A and 117A frequency generators are rated MD and replaced by the 117B frequency generator. The 117B frequency generator is electrically and mechanically interchangeable with the 113A and 117A frequency generators. Modification kit D-180277 (Fig. 1), used to equip the 29B1 power unit (Fig. 2) with 30-Hz ringing power, includes a 117B frequency generator.

#### 2. IDENTIFICATION

2.01 The 29- and 30-type power units operate on an ac input of 111, 117, or 123 volts,  $\pm 5$  percent at 60 Hz. The input power is approximately 320 watts at 117 volts 60 Hz. The outputs of the power units and features are shown in Table A.

2.02 The 29B1 (Fig. 2) and 30B1 power units are fitted with a parallel blade U-grounding receptacle for use with prewired power cords. The 29C1, 29E1, and 30C1 (Fig. 3) power units are fitted with a molded plug and cord for use with the prewired cords. The prewired power cords are available in the following lengths and should be ordered separately.

PART NO.	LENGTH (FT)
P-40J326	1-1/2
P-40J327	2
P-40J328	4
P-40J329	6
P-40J099	12

#### NOTICE

Not for use or disclosure outside the  
Bell System except under written agreement

**Warning:** The power cord should not be connected to the ac service receptacle until all other wiring has been connected.

- 2.03 The 29B1, 29C1, 30B1, and 30C1 power units are fused as follows:

♦**INPUT**—♦ 1—LINE (F1), 5-ampere Bussmann MDX-5 fuse

♦**OUTPUT**—For 29B1, 29C1, 30B1, 30C1♦

1—24V A TLK, 2-ampere No. 24C fuse

6—24V B SIG, 2-ampere No. 24C fuses

6—10V/11V AC, 3-ampere No. 24B fuses

1—10V AC Interrupter, 2-ampere No. 24C fuse

1—18V AC, 2-ampere No. 24C fuse.

♦**OUTPUT**—For 29E1♦

1—24V A TLK, 2-ampere No. 24C fuse

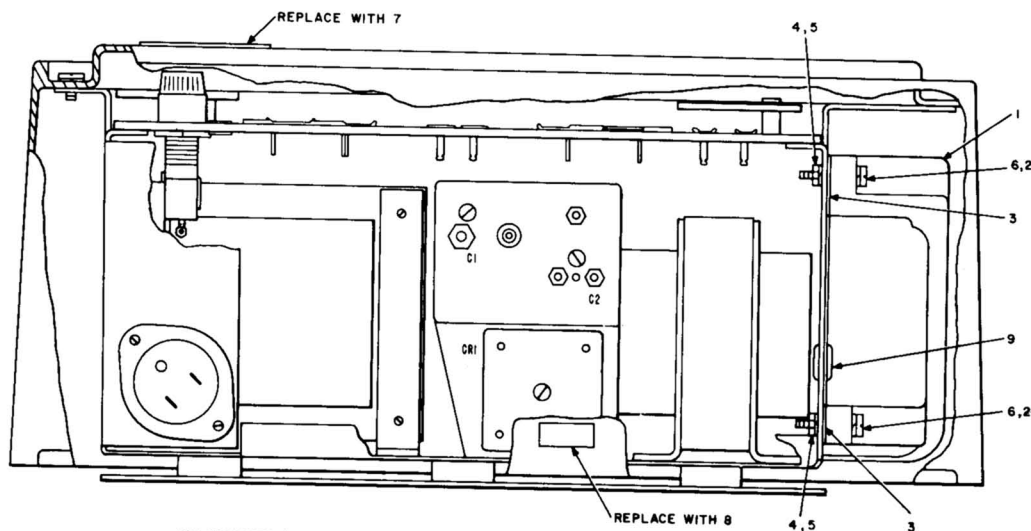
♦5—24V B SIG, 2-ampere No. 24C fuses

1—24V B SIG, 3-ampere No. 24B fuse♦

6—10V/11V AC, 5-ampere No. 24F fuses

1—10V AC Interrupter, 5-ampere No. 24F fuse

1—15/18V AC, 5-ampere No. 24F fuse.



KIT OF PARTS (D-180277)

1. 1178 FREQUENCY GENERATOR
2. P-284148 PLAIN WASHER (NO.8) (2 REQD)
3. P-252552 FIBER WASHERS (2 REQD)
4. P-206518 HEX NUT (.164-32) (2 REQD)
5. P-221761 LOCKWASHER (NO.8) (2 REQD)
6. P-181456 BHM SCREW (.164-32 X 5/8) (2 REQD)
7. P-40V023 NAMEPLATE
8. P-40V027 NAMEPLATE
9. GROMMET, NYLON-NO. NMC557-8B-NYLON MOULDING CORP., 40 BROWN AVE., SPRINGFIELD, N.J.

Fig. 1—Modification of 29B1 Power Unit to Incorporate 30-Hz Ringing Power

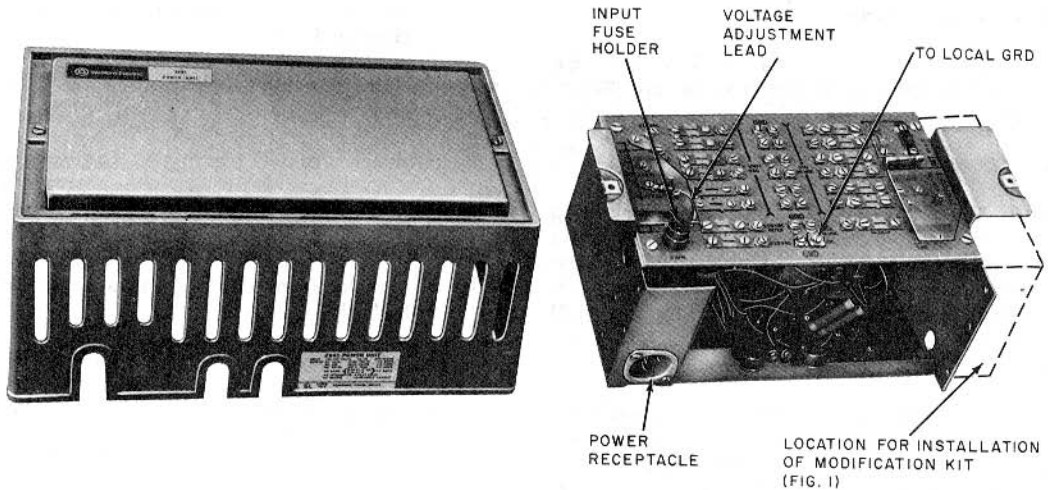


Fig. 2—29B1 Power Unit (Wall Mounted) Cover Removed

**2.04** The 29B1 power unit can be modified to include 30-Hz ringing power by adding the D-180277 KIT OF PARTS to the unit as shown in Fig. 1.

After the power unit has been modified in accordance with Fig. 1, connect the frequency generator to the power unit as follows:

FREQUENCY GENERATOR TERMINAL	POWER UNIT TERMINAL
1	AC1
2	AC2
3	$\pm 110V$ 30 Hz
4	GRD

When modified as above, the power unit shall be identified as a 30B1 power unit.

### 3. INSTALLATION



*Reference shall be made to Section 167-400-200 for general requirements necessary for the proper installation of the power unit.*

**3.01** Since the 29B1 and 30B1 power units are identical in size, wall mounting procedures are the same. The same is true for rack mounting 29C1, 29E1, and 30C1 power units. (The 29C1, 29E1, and 30C1 power units differ only in depth requirements. See Table A.) Therefore, only the installation procedures for the 30B1 and 30C1 power units will be covered in this section.

**3.02** Install the 30B1 power unit as follows.

**Caution:** The power unit must be mounted on a wall in a horizontal position with enough open area to ensure adequate ventilation. Do not lay objects on the power unit nor allow packing crates, etc, to be piled around it as this will cause overheating and failure of the unit.

- Fasten the backboard plate assembly to the wall in accordance with local instructions.
- Hang the power unit on the backboard and secure with the machine screws provided.

**3.03** Mount the 30C1 power unit (Fig. 3) on the equipment frame using the four mounting

holes on the metal enclosure of the unit and secure with machine screws.

**Note:** Two 29C1, 29E1, or 30C1 units can be mounted side by side in a standard 23-inch frame.

#### 4. CONNECTIONS

**4.01** The instructions that follow are for connecting the 30B1 (Fig. 4) and 30C1 power units to associated telephone equipment. With the exception of connections to the 113A or 117A frequency generators, rated MD, or the 117B frequency generator, the instructions also apply to the 29B1, 29C1, and 29E1 (Fig. 5) units.

**4.02** The power unit has three terminals for adjustment to the ac service voltage level and are shipped with the adjustment lead connected to the 117-volt terminal. With this connection, the unit will perform satisfactorily for line voltages between 111 and 123 volts. The nominal line voltage should be accurately checked before connecting. If the nominal voltage is between 105 and 114 volts, connect the adjustment lead to the 111-volt terminal. If the nominal voltage is between 123 and 129 volts, connect the adjustment lead to the 123-volt terminal.

**4.03** Place wiring (supplying telephone equipment) through the plastic cable guides at the bottom of the 30B1 unit or through the plastic cable guide on the back of the 30C1 unit. Dress the wires below the ground terminals. On 29C1, 29E1, and 30C1 units, place the wires in the loop rings. If the power unit is mounted on the right side of the frame, the rings are mounted on top of the unit. The rings are mounted on the bottom of power units mounted on the left side of the frame.

**Note:** Do not use rings as a tool when skinning wires and do not leave the wires in the rings under tension.

**4.04** Secure the input power cord in the cable clip on the unit.

**4.05** Connect ground terminals, station key equipment, and lamp wiring to the appropriate supply terminals as marked on the panel. See Fig. 4 or 5.

**4.06** Connect local ground to the terminal designated LOC GRD.

**Note:** While the ground terminals on the power unit are connected to a common bus, the station ground wiring leads should be connected to their **designated** ground terminals (18V, 10V/11V, SIG, TLK, etc).

**4.07** All ringers powered by the 113A (MD), 117A (MD), or 117B frequency generator should be connected in accordance with Table A, Note 4. The bias spring should be set initially at the high notch position (low sensitivity). If the ringer fails to operate properly, the spring should be set to the low notch.

**4.08** In the event that some remote facility (e.g., a ringdown tie line utilizing a carrier link) fails to operate properly with the 30-Hz ringing frequency, a 29-type power unit with a supplementary 20-Hz ringing supply (101G) should be used. Such difficulty is generally due to the fact that signal converters in the central office (D1B converters, E-type signaling units, etc) contain bandpass filters tuned to 20 Hz. Such units will not respond to 30-Hz signaling.

**TABLE A**  
**OUTPUTS AND FEATURES 29- AND 30-TYPE POWER UNITS**

FEATURES		DESCRIPTION AND OUTPUT			POWER UNIT				
		VOLTS	AMPERES	NOTE	29B1	29C1	29E1*	30B1	30C1
DC OUTPUT	Talk	18-26	0-1	1	X	X	X	X	X
	Signal	20-26	0-4						
AC (60-Hz) Lamp Output		8.75-11 or 9.75-12	0-12	2,3	X	X	X	X	X
		13.25-16.75 or 16-20	0-1.6				X		
AC Buzzer Output		16-20	0-1.6		X	X		X	X
AC Interrupter Motor Output		8.75-11	0-2	3	X	X	X	X	X
AC (30-Hz) Output (Ringing Supply)		110-125	Not Specified	4	Note 5			X	X
Wall Mounting		14.0" wide by 8.25" high by 6.37" deep Includes Wall Mounting plate and cover.			X			X	
Rack Mounting		10.50" wide by 6.94" high by 5.75" deep				X	X		
		10.50" wide by 6.94" high by 7.88" deep							X

*Note 1:* Total DC TALK and DC SIGNAL not to exceed 4 amperes.

*Note 2:* AC (60-Hz) voltage is normally adjusted at 10 volts. If the system requires higher lamp voltage, the link may be adjusted for 11 volts.

*Note 3:* Combined current (8.75 to 11 or 9.75 to 12 volts) should not exceed 12.0 amperes.

*Note 4:* 1 to 16 C4A or H1A ringers with or without series diodes (diode matrix) or 1 to 6 C4A or H1A ringers with series capacitors.

*Note 5:* When 30-Hz ringing output is added to the 29B1 power unit in accordance with 2.04, the power unit shall be identified as 30B1 power unit.

\* Intended for use in COM KEY II packaged key telephone system.

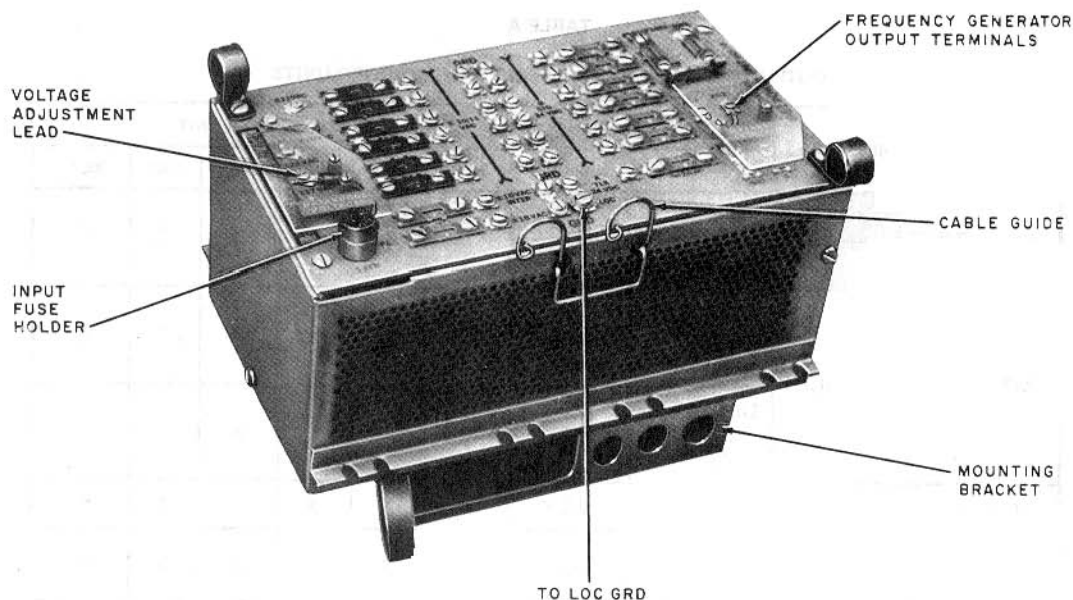


Fig. 3—30C1 Power Unit (Rack Mounted) Cover Installed

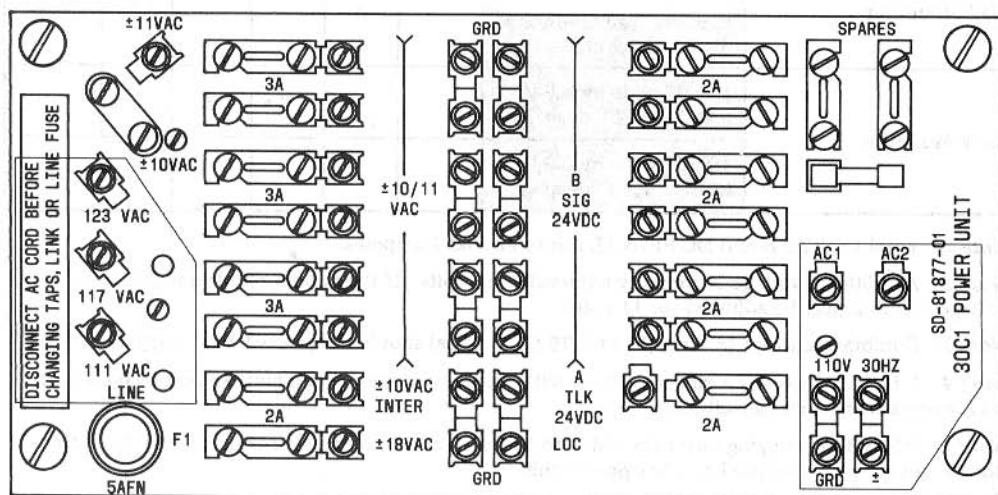
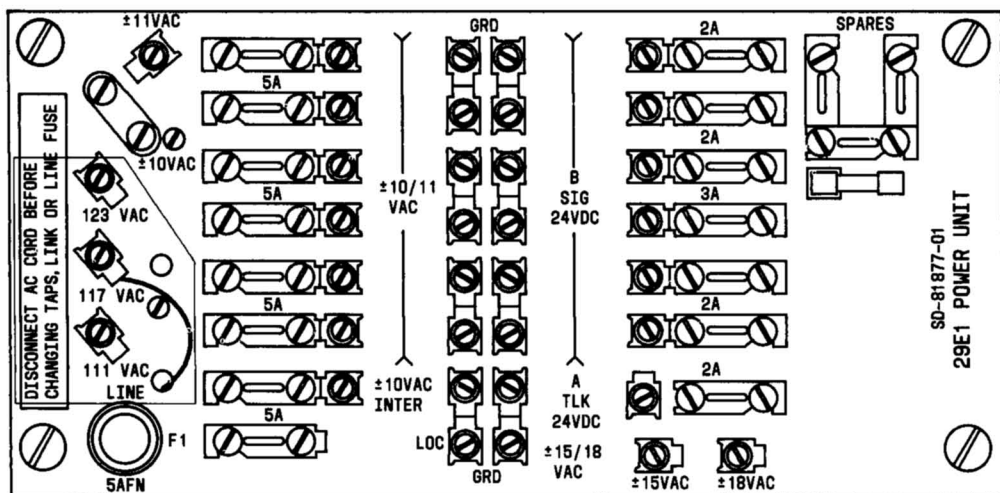


Fig. 4—Wiring Connections For 29B1, 29C1, 30B1, and 30C1 Power Units



**Fig. 5—Wiring Connections For 29E1 Power Unit**