JERROLD ELECTRONICS CORPORATION
A subsidiary of
GENERAL INSTRUMENT CORPORATION

INSTRUCTION SHEET

435-822-03

STARLINE
CATV CABLE POWER SUPPLIES

MODELS SPS-30B AND SPS-60B

DESCRIPTION

Models SPS-30B and SPS-60B are 30 and 60 V a.c. supplies for CATV systems where coaxial cables have to carry both r.f. energy and a.c. power. The units operate from a 115 V, 60 Hz utility line.

The power supplies have a voltage-regulating, dual-winding power transformer; a U/L listed circuit breaker and box for primary power protection; one self-healing, non-polarized, gas-filled surge protector; a 115 V a.c. auxiliary output jack; a secondary voltage indicator light; and a built-in filter that provides r.f. isolation.

Optional equipment, for installation in the field, includes an output terminal box (Model SPS-PT-KIT) to provide a second a.c. output; a lightning arrester (Jerrold Part No. 137-268-00) for line surges; and a time delay relay (Model PDT-30/60) to protect the system loads from turn-on transients from the regulating transformer.

The units are housed in a weatherproof sheet aluminum cabinet which has a padlock facility and is equipped with appropriate brackets, so that the power supply can be mounted on a utility pole or cross-arm, or on any surface where a 115 V a.c., 60 Hz, 3-wire source is available.

The power supplies are designed to deliver outputs of 30 and 60 V rms respectively. The a.c. output of the power supplies is coupled into the cable system via a Jerrold power inserter Model SPJ-3C (to be procured separately) which is connected at any convenient point to the coaxial cable.

INSPECTION AND TEST

Before installation, physically inspect the power supply to make sure it was not damaged while in transit. Then check its output voltage. For this purpose, construct a test cable as follows:

a. Use an adequate length of 3-wire type SJT cable.

b. Cut back the cable jacket at both ends and expose about ½ inch of the conductors; install a three-prong plug on one end of the cable.

In addition to the test cable, a true rms reading voltmeter such as a dynamometer or iron vane type meter (e.g., Weston Model 204 or 304) is needed.

Open the SPS cabinet by loosening the two locking bolts at the bottom and sliding the cover down; tilting the cover sideways permits complete removal. Then remove the cover from the circuit breaker inside the unit and connect the three wires of the test cable as illustrated in Fig. 1.

SPECIFICATIONS

Model No.	SPS-30B	SPS-60B
PRIMARY, for full load	95 to 130 V, 60 Hz, 500 W max.	95 to 130 V, 60 Hz, 1050 W max.
SECONDARY, nominal	30 V rms	60 V rms
REGULATION(1)	output voltage will keep within +5% to —3.5% for line voltage variations between 95 and 130 V, and for resistive load current variations between 4 and 12 A	
OPERATING TEMPERATURE RANGE	—40°C to +60°C	
SURGE PROTECTION	gas tube, 145 V d.c., ±20%, 5 A, with 40 A follow-on	

(1) a. Under the above conditions, the output peak voltage will not exceed 39 V and 78 V respectively.
b. For an input between 85 and 95 V, the secondary rms voltage can be as low as 28.25 and 56.5 V respectively.

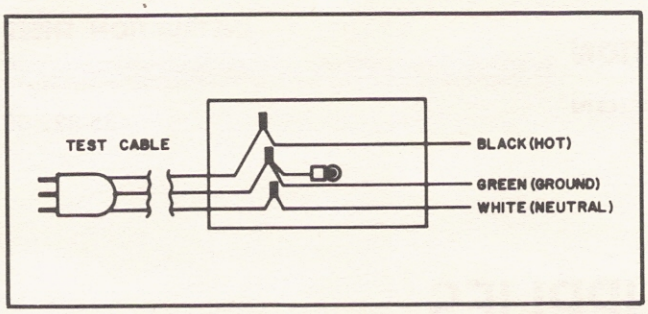


Fig. 1—Test Cable Connections

Remove the cover from the output terminal and surge arrester box by loosening the screw at the bottom, sliding the cover up, and lifting it off.

Connect the plug of the test cable to a 115 V a.c., 3-wire outlet. Now test for 30 or 60 V rms at the output terminal with the negative test lead on chassis ground.

After test, remove the plug of the test cable from the 115 V outlet, disconnect the other end of the cable from the leads inside the utility box. If no accessories are to be installed, return the cover to the output terminal box, and then the cover to the SPS housing. The power supply can now be transported to its mounting location, preferably in its shipping carton.

INSTALLATION OF ACCESSORIES

OUTPUT TERMINAL BOX—MODEL SPS-PT-KIT

1. Remove the output terminal box knockout from the bottom plate of the power supply housing (see Fig. 2).
2. Use a 5/32" or number 22 drill (clearance hole for a number 6 screw) to drill out the three dimples located on the side of the power supply housing.

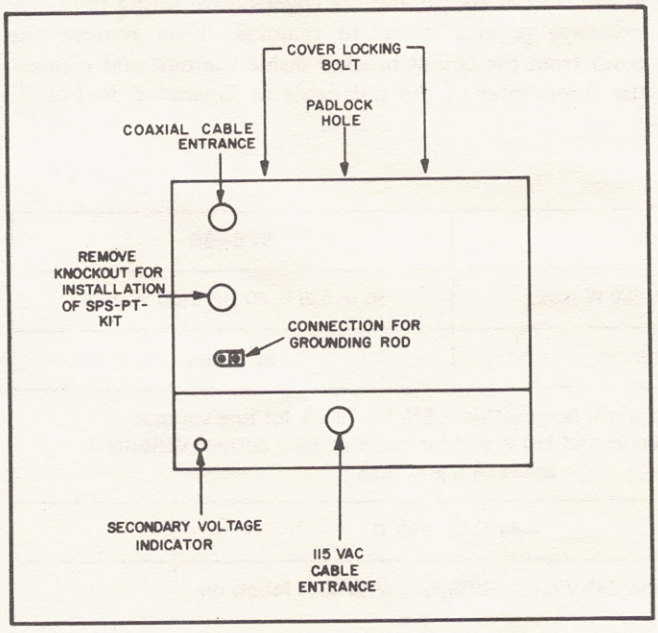


Fig. 2—SPS-*B Housing, Bottom View

3. Install the output terminal box, using the three #6-32 x ⅜" screws and lock washers provided. Secure the coaxial cable bushing with the ½" pipe nut provided.
4. Using the high temperature solder provided, solder the provided r.f. coil across the a.c. input terminals of the output terminal boxes.
5. The a.c. output voltage from the output terminal box may be tested by using the method described under Inspection and Test.

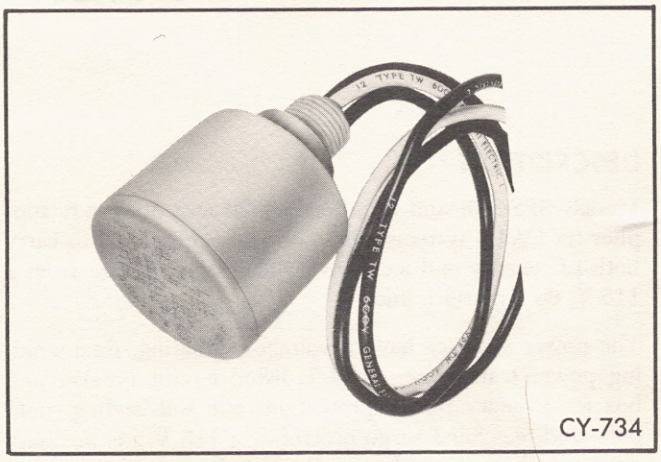


Fig. 3—Lightning Arrester

LIGHTNING ARRESTER—JERROLD PART No. 137-268-00

1. To install the lightning arrester in the circuit breaker box, remove the knockout illustrated in Fig. 7. Secure the lightning arrester with the pipe nut provided.

TIME DELAY RELAY—MODEL PDT-30/60

Description

Time delay relay Model PDT-30/60 can be incorporated into power supply Models SPS-30B or SPS-60B to protect the system loads from turn-on transients of the regulating transformer. The relay is packaged in an aluminum box with a 15-inch-long a.c. line cord terminated by a three-prong plug. The output line consists of two number 12 stranded wires, one 12 inches long and one 15 inches long.

The PDT-30/60 must not be used in a power supply that is mounted in a pedestal. Ambient temperatures in the pedestal could be in excess of the specified operating temperature range of the PDT-30/60.

Specifications

Operating line voltage	95 to 120 V a.c.
Input power, nominal	3.5 W
Release voltage, nominal	20 V a.c.
Delay time (closing delay of 50 amp. terminals), minimum	200 ms
Release time, maximum	25 ms
Ambient temperature range	−40°C to +60°C

Mounting

1. Three tapped #8-32, ⅝" long standoffs, together with the necessary hardware for mounting the PDT-30/60, are provided. Fig. 4 diagrams the location of the mounting holes.

Electrical Connections (see Fig. 5)

1. The power source is the auxiliary a.c. outlet located on the transformer chassis.
2. Remove the plastic spiral wrap from the a.c. power leads between the output terminal box and the transformer chassis. Cut the red lead approximately in the middle and strip back the insulation about ½". Using the wire nuts provided, connect the 12-inch lead to the lead coming from the transformer chassis; then connect the 15-inch lead to the lead coming from the output terminal box.
3. Replace the plastic spiral wrap on the a.c. power leads.

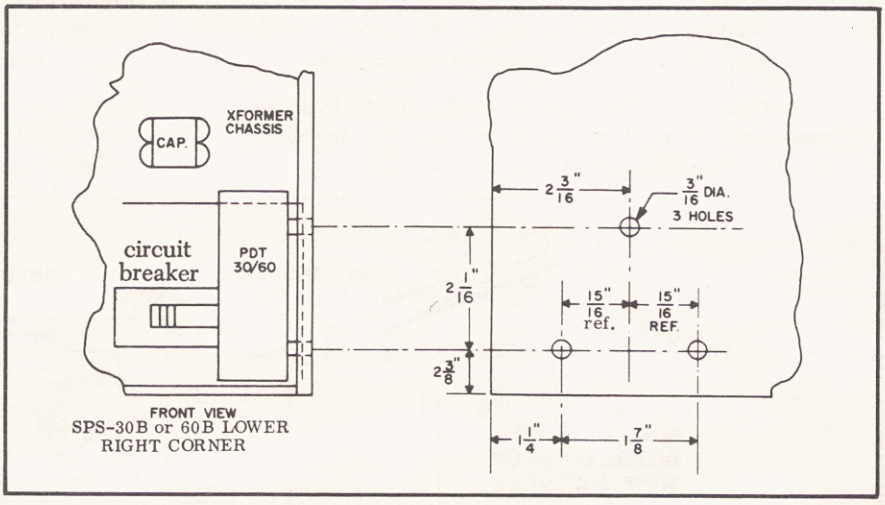


Fig. 4—Mounting, PDT-30/60

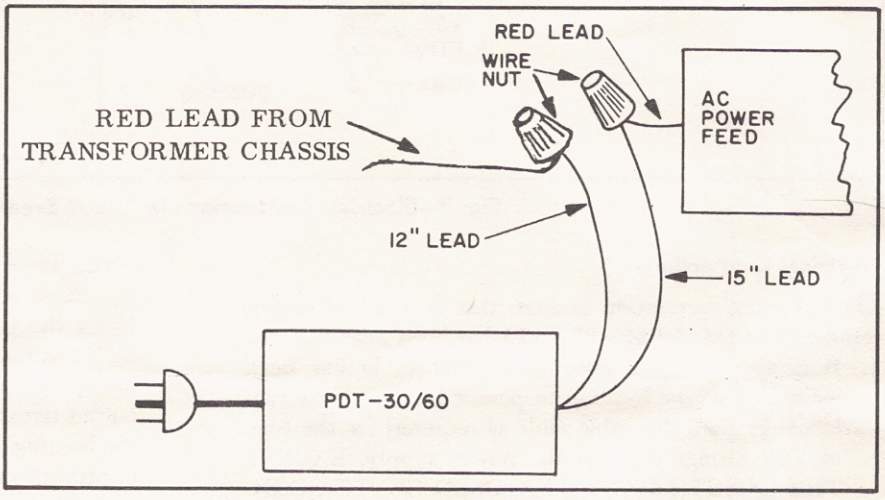


Fig. 5—Electrical Connections, PDT-30/60

INSTALLATION ON SITE

Mounting Hardware Required

1. One ⅝" x 14" galvanized steel bolt (see NOTE) with two washers and one nut (not supplied with the power supply).
2. One 5/16" x 2" galvanized lag bolt (supplied with unit).
3. One VSF fitting for the type of coaxial cable used. Two will be required where the power supply has been equipped for dual output.

   NOTE: Where cross-arm mounting is required, regular spacing of 7½" between cross-arms will permit mounting the power supply in the same manner as on a pole; a shorter ⅝" diameter mounting bolt may suffice in this case.

Mounting on a Utility Pole

1. Drill a ⅝" hole all the way through the utility pole at the height required for mounting the power supply. Local regulations and ordinances should be consulted for installation of this type of electrical equipment.
2. Place one washer under the head of the 14" steel bolt, then force the bolt through the hole in the utility pole. Place the other washer over the end of the bolt and loosely thread on the nut.
3. Slip the upper (slotted) mounting bracket (Fig. 6) onto the bolt so that the bracket is between the bolt head and the washer.

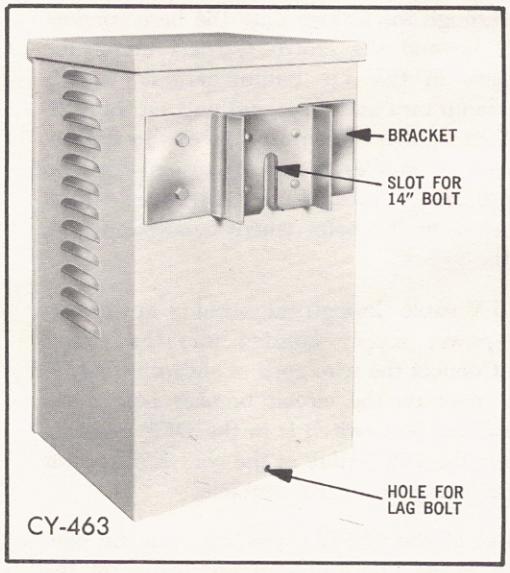


Fig. 6 Rear View of Power Supply Housing

4. Keeping the housing vertical, wrench-tighten the nut. Then fasten the bottom flange of the housing to the pole, using the 2" lag bolt supplied with the unit.

5. Loosen the two locking bolts on the front cover and remove the cover. Remove the covers from the output terminal boxes, or circuit breaker box.

6. Connect the ground lead from the grounding rod to the connector located on the power supply bottom plate in the housing.

7. Install the VSF fitting in the a.c. output aperture as described in the relevant instruction sheet for the type of fitting used.

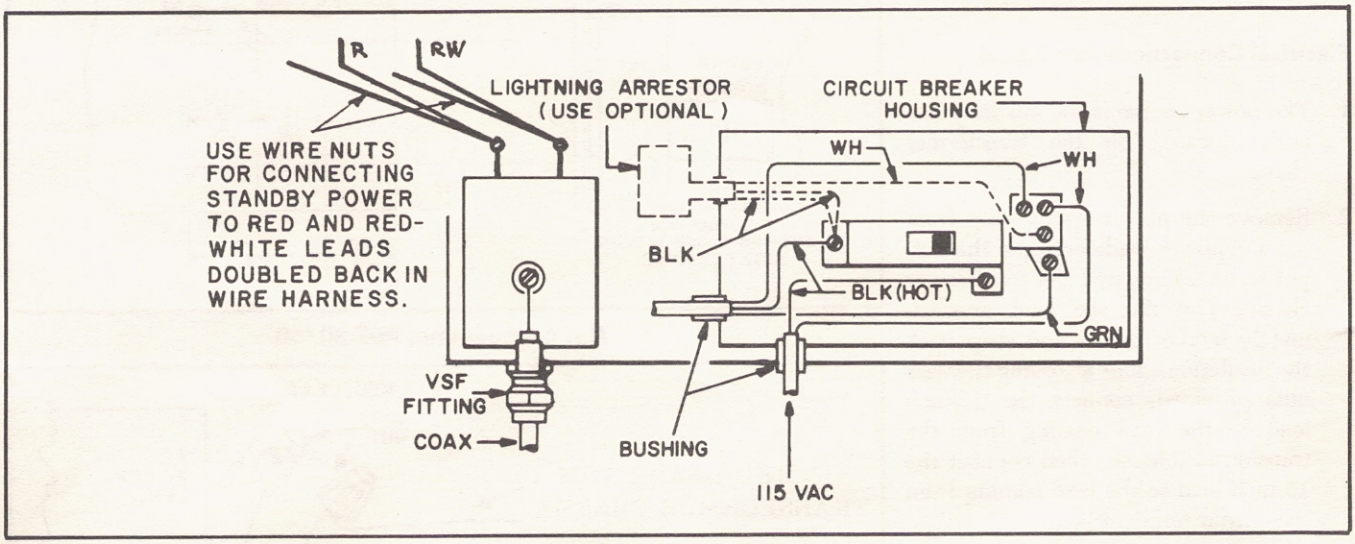


Fig. 7—Electrical Connections in Circuit Breaker Box

Electrical Connections

The following description assumes that an optional output terminal box (Model SPS-PT-KIT) has been installed.

1. It is assumed that sufficient coaxial cable has been looped off at the location to permit forming expansion loops. Prepare the cable ends as required for the type of VSF fittings used on the power supply, EXCEPT THE LENGTH OF THE EXPOSED CENTER CONDUCTOR ("A" DIMENSION) SHOULD BE 1½". For jacketed types of cable, a heat-shrinking apparatus and sealing material or wrapping tape, or at least weatherboots, should be available for weatherproofing the coaxial cable connections. Now feed the cable ends all the way through the fittings until the bare conductor is visible beyond the crown washers under the terminal screws in the a.c. output terminal boxes. Tighten the clamp nuts and the gland nuts on the VSF fittings and then tighten the terminal screws in the a.c. output terminal assemblies. Form expansion loops on the a.c. output cables and lash the cables to the messenger wire close to the point where connection is to be made to the SPJ-3C.

2. Feed the 115 V cable through the bushing in the bottom of the power supply housing into the circuit breaker box. Connect the wire ends as shown in Fig. 7. Replace the cover on the circuit breaker box; make sure the circuit breaker switch is in the OFF position. Also make sure the 115 V plug of the chassis connector cable is properly seated in its receptacle.

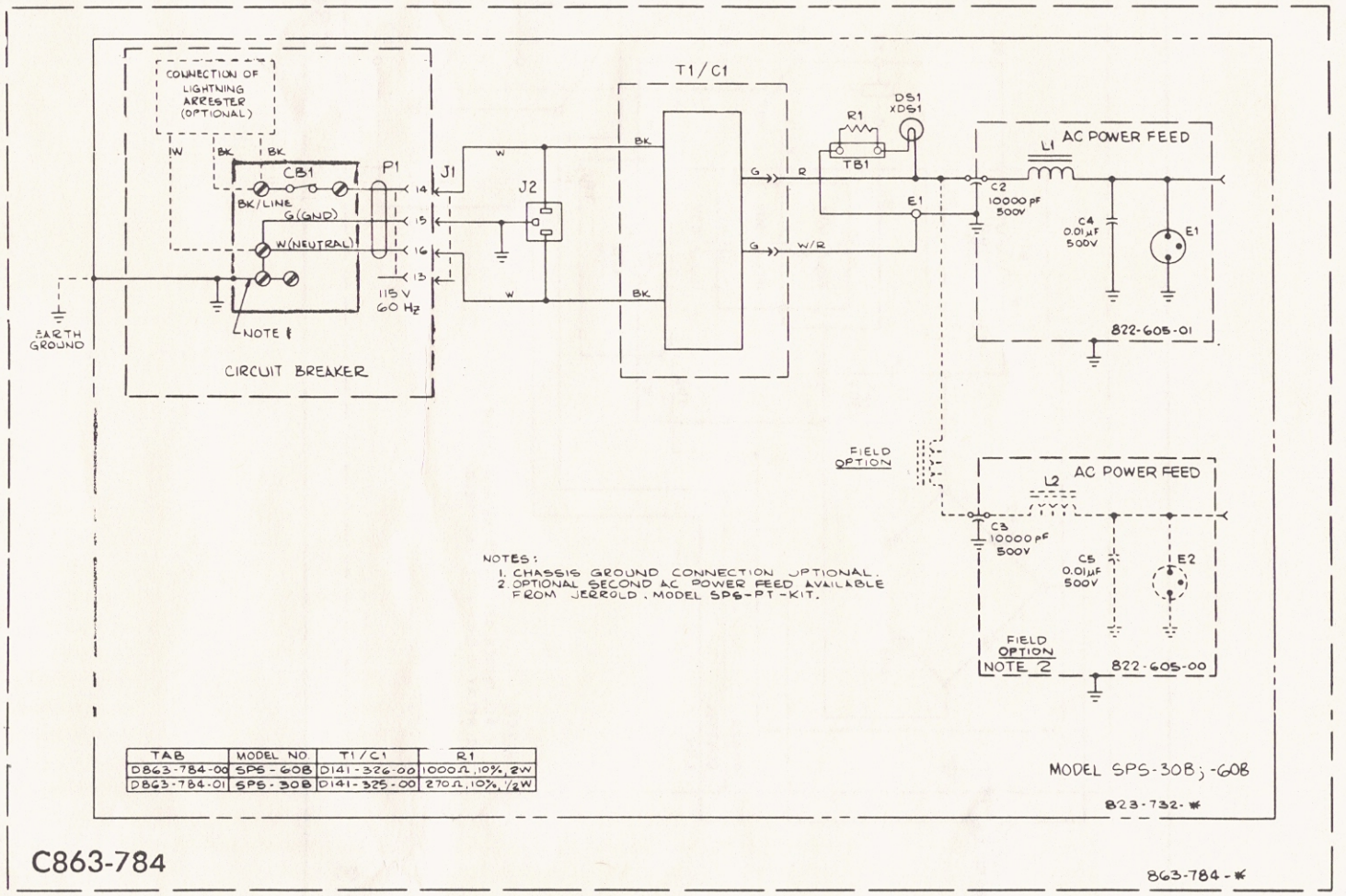
3. The other end of the 115 V cable can now be connected to the utility line outlet; if necessary, set the circuit breaker switch to the ON position to energize the trunk line section served by the power supply. Using the true reading rms meter, check for a 30 or 60 V rms reading between the output terminals and the transformer chassis. Finally replace the covers on the output terminal boxes and the cover on the power supply housing. It is recommended to padlock the housing to prevent tampering by unauthorized persons.

MAINTENANCE

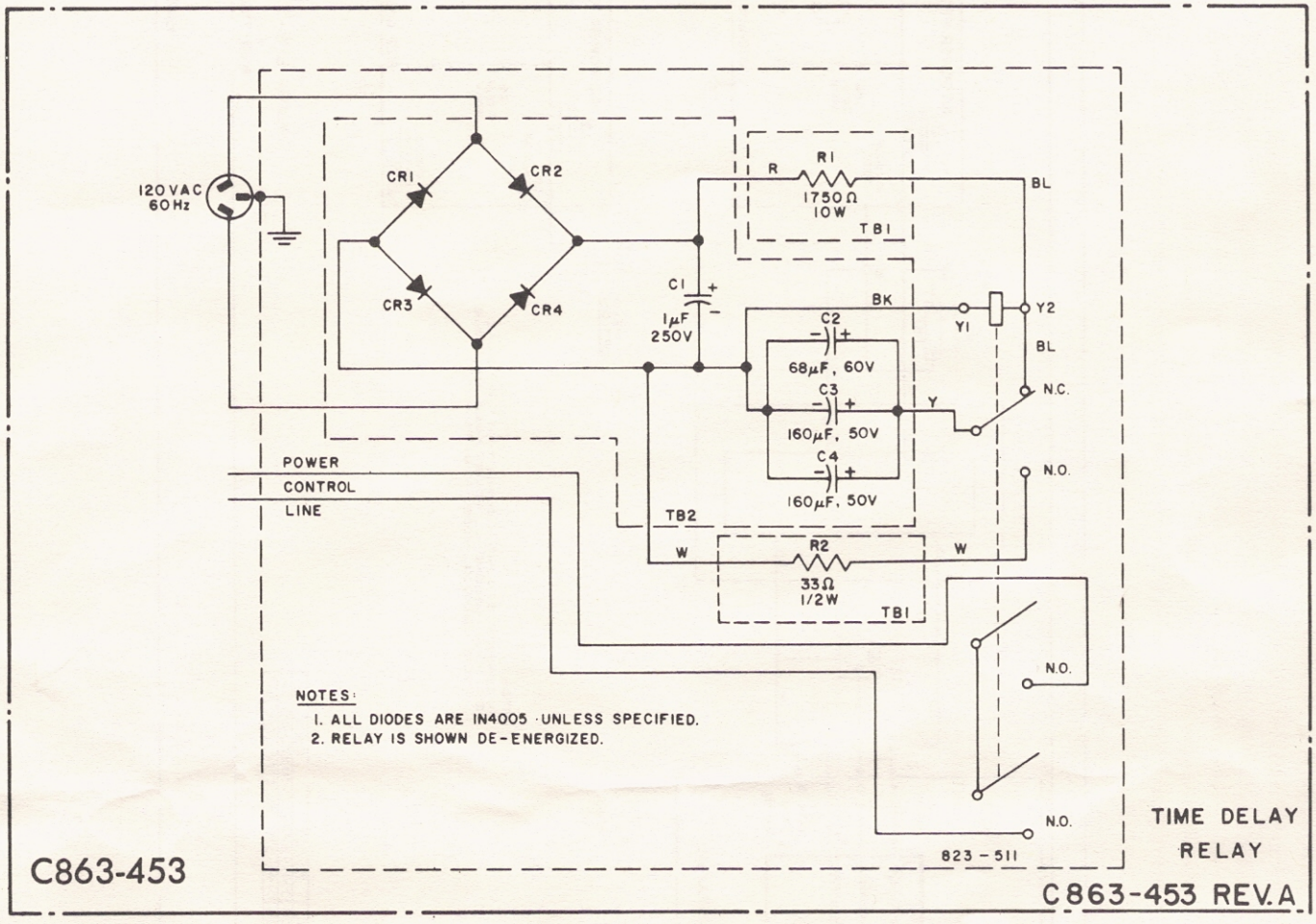
The SPS-30B or SPS-60B will require only routine checks on output voltage and on firmness of cable connections. Where no standby power system is available, system operators should keep a unit as a spare in case a total failure occurs. For the benefit of maintenance personnel, parts lists and schematic diagrams are given here.

REPLACEMENT PARTS LIST	
MODEL No. PDT-30/60	
ASSEMBLY No. D823-511 DRAWING No. C863-453	
SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS	JERROLD PART No.
ACCESSORY PACKAGE	A510-435
CAPACITORS	
C1	125-316
C2	127-183
C3, 4	127-187-00
DIODES	
CR1, 2, 3, 4	137-510
RELAY	S163-031
RESISTORS	
R1	113-219-00
R2	112-176

REPLACEMENT PARTS LIST	
MODEL No. SPS-30B, -60B	
ASSEMBLY No. 823-732-00, -01 DRAWING No. 863-784	
SCHEMATIC DESIGNATIONS OR PART DESCRIPTIONS	**JERROLD PART No.**
CAPACITORS	
C2	129-117
C4	124-339-00
CIRCUIT BREAKER	
CB1	C811-824-01
LAMP	
DS1	102-006
RESISTORS	
R1, SPS-30B	112-290
R1, SPS-60B	112-364
SURGE PROTECTOR	
E1	S137-269-00
TRANSFORMER	
T1 (Includes C1), SPS-30B	D812-436-01
T1 (Includes C1), SPS-60B	D812-436-00



TAB	MODEL NO	T1/C1	R1
D863-784-00	SPS-60B	D141-326-00	1000Ω, 10%, 2W
D863-784-01	SPS-30B	D141-325-00	270Ω, 10%, ½W



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