

**MWO 189-1**

**OPTIONAL**

**MODIFICATION WORK ORDER**

**FOR**

**651S-1/1A**

**GENERAL PURPOSE**

**HF RECEIVERS**

**(KEEP-ALIVE)**

**NOVEMBER 1974**

TABLE OF CONTENTS

SECTION 1. GENERAL ----- Page 1

    1.1 Equipment Affected ----- Page 1

    1.2 Class of Modification ----- Page 1

    1.3 References ----- Page 1

    1.4 Modification Time Required ----- Page 1

SECTION 2. MATERIAL REQUIRED ----- Page 1

SECTION 3. REASON FOR MODIFICATION ----- Page 1

SECTION 4. MODIFICATION PROCEDURE ----- Page 2

SECTION 5. REMINDER ----- Page 3

SECTION 1. GENERAL

1.1 Equipment Affected

This MWO will affect all Collins' 651S-1/1A General Purpose HF Receivers.

1.2 Class of Modification

This MWO is OPTIONAL.

1.3 References

1.3.1 Collins Radio Co., Instruction Book 651S-1/1A General Purpose HF Receiver (Part 1 and 2).

1.3.2 No other MWO has been issued.

1.4 Modification Time Required

This modification can be performed within one hour by any technician.

SECTION 2. MATERIAL REQUIRED

ITEM NO.	STOCK NO.	NOMENCLATURE	QTY.	COST
1.	5820-P00-0235	Modification Kit f/u/w MWO 189-1 c/o: a. LMB Box Chassis No. 137 b. Plug, Amphenol Type MS3106B c. Receptacle, MS3102A d. Cord	1 ea.	
2.	6140-H04-1068	Battery, Storage; Gel-Cell 6V, 1 AH. Globe Union Inc., Type GC610-1	1 ea.	
3.	6130-H04-1067	Charger, Battery; Globe Union Inc., GRC6060 CDF	1 ea.	
4.	7510-H00-8637	MWO Identification Plate	1 ea.	

SECTION 3. REASON FOR MODIFICATION

This modification will provide an inexpensive, reliable means to prevent loss of preselected frequency display in the Collins' 651S-1/1A HF receiver in the event of momentary or extended disruption of AC primary power.

#### SECTION 4. MODIFICATION PROCEDURE

- 4.1 Remove the receiver from rack mount cabinet. See Figure 1A.
- 4.2 Remove the dust cover from the receiver.
- 4.3 Remove the hole plug in the hole designed for the remote control output plug J-63 on the rear of the receiver. See Figure 2 (Figure 39 - Sheet 1 of 3 - Parts List).

NOTE: Some of the earlier production units were provided with the remote control output plug J-63. If this is the case, proceed with steps 4.3.1 thru 4.3.4. If this is not the case, proceed with step 4.4.

- 4.3.1 Remove front panel assembly.
- 4.3.2 Remove all wiring that is connected to the output plug J-63. This wiring should be removed from the unit and discarded.
- 4.3.3 Remove the remote control output plug J-63 from the rear of the receiver. See Figure 2. Discard this plug.
- 4.3.4 Proceed to step 4.5.
- 4.4 Remove front panel assembly.
- 4.5 Install the pre-wired interface chassis mount socket (Amphenol 3102-A, 14S-6S) in the remote control output hole using the 4-40 nuts and bolts supplied. See Figure 3.

NOTE: For purposes of standardizing, mount the socket with the key at the top. Solder the Red wire to the back of the positive terminal of TB106. Solder the black wire to the negative or ground terminal of TB106. See Fig. 3 & 8.

- 4.6 Solder the "White" and "Green" (110 Volt AC) wires to the rear most terminals of fuses F201 and F202. See Figure 4.
- 4.7 If the S109 Optical Tuning Switch is in an output state of "HI-LO" or "LO-HI" when the power failure occurs, with this modification, it will change the receiver frequency by as much as 400 Hz. If it is in a "HI-HI" or "LO-LO", no change will occur. To overcome this problem, the following steps must be performed.
  - 4.7.1 With front panel assembly removed and laying flat, locate the terminal post between the mode switch (S101) and bandwidth switch (S102) and disconnect the red wire from this post. See Figure 5.

- 4.7.2 Pull the wire back through the harness and reconnect it to the junction of VR501/R505 and Q501-C of TB 102 (The Keep-Alive Board). See Figure 6.

This part of the modification procedure will tie the S109 switch to the Keep-Alive Battery during power outages and no frequency change should occur. An added current drain on the battery system of about 60 to 90 mA can be expected with this modification, or a total drain of about 900 mA. It is important to note that the S109 switch will be active during power outages and any change in the dial setting will change the frequency.

- 4.8 Remove the cover from battery pack and remove packing material.
- 4.9 Install the battery charger inside battery pack chassis using the holes and hardware provided. See Figure 3 for proper location.
- 4.10 Remove the paper from the tape in the bottom of the battery and press the battery down firmly inside battery pack chassis. See Figure 3 for proper location.
- 4.11 Make proper wiring connections to install battery charger and battery. See Figure 8 for wiring diagram.
- 4.12 Replace battery pack cover.
- 4.13 Re-assemble the front panel assembly and dust cover of the receiver.
- 4.14 Re-install the receiver in the rack mount cabinet.
- 4.15 Remove the paper from the tape on the bottom of the battery pack chassis and press pack down firmly on rack mount cabinet next to the receiver as shown in Figure 1B.
- 4.16 Connect the battery pack plug (P63) to the receiver. See Figure 3.
- 4.17 Pull the AC cord to check the KA circuit.

NOTE: The battery can be checked periodically at the TB106 Batt -6V terminal.

## SECTION 5. REMINDER

An MWO Identification Plate should be mounted on the dust cover (rear panel) to the right of the muffin fan. The Identification Plate should be marked as follows:

5.1 MWO 189-1

5.2 Date of Modification

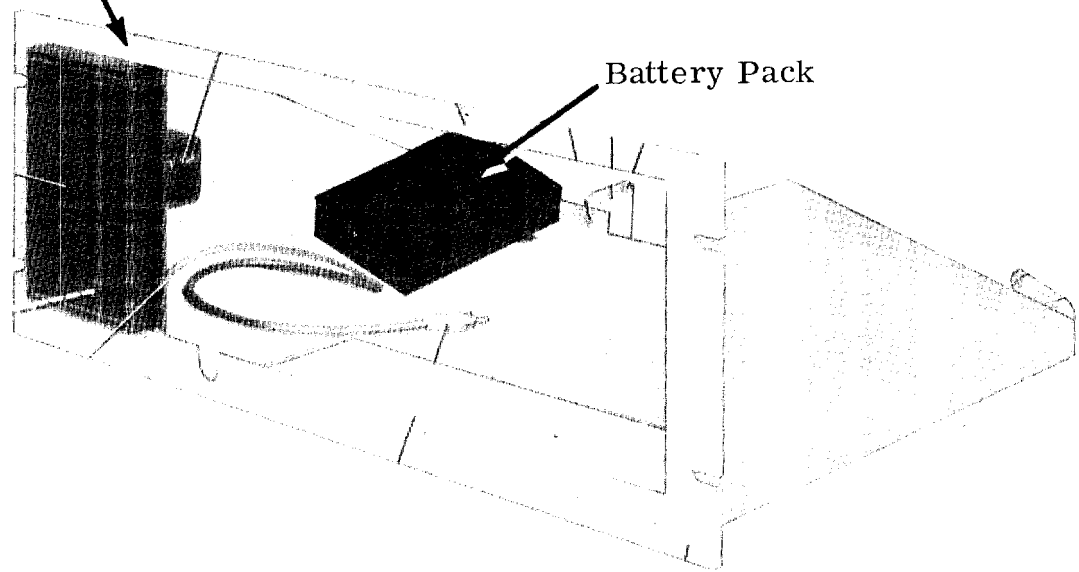
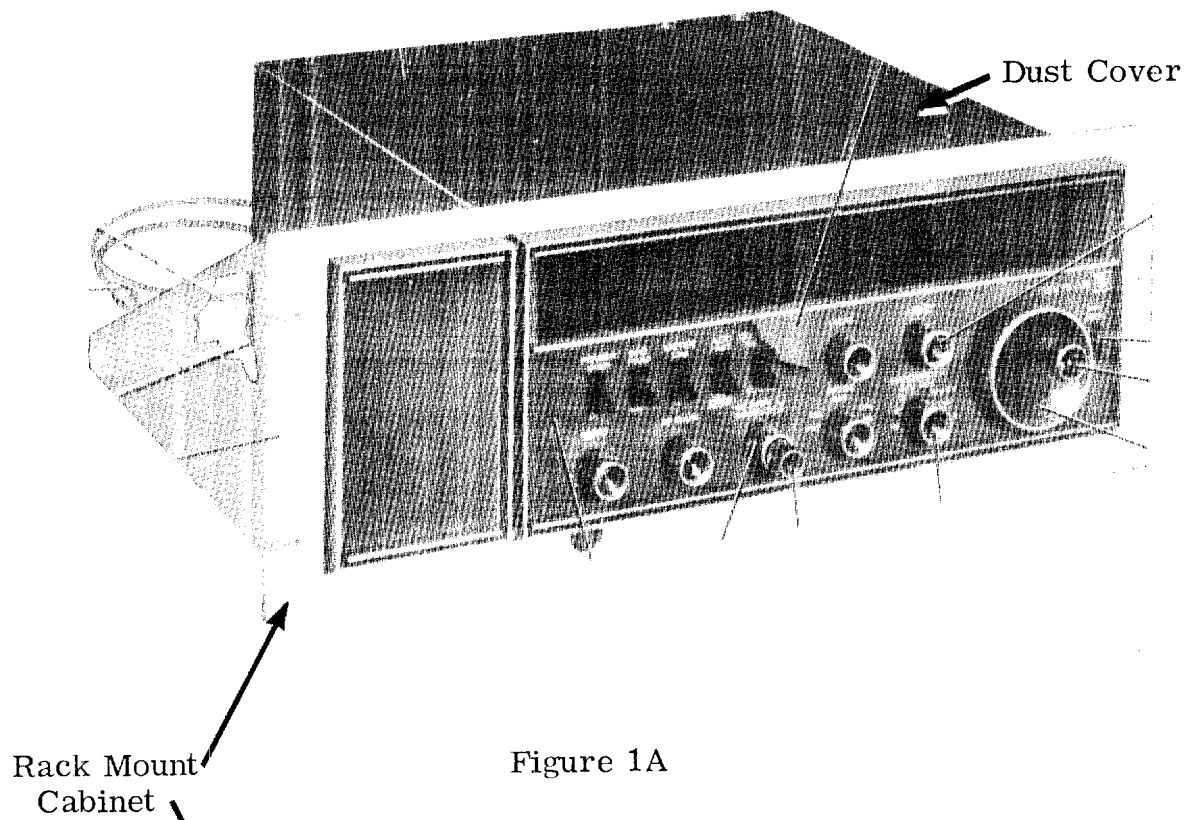
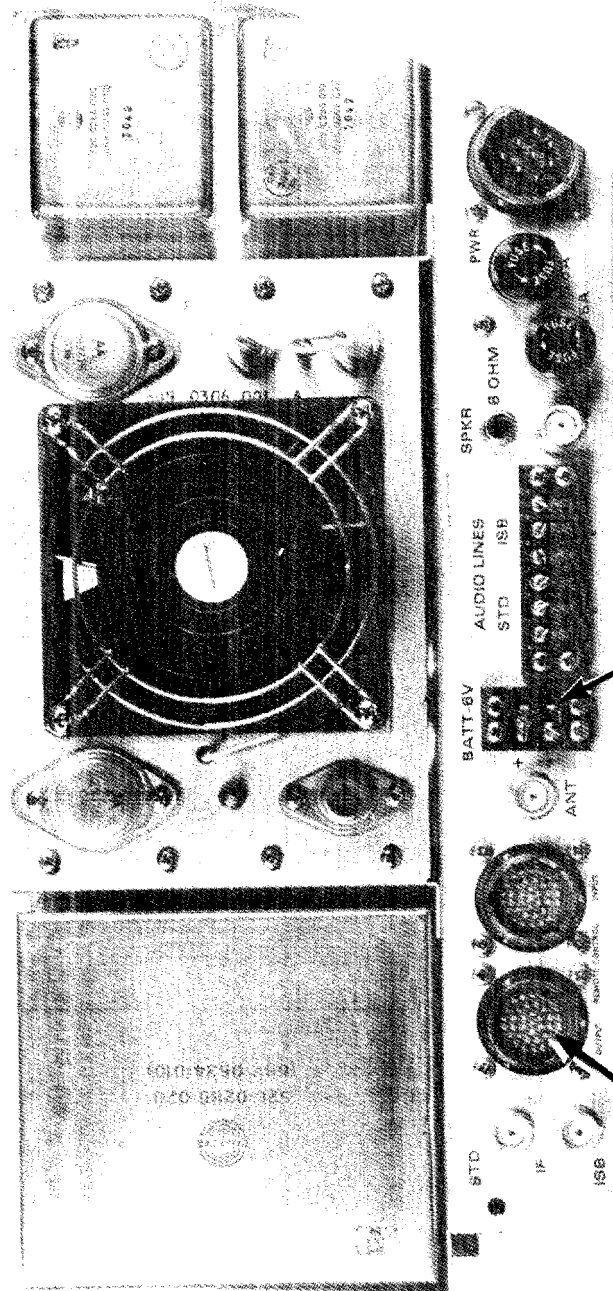


Figure 1B

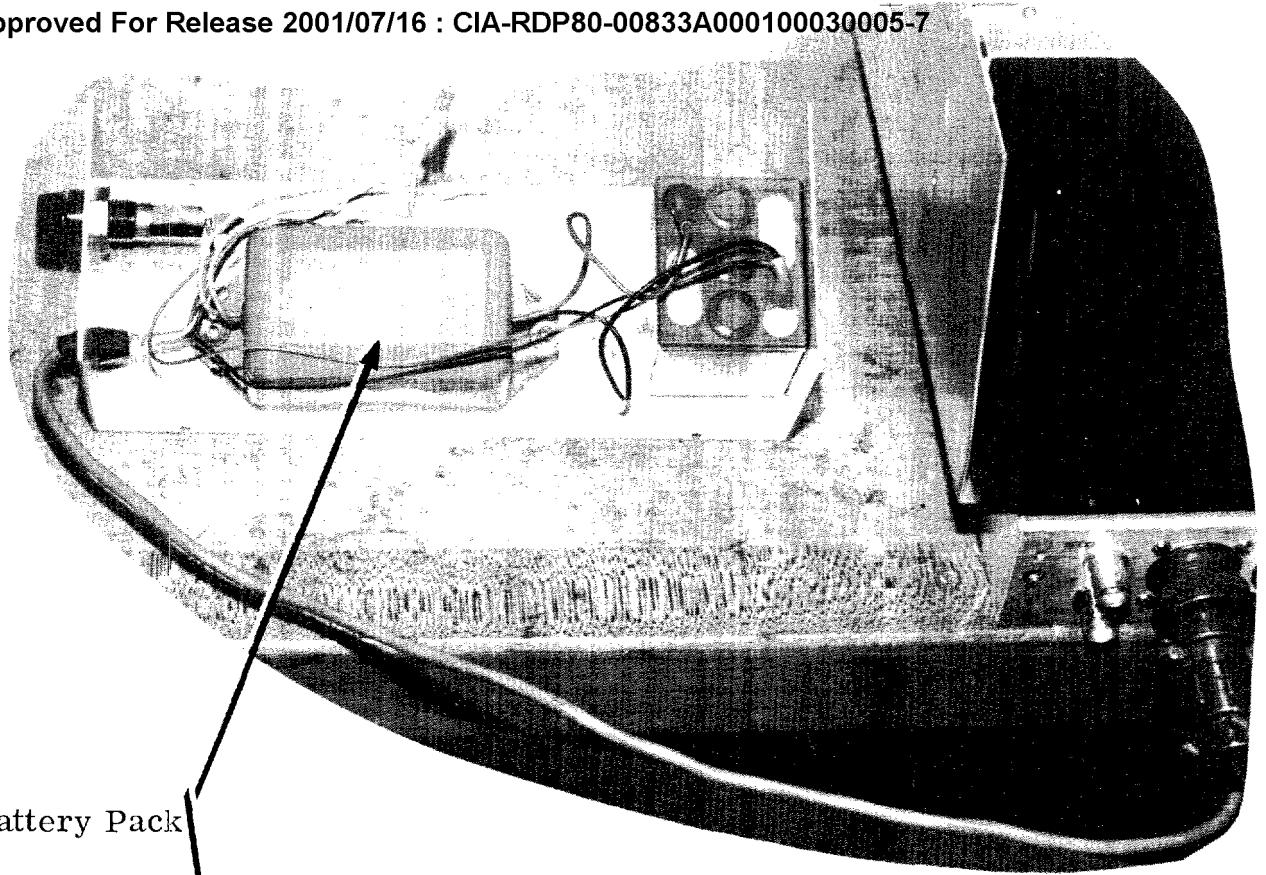


TB106

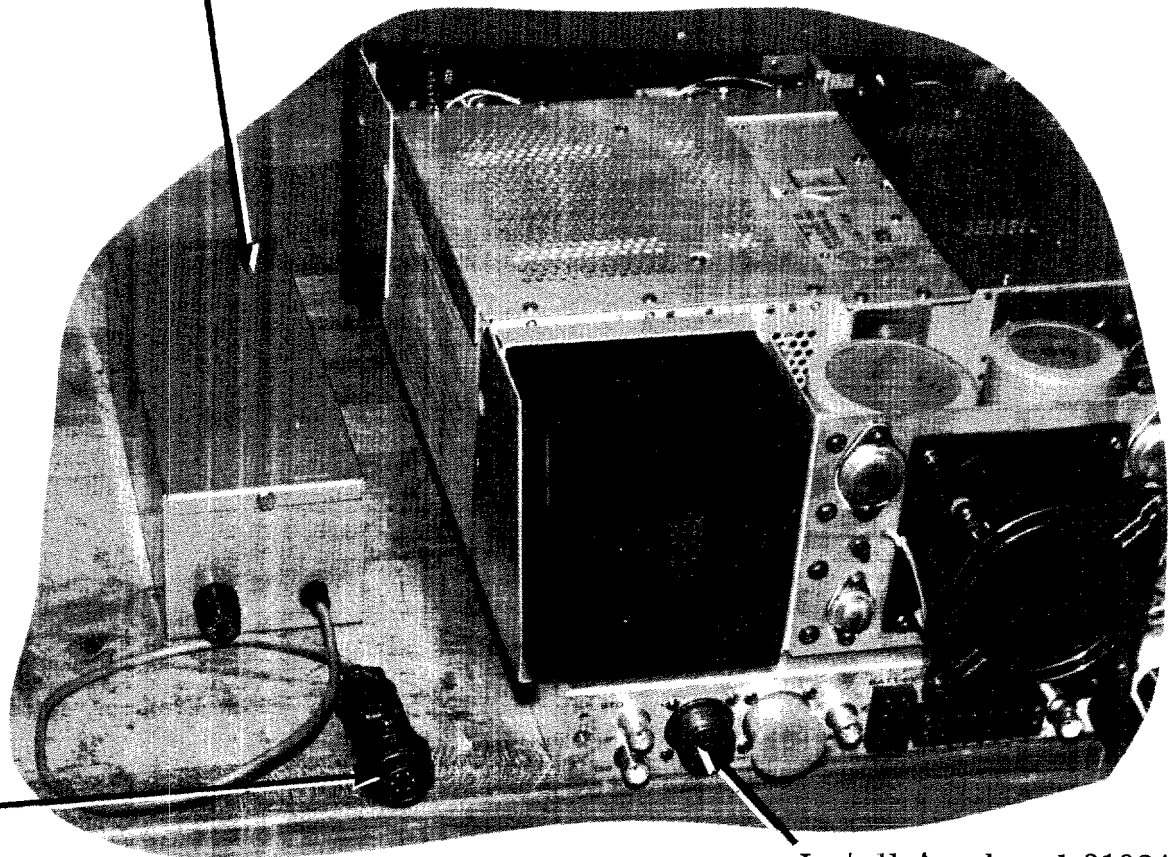
Remote Control Output  
Plug J-63  
(Remove if installed)

Figure 2 - Rear View of 651S-1





Battery Pack



Plug  
(P63)

Install Amphenol 3102A, 14S-6S

Figure 3 - 651S-1 Receiver With Power Pack

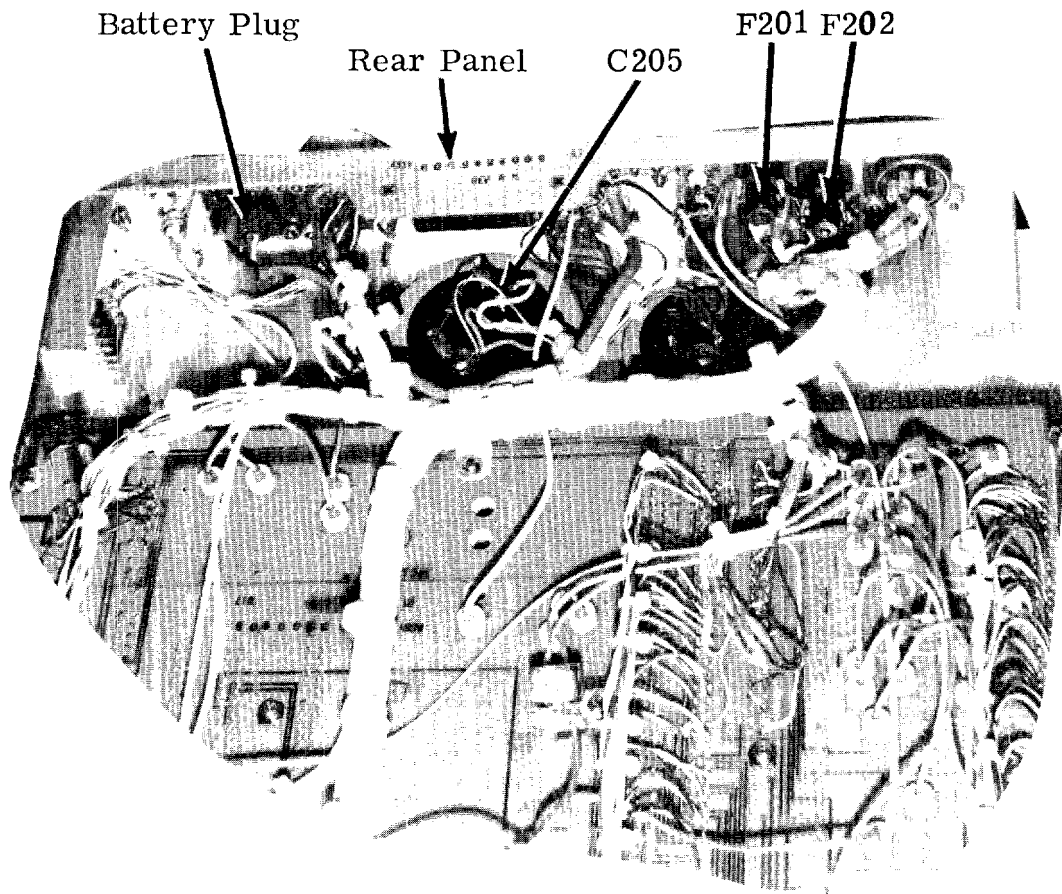


Figure 4 - 651S-1 Chassis

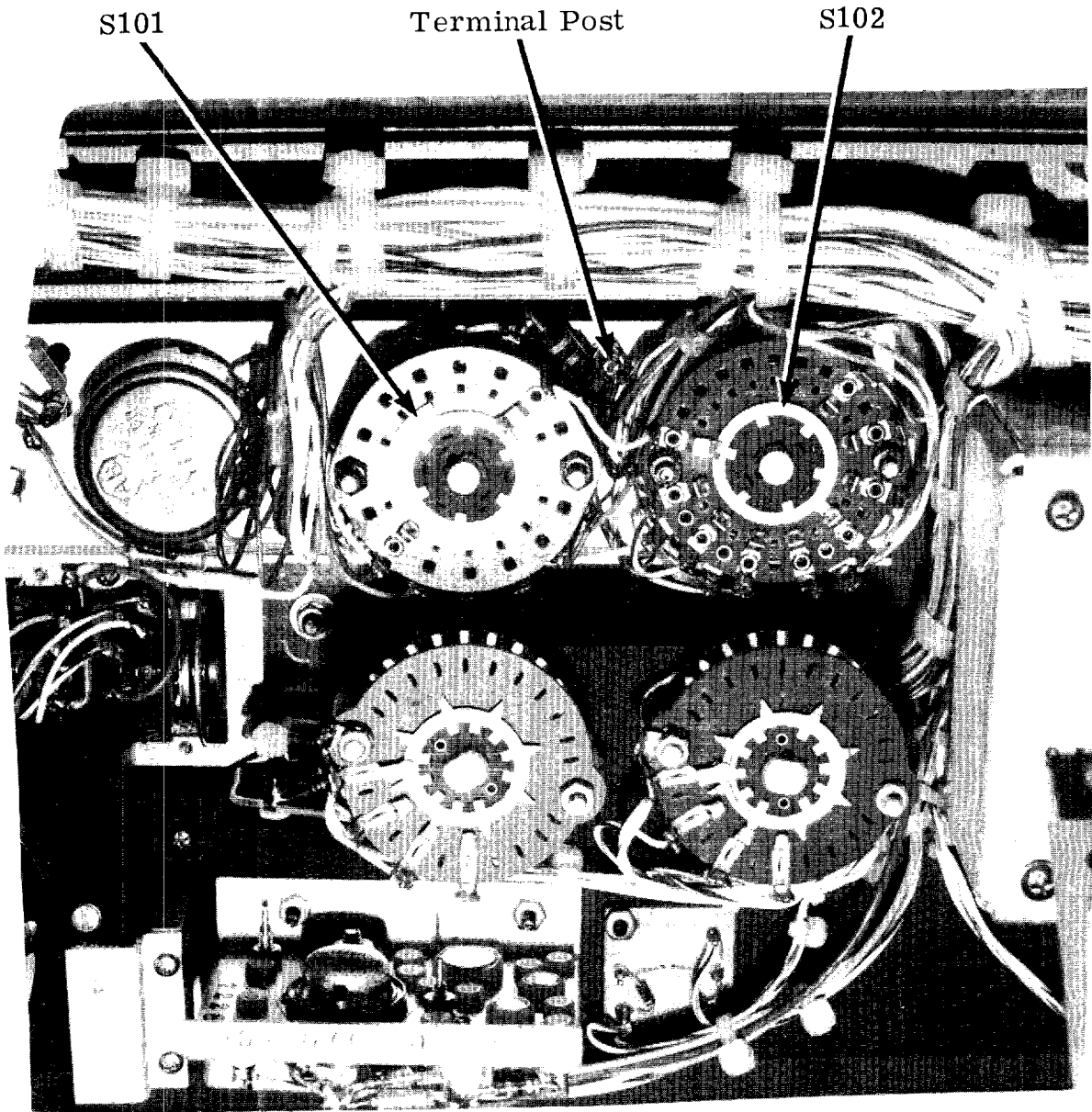
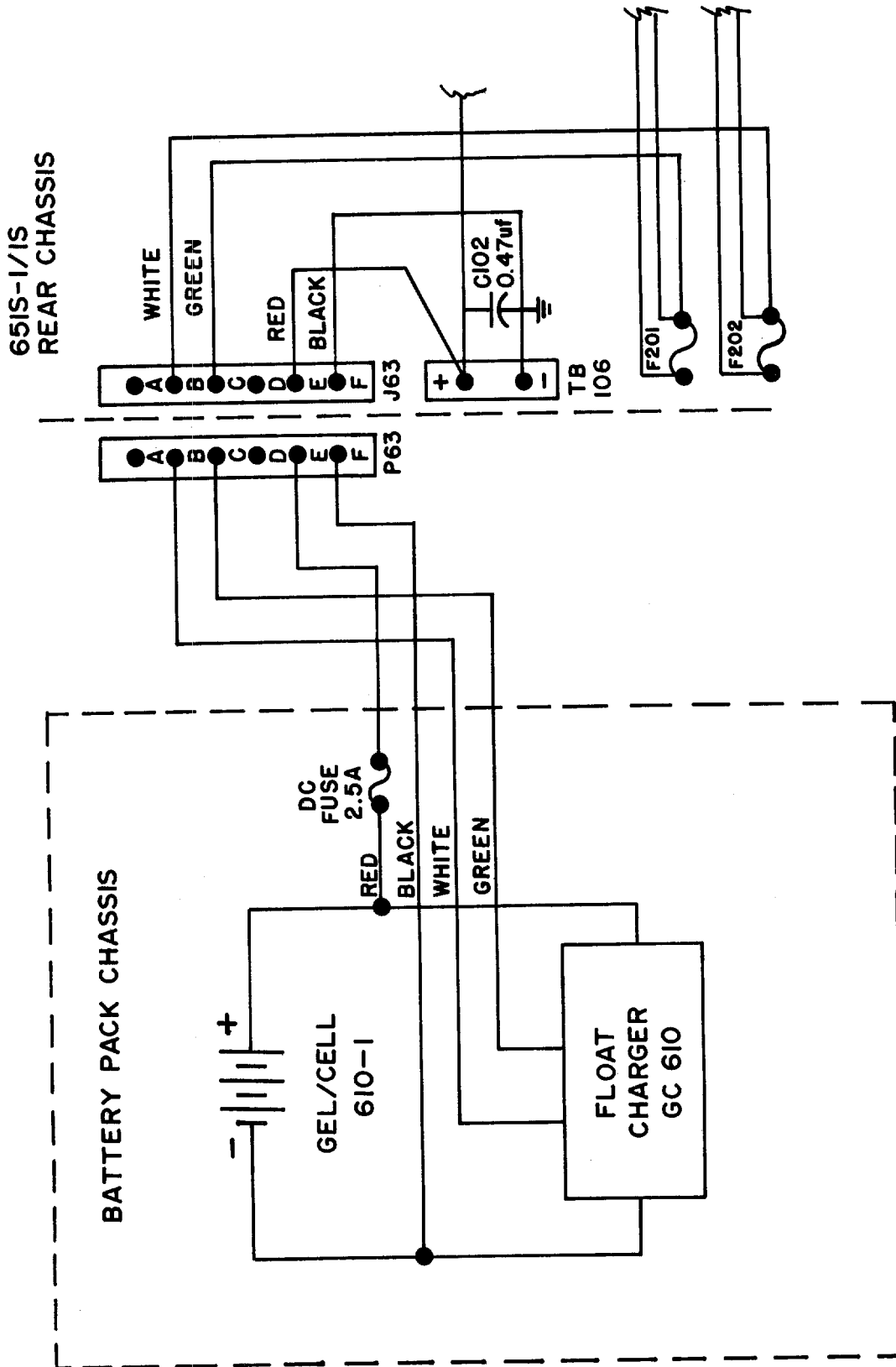


Figure 5 - Rear View of Front Panel Assembly





KEEP-ALIVE BATTERY PACK  
FOR COLLINS 651S-1/1S

Figure 8