

19- AND 20-TYPE POWER UNITS

IDENTIFICATION, INSTALLATION, CONNECTIONS, AND MAINTENANCE

1. GENERAL

1.01 The 19- and 20-type power units are intended to provide power for talking, relays, lamps, buzzers, and 30-cycle ringing in Key Telephone Systems.

1.02 This section is reissued to change the title of the section, the DC TALK and SIGNAL output designation, and the DC TALK designation on figures 1, 2, and 4.

1.03 The 19A1, 19B1, 19C1, and 20C1 power units have been recoded to the 19A2, 19B2, 19C2, and 20C2 power units, respectively. The 20A1, 20B1, and 20C1 power units are rated "Manufacture Discontinued" (MD) and are replaced by the 20A2, 20B2, and 20C2 power units.

1.04 The information in this section is based on circuit schematic drawing SD-81824-01, Issue 9D. For a detailed description of operation, refer to the corresponding circuit description. If this section is to be used with equipment or apparatus that is associated with a later or earlier issue of the schematic 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.

2. IDENTIFICATION

2.01 The dc rectifier and ac supply of the 19- and 20-type power units are designated the 19A2 power unit. When a 113A frequency generator is added, the combined unit becomes the 20A2 power unit (see Fig. 1). The units are available for wall or relay rack mounting as follows:

19B2—19A2 with hardware and cover for wall mounting.

19C2—19A2 with hardware for mounting in a Key Service Unit or relay rack.

20B2—20A2 with hardware and cover for wall mounting (see Fig. 2).

20C2—20A2 with hardware for mounting in a Key Service Unit or relay rack (see Fig. 3).

2.02 These power units operate on an ac input of 111, 117, or 123 volts ± 5 percent, 60 hertz. The outputs of the power units and features are shown in Table A.

2.03 The power units are equipped with a parallel blade U-ground receptacle. A 3-conductor power cord with male and female U-ground plugs is available for connection to the input receptacle in the power unit (see Fig. 2 and 3). The cords are available in the following lengths and should be ordered separately:

P-40J326—1 1/2 ft

P-40J327—2 ft

P-40J328—4 ft

P-40J329—6 ft

P-40J099—12 ft

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

2.04 The power units are fused as follows:

INPUT—2-ampere Bussman MDL-2 fuse

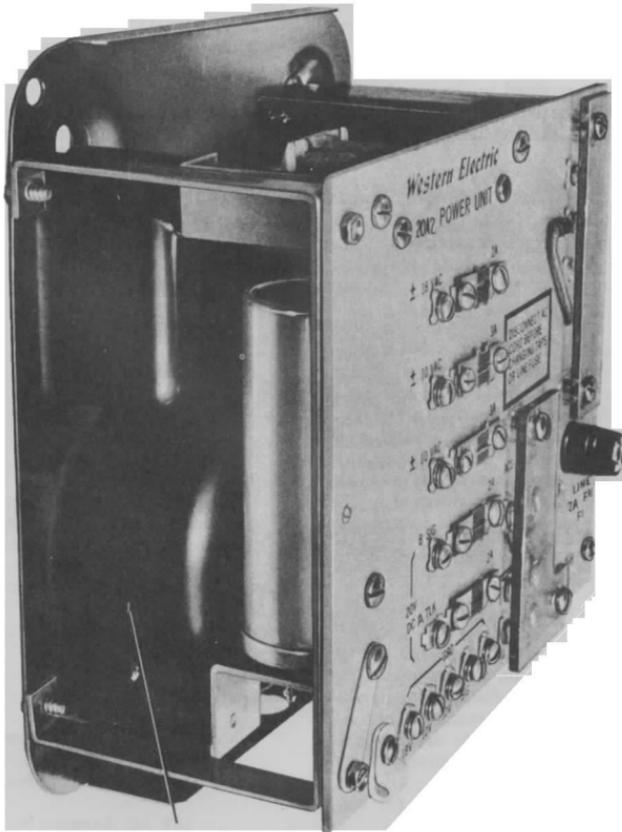
OUTPUT—24V TALK, 2-ampere No. 24C fuse

24V SIGNAL, 2-ampere No. 24C fuse

10V AC, 3-ampere No. 24B fuses

18V AC, 2-ampere No. 24C fuse

2.05 The 47C1 power unit is available for locations requiring reserve power.



113A FREQUENCY GENERATOR

Fig. 1—20A2 Power Unit with Hardware Required for 20B2 Unit Less Cover

TABLE A – OUTPUT AND FEATURES 19- AND 20-TYPE POWER UNITS

FEATURE	DESCRIPTION AND OUTPUT			POWER UNIT				
	VOLTAGE	AMPS	NOTE	19B2	19C2	20B1 (MD)	20B2	20C2
DC Output Talk Sig	18-26 20-26	0.6 1.5	1	X	X	X	X	X
AC (60 Hz) Output	8.75-11 16-20	4.5 1.4	2	X	X	X	X	X
AC (30 Hz) Output (Ringing Supply)	110-125	Not Specified	3			X	X	X
Wall Mounting	9-1/4" high by 8-3/4" wide by 5" deep. Includes metal backboard and cover.			X		X	X	
Rack Mounting	7" high by 8-1/2" wide by 5" deep. Mounted on horizontal bars drilled on 7/16" centers and vertically spaced at 7". Requires 20 mounting spaces.				X			X

Note 1: Total DC TALK and DC SIGNAL not to exceed 1.5 amps.

Note 2: Where combinations of the two outputs are used to determine load-carrying capacity, add twice the current used in 16-20 volt output to the current used in the 8.75-11 volt output. A total of 4.5 amperes is maximum.

Note 3: 1 to 16 C4A or H1A ringers with series diodes (diode matrix) or 1 to 6 C4A or H1A ringers with series capacitors.

3. INSTALLATION



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

3.01 Since the 19B2 and 20B2 power units are the same size, wall mounting procedures are identical. The same is true for the 19C2 and 20C2 power units for rack mounting. Therefore, only the installation procedures for the 20B2 and 20C2 power units will be covered in this Section.

3.02 Install the 20B2 power unit as follows:

Note: The power unit must be mounted on a wall in a vertical position with enough open area to allow adequate ventilation. Do not lay objects on the power unit or allow packing crates, etc. to be piled around it as this will cause overheating and failure of the unit.

(a) Fasten the backboard plate assembly, P33A830, to the wall as covered in Section 463-130-200.

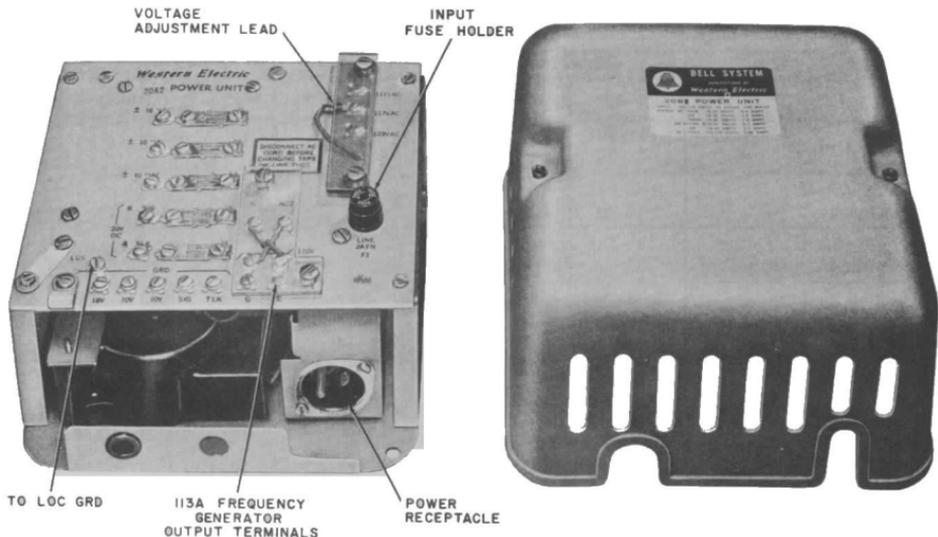


Fig. 2—20B2 Power Unit (Wall Mounted)—Cover Removed

(b) Hang the power unit on the backboard and secure it with the machine screws provided.

3.03 The 20C2 power unit is mounted on an equipment rack using the four mounting holes on the metal enclosure (Fig. 3). Fasten with the machine screws provided.

3.04 When the 47C1 power unit is used for reserve power, refer to Section 167-449-101 for information on installation procedures.

4. CONNECTIONS (Fig. 4)

4.01 The instructions that follow are for connecting the 20B2 and 20C2 power units to associated telephone equipment. With the exception of connections to the 113A frequency generator, the instructions also apply to the 19B2 and 19C2 power units.

4.02 The power units have 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. If abnormal line voltage is suspected, the line voltage should be accurately checked. If the 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 20B2 unit (Fig. 2) and through the slot provided on the mounting flange on the 20C2 unit (Fig. 3). Dress the wires along the left side of the panel and below the ground terminals.

4.04 Connect ground terminals, station key equipment, and lamp wiring to the appropriate supply as marked on the panel.

4.05 Connect LOC GRD as shown in Fig. 4.

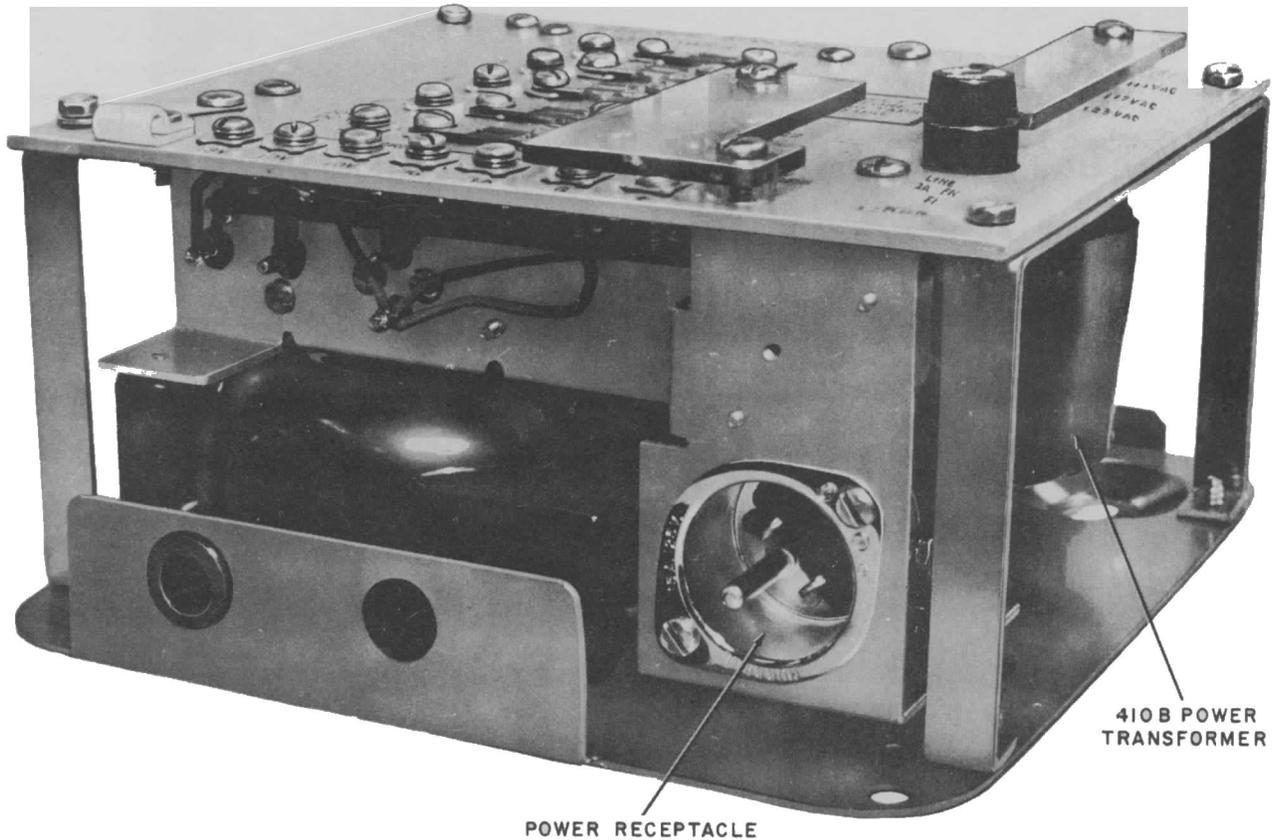


Fig. 3—20C2 Power Unit (Rack Mounted) Enclosure Removed to Show Power Receptacle

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 (Fig. 4).

4.06 All ringers powered by the 113A frequency generator should be connected in accordance with Table A, Note 3. 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.

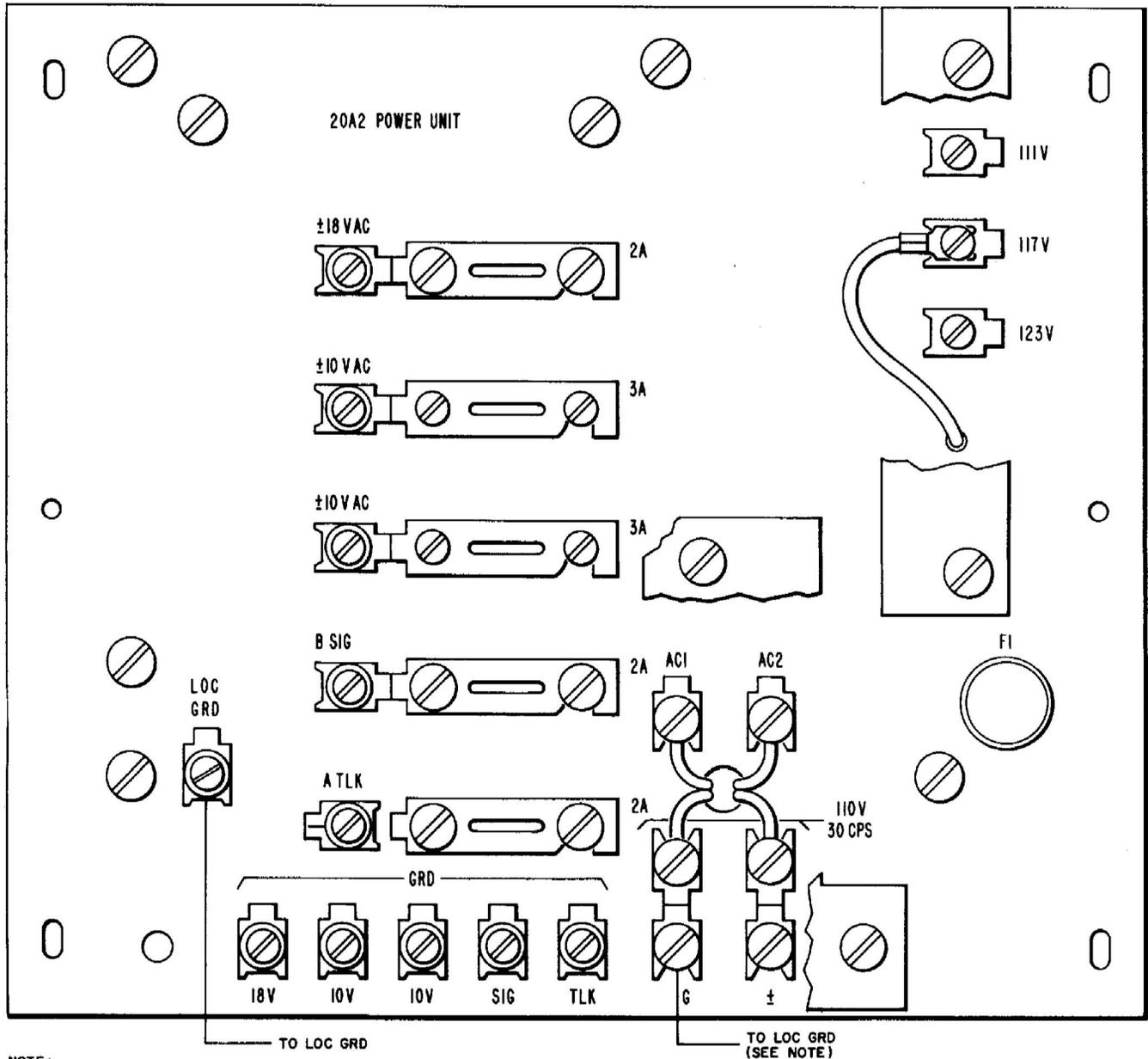
4.07 In the event that some remote facility (eg, a ringdown tie line utilizing a carrier link) fails to operate properly with the 30-Hz ringing frequency, a 19-type power unit with a supplementary 20-Hz ringing supply (101G) should be used. Such difficulty is generally due to the fact that signal converters 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.

5. MAINTENANCE 20B1 POWER UNIT (20A1 with Hardware and Cover for Wall Mounting)

5.01 Two different diodes, the 487A and the MDA 952-2, were used as the bridge rectifier in the manufacture discontinued 20B1 and 20C1 power units. If the dc output of the unit using the 487A diode becomes short circuited, it may result in a burnout of the diode.

5.02 To provide a margin of safety, install 24G fuses (1-1/3 amp) in place of the 24C fuse (2 amp) in the 24V TALK and 24V SIGNAL dc outputs of the units using the 487A diode. The



NOTE:
TO BE USED IF LOCAL GROUND
TERMINAL IS NOT PROVIDED.

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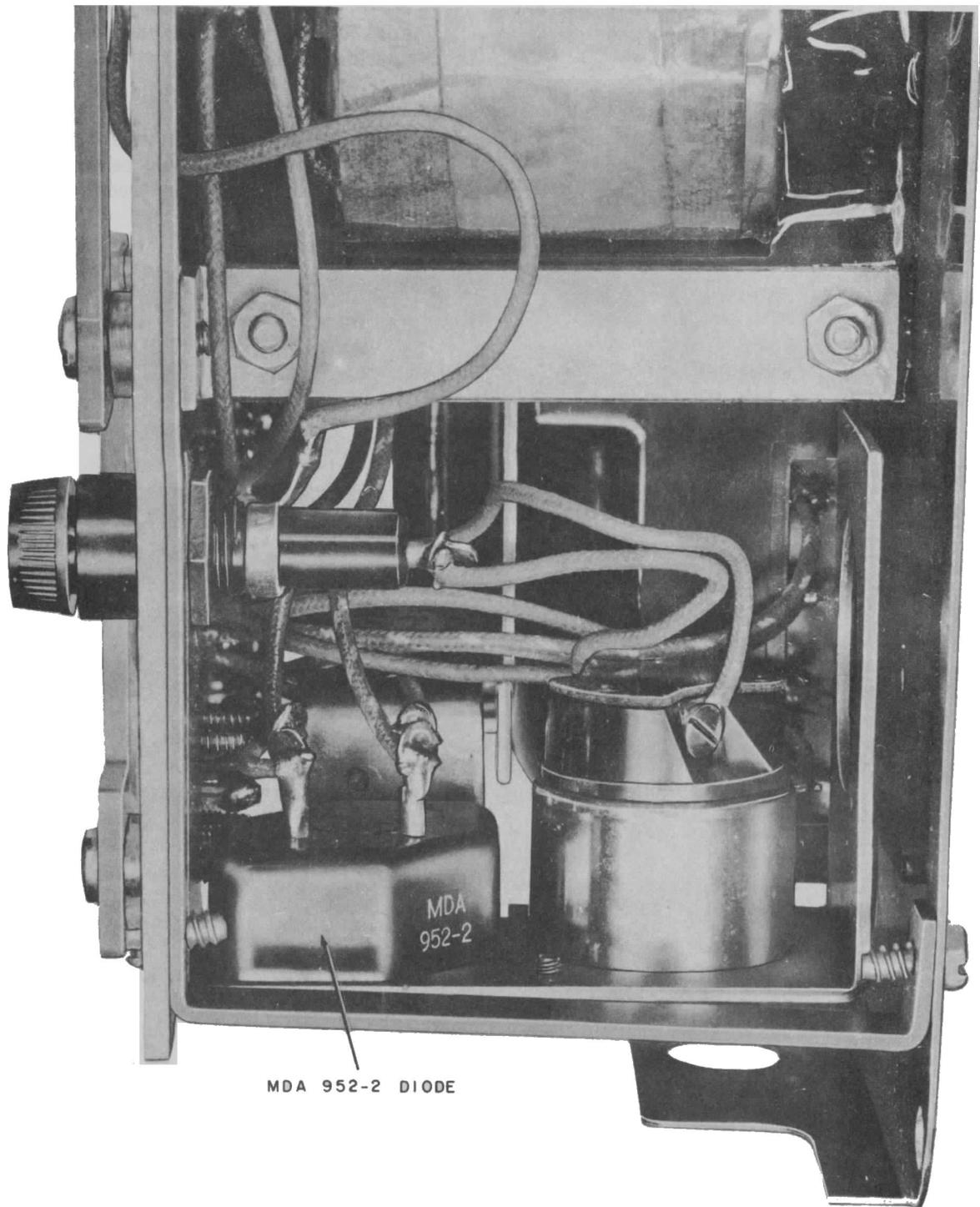
Fig. 4—Wiring Connection for 20A2—Power Unit

following will help in identifying the 20B1 and 20C1 Power Units involved:

- The bridge rectifier is located on the mounting bracket which also supports the power cord receptacle. See Fig. 5.

- The 487A diode is square and approximately one inch on a side. It is fastened with one central mounting screw.

- The MDA 952-2 is hexagonal and is slightly larger. It is fastened with two screws.

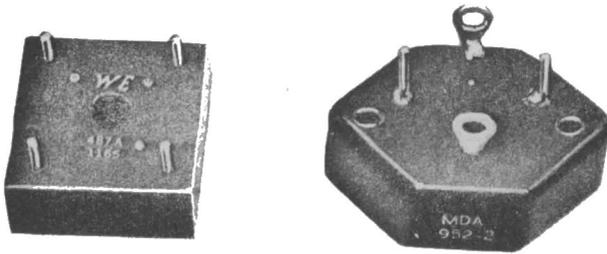


MDA 952-2 DIODE

Fig. 5—Diode Location on 20B1 Power Unit

- Fig. 6 of the two bridge rectifiers will aid in further ease of identification.

Note: Later production units of the 20B2 and 20C2 power units use the 487C diodes which are square.



5.03 On the outward movement of the 20B1 power unit, they should be returned to the WEC Co for modification and recoding to a 20B2 power unit.

Fig. 6—487A and MDA 952-2 Diodes