

## KEY TELEPHONE SYSTEMS

### RESERVE POWER

### 47C POWER UNIT

#### 1. GENERAL

**1.01** The 47C power unit (Fig. 1) provides emergency power to maintain talk and signal voltages, lamp voltages, and ringing voltage in key telephone systems during commercial power failures.

**1.02** This issue of the section is based on the following drawings:

CD-81964-01, Issue 2A

SD-81964-01, Issue 5A

If this section is to be used with equipment or apparatus reflecting later issues of the drawings, 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.

**1.03** The power supply will provide from 4 to 8 hours of reserve power for up to 13 1A2 line circuits or equivalent 1A, 1A1, and 1A2 power loads. The exact reserve time is dependent on line usage and lamp multiplying for each installation.

#### 2. IDENTIFICATION

**2.01** The 47C power unit provides emergency power from a KS-20390, List 1 nickel cadmium battery which is automatically activated during commercial power failures and disconnected when commercial power has been restored. The power unit is normally in a standby state with the battery on trickle charge. The power unit also provides mounting space for an optional 116A frequency generator capable of operating up to six high impedance ringers.

**2.02** The 47C power unit interconnects between the standard ac power unit and the key telephone equipment it serves. It provides the following outputs:

- -24V dc for signaling (B Bat.)

- -24V dc for talking (A Bat.)

- -10V dc for lamps

When a ringing supply is required for emergency service, the optional 116A frequency generator is mounted in the power unit to provide 25 Hz ringing voltage.

**2.03** The power unit is approximately 10-1/2 inches wide by 6-7/8 inches high (including mounting bracket) by 7-3/16 inches deep. It is designed to be rack mounted using frame mounting bars. It can also be mounted in the 502, 513, or 515 key service units in the regular power supply location when an external power supply is provided.

**2.04** The front panel (Fig. 2) of the power unit, mounting the input and output screw terminals and fuses, is removable.

**2.05** The power unit consists of three main parts:

- Control circuit (GL-1 circuit pack)
- Battery (KS-20390, L1)
- Optional ringing generator (116A frequency generator).

**2.06** *Control Circuit (GL-1 Circuit Pack):* A plug-in type circuit pack used to:

- Automatically connect emergency ac and dc supply to key telephone equipment when commercial power fails, and to disconnect the emergency power supply when commercial power is restored.
- Disconnect discharged battery from key equipment to protect both battery and key equipment from damage.

**Caution:** Do not attempt to adjust potentiometer R6.

#### NOTICE

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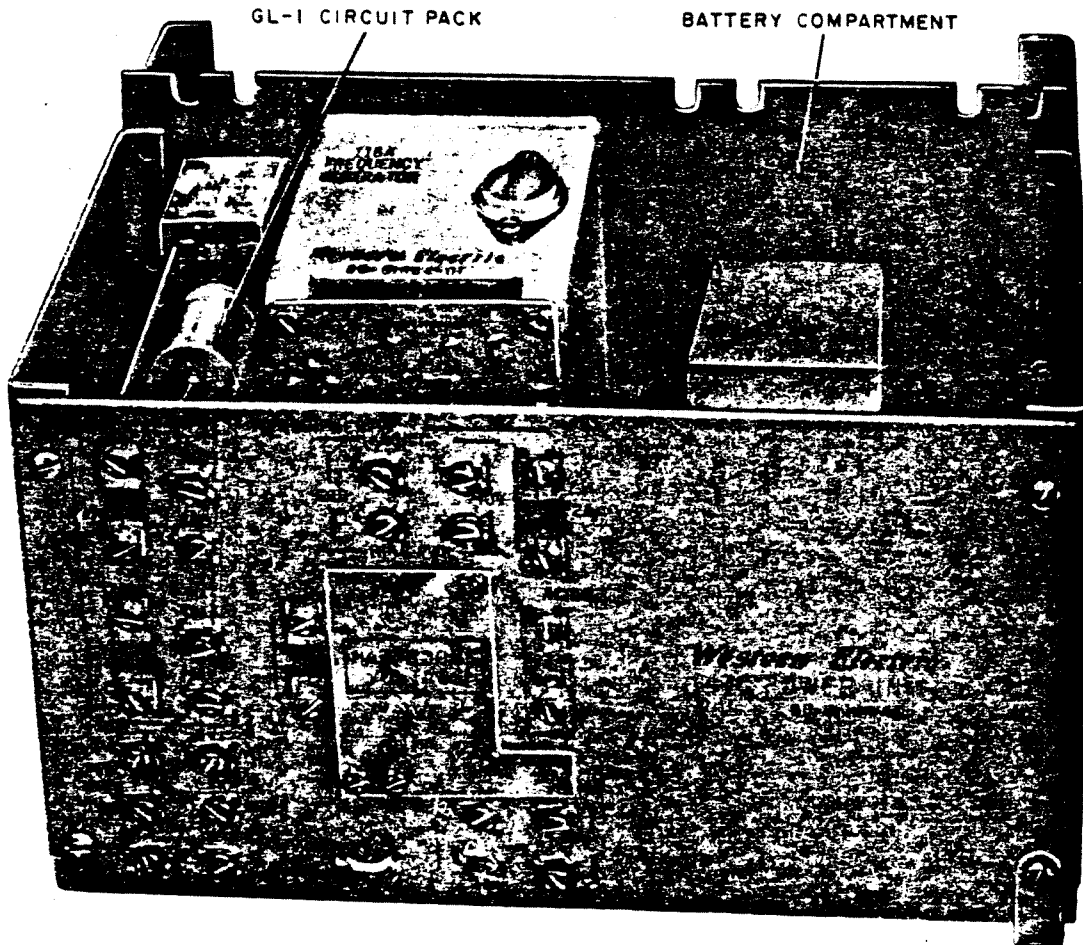


Fig. 1—47C Power Unit

- Connect the battery for trickle charge (from the normal use power unit) when the unit is on standby.

**Note:** The batteries will normally be fully recharged in approximately 24 hours.

**2.07 Battery (KS-20390, List 1):** Consists of a 24-volt (dc reserve) and a 10-volt dc (lamp reserve) battery in a single case. The battery is mounted in the battery compartment and connected to the power unit with a connector ended cable (Fig. 2). The battery will provide approximately three years of service at ambient temperatures ranging from 32° to 140°F. A label is provided on the battery for recording the installation date.

**2.08 Ringing Generator (116A Frequency Generator):** Furnished on an optional basis since a local ringing supply is required only with common audible ringing to standard ringers. The frequency generator has the capability to operate six high impedance ringers simultaneously.

#### ORDERING GUIDE

- Unit, Power, 47C
- Battery, KS-20390, L1
- Interrupter, KS-19384 or KS-19385 (See 3.02)

#### Replaceable Component

- Assembly, Pack, Circuit, GL-1

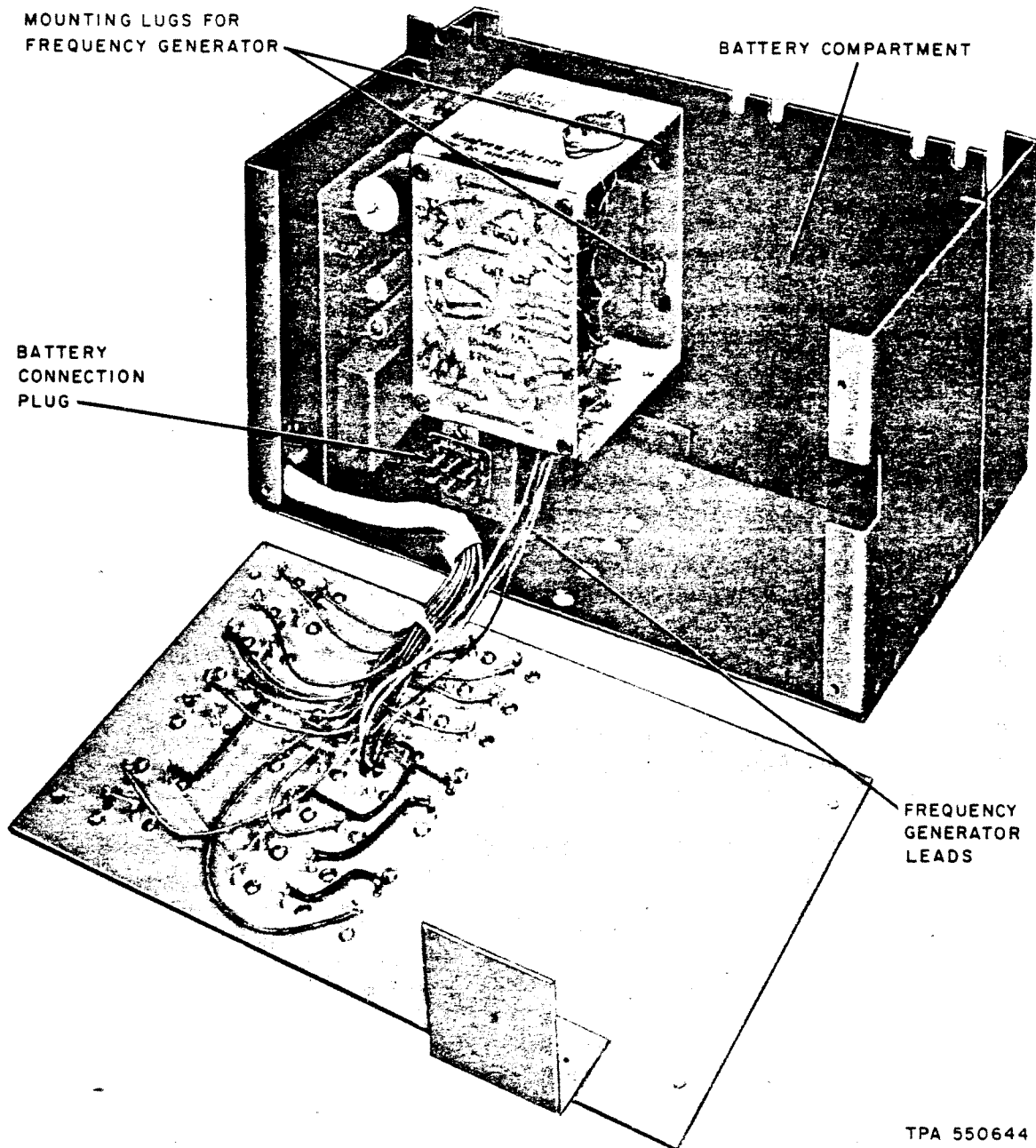


Fig. 2—47C Power Unit (Front Cover Removed)

### *Optional Components*

- Buzzer, KS-8109, L2 (See 3.01)
- Generator, Frequency, 116A.

### 3. INSTALLATION

#### Planning

- 3.01 KS-8109, L2 buzzers (24V dc) may be used for common audible signaling. This would

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eliminate the need for the 116A frequency generator. *However, in view of the buzzers high current drain, their use should be considered only where the number of buzzers is small and ringing is a small portion of overall calling.*

**3.02** The interrupter normally used in key telephone system installations operates on 10V ac. *It is necessary to replace the ac interrupter with a 24V dc interrupter (KS-19384 or KS-19385).*

**3.03** The KS-20390, L1 battery is shipped in a discharged stage. *It must be charged for 16 hours to attain a fully charged state before being placed in service.* To charge battery, proceed as follows:

- (1) Remove front cover from 47C power unit (Fig. 2).
- (2) Place battery in power unit battery compartment and connect battery connector to mating battery connection plug.
- (3) Replace front cover.
- (4) Connect a 19- or 20-type power unit to the power unit as shown in Fig. 3 for a minimum of 16 hours.

*Note:* Since reserve power is not available until battery is charged, the battery should be charged at the installation work center prior to installation at the customer's premises.

**3.04** The output of a 47C power unit and 116A frequency generator are not designed to be paralleled. In large key telephone installations it will be necessary to dedicate the power unit and frequency generator to specific equipment.

**Installing**



*Refer to Section 167-400-200 for general requirements necessary for the proper installation of the power unit.*

**3.05** For ease of installation, the battery and optional frequency generator should be installed in the power unit before it is mounted.

**3.06** To install battery and frequency generator, proceed as follows:

- (1) Remove front cover from power unit (Fig. 2).
- (2) Record installation date on label provided on battery.

*Note:* Installation date must be recorded so follow-up replacement can be made. The battery should be changed after three years service.

- (3) Place **fully charged** battery (see 3.03) in battery compartment and connect battery connector to mating battery connection plug.
- (4) Slide frequency generator (if used) in place on mounting lugs.
- (5) Insert frequency generator leads through hole in front panel.
- (6) Replace front cover on power unit
- (7) Connect frequency generator leads to terminals (Fig. 3) on front panel as follows:

TERM	LEAD
1	Red
2	Red-White
3	Blue
4	Blue-White

**3.07** Mount the power unit at the desired location. Mounting hardware must be furnished locally.

**3.08** Ensure that power unit is properly fused. See Table A and Fig. 1 for fusing.

TABLE A

24V DC SIGNAL	2-ampere, No. 24C fuse
24V DC TALK	2-ampere, No. 24C fuse
10V AC LAMP	2-ampere, No. 24C fuse
10V AC LAMP	2-ampere, No. 24C fuse
FREQ GEN	3/4-ampere, No. 24D fuse

**3.09** In the associated key telephone equipment, replace the 10-volt ac interrupter with a 24-volt dc KS-19384 or KS-19385 interrupter.

#### 4. CONNECTIONS

**4.01** Connect power unit as shown in Fig. 3.

**4.02** After connecting the power unit, it should be operated in the system for a minimum of 10 minutes on commercial ac power before it is tested.

**4.03** Check the installation by removing the ac power to the KTS power supply. Make a test call to a station in the KTS. The KTS should operate in a normal manner on receiving the call. If it does not, the battery is defective, or not charged, or the power unit is defective. Use a KS-14510 volt-ohm-milliammeter or equivalent to check the battery as follows:

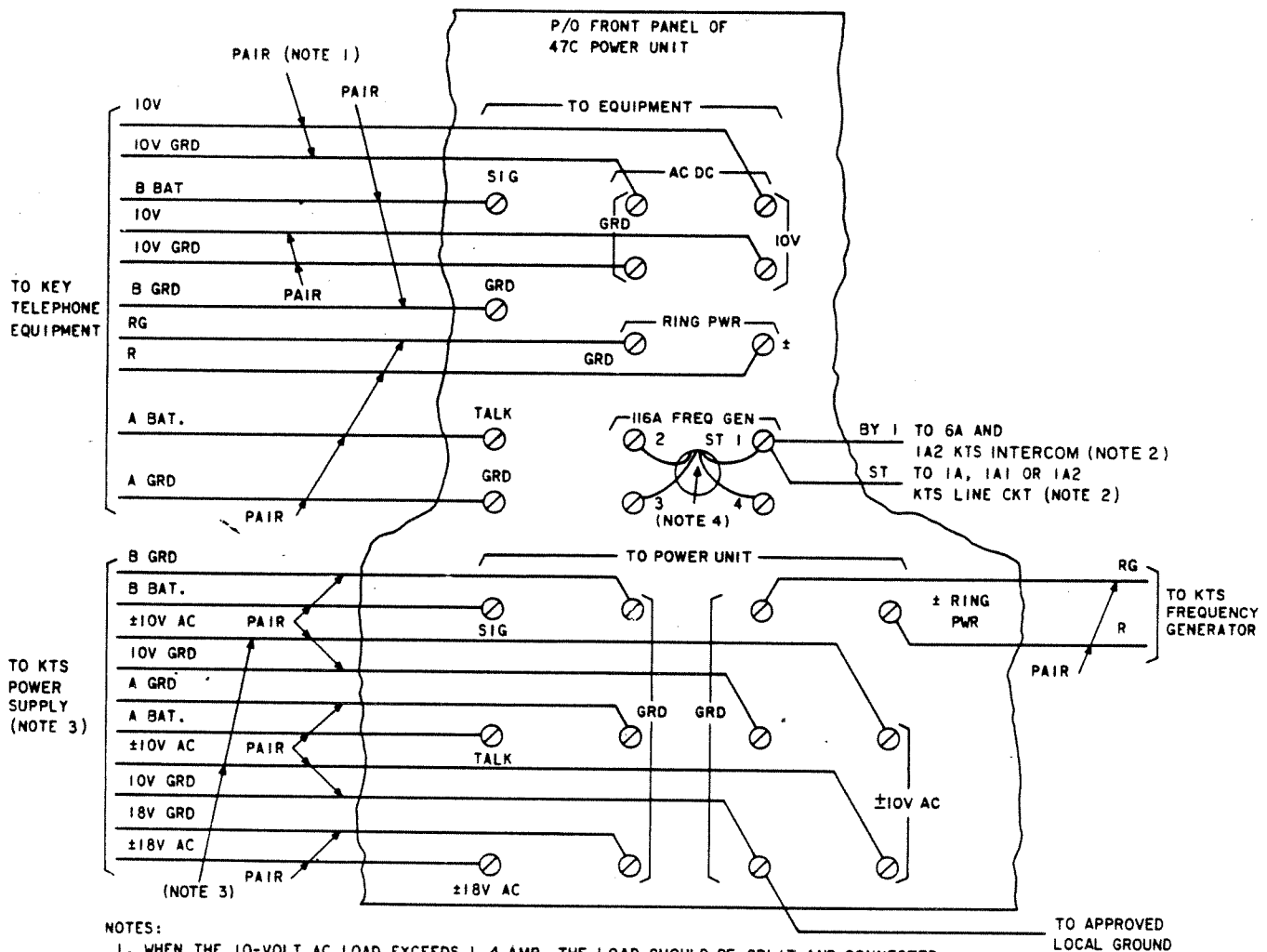
MEASURE BETWEEN	READINGS
SIG (−) and GRD (+)	> 20.0 Volts
10V and GRD (+)	> 9.0 Volts

If either of the preceding readings is not obtained, the battery should be recharged and if defective replaced.

#### 5. MAINTENANCE

**5.01** Keep the 47-type power unit clean and free of all foreign matter to ensure proper operation of the unit.

**5.02** Periodically check the operation of the power unit in accordance with 4.03.



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Fig. 3—Connections for 47C Power Unit