STATION SYSTEMS—POWER SUPPLY

INSTALLATION AND MAINTENANCE

1.00 INTRODUCTION

1.01 This section is reissued to:

- Add information on BL-12433 adapter.
- Add Table B.
- Remove information on 393-B and KS-5714 transformers.
- Add 3-conductor cord to Fig. 1, 2, 3, 4, 5, and 6.

1.02 Due to extensive changes marginal arrows have been omitted.

2.00 GENERAL

2.01 Locate all power plants and rectifiers where they will be accessible for inspection and maintenance. Location should be clean, well-ventilated, and as near station system apparatus as possible.

2.02 With the exception of the 101A and 101E power plants, all power plants and rectifiers discussed in this section require a 3-conductor 110-volt ac power receptacle. However, a 2-conductor receptacle can be used with an adapter. See 10.00.

2.03 The 110-volt ac outlet is furnished by the customer. If convenient, an existing outlet may be used, or the customer may wish to have an outlet placed adjacent to the equipment with which the power plant is used.

Make sure that the 110-volt ac power service outlet used is not under control of a switch.

2.04 To prevent their accidental removal, fasten power cords to the 110-volt ac outlet with a power-cord plug-retainer assembly, as described in 11.00.

2.05 Cable (switchboard, 1450CL, 6-conductor or 1451CL, 12-conductor) is a 20-gauge cable suitable for use between power plants and key equipment.

2.06 Power plants shall be grounded with 14-gauge wire.

2.07 On the 101G, H, and J power plants, no maintenance should be attempted other than the replacing of operated fuses. If any one of these power plants fails to function, it should be replaced.

3.00 101A POWER PLANT

3.01 The 101A power plant may be mounted on the wall or on a floor stand in the same manner as the 4-plate apparatus cabinet described in the C Section entitled Equipment Cabinets and Apparatus Mountings, Installation. The cabinet, when equipped with batteries, weighs approximately 90 pounds; therefore, care should be taken to ensure that the mounting arrangement is secure.

3.02 Arrange and wire the power plant in accordance with SD-81118-01 and ED-81506-01.

3.03 The 101A power plant, as furnished, is arranged for charge control operation (see Fig. 1). To operate the plant on a continuous charge basis, disconnect the leads to the contacts of the *CC* relay.

3.04 To set charge rate for continuous charge:

1. Remove charge fuse.
2. Strap out *B* resistor.
3. Set *C* rheostat at 0 resistance.
4. Connect ammeter across charge fuse terminals, positive side of meter to bus bar side of fuse terminal.

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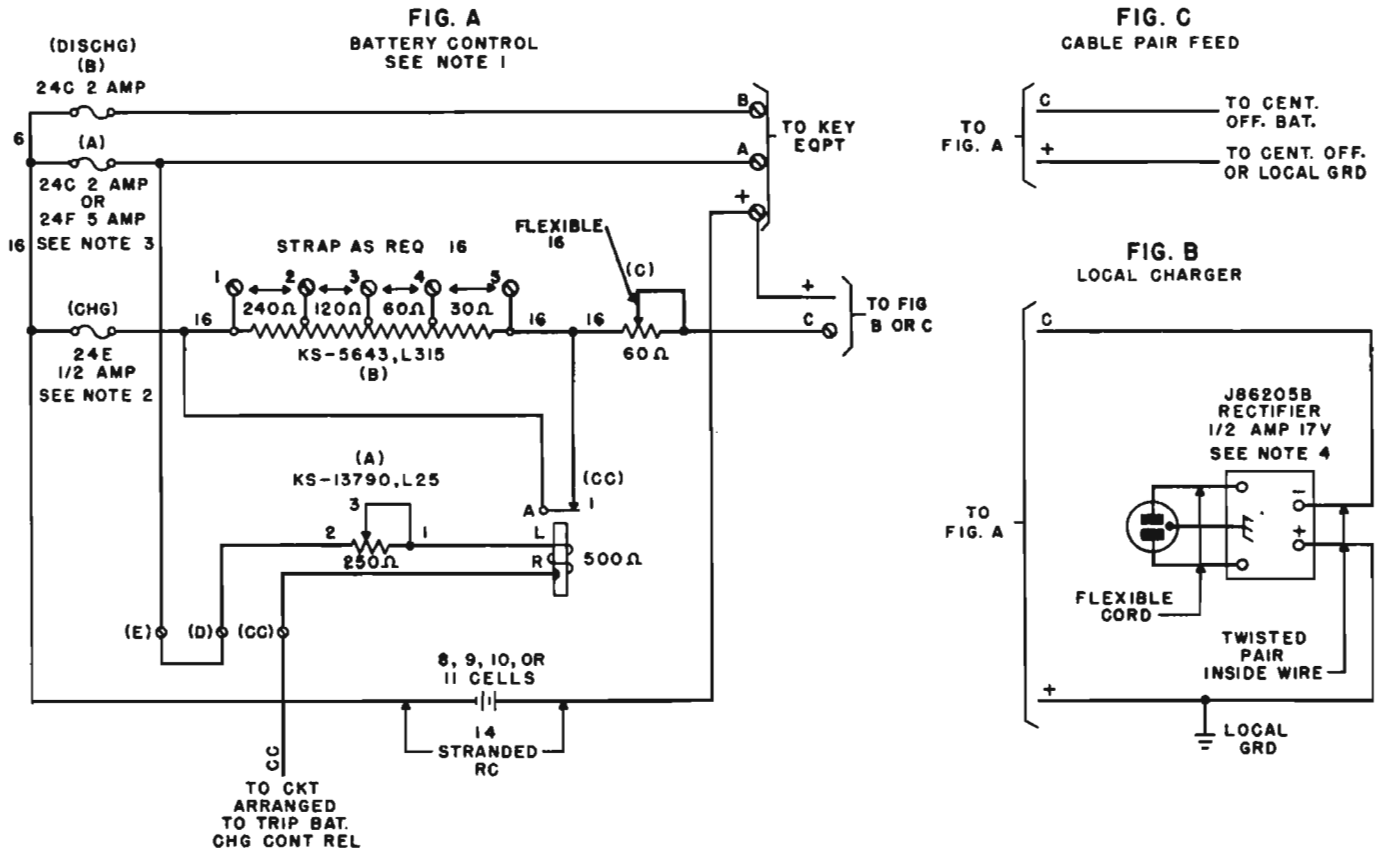


Note 1: All leads to be 20 AWG unless otherwise specified.

Note 2: If cable pair feeds are exposed, replace CHG fuse with a 60G fuse.

Note 3: When this plant is used to supply battery to equipments having distributing fuses at the equipment, the discharge (A) 2-amp fuse may be replaced by a 5-amp fuse. Where this is done, the battery and ground leads from the battery cabinet to the fuse panel and ground terminal strip shall be 16 AWG. The 2-amp fuse shall be furnished unless otherwise specified.

Note 4: Derate rectifier to 1/4 amp if used with 11-cell battery.

Fig. 1 — 101A Power Plant

5. Adjust charge rate to nearest value above required value by moving rectifier taps.
6. Make final adjustment by means of *C* rheostat and, if needed, *B* resistor.
7. Remove ammeter and replace charge fuse.

3.05 Use this method of setting high and low charge rate when using charge control *CC* relay. ***Set high charge rate first.*** To set high charge rate:

1. Open *CC* lead to key equipment.
2. Proceed as in 3.04, 1 through 5.
3. Make final adjustment by means of the *C* rheostat.
4. Close down *CC* lead to key equipment.

Now set low charge rate.

5. Block *CC* relay operated.
6. Cut in *B* resistor, as required, to obtain a charge rate of approximately 0.06 amp.
7. Remove block from *CC* relay, remove ammeter, and replace charge fuse.

3.06 Detailed instructions for adjustment of the *A* potentiometer for proper operation at the *CC* relay are given in the Circuit Requirements table of SD-81118-01.

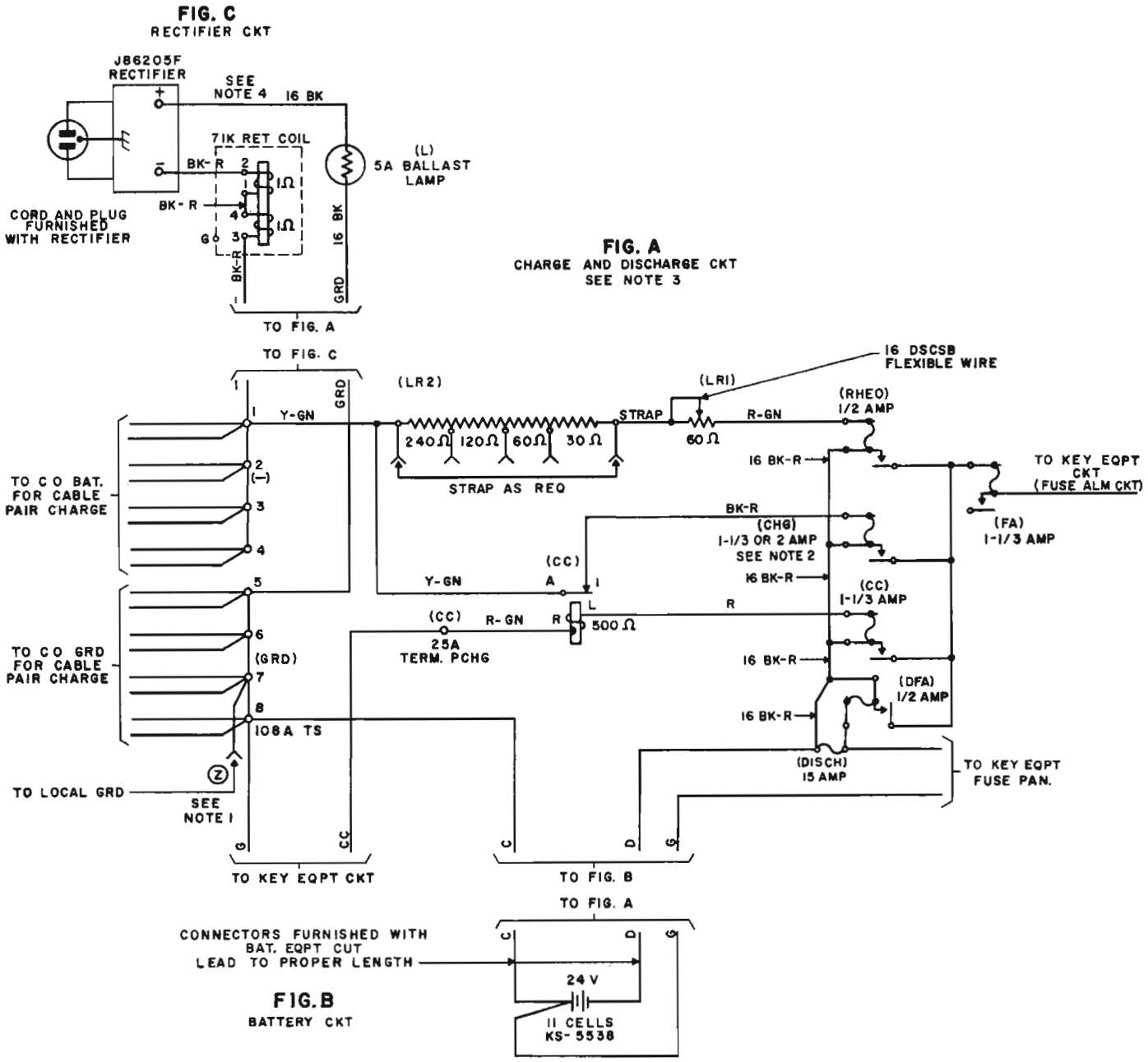
3.07 The plant should be visited occasionally to add water to the battery, to note whether charge indicators are up or down, and to check charge rate.

4.00 101E POWER PLANT

4.01 Mount the 101E power plant on a wall or on the floor in the same manner as the 18-plate cabinet described in C Section entitled Equipment Cabinets and Apparatus Mountings, Installation.

4.02 Arrange and wire power plant in accordance with SD-80733-01 and ED-80922-01. Fig. 2 shows wiring arrangement with rectifier or cable pair charge.

4.03 The high charge rate should not exceed 1 amp for the 30-ampere-hour battery or 0.5 amp for the 15-ampere-hour battery.



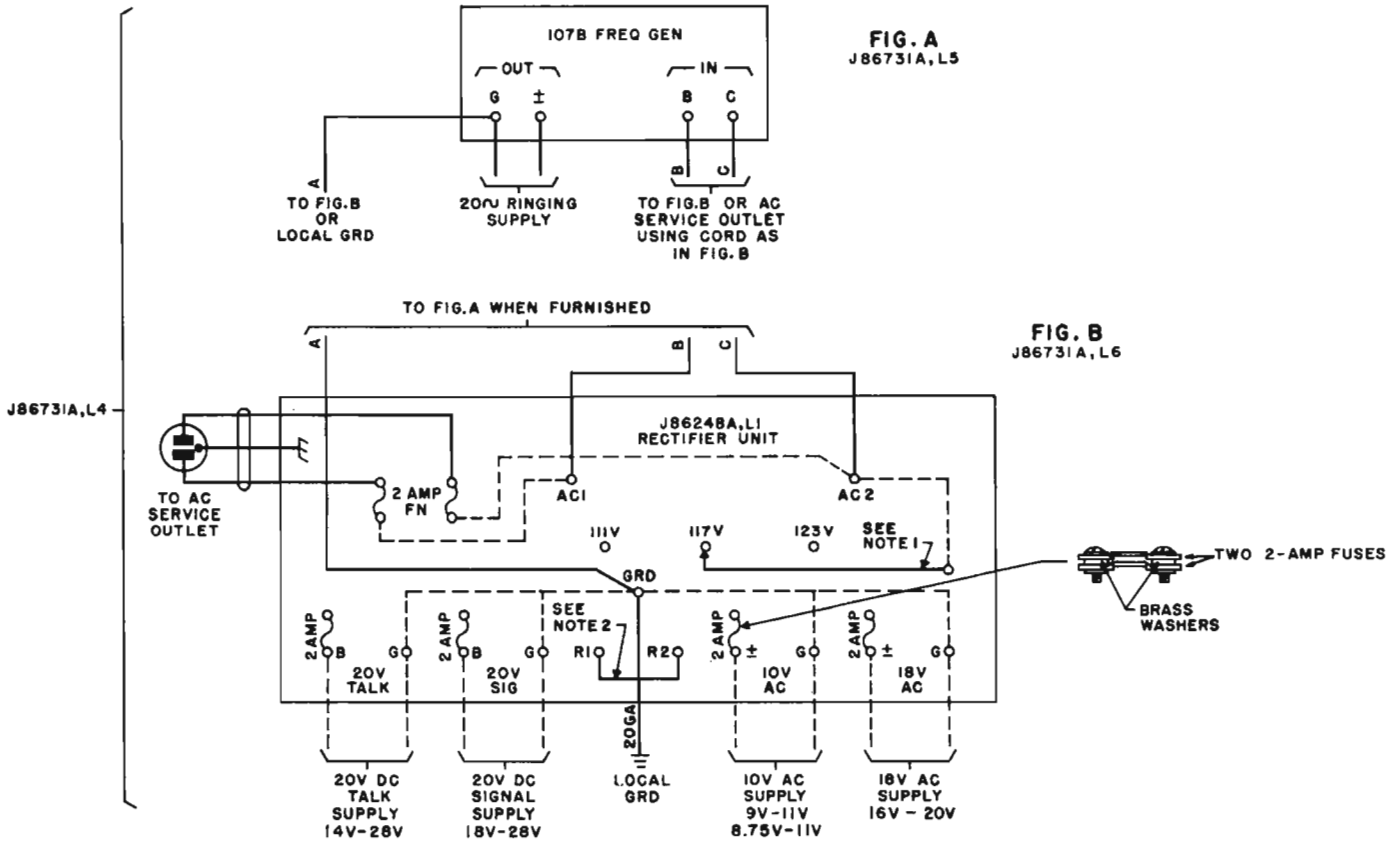
Note 1: Furnish *Z* wiring when local charger is used or with ground return cable pair charge.

Note 2: Charge fuse shall be 1-1/3 amp with cable pair charge and 2 amp when rectifier is provided.

Note 3: Wire unless otherwise specified to be 20 AWG.

Note 4: Transformer tap shall be selected to give rectifier output of not over 0.5 amp at operate voltage of *CC* relay.

Fig. 2 — 101E Power Plant



Note 1: Connect to 111V, 117V, or 123V, depending on ac service voltage range.

Note 2: Remove strap when transfer and reserve battery equipment is furnished.

Note 3: The maximum of each fuse is 1.6 amp or thirty-six 51A lamps.

Note 4: When 10V ac load is to exceed 1.4 amperes, a second 2-ampere fuse should be mounted on the same fuse mounting as the first, with washers between the two fuses. When fuses have current conducting surface on one side only, the bottom fuse must have this surface against the stud while the top fuse must be face up, against the screw head. In this case, the washers are not required. See Plant Series Section 167-400-200.

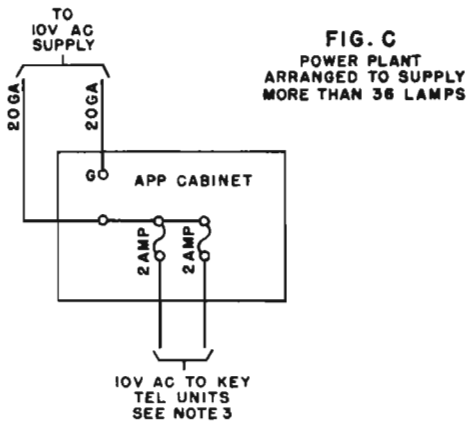


Fig. 3 — J86731A and D 101G Power Plants

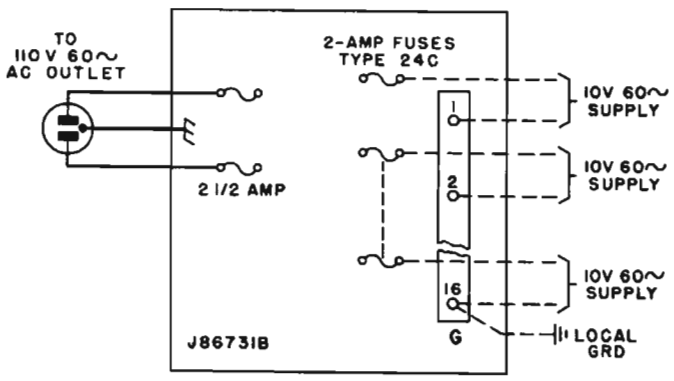


Fig. 4 — J86731B 101G Power Plant

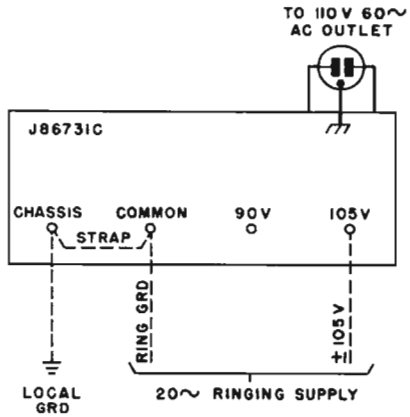


Fig. 5 — J86731C 101G Power Plant

4.04 Use this method of setting high and low charge rate. Set high charge rate first. To set this charge:

1. Remove *CC* fuse.
2. Remove charge fuse.
3. Place ammeter across charge fuse terminals, positive side of ammeter to bus bar side of the fuse terminal.
4. Adjust the taps on the rectifier to give a current at or as close as possible to the desired current.
5. Remove ammeter and replace *CC* fuse.

Now set the low charge rate as follows:

6. Remove rheostat fuse.
7. Place ammeter across rheostat fuse, positive side of ammeter to bus bar side of fuse terminal.
8. Cut in *LR2* resistor as needed, and adjust *LR1* rheostat to obtain a current of approximately 0.06 amp.
9. Remove ammeter and replace the charge and rheostat fuses.

4.05 The *CC* relay should be adjusted as described in PBX installation and maintenance practices covering adjustment of 253-type relay with 11 cells and no rheostat.

4.06 The plant should be visited occasionally to add water to battery, to note position of charge indicators, and to check charge rate.

5.00 101G POWER PLANTS

5.01 Securely fasten the power plant backboard to the wall with No. 14 RH wood screws. The power plant should be mounted a minimum of 10 inches and a maximum of 60 inches above the floor.

5.02 Fasten power plant to backboard with machine screws provided. In areas where local regulations require that such apparatus be removable without use of tools, use only pear-shaped holes for mounting. In other areas, one screw should be placed in one of the round holes at the bottom.

5.03 When necessary, the J86731A, List 4 101G power plant may be mounted on the J86731A, List 7 metal floor stand. Attach the backboard to the legs of the floor stand with the bolts furnished with the floor stand. Fasten the floor stand securely to the floor with No. 14 RH wood screws. If appearance is important, cover the exposed portion of the legs of the floor stand with covers per ED-95023-01, Group 5. The J86731A, List 4 101G power plant may also be mounted on the same floor stand as the 16A apparatus cabinets by use of auxiliary legs. This method is described in C Section entitled Equipment Cabinets and Apparatus Mountings, Installation.

5.04 The 2-amp fuse in the 10-volt ac supply of the J86731A, Lists 4 and 6 101G power plants provides for a maximum of thirty-six 51A lamps. When two 2-amp fuses separated by brass washers are paralleled as illustrated in Fig. 3B, and connections are provided as shown in Fig. 3C, seventy-two 51A lamps may be supplied. The connections for the J86731A, Lists 4, 5, and 6 101G power plants are shown in Fig. 3.

5.05 Fig. 4 gives the connections for the J86731B, List 1 power plant.

5.06 The J86731C, List 1, and J86731D, List 1 101G power plants are arranged to mount in a KTU apparatus cabinet, or on relay rack, or in a key telephone system KSU. When the power plant is mounted in an apparatus cabinet, the ac power cord shall follow the same route within the cabinet as incoming cable. Fig. 5 gives the connections for the J86731C, List 1 or 2 power plant. Fig. 3 gives the connections for the J86731D, List 1 power plant.

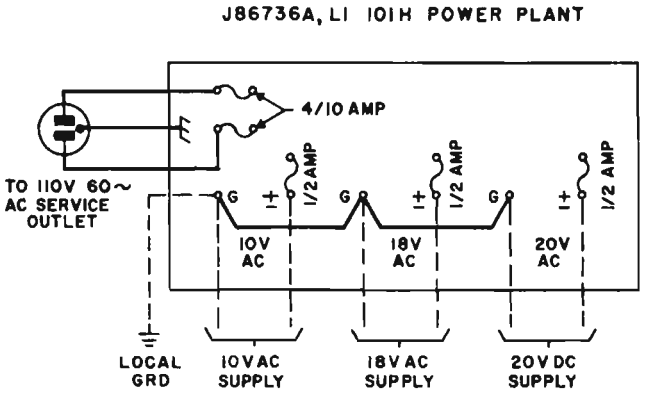


Fig. 6 — J86736A, List 1 101H Power Plant

6.00 101H POWER PLANT

6.01 This power plant is mounted in the manner described for 105B apparatus box in the C Section entitled Equipment Cabinets and Apparatus Mountings, Installation.

6.02 Fig. 6 gives the connections of the J86736A, List 1 101H power plant.

7.00 101J POWER PLANT

J86471A

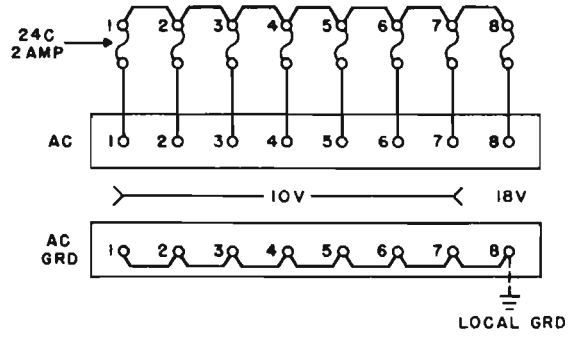
7.01 The J86471A, List 1 dc unit and List 1 ac unit are designed to mount in an apparatus cabinet or on a relay rack, or for wall mounting in the J86471A, List 2 cabinet.

7.02 When the units are mounted in an apparatus cabinet or on a relay rack, they may be mounted side by side with the ac unit on the left, or one over the other with the ac unit on top. When they are mounted in the J86471A, List 2 cabinet, mount the ac unit in the top position.

7.03 Fig. 7 gives the connections of the J86471A, List 1 or 3 ac and dc units.

7.04 When space does not permit and 107C frequency generator is needed, the two units may be mounted in a 6-plate apparatus cabinet.

FIG. A
J86471A, LI OR L3, AC UNIT



Note: Connect the *BK* lead to the B terminal. Connect the *G* and *W* leads to the 18V terminal when used with PBX equipment, and to the 24V terminal when used with key tel equipment.

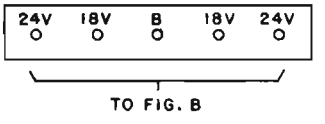


FIG. B
J86471A, LI OR L3, DC UNIT

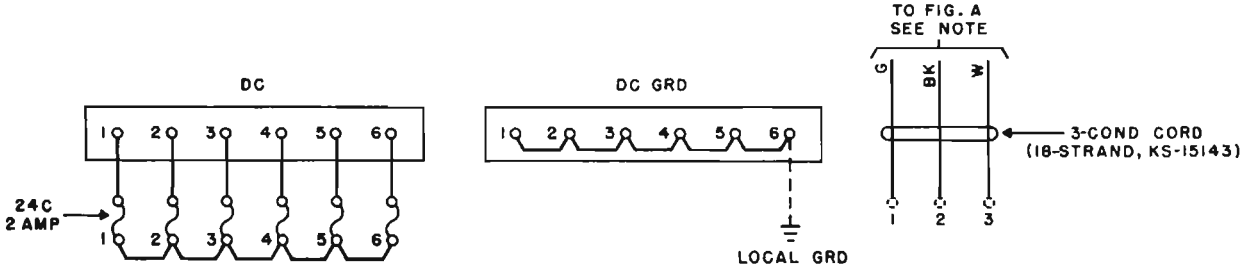
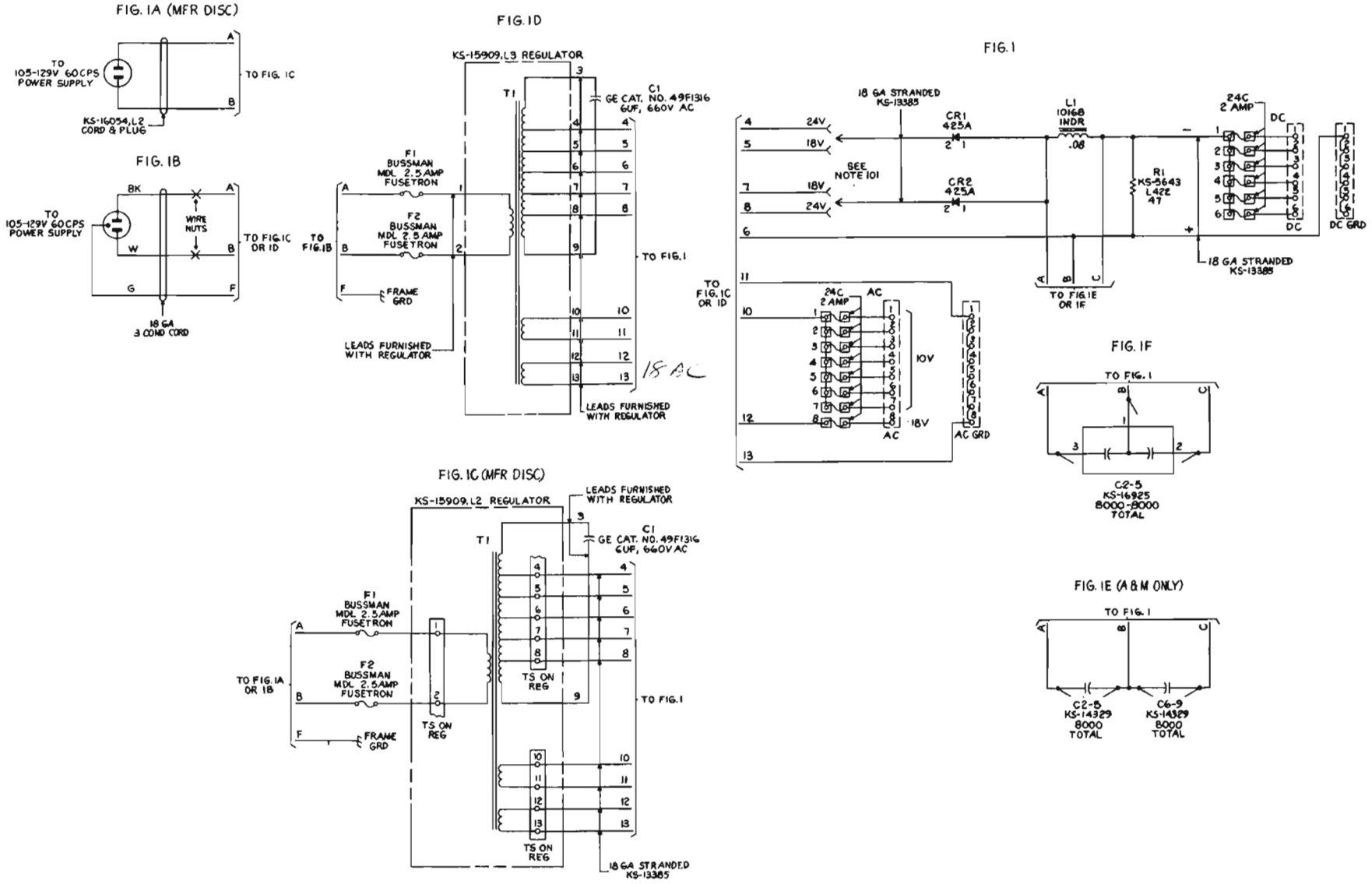


Fig. 7 — J86471A, List 1 or 3 AC and DC 101J Power Plant



Note 1: When rectifier is used with key telephone equipment, connect 24V taps. When used with PBX equipment, connect 18V taps.

Note 2: All leads shall be 18 gauge, KS-13385, solid, unless otherwise specified.

Note 3: Unless otherwise specified, resistance values are in ohms. Capacitance values are in microfarads.

Fig. 8 — J86471B, List 1 AC and DC 101J Power Plant

J86471B

7.05 Fig. 8 gives the connections of the J86471B unit.

When a power plant employing aluminum-type electrolytic capacitors is not in service, the dielectric film tends to deteriorate. To restore the film see Plant Series Section 032-110-701.

8.00 J86205-TYPE RECTIFIERS

The J86205B and F rectifiers are arranged for relay rack, wall, or shelf mounting. A 165 backboard may be used when the wall is not suitable for mounting the rectifier directly on the surface.

9.00 NOISE-REDUCTION CAPACITOR

9.01 Where current for talking circuits and for bells or buzzers is supplied over a common cable pair or pairs, a certain amount of noise will be introduced into the talking circuits when the signals are operated.

9.02 The 23A KTU (consisting of a KS-14136 capacitor mounted on a single-width angle bracket) should be used to reduce such noise.

10.00 POWER-CORD ADAPTER

10.01 A Hubbell No. BL-12433 adapter must be used with 3-conductor power cords where 2-conductor receptacles are used (see Fig. 9).

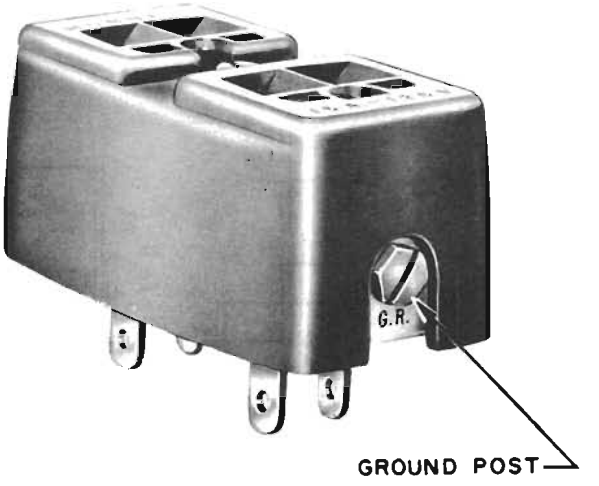


Fig. 9 — BL-12433 Adapter

10.02 The Hubbell adapter also provides a frame ground for the power plant or rectifier. If the power receptacle is not grounded, a local ground must be terminated on the ground post of the adapter. (See Fig. 9.)

11.00 POWER-CORD PLUG-RETAINER ASSEMBLIES

11.01 Where local regulations permit, a power-cord plug retainer and cord clamp of proper size may be used to prevent accidental removal of the power-cord plug from power-service outlets.

11.02 Power-cord plug-retainer assemblies complete with retainer, insulated cord clamp, and associated hardware are shown in Table A.

TABLE A

POWER-CORD PLUG RETAINERS

Single-Plug Retainer and Clamp	Twin-Plug Retainer and Clamp	Left- and Right-Hand Right-Angle Retainer	Cord Diameter
type			inch
SCB-4	TCB-4	ACB-4	1/4
-5	-5	-5	5/16
-6	-6	-6	3/8
-7	-7	-7	7/16
-8	-8	-8	1/2
-10	-10	-10	5/8

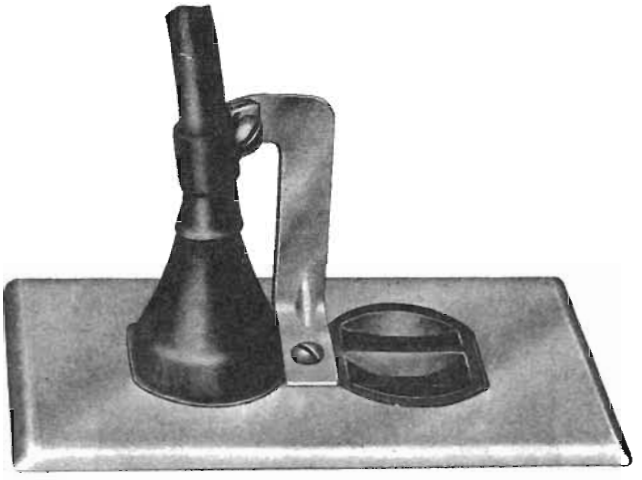


Fig. 10A — Single-Plug Retainer

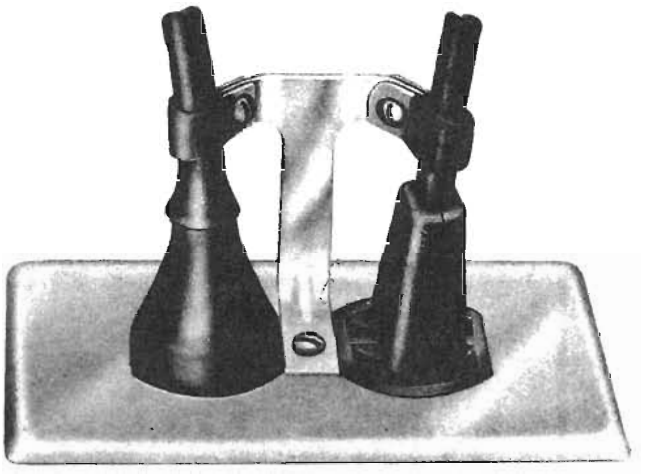


Fig. 10B — Twin-Plug Retainer

11.03 Fig. 10A shows method of installing single-plug retainer assembly. Fig. 10B shows method of installing twin-plug retainer assembly. Fig. 10C shows method of installing right-angle retainer assembly (left hand).

11.04 A right-angle retainer assembly (right hand) is available and can be installed singly or with a left-hand assembly using the same mounting screw.

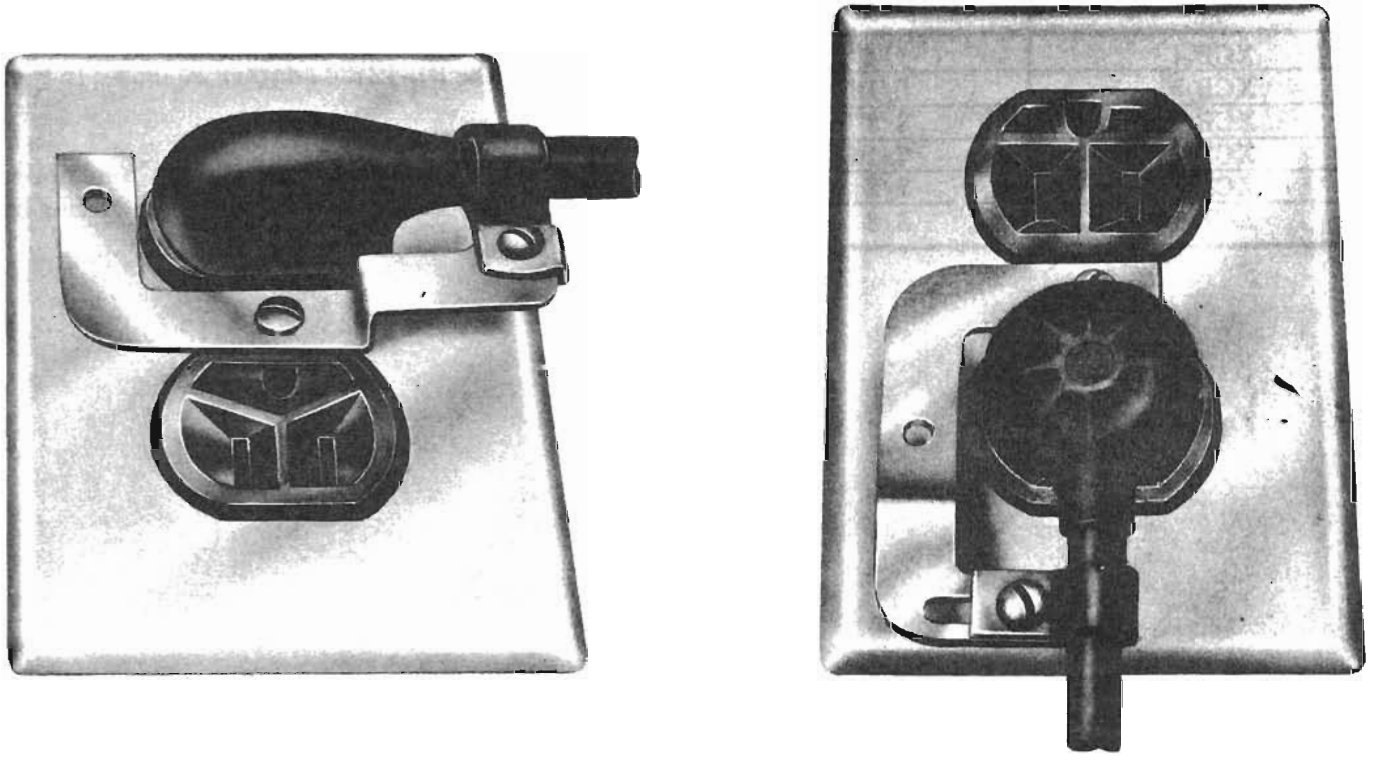


Fig. 10C — Right-Angle Retainer Assembly (Left Hand)

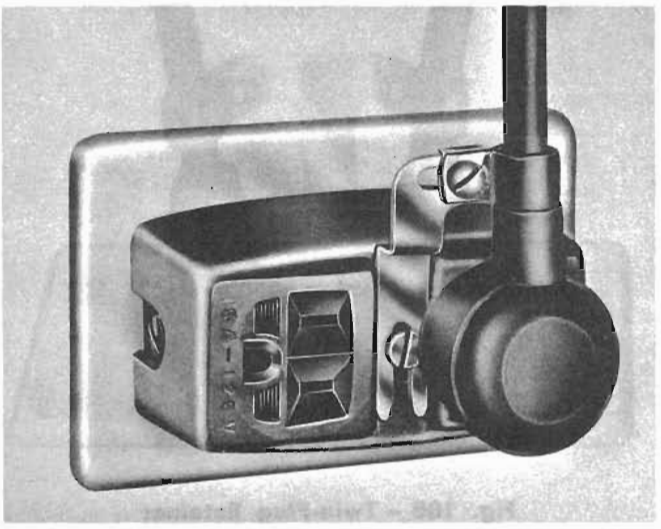


Fig. 10D — Single-Plug Retainer (Used with BL-12433 Adapter)

TABLE B

POWER-CORD PLUG RETAINERS
(Used with BL-12433 Adapter)

Right-Angle Retainer type	Cord Diameter inch
XCB-4	1/4
XCB-5	5/16
XCB-6	3/8
XCB-7	7/16
XCB-8	1/2
XCB-10	5/8

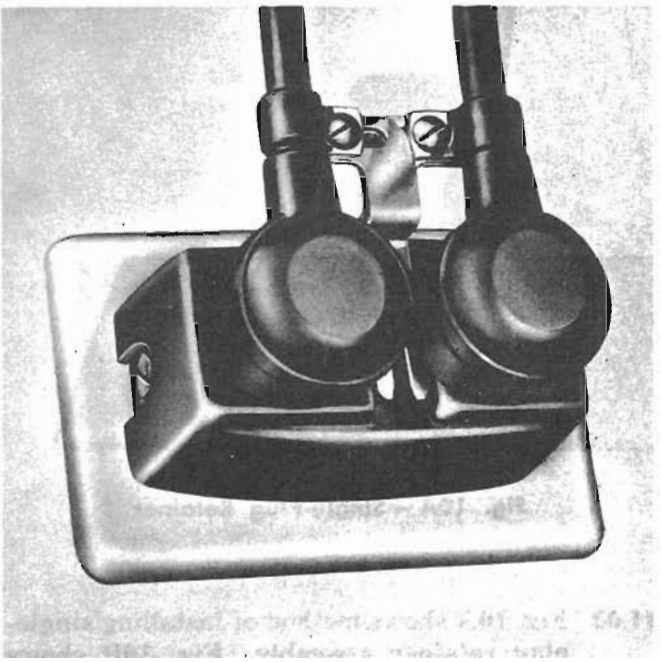


Fig. 10E — Twin-Plug Retainer (Used with BL-12433 Adapter)

11.05 Power-cord plug-retainer assemblies used with the BL-12433 adapters are shown in Table B.

11.06 Install the single-plug retainer assemblies with the BL-12433 adapter as shown in Fig. 10D.

11.07 Install the twin-plug retainer assemblies with the BL-12433 adapter as shown in Fig. 10E.