

TOSHIBA SYSTEM PRACTICES
ELECTRONIC KEY TELEPHONE SYSTEM

SECTION 100-006-250
POWER SUPPLY INSTALLATION

StrataVI[®]

POWER SUPPLY
AND
BACK-UP BATTERY
INSTALLATION INSTRUCTIONS

StrataVI

POWER SUPPLY (EPSA) & BACK-UP BATTERY (PBBU)

INSTALLATION INSTRUCTIONS

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01 POWER SUPPLY MOUNTING

01.01 All models of the External Power Supply Assembly (EPSA) are equipped with a built-in wall mounting bracket, as shown in Figure 1, to allow the EPSA to be mounted on a wall or other flat, vertical surface.

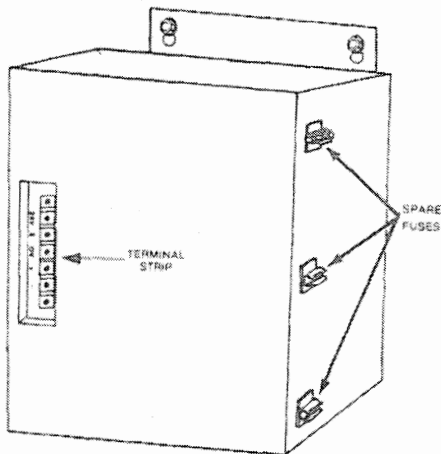


FIGURE 1

01.10 Preparing the Mounting Surface

01.11 Unpack and inspect the EPSA and the enclosed hardware. The following hardware, which is required to mount and connect the EPSA to the system, is supplied with each EPSA.

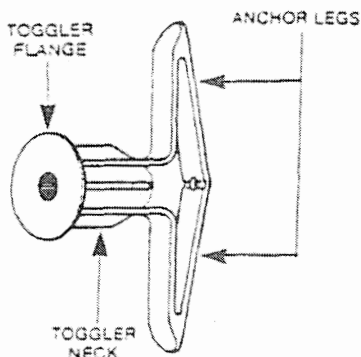


FIGURE 2

ENCLOSED HARDWARE

Quantity	Item
2	T.C. Toggler Wall Fasteners (Figure 2).
2	#14 Hex Head Sheet Metal Screws.
1	Toggler Key.
1	Template P/N 117260-001 (to space the wall fasteners properly).
1	AC Fuse (spare) P/N 116438-088 (F1, 5 amp, SLO-BLO 125 VAC).
1	DC Fuse (spare) P/N 116438-030 (F2, 10 amp, Fast-BLO, 32 VDC).
1	16 AWG, 3 wire Jacketed Cable (54 inches).

01.12 Choose a suitable location on a vertical surface for the EPSA, and attach the P/N 117260-001 template to that location temporarily. Use a spirit level to verify that the indicated drilling points are level.

01.13 Place punch marks on the mounting surface through the "+" marked drilling positions on the template.

01.14 Enlarge the two punch marks with an 1/8-inch drill bit.

01.15 With a 5/16-inch bit, drill through the mounting surface to complete the anchoring holes.

01.20 Securing the EPSA

01.21 Press the anchoring legs of a toggler together and insert them into one of the anchoring holes, as shown in Figure 3.

01.22 Insert the toggler into the hole until the neck flange is flush with the mounting surface. If it is difficult to insert it completely by hand, tap it lightly with a hammer.

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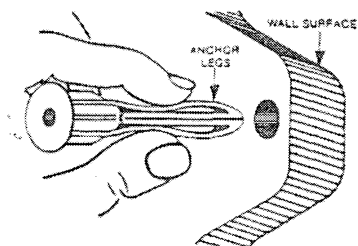


FIGURE 3

01.23 Insert a togger key into the small hole in the neck of the fastener, as shown in Figure 4. This should cause the anchoring legs to "pop" open. Even if the mounting surface is too thick to permit the legs to open fully, adequate support for the EPSA should be provided when the screws are in place. Remove the togger key.

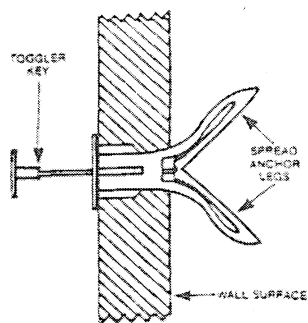


FIGURE 4

01.24 Repeat the steps outlined in Paragraphs **01.21** to **01.23** for the second hole.

01.25 Thread the #14 hex head sheet metal screws into the small holes in the center of the togglers. Leave approximately 3/16-inch clearance between the bottom of each screw head and the mounting surface (Figure 5).

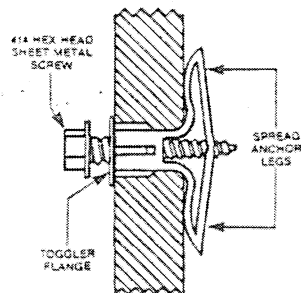


FIGURE 5

01.26 Align the EPSA mounting bracket's holes with the sheet metal screws as shown in Figure 6. Place the EPSA against the mounting surface with the screws protruding through the holes.

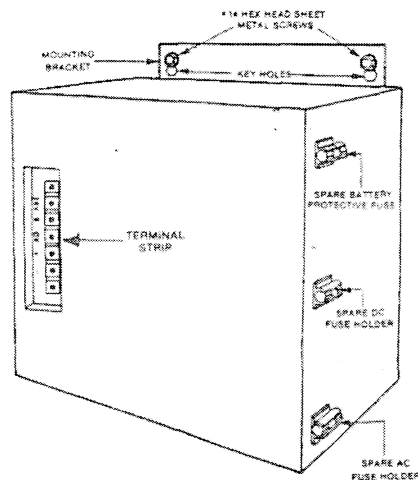


FIGURE 6

01.27 Lower the EPSA so that the narrower portions of the holes slip over the screws and the weight of the EPSA is supported. Tighten the screws.

01.30 Fuse Protection for the EPSA

01.31 Remove the spare fuses from the hardware carton.

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01.32 Place the spare 10 amp DC fuse in the center fuse storage clip located on the side panel of the EPSA (Figure 6).

01.33 Place the spare 5 amp SLO-BLO AC fuse in the clip below the DC fuse clip.

01.34 Remove and inspect the fuses that were shipped inside the EPSA. If the visual inspection reveals a defective fuse, remove the appropriate spare from its storage clip and replace the defective fuse. (Order another spare fuse.)

02 BATTERY BACK-UP INSTALLATION

02.01 General

02.02 The Power Battery Back-up Assembly (PBBU) in Figure 7 is an optional PCB which may be installed in the EPSA 104 to interface with two auxiliary 12V batteries. In the event of an electrical power failure, the PBBU provides an automatic battery power source, permitting a typical STRATA VI system to continue normal operations for up to 12 hours.

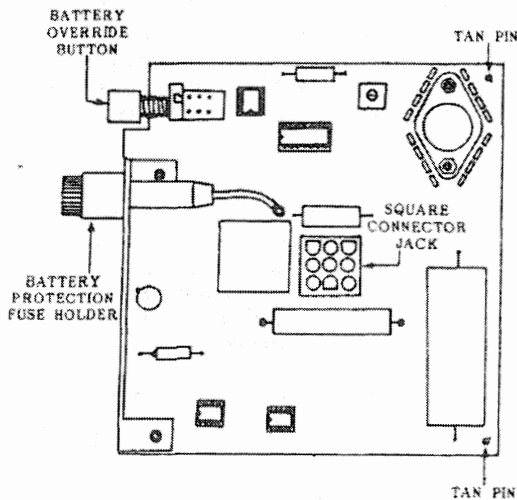


FIGURE 7

02.03 The PBBU contains a voltage sensing circuit which causes an electromechanical relay to connect the back-up battery power supply to the system before the EPSA output voltage drops below 21VDC (at which point system functions would be disrupted and existing calls would be disconnected).

02.04 When the normal source of electrical power is restored, the voltage sensing circuit relay will disconnect the standby battery power source.

02.05 If the standby battery power source output falls below 21VDC while it is connected to the system, the voltage sensing circuit will cause the relay to disconnect the standby battery from the system.

02.06 The standby battery power supply will not reconnect unless:

- The normal source of electrical power is restored, causing the PBBU to disconnect the battery power supply from the system, or...
- The "Battery Override" switch (Figures 7 and 8) is placed in the ON position, or...
- The depleted batteries are replaced by a freshly charged pair and the "Battery Override" switch is turned on and then released.

02.07 The PBBU also contains circuitry to provide the charge current necessary to maintain the batteries at a satisfactory level of charge while the STRATA VI system is in normal operation. An external fast charger may also be connected across the battery output terminal connections.

02.08 The PBBU kit contains the following items:

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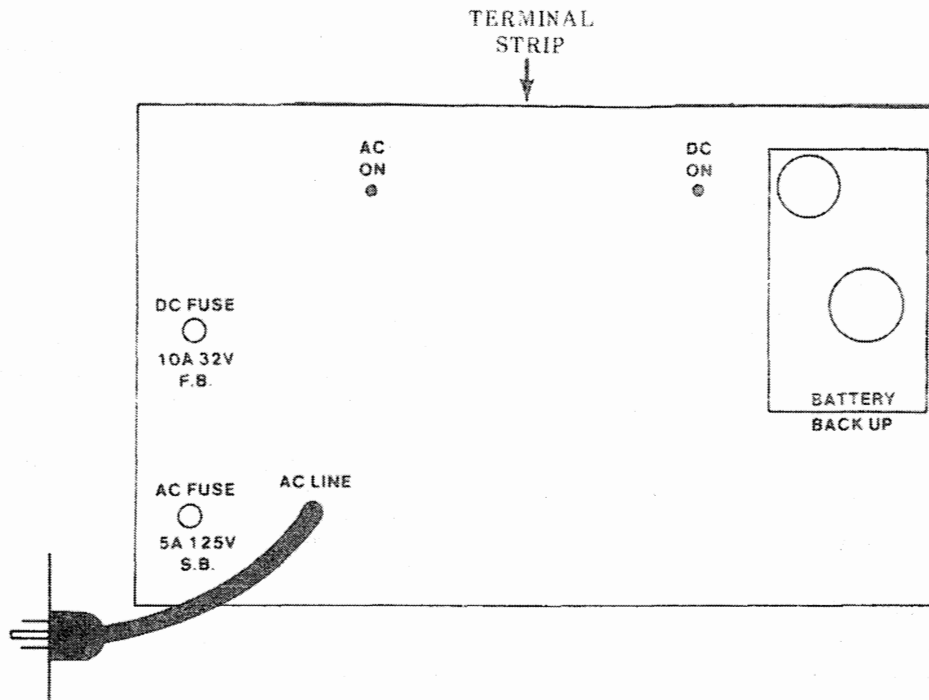


FIGURE 8

- PBBU—Power battery backup PCB.
- Fuse—A spare battery protection fuse.
- Cable Clamp—A 7/16-in. cable clamp which may be needed to secure the wiring harness inside the EPSA.
- "PBBU-REV 3"—An adhesive-backed decal to be placed on the front face of the EPSA.
- Warning Tag—A warning tag to be attached to the EPSA 115VAC power cord.
- Two Batteries—Two 12V/80 amp-hour, lead-acid, automotive-type, maintenance-free batteries are recommended. The procedures in Paragraph 02.50 assume batteries with side-mounted terminals are used.
- Battery Rack and Separator—A battery rack and separator should be used to secure the batteries to prevent tipping and spilling of battery acid or accidental shorting of the battery terminals.
- Two-Wire Connecting Cable—A 2-wire connecting cable terminating at one end with 3/8-in. ring terminals and at the other end with 1/8-in. hooked spade terminals is required to provide the connection

02.09 In addition to those items supplied in the PBBU kit, the following additional items are needed to install a PBBU in an EPSA:

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between the batteries and the EPSA. The minimum wire size must be determined by the loop length of the connecting cable as indicated in Table A.

TABLE A—MINIMUM WIRE GAUGE

LOOP LENGTH	RECOMMENDED SIZE
12 ft.	16 gauge
20 ft.	14 gauge
30 ft.	12 gauge
50 ft.	10 gauge

- Single Wire Cable—A 16 AWG single wire cable, approximately 18 inches in length and equipped with ring terminals, is required to connect the two batteries in series.
- Cable Clamp—A cable clamp should be used to relieve strain on the battery cable to prevent cable movement from affecting the batteries.
- Battery Fuse—A 10 amp, 32V (minimum) fuse, or a 10 amp DC instantaneous tripping circuit breaker is to be located adjacent to the batteries in series with the negative lead of the 2-wire connecting cable. The battery fuse (or circuit breaker) is required to protect the batteries from damage due to a power surge or a short circuit.
- Hex Head Bolts—Four 3/8in. hex head bolts are required to connect the cable terminals to the batteries.
- Washers—Eight 3/8-in. flat washers and four 3/8-in. internal-tooth lock washers are required for the above cable terminal connections.
- Battery Cabinet—If the batteries are not located in a well-ventilated closet or other secure area, protected from fire or sparks, a properly ventilated protective cabinet is required to safeguard them.

NOTE:

The EPSA-104 is currently being supplied with all STRATA VI systems; however, an EPSA-103 is shown in the illustrations. Installation in each of these EPSAs is similar except for minor differences in the location of harnesses or connectors. If required by local code, see the permanent wiring instructions on the tag attached to the power supply cord. The "Warning Tag" attachment at the same location is always required.

CAUTION:

The EPSA, battery, battery rack, and the interconnecting wiring shall be installed only by qualified installers, in accordance with all applicable electrical codes and Article 480 of the National Electrical Code. Before installing see the "Installation Instructions" enclosed with each item.

WARNING:

Only trained personnel may service or install the PBBU and EPSA-104.

02.10 PBBU Installation

02.11 EPSA Preparation

NOTE:

Before attempting to install a PBBU PCB, the EPSA must be mounted and connected to the MKSU; (Section 100-006-200, Installation).

02.12 Verify that the power switch on the MTOU is in the OFF position, and then disconnect the EPSA's 115 VAC power cord.

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02.13 Remove the terminal strip cover from the **OUTPUT/24V, 8A-24V/BATTERY** terminals (Figure 9).

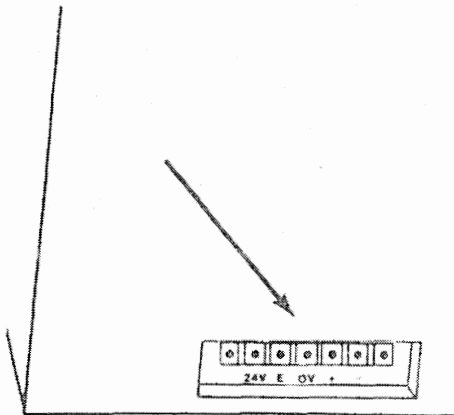


FIGURE 9

02.14 The EPSA cover is secured by seven screws. Viewing the EPSA as if it is wall-mounted, two screws will be located at the rear edge of the top of it, three on the side facing outward and two on the rear edge of the bottom.

02.15 Remove all seven screws.

02.16 Remove the cover and set it aside.

02.17 Locate and trace the multi-wire harness in the lower portion of the EPSA (the area away from the built-in mounting bracket). The harness originates from the transformer and the terminals and fuse holders mounted in the control panel. This harness terminates in a rust-colored square connector.

02.18 The harness is secured to the bottom of the chassis with a cable clamp as shown in Figure 10. Loosen the screw and nut slightly to allow movement of the harness.

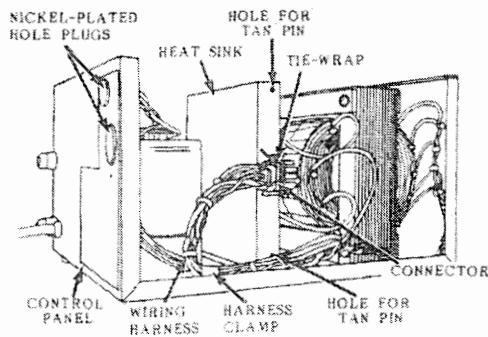


FIGURE 10

02.20 Installing the PBBU Assembly

02.21 Mounted in the EPSA control panel are two nickel-plated hole plugs. Bend in the retaining tabs on both plugs; remove and discard them.

02.22 Unwrap the PBBU and locate the screw in the PBBU's mounting bracket (Figure 11). Remove and save the screw.

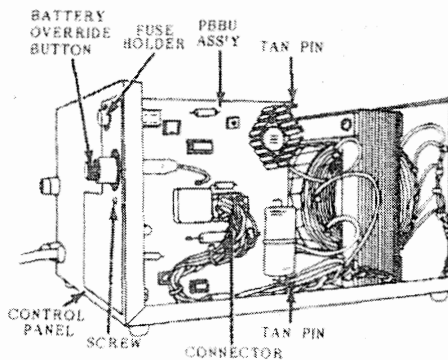


FIGURE 11

02.23 Slip the PBBU's battery protection fuse holder and the battery override button through their respective ports in the control panel (Figure 11). The PBBU's mounting bracket should be

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flush against the rear of the control panel with the fuse holder and override button protruding through it. The harness should flow around the PBBU PCB, with no wires beneath it.

02.24 Align the two tan-colored PBBU pins with the two holes in the heat sink (Figure 10). Press the pins into the holes until they catch and hold the PBBU PCB.

02.25 Use the previously removed screw and secure the PBBU mounting bracket to the control panel. See Figure 11.

02.26 Plug the rust-colored connector into the nine-hole jack in the center of the PBBU PCB. **Do not** force the connector's prongs into the jack, they are keyed so that they can be mated in only one position.

02.27 Replace the EPSA cover and secure it with the seven screws originally removed.

02.28 Press in the battery override button (Figure 8). If it catches and stays in, press it again to cause it to release and protrude out of the control panel. Out is off, and the position of the button must be in for the EPSA to operate normally.

02.29 Remove the spare fuse from the PBBU kit. If the original fuse is missing or defective, replace it with the spare. If not, put the spare fuse in the holder located on the side of the EPSA away from the control panel.

02.30 Required Labels and Warning Tags

02.31 Remove the warning tag from the kit and tie it to the power cord where it emerges from the EPSA.

02.32 A "PBBU-REV 3" decal must be placed on the control panel of the

EPSA. Remove the decal from the kit, peel the backing off, and place it on the control panel (Figure 8).

02.40 Battery Connection

CAUTION:

Do not attempt to connect the batteries to the EPSA while the AC power cord is plugged in, or without the EPSA being connected to the MKSU. Do not connect the 2-wire cable to the batteries before connecting it to the EPSA. Once the batteries are connected to the EPSA the 24V 8A output terminals are live.

02.41 Select a location for the batteries near the EPSA. The loop length of the cable connecting them to the EPSA will determine the minimum gauge wire which can be used in the cable. See Table A.

NOTE:

The area in which the batteries are to be located must be well ventilated to prevent a dangerous accumulation of battery gases. The batteries must also be protected from moisture and extreme temperatures.

02.42 Secure the batteries in the battery rack and separator, which should be located in a minimum access area, such as a closet or a well ventilated cabinet.

02.43 Verify that the battery override button is in the **OFF** position (out).

02.44 Loosen the two screws on the terminal strip identified as 24V/BATTERY.

02.45 Attach the cable's two spade tips to these connectors. Each wire,

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as well as the EPSA terminals, are marked positive (+) or negative (-). See Figure 12. Match positive to positive and negative to negative.

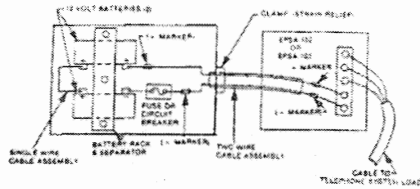


FIGURE 12

02.46 Connect the battery fuse (or circuit breaker) lead to the negative terminal on one battery (Figure 13).

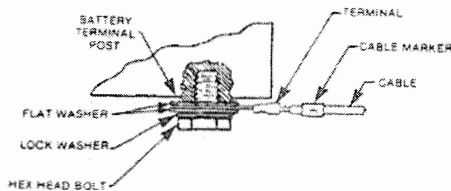


FIGURE 13

02.47 Attach the negative wire from the connecting cable to the battery fuse (or circuit breaker).

02.48 Connect the positive wire to the positive pole of the battery to which the fuse is not connected (see Figure 12).

02.49 Connect one end of the single-wire cable to the positive terminal on the battery with the fuse. Connect the other end to the negative terminal on the battery without the fuse (Figure 12).

NOTE:
Place the cable clamp over the two-wire cable and secure it to either the battery rack or the protective cabinet. Adjust the clamp to relieve strain on the cable.

02.50 Installation Finalization

02.51 Plug the AC power cord in, and verify that the **AC ON** indicator is lit.

02.52 Unplug the AC power cord, and verify that the **DC ON** indicator is lit to indicate the batteries are supplying electrical power as needed.

02.53 Replace the terminal strip cover and test the STRATA VI system functions under both AC and battery back-up power.

CAUTION:
When testing is complete, make certain that the battery override button is in the **OFF** position and that the **AC ON** indicator is lit.