

## POWER UNITS

### 29- AND 30-TYPE

### IDENTIFICATION, INSTALLATION, AND CONNECTIONS

#### 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 indicate that the 113A frequency generator is replaced by the 117A frequency generator.

1.03 This issue of the section is based on the following drawing: SD-81877-01, Issue 6D. For a detailed description of the operation, see 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 SD and CD 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 or 117A frequency generator. The frequency generator mounts in the power unit case. The 113A frequency generator is rated "Manufacture Discontinued" and replaced by the 117A frequency generator. The 117A frequency generator is electrically and mechanically interchangeable with the 113A frequency generator. The new modification kit (D-180277), used to equip the 29B1 power unit with 30-Hz ringing power, is provided with the 117A 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 units are identified and described in Table A.

2.02 The 29B1 and 30B1 power units are fitted with a parallel blade U-grounding receptacle for use with prewired power cords. The 29C1 and 30C1 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

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

2.03 The power units are fused as follows:

- 1—LINE (F1), 5-ampere Bussman MDX-5 fuse
- 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

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

FEATURE	VOLTAGES AND DESCRIPTION			POWER UNIT			
	VOLTS	AMPERES	NOTE	29B1	29C1	30B1	30C1
DC OUTPUT: Signal Talk	20-26 18-26	0-4 0-1	1	X	X	X	X
AC (60-Hz) Lamp Output	8.75-11 or 9.75-12	0-12	2	X	X	X	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
AC (30-Hz) Output (Ringing Supply)	110-125	Not Specified	4	See Note 5		X	X
Wall Mounting	14.10 wide by 8.36 high by 6.35 inches deep. Includes Wall Mounting plate and cover.			X		X	
Rack Mounting	10.44 wide by 6.94 high by 5.77 inches deep.				X		
	10.44 wide by 6.94 high by 7.88 inches 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:* Total ac 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.

**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	±110V 30 Hz
4	GND

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

### 3. INSTALLATION

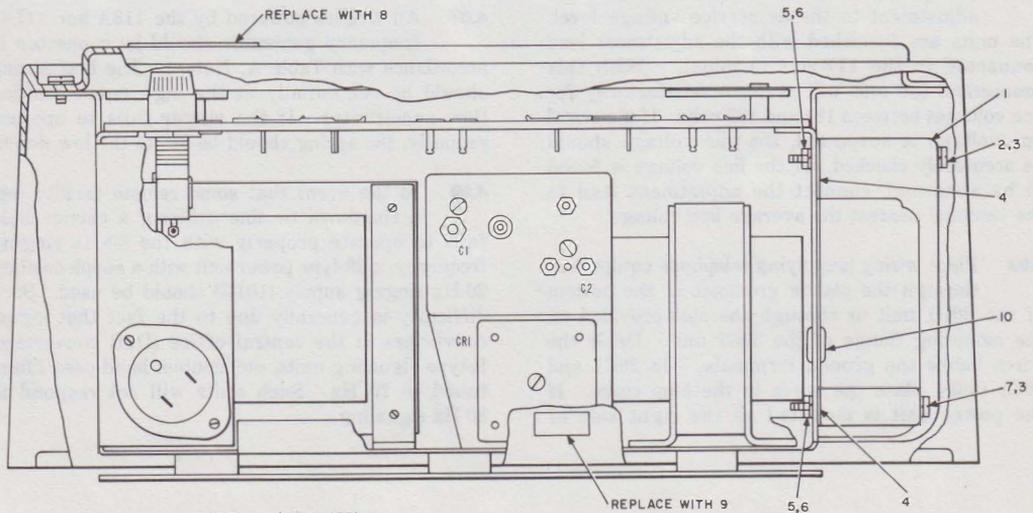


*Reference shall be made to Section 167-400-200 for general requirements necessary for the proper installation of the power unit.*

**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 the 29C1 and 30C1 power units. (The 29C1 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.

**Note:** 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 as this will cause overheating and failure of the unit.



KIT OF PARTS (D-180277)

1. I17A FREQUENCY GENERATOR
2. P-181465 BHM SCREW (.164-32X2-1/4) (2 REQD)
3. P-284148 PLAIN WASHER (NO.8) (3 REQD)
4. P-252552 FIBER WASHERS (3 REQD)
5. P-206518 HEX NUT (.164-32) (3 REQD)
6. P-221761 LOCKWASHER (NO.8) (3 REQD)
7. P-181464 BHM SCREW (.164-32X2)
8. P-40V023 NAMEPLATE
9. P-40V027 NAMEPLATE
10. HEYCO SB-625-B NYLON SNAP BUSHING.

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

- (a) Fasten the backboard plate assembly to the wall in accordance with local instructions.
- (b) Hang the power unit on the backboard and secure it with the machine screw provided.

**3.03** Mount the 30C1 power unit on the equipment frame using the four mounting holes on the metal enclosure of the unit and secure with machine screws.

*Note:* Two 29C1 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 and 30C1 power units to associated telephone equipment. With the exception of connections to the 113A or 117A frequency generator, the instructions also apply to the 29B1 and 29C1 units.

**4.02** The power units have three terminals for adjustment to the ac service voltage level. The units are furnished 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. If abnormal line voltage is suspected, the line voltage should be accurately checked. If the line voltage is found to be abnormal, connect the adjustment lead to the terminal nearest the average line voltage.

**4.03** Place wiring (supplying telephone equipment) through the plastic grommet at the bottom of the 30B1 unit or through the slot provided on the mounting flange of the 30C1 unit. Dress the wires below the ground terminals. On 29C1 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. 2.

**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 or 117A 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 (eg, 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 band pass filters tuned to 20 Hz. Such units will not respond to 30-Hz signaling.

FIG. 2  
AC AND DC POWER SUPPLY  
(29 AND 30 TYPE POWER UNITS)

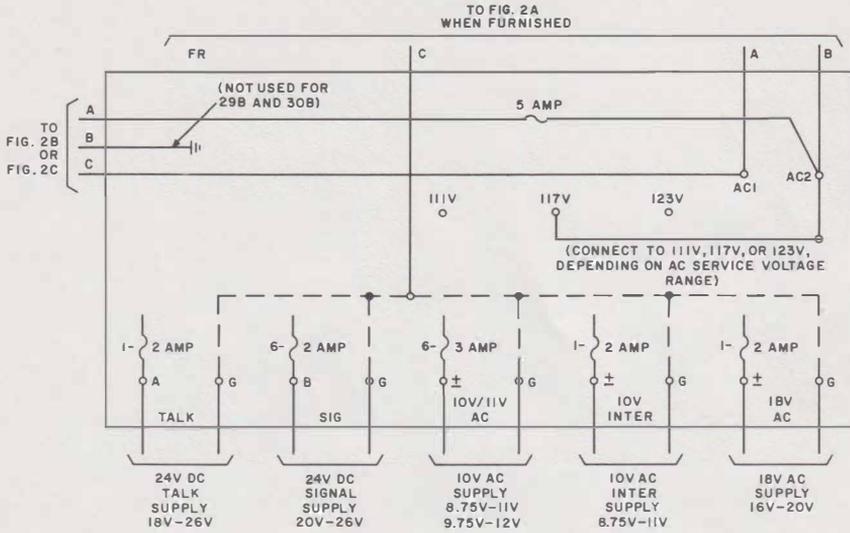


FIG. 2A  
113A OR 117A 30-HZ FREQUENCY GENERATOR  
(30B1, 30C1)

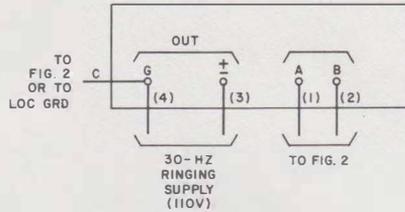


FIG. 2B  
AC INPUT  
(29B AND 30B TYPE POWER UNITS)



FIG. 2C  
AC INPUT  
(29C AND 30C TYPE POWER UNITS)

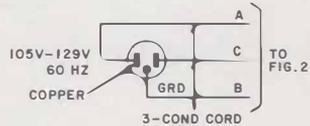


Fig. 2—Wiring Connections for 29- and 30-Type Power Units