

ZENITH TRANS-OCEANIC

All Models

A-B Battery Supply

90 VOLT B+/9 VOLT A+



**INSTRUCTIONS
PARTS LIST
BATTERY LAYOUTS
WIRING DIAGRAMS
TEMPLATES FOR Z-985 CONNECTOR
TROUBLESHOOTING GUIDE**

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Complete instructions are also available online in .pdf format (Adobe Reader required) at www.edsantiqueradios.com

90 Volt / 9 Volt A-B Battery

Instructions

The Zenith Z-985 AB battery and all compatible batteries, such as the Eveready 752 and RCA VS-047, work in all models of the Zenith Trans-Oceanic and most Trans-Oceanic clones such as the Hallicrafters TW-1000, TW-2000 and the RCA Strato-world. The Zenith 8G005 series requires an additional 1.5-volt battery in series with the A (filament) supply. Decide how you want to connect your battery to your Zenith Trans-Oceanic. There are two basic choices for connecting your battery to your radio:

- A. For the highest level of authenticity, use an original or replica Z-985 type male connector, available at www.edsantiqueradios.com
- B. No connector. Install 1/8" x 1/2" pins on the ends of the 90v B+, 9v A+, and combined B- leads from your battery and connect directly to the Zenith female connector. This does not alter your Zenith in any way and avoids the hassle of building a replica connector. However, it is essential to color code your battery leads and the connector to avoid the chance of incorrectly connecting the leads and seriously damaging your tubes and/or radio.

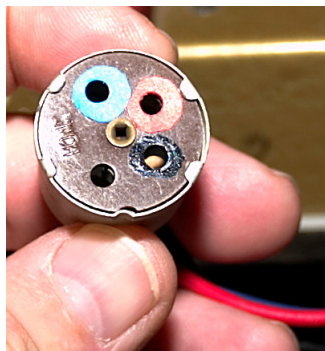


Photo 1. Color-coded terminal holes on Zenith Female connector

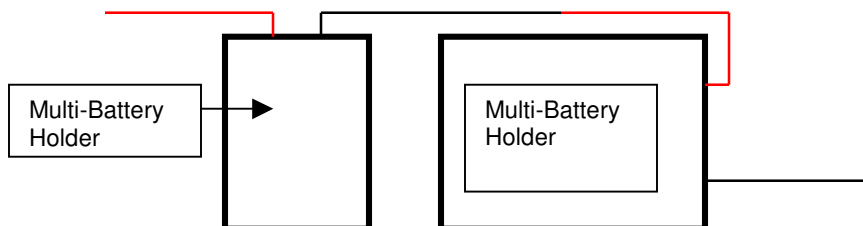
Step 1. Decide what kind of batteries you will use for the 90-volt B power supply. For the 90 volt B supply, you can use ten 9 volt batteries or 60 AA batteries. Ten 9-volt batteries will power your radio for 30 to 40 hours. The AA batteries have more amperage and will last about ten times longer (400+ hours). If you are planning to use AA batteries, purchase six 5x2 AA battery holders and two 3x1 D battery holders. The wiring is basically the same for AA batteries or 9 volt batteries. The batteries are wired in series. There are holders available in various configurations for AA and D batteries, and holders that hold more than one battery are already wired in series, so you only need to wire the holders themselves in series with the connector. Refer to the wiring diagram included with these instructions.

Step 1A. Prepare the A supply. The A supply powers the filaments in the tubes. The A supply for 500 and 600 series radios requires a total of 9 volts. Six D cells work well for the A power supply (see note below if you will be using this battery in a 8G005 series radio). Two 3x1 D cell holders will work if you are using 60 AA's for the B supply. If you are using 9 volt cells for the B supply, you have much more room in the box for D cells, and you can use any combination of D holders that will fit. If you plan to use a 3x2 D cell holder, make sure it will fit in the box. Whatever combination you choose, you must have at total of six D batteries in series, giving you $1.5v \times 6 = 9$ volts for the A supply to the tube filaments.

Note: For the 8G005 series and 600 series, you will also need a separate D cell, which must connect to the separate two-prong connector coming from the large battery plug on your radio (8G005) or down from the chassis compartment for the dial light (600 series). On 8G005 series radios, the small connector is wired in series with the A+ side of the large plug. Your radio will not operate unless a 1.5v battery is connected to this small plug. The additional battery is required because the 8G005 series have more tubes than the later models.

Connect the holders in series. Refer to the wiring diagrams at the end of this document for detailed wiring schematics.

Figure 1. Generic diagram for connecting multi-cell holders



Step 1B. Prepare the B supply using six 5x2 AA battery holders or ten Radio Shack #2700325 9v battery clips. Now connect and solder each black lead to a red lead of another battery holder or clip until you have a

chain of six AA battery holders or ten 9v battery clips soldered together black to red. If you are using 9v batteries, build a cardboard box to hold the ten 9v cells (see photo 3a. below) or use a plastic box of the right size. You won't need a box for the AA holders. Be very careful to avoid a shock when handling the free ends of the leads from the B supply.

Note: Some 5x2 AA holders have snaps that accept a 9v style snap cap. You can purchase these at Radio Shack and you will need six for your 5x2 AA holders. These holders are very convenient to use as you can unsnap them from the circuit when it's time to replace all those AA cells.

Figure 2a. Diagram for connecting 9v battery clips in series

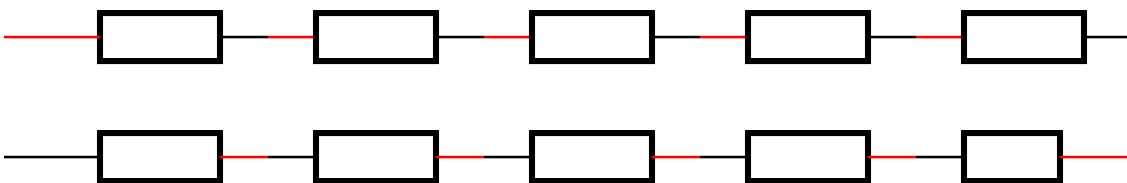
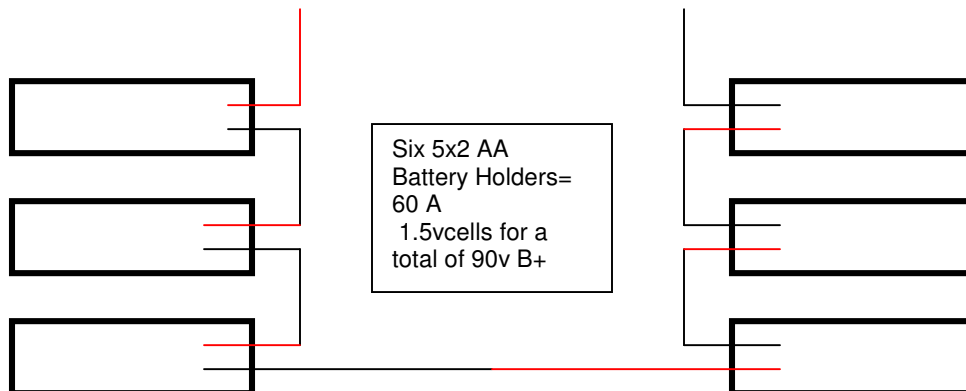


Figure 2b. Diagram for connecting six 5x2 AA holders in series



Step 2. If the connector hole in the battery box has not been cut out, cut it out now. The Zenith female connector requires a 1-5/16" hole to pass through. If you built or purchased a replica connector, hot glue it to the inside of the box.

Step 3A. Go to Step 3B if you used AA batteries for the B supply. Place the single D cell holder in the battery box and connect the leads to the dial light connector. Use small, insulated alligator clips or fabricate a suitable connector to fasten the 1.5 volt D battery to the terminals of the dial light circuit. You can make one from a Radio Shack 2-position female interlocking connection, (P/N 274-154). Carefully tuck them inside the left side of the battery compartment and make sure the clips aren't touching. For a more authentic setup, you can purchase a replica, working Z-1 battery at www.edsantiqueradios.com to power

the 600 series dial light circuit or to use for the extra filament battery in 8G005 series radios.

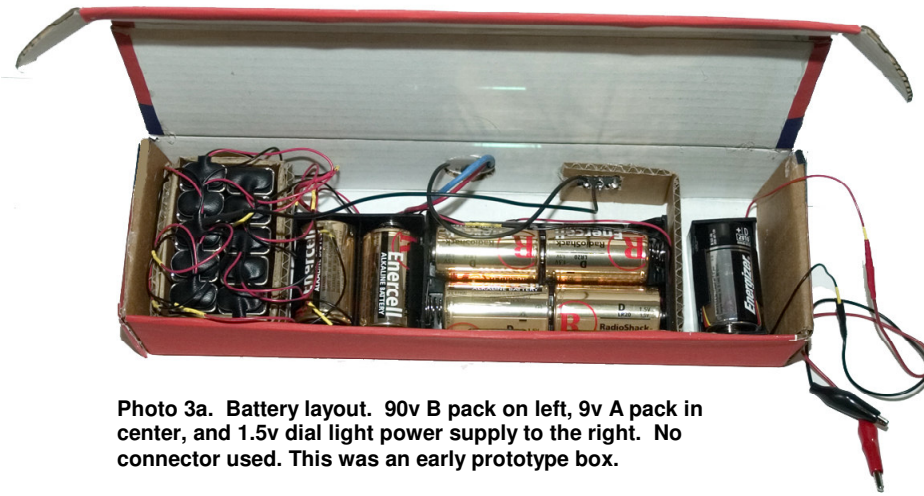


Photo 3a. Battery layout. 90v B pack on left, 9v A pack in center, and 1.5v dial light power supply to the right. No connector used. This was an early prototype box.

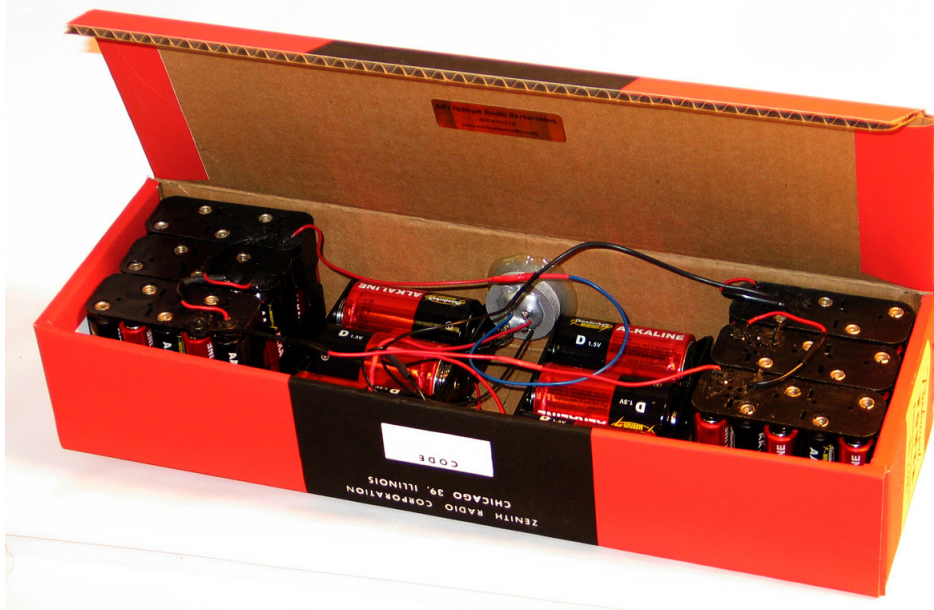


Photo 3b. Improved battery layout using 60AA batteries in place of the ten 9 volt batteries. Use my Z-1 battery for the dial light in 600 series radios or extra filament supply in the 8G005 series radios.

Step 3B. Place three AA holders in each end of the box as shown in Photo 3b, above. Place two 3x1 D cell holders in the center of the box, one on each side of the connector. The two 3x1 D cell holders are wired in a series string as are the six AA holders (each AA holder holds ten batteries, five per side.).

A-B Battery Parts List

This list is for reference. You may not need all these parts, depending upon which kind of batteries you are using for the B power supply (9 volt or AA).

PARTS LIST

<i>Radio Shack #</i>	<i>QTY</i>	<i>Item Description</i>
2700325	2 ea	Pkg/5 9v battery clips
2700389	1 ea	Plastic battery holder, 4 D cells
2700389	1 ea	Plastic battery holder, 2 D cells
2700402	1 ea	Plastic battery holder, 1 D cell (optional for dial light)
275401	1 ea	SPST slide switch
274321	1 ea	Pkg/8 RCA phono plugs (3 needed)

Battery holders

12BH310A-GR 5x2 AA holders	6 ea	Mouser www.mouser.com 1-800-346-6873
12BH131-GR 3x1 D holders	2 ea	

CONNECTOR

Z-985 Connector
(reproduction) www.edsantiqueradios.com

WIRES

Red, Black, and Blue (or other color to match the 90v B+ lead on your model radio) hook-up wire
Solder
Shrink tubing

TOOLS

Soldering gun
Wire strippers
Needle nose pliers
Hobby Knife
Hot glue

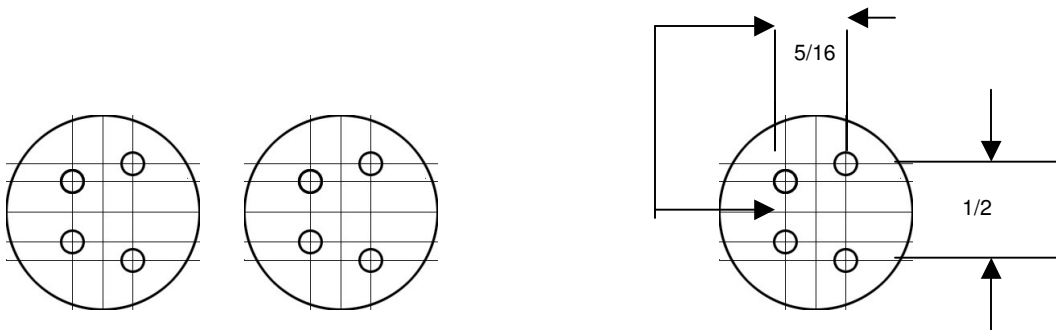
BATTERIES

90 Volt B Supply	10 ea	9v alkaline cells
or	60 ea	1.5v AA alkaline cells

9 Volt A Supply	6 ea	1.5 alkaline D cells
Dial Light Supply	1 ea	1.5 alkaline D cell (optional)

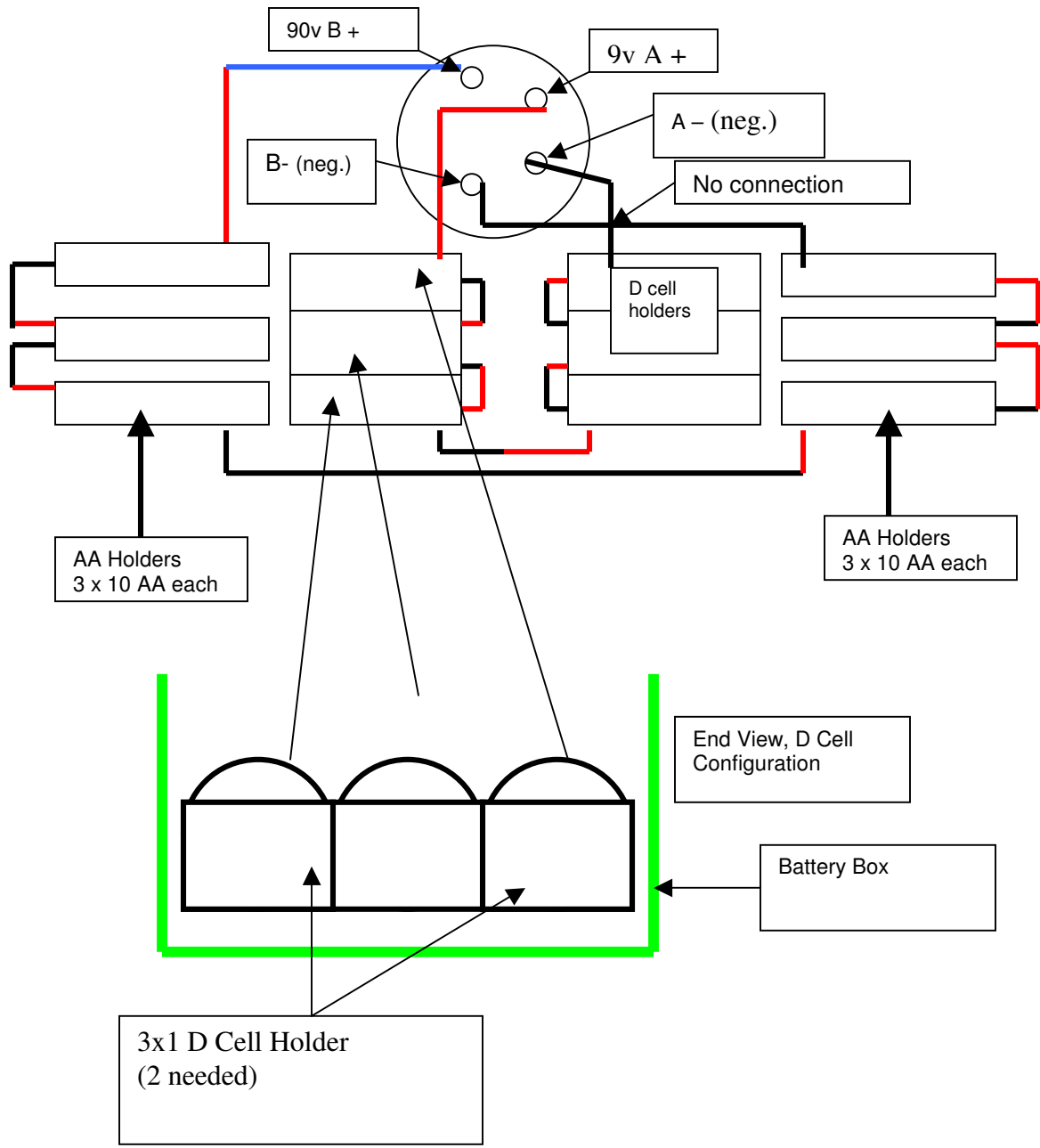
Zenith Connector Templates

Copy and use if you are building a replica connector.
For instructions to build your own replica connector, go
to www.njarc.org/broadcaster/BC0702.pdf, page 6.

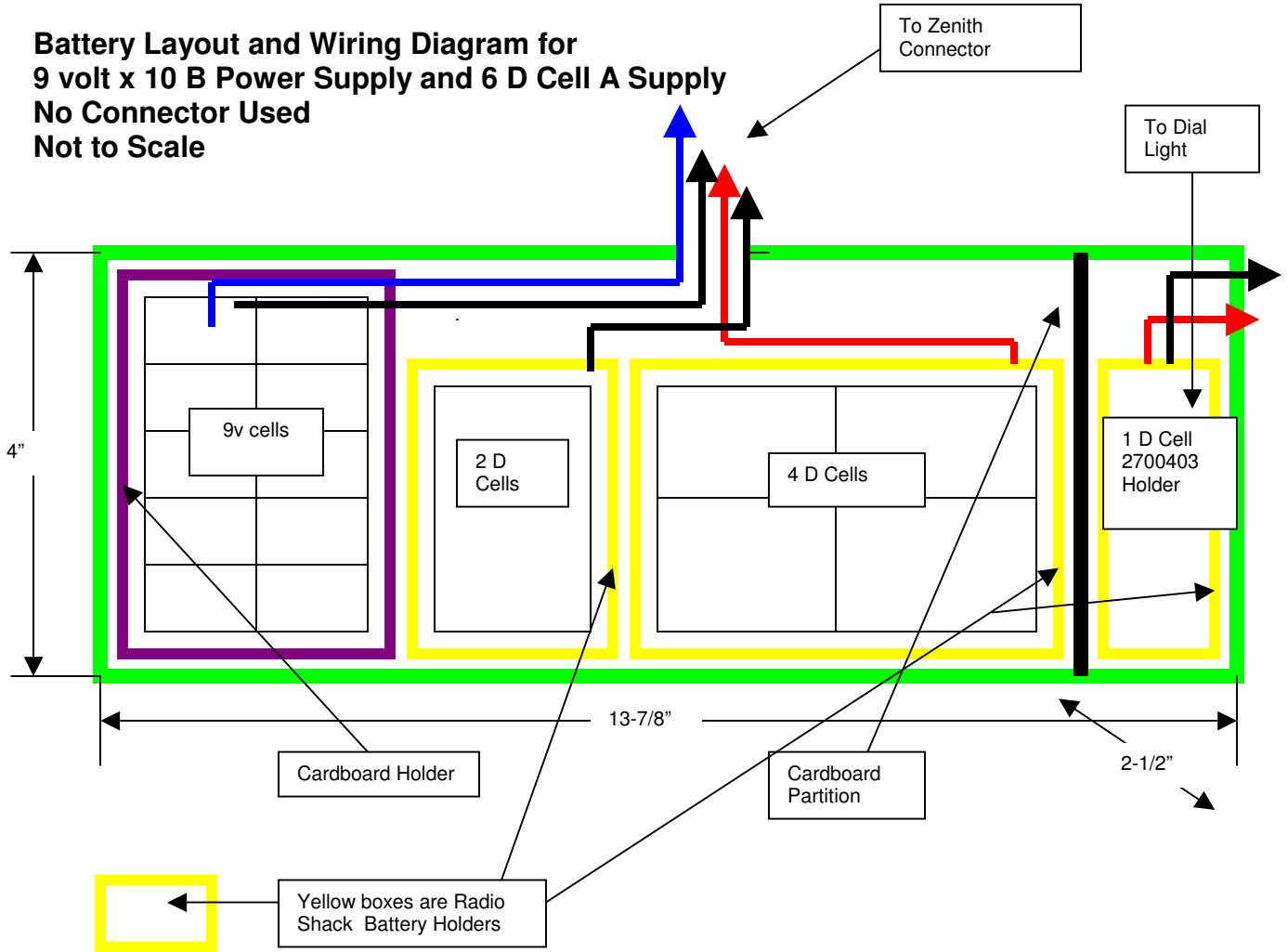


Battery Layout and Wiring Diagram for 60 AA B Power Supply and Two 3x1 D cell holders for A Power Supply

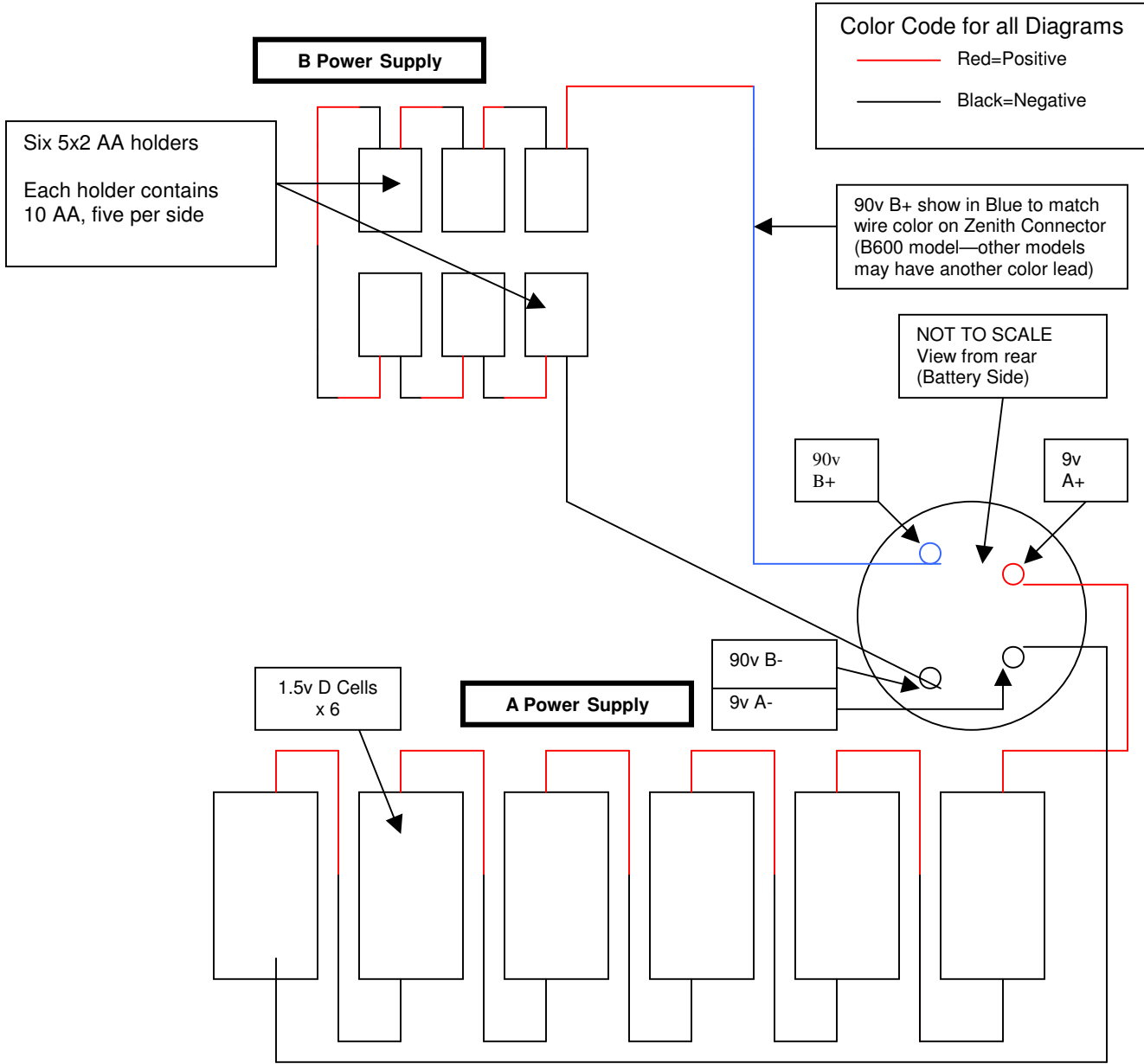
(Not to Scale)



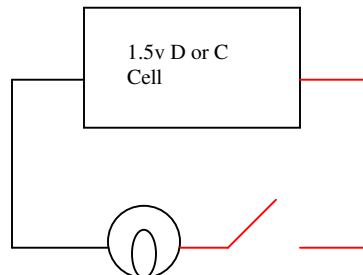
**Battery Layout and Wiring Diagram for
9 volt x 10 B Power Supply and 6 D Cell A Supply
No Connector Used
Not to Scale**



Wiring Diagram for 90v/9v A-B Battery, 60 AA cell B Supply Version



Dial Light Wiring Diagram



AB Battery and Connector Trouble Shooting Guide

Step 1. Check voltages at battery side male connector

There should be 90 vdc between the B+ and B- pins

There should be 9 vdc between the A+ and A- pins

If voltages are correct, go to step 3

Step 2. If voltages are incorrect, check for the following:

Weak or dead batteries

Incorrectly inserted batteries

Incorrectly wired battery holders

Bad joints or connections

Defective connector (return for replacement or refund)

Step 3. If voltages at male connector are correct, check the radio side female connector

Pins not mating with female socket contacts

Dirty or corroded contacts in the female socket

Open connections in female socket connector

Step 4. Is your radio a 500 or 600 series Trans-Oceanic? These radios have a resistor embedded in the body of the female socket connector to augment B+ voltage and prevent accidental filament burnout when switching between AC and battery power. Check the value of the resistor between the A+ and B- pins in the female connector. It may have drifted upwards due to aging. The value should be 100 ohms. If the resistance is too high, it may decrease plate voltage below acceptable levels. Replace the resistor. This requires disassembly of the female socket connector.

You may also bypass the resistor by connecting the B- lead from the B power supply to the A- pin as shown below. If the radio now works properly, the problem is with the resistor or connection between the A+ and B- pins. There is no difference in the operation of the radio with the negative leads from the A and B power supplies both connected to the A- pin. To prevent accidental filament burnout, always turn radio off when connecting or disconnecting the battery or switching between AC and battery power.

