

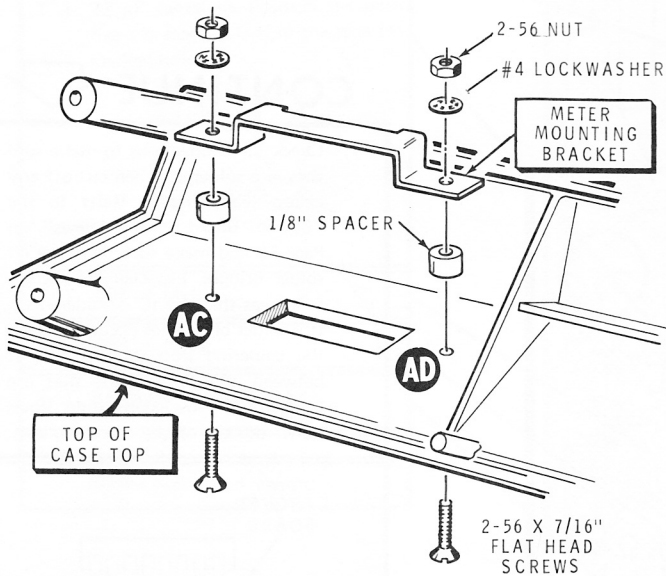
PICTORIAL 2-1

### CASE PARTS MOUNTING

Refer to Pictorial 2-1 (fold-out from Page 8) for the following steps.

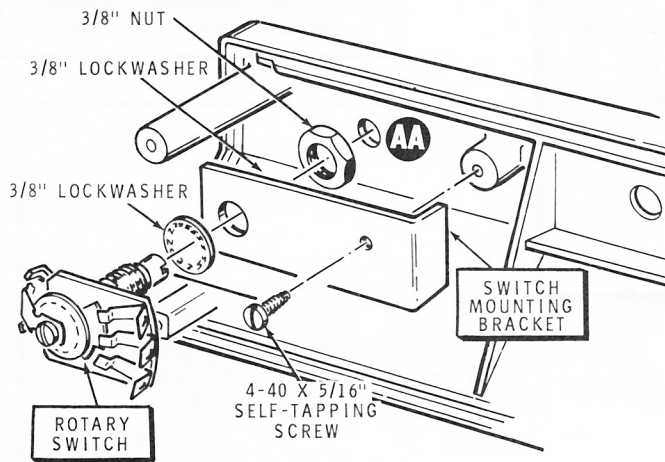
**NOTE:** Use the plastic nut starter supplied with this kit to hold and start 2-56 and 4-40 nuts.

- ( ) Locate the case top and position it as shown.



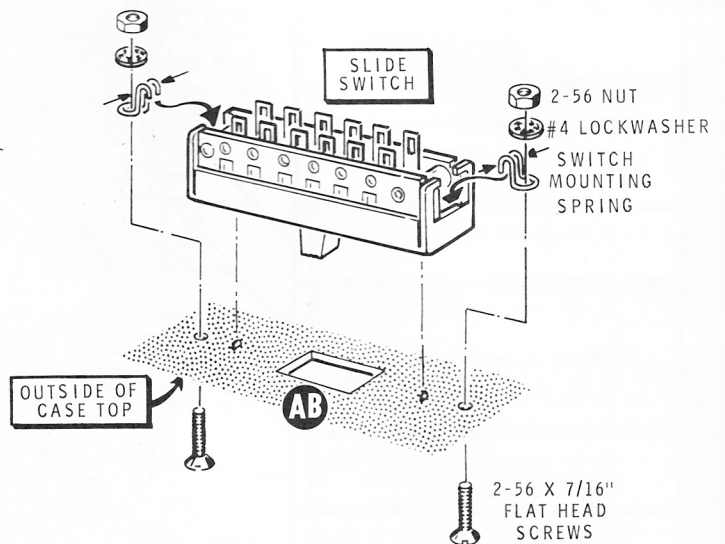
**Detail 2-1A**

- ( ) Refer to Detail 2-1A and mount the meter bracket at AC and AD. Use two 2-56 x 7/16" flat head screws, two 1/8" spacers, two #4 lockwashers, and two 2-56 nuts.



**Detail 2-1B**

- ( ) Refer to Detail 2-1B and mount the rotary switch on the mounting bracket. Use a 3/8" lockwasher and a 3/8" nut. Position the switch so its sides are parallel to the bracket.
- ( ) Mount the switch mounting bracket at AA with a 4-40 x 5/16" self-tapping screw. Make sure the lower lug on the switch is not touching the meter bracket.
- ( ) Turn the switch shaft at AA to its full clockwise position as viewed from the end of the shaft.



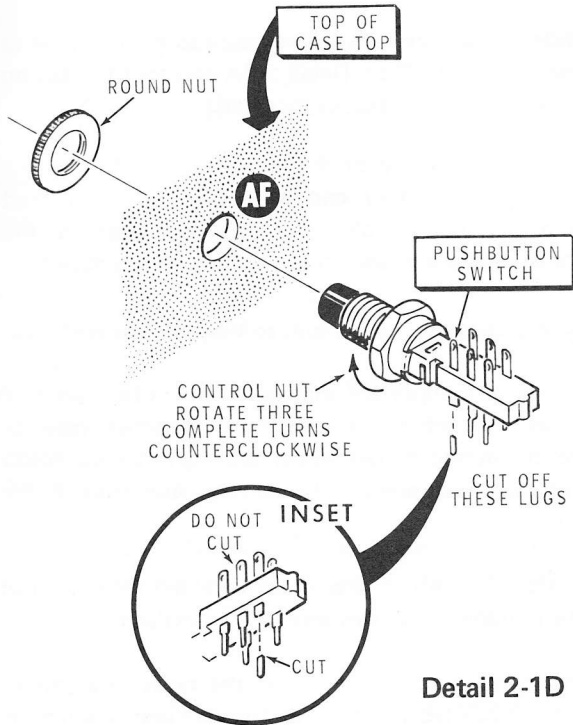
**Detail 2-1C**

- ( ) Refer to Detail 2-1C and install switch mounting springs on each end of the slide switch. Then mount the slide switch to the case top at AB. Use two 2-56 x 7/16" flat head screws, two #4 lockwashers, and two 2-56 nuts. It may be necessary to push the spring fingers together slightly to make the spring fit on the switch.
- ( ) Peel the protective paper backing from the back of the decorative trim panel. Then press the panel in place on the front of the case top as shown in the inset drawing on Pictorial 2-1.

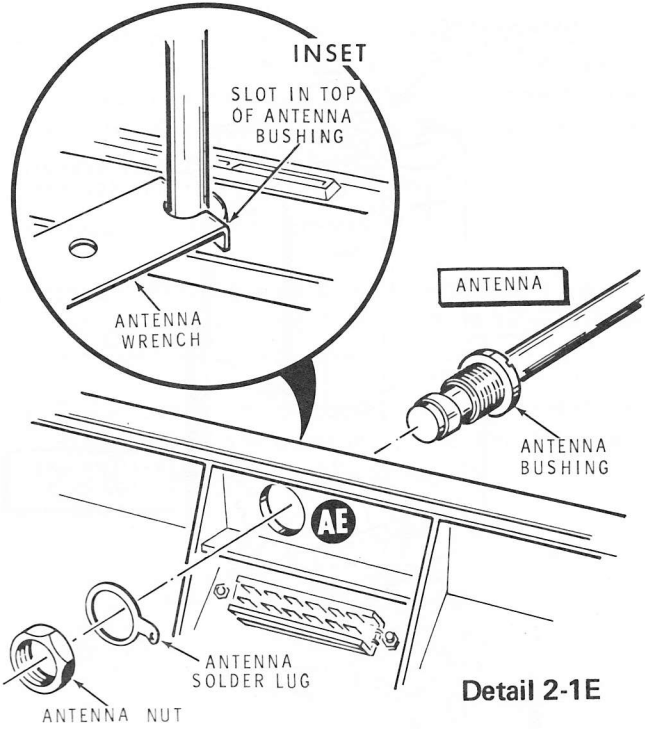
Refer to Detail 2-1D for the following steps.

- ( ) Locate the pushbutton switch and cut off all the lugs without holes.

- ( ) Remove the round nut from the pushbutton switch and make sure the control nut is rotated all the way clockwise on the switch. Then rotate the control nut counterclockwise three complete turns.
- ( ) Mount the pushbutton switch in the case top at AF.
- ( ) Locate the whip antenna and remove the antenna nut and antenna solder lug.



Detail 2-1D



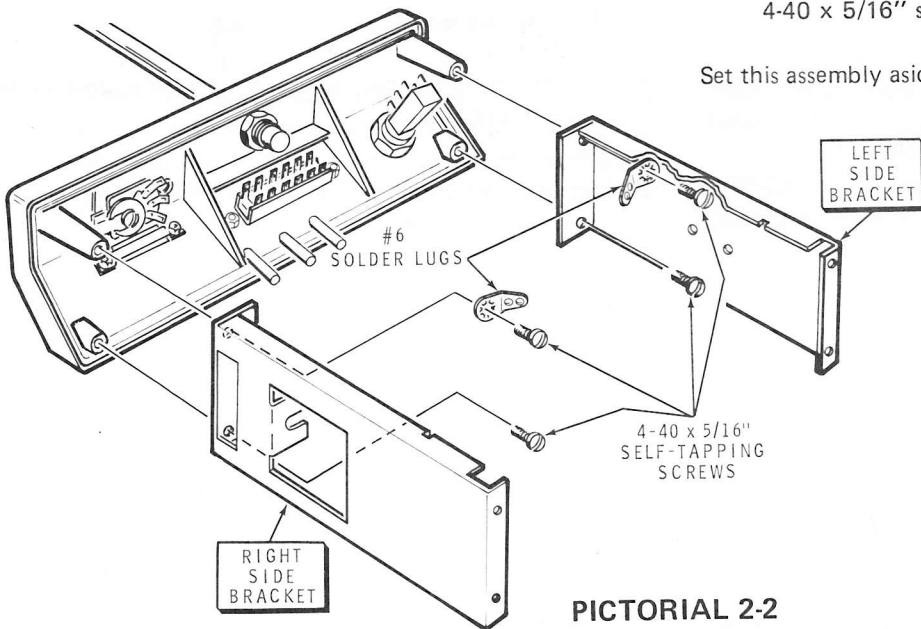
Detail 2-1E

- ( ) Mount the antenna in the case top at AE with the antenna solder lug and nut as shown in Detail 2-1E. Use the antenna wrench to tighten the antenna.

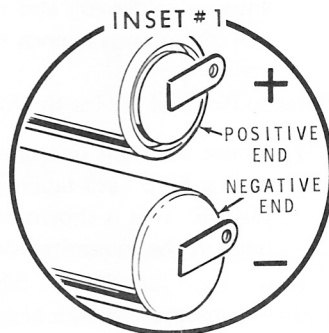
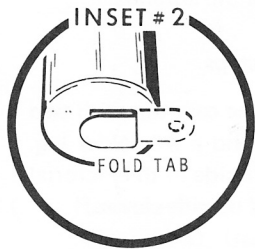
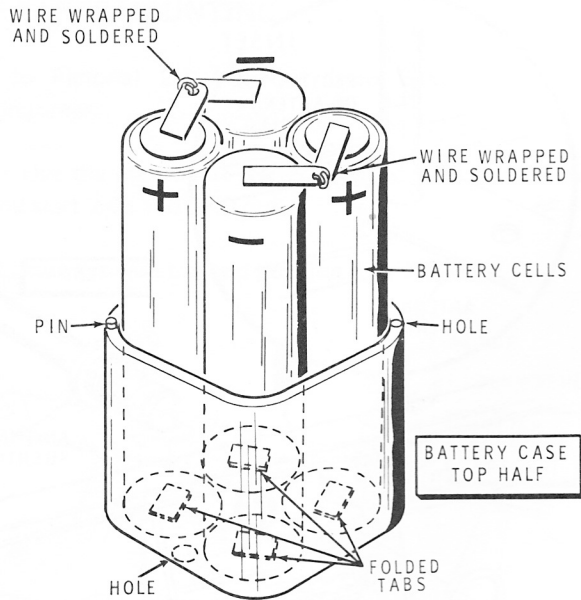
Refer to Pictorial 2-2 for the following steps.

- ( ) Mount the right side bracket to the case top with two 4-40 x 5/16" self-tapping screws and a #6 solder lug. (NOTE: This is shown on the left side in the Pictorial because the transmitter case top is up-side-down.)
- ( ) Mount the left side bracket to the case top with two 4-40 x 5/16" self-tapping screws and a #6 solder lug.

Set this assembly aside temporarily.



PICTORIAL 2-2



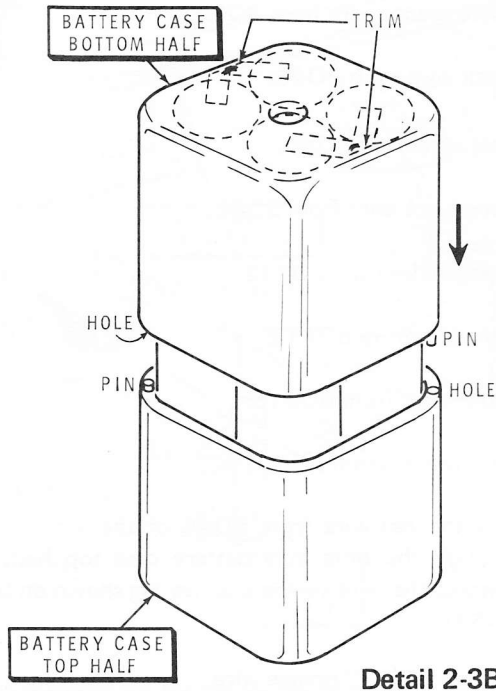
Detail 2-3A

Refer to Detail 2-3A for the following steps.

- ( ) Locate both battery case top halves. These are the case halves with an extra hole in the top.
- ( ) Position the case top halves as shown. Note the small hole in one corner of each case top half and the small pin on the opposite corner.
- ( ) Refer to inset drawing #1 on Detail 2-3A and identify the positive (+) and negative (-) ends of a battery cell.
- ( ) Slide the battery cells in the case top halves. Refer to inset drawing #2 on Detail 2-3A and fold the tab on the end to be inserted, of each cell.
- ( ) Check the polarity of the battery ends. Make sure a positive (+) battery end is visible in each marked corner (pin or hole). The battery ends in the unmarked corners should be negative (-), as shown.
- ( ) Position the tabs of the cells so they overlap as shown.

**NOTE:** It is very important that the batteries be assembled exactly as instructed. Otherwise the batteries may be permanently damaged. Use solder sparingly. Excess solder on connections will prevent the battery cases from fitting properly.

- ( ) Cut a 2" length of large black wire and remove all of the insulation. Use this wire in the next step.
- ( ) Insert the bare wire through the holes in a pair of battery cell tabs. Then wrap the wire once around the tab. Solder the wire and the tabs, and cut off the excess wire length.
- ( ) In the same manner, wire and solder the other three pair of cell tabs.



Detail 2-3B

NOTE: In the following step, do not let the case bend the cell tabs down. The positive (+) tab may short out against the negative (-) battery case. As shown in Detail 2-3B, trim the cell tabs, if necessary.

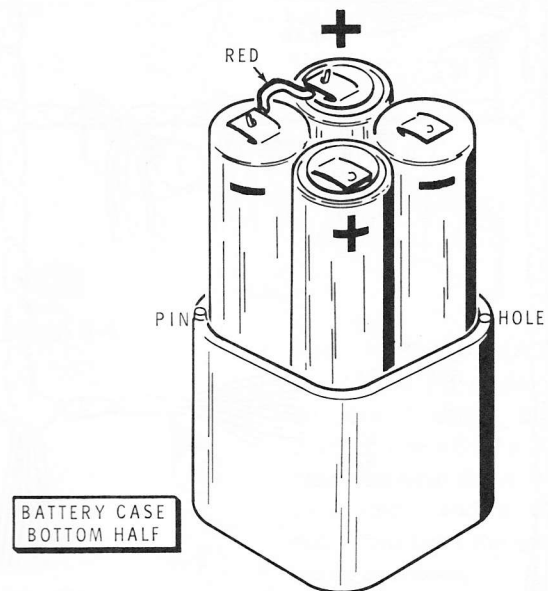
- ( ) Refer to Detail 2-3B and place the battery case bottom halves onto the battery case top halves. Note the corresponding pins and holes in the case bottom halves.
- ( ) Turn both battery cases over and remove the battery case top halves.

Refer to Detail 2-3C for the following steps.

- ( ) Position the battery case bottoms as shown, using the pin and hole as reference. The negative (-) battery end should be visible in each corner with either a pin or hole. The other two battery ends should be positive (+).

NOTE: When you are instructed to prepare a wire, as in the next step, cut the wire to the length specified and remove 1/4" of insulation from each end. Then twist together the fine wire strands and apply a small amount of solder to the wire ends to hold the strands together.

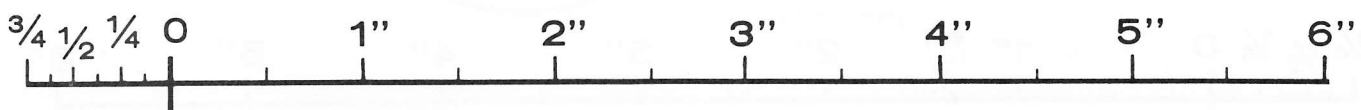
- ( ) Prepare two large 1" red wires.
- ( ) Solder one red wire between the indicated (+) and (-) cell tabs in each case bottom half. Make sure these wires are positioned as shown.
- ( ) Position the battery case bottom half exactly as shown in Detail 2-3C and check the 1" red wire. Make sure this wire is connected to the correct lugs.

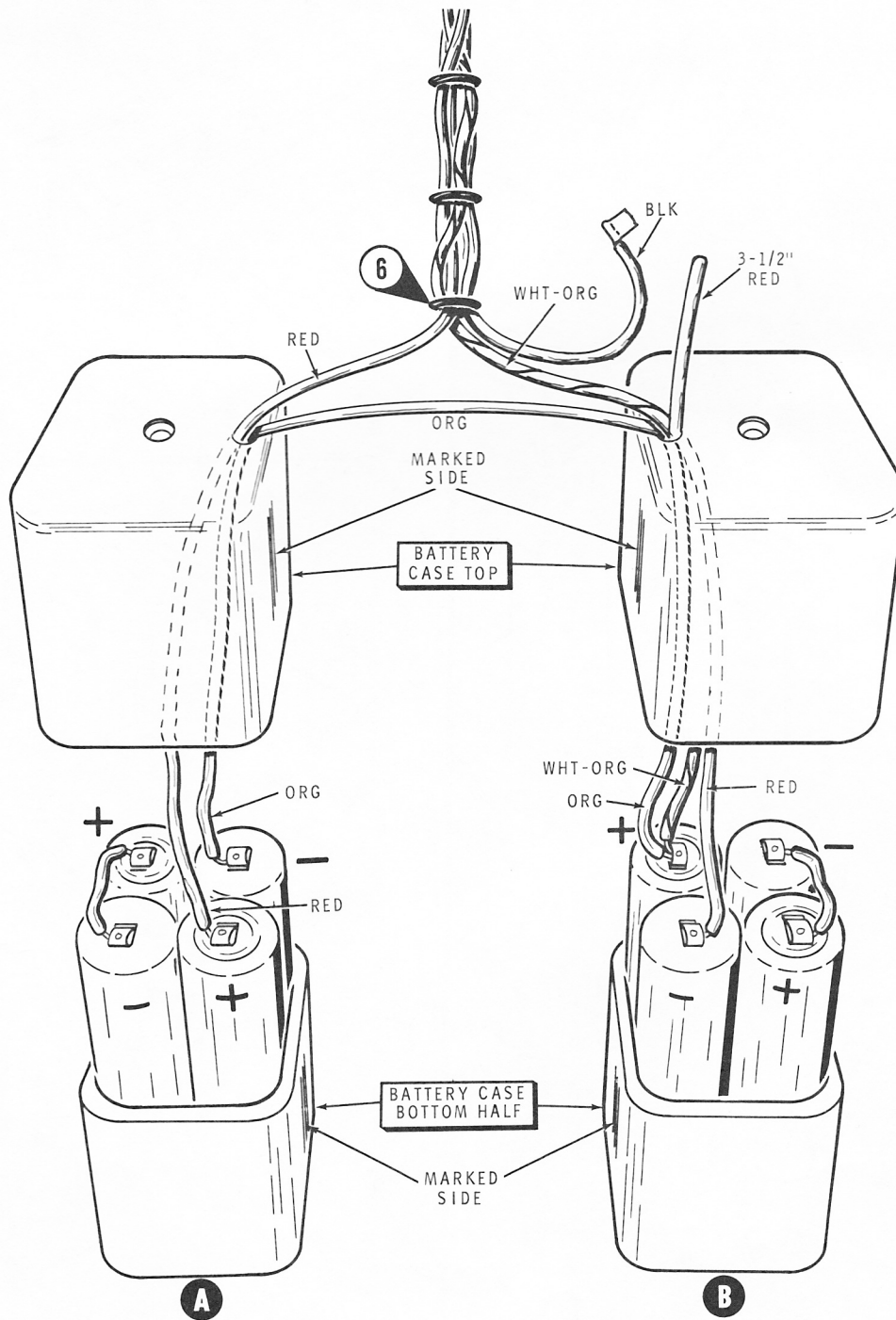


Detail 2-3C

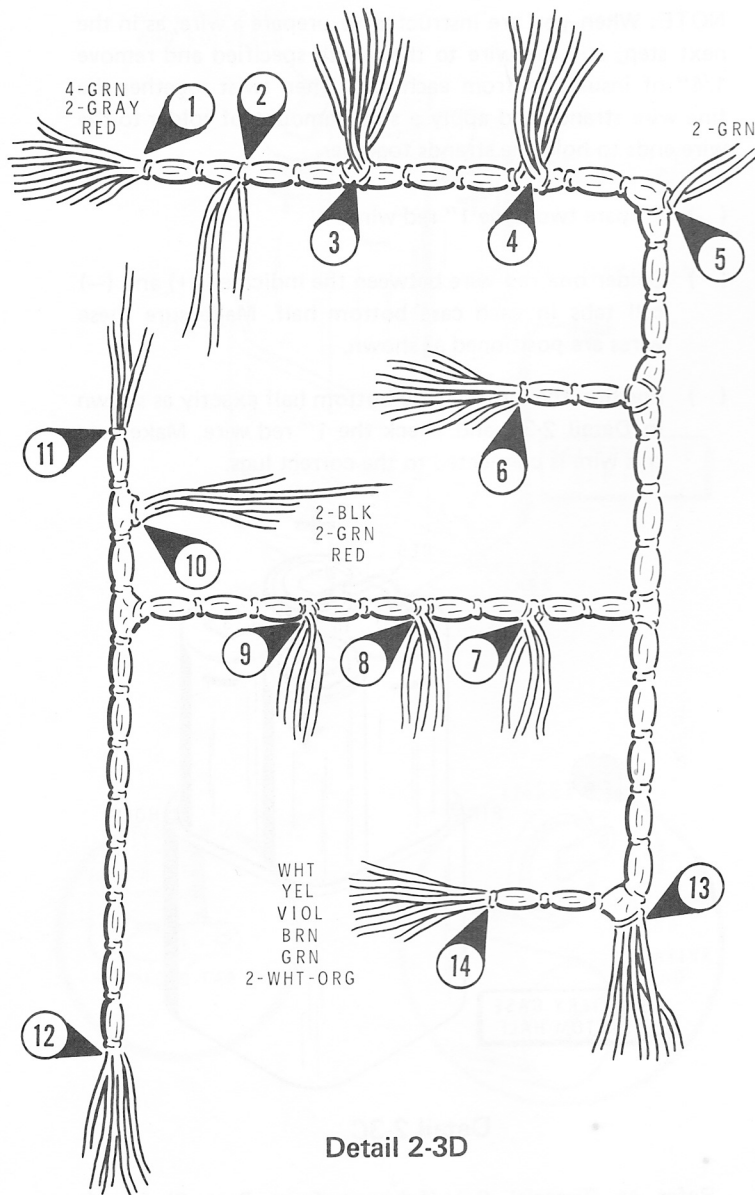
Refer to Pictorial 2-3 (fold-out from Page 8) for the following steps.

NOTE: The batteries in the Pictorial are labeled A and B. Battery A will be wired in the next step.





**PICTORIAL 2-3**



- ( ) White-orange wire from BO#3.
- ( ) Black wire from BO#3.
- ( ) Blue wire from BO#4.
- ( ) Long black wire from BO#6.
- ( ) Orange wire from BO#12.
- ( ) Blue wire from BO#13.
- ( ) Violet wire from BO#13.
- ( ) Yellow wire from BO#14.
- ( ) Pass the red wire from BO#6 of the wiring harness through the hole in a battery case top half. Then connect the wire to the positive lug shown on battery A (S-1).
- ( ) Prepare a 3-1/2" orange wire.
- ( ) Connect one end of this orange wire to the negative lug shown on battery A (S-1).

NOTE: If the wires are not positioned properly in the battery cases, the cases will not fit together properly. Make sure all slack wire is pulled out of the cases.

- ( ) Pass the other end of this orange wire through the hole in the battery case top. Then slide the battery case top down over the battery cells.

NOTE: You will wire battery B in the following steps.

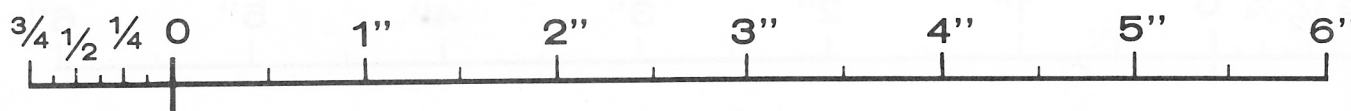
- ( ) Refer to Detail 2-3D and position the wiring harness as shown. The term "breakout" (BO) refers to a place where a group of wires come out of the harness. Do not shorten any of the wires.

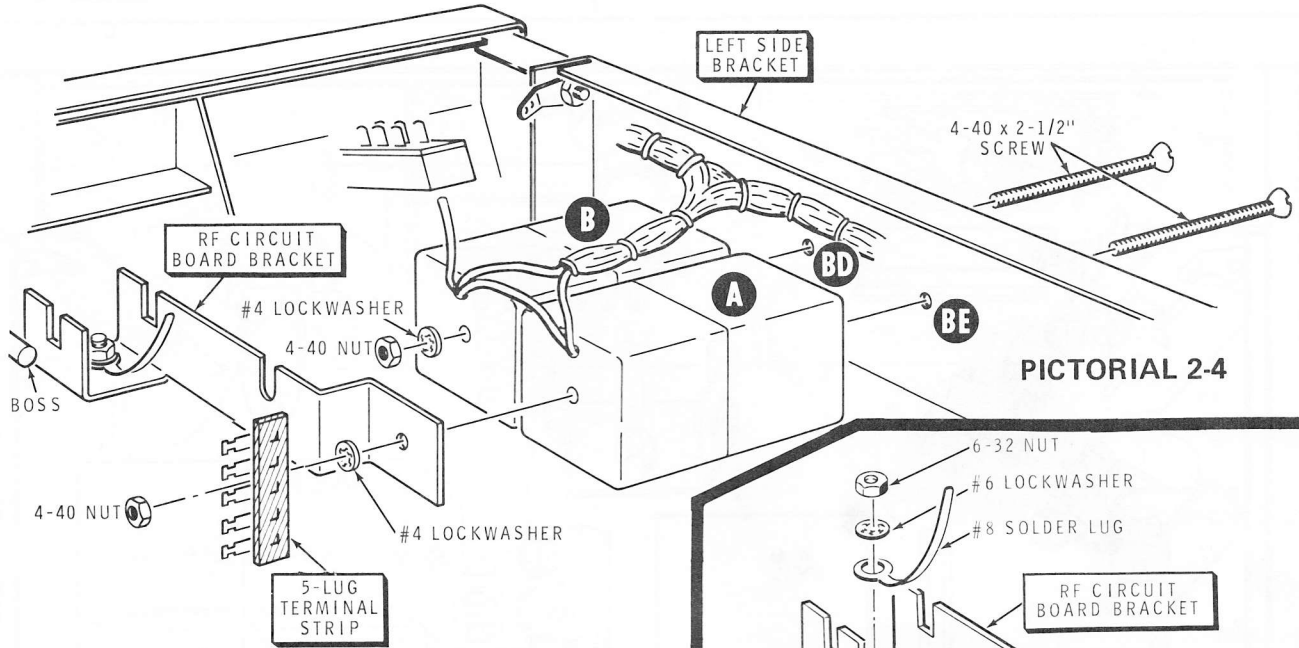
NOTE: Once the batteries are wired, certain wires in the harness will have voltage applied to them. Therefore you will be instructed to place a piece of tape over the ends of these wires. Remove the tape when you are instructed to connect the wire.

Place a piece of tape over the ends of the following harness wires.

- ( ) Red wire from BO#3.

- ( ) Prepare only one end of a 3-1/2" large red wire.
- ( ) Connect this wire to the indicated (-) cell tab (S-1).
- ( ) Pass the other end of this wire through the hole in the remaining case top.
- ( ) Pass the orange wire coming from battery A through the hole in the battery case top.
- ( ) Pass the white-orange wire from BO#6 of the harness through the hole in the battery case top.
- ( ) Connect the white-orange and the orange wires to the positive lug shown on Battery B (S-2).





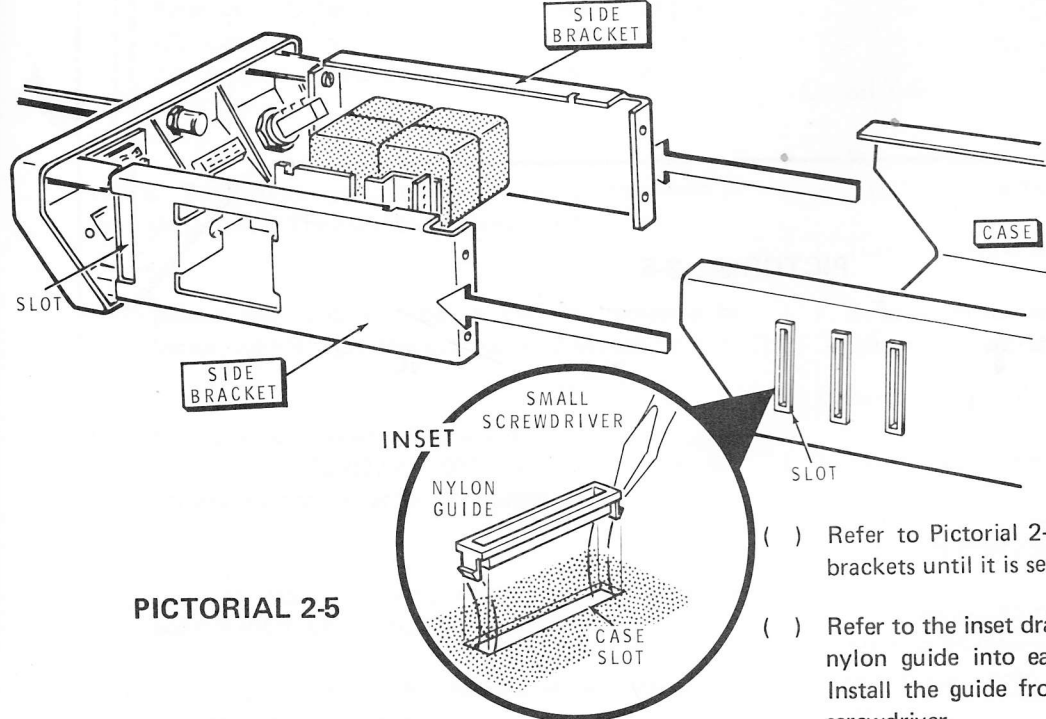
PICTORIAL 2-4

Detail 2-4A

Refer to Pictorial 2-4 for the following steps.

- ( ) Mount battery case B to the left side bracket at BD with a 4-40 x 2-1/2" screw, a #4 lockwasher, and a 4-40 nut.
- ( ) Locate the rf circuit board bracket and the #8 solder lug.
- ( ) Cut 3/8" off the small end of the #8 solder lug.

- ( ) Refer to Detail 2-4A and mount the #8 solder lug on the rf circuit board bracket. Use a 6-32 x 3/8" black flat head screw, a #6 lockwasher, and a 6-32 nut. Then bend the solder lug up as shown.

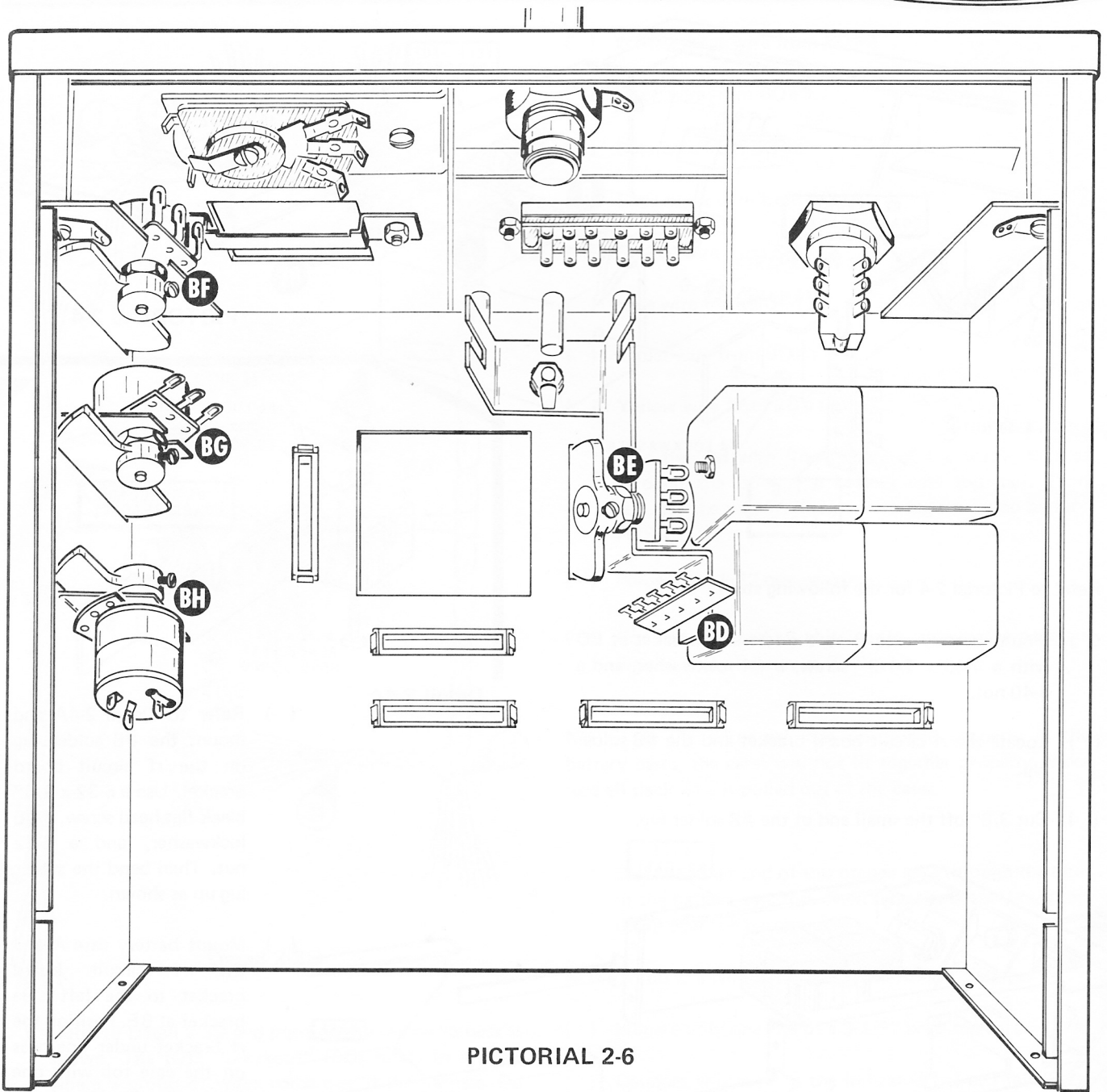


PICTORIAL 2-5

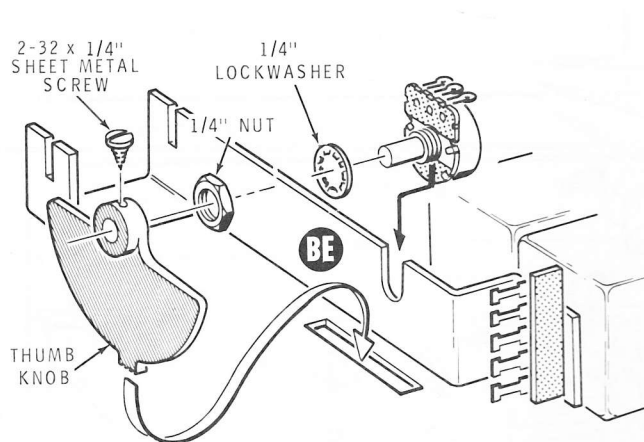
- ( ) Mount battery case A and the rf circuit board bracket to the left side bracket at BE. Position the rf bracket under one boss on the case top with one boss on each side of the bracket. Use a 5-lug terminal strip, a 4-40 x 2-1/2" screw, a #4 lockwasher, and a 4-40 nut (large).

- ( ) Refer to Pictorial 2-5 and slide the case over the side brackets until it is seated in the case top.
- ( ) Refer to the inset drawing on Pictorial 2-5 and install a nylon guide into each of the nine slots in the case. Install the guide from outside the case using a small screwdriver.

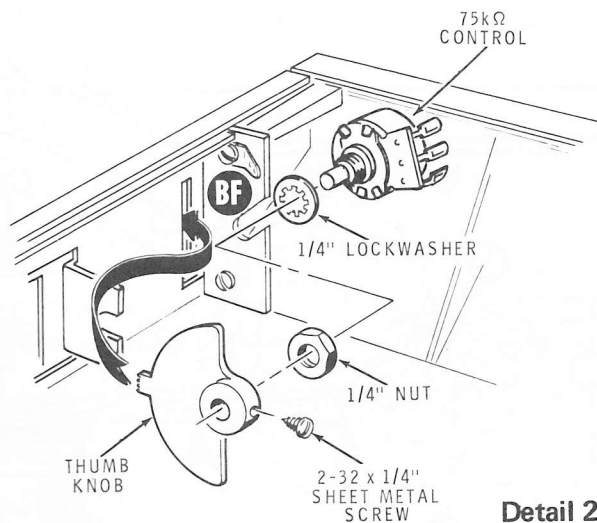




PICTORIAL 2-6



Detail 2-6A



Detail 2-6B

Refer to Pictorial 2-6 for the following steps.

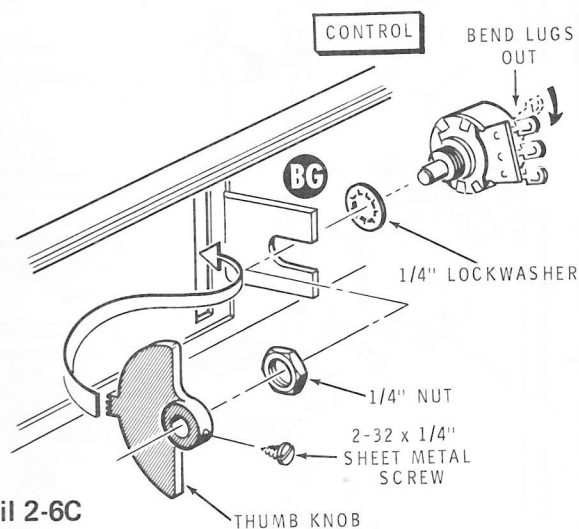
- ( ) Refer to Detail 2-6A and start a 2-32 x 1/4" sheet metal screw in each of the thumb knobs.
- ( ) Place a 1/4" lockwasher and a 1/4" nut on a 15 k $\Omega$  (#10-924) control. Do not turn the nut on all the way.

NOTE: When you are instructed to set a control shaft to its center of rotation, as in the next step, perform the operation as accurately as possible. This is very important.

- ( ) Refer again to Detail 2-6A and turn the shaft of the 15 k $\Omega$  control to its center of rotation. Then place a thumb knob on the shaft. Do not tighten the thumb knob screw.

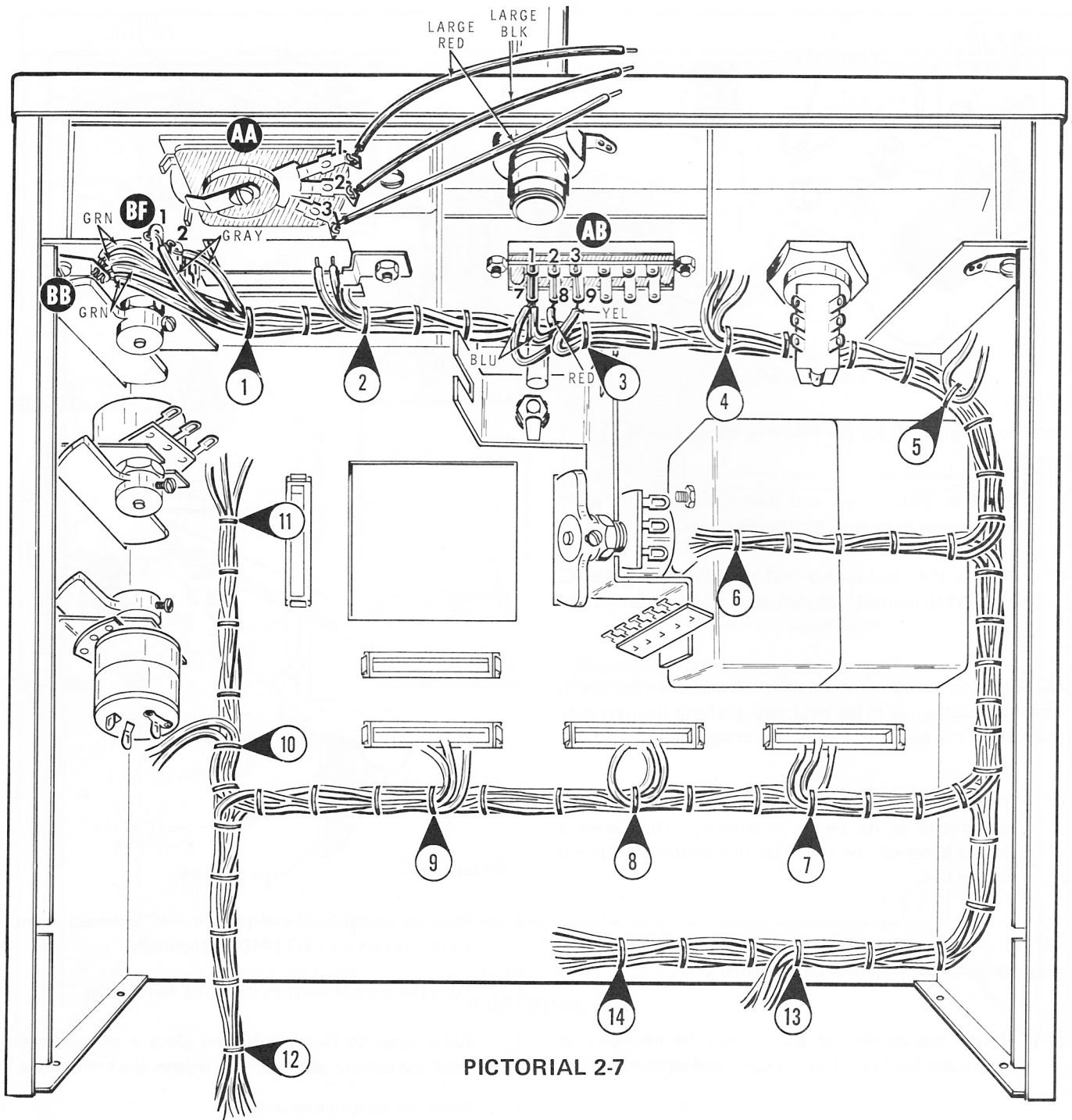
NOTE: The thumb knob screws will not be tightened as they are installed. They will be tightened later.

- ( ) Mount this control at BE. It may be necessary to loosen the 1/4" nut. Use the open-end wrench.
- ( ) In the same manner, place a 1/4" lockwasher and a 1/4" nut on a 75 k $\Omega$  (#10-922) control. Then turn the control shaft to its center of rotation.
- ( ) Refer to Detail 2-6B and place a thumb knob onto the control shaft. Do not tighten the screw.
- ( ) Mount this control at BF. Make sure the control lugs are positioned as shown.



Detail 2-6C

- ( ) Refer to Detail 2-6C and place a 1/4" lockwasher and a 1/4" nut on a 75 k $\Omega$  (#10-922) control.
- ( ) Turn the control shaft to its center of rotation.
- ( ) Refer again to Detail 2-6C and place a thumb knob onto the control shaft. Do not tighten the knob screw.
- ( ) Bend the control lugs straight.
- ( ) Mount this control at BG.
- ( ) Place a 1/4" lockwasher and a 1/4" nut on the miniature rotary switch.
- ( ) Turn the miniature rotary switch shaft to its clockwise position as viewed from the shaft end. Then place a thumb knob onto the shaft. Do not tighten the knob screw.
- ( ) Mount the miniature rotary switch at BH.



PICTORIAL 2-7

**INITIAL WIRING**

Refer to Pictorial 2-7 for the following steps.

Connect the wires from BO#1 of the wiring harness as follows:

- ( ) Either gray wire to lug 2 of control BF (S-1).
- ( ) Other gray wire to lug 1 of control BF (S-1).

- ( ) All four green wires to solder lug BB (S-4).

- ( ) Make sure solder lug BB does not interfere with the thumb knob of control BF.

The red wire coming from BO#1 will be connected later.

- ( ) Prepare the following lengths of wire:

3-1/2" large red  
3-1/2" large red

3-1/2" large black



Connect one end of the prepared wires to switch AA as follows:

- ( ) 3-1/2" large red wire to lug 3 (S-1).
- ( ) 3-1/2" large black wire to lug 2 (S-1).
- ( ) 3-1/2" large red wire to lug 1 (S-1).

NOTE: The other end of these wires will be connected later.

Connect the wires from BO#3 of the wiring harness to switch AB in the following steps. Remove any tape from the ends of the wires as they are connected.

NOTE: In the next three steps, pass the bare end of the wire through both lugs of the switch and solder both lugs.

- ( ) Both blue wires to lugs 7 and 1. Solder both lugs.
- ( ) Red wire to lugs 8 and 2. Solder both lugs.
- ( ) Yellow wire to lugs 9 and 3. Solder both lugs.

Refer to Pictorial 2-8 for the following steps.

- ( ) Bend the remaining lugs on switch AB away from each other slightly. Then when a connection is made to lug 10, for example, it will not touch lug 4.

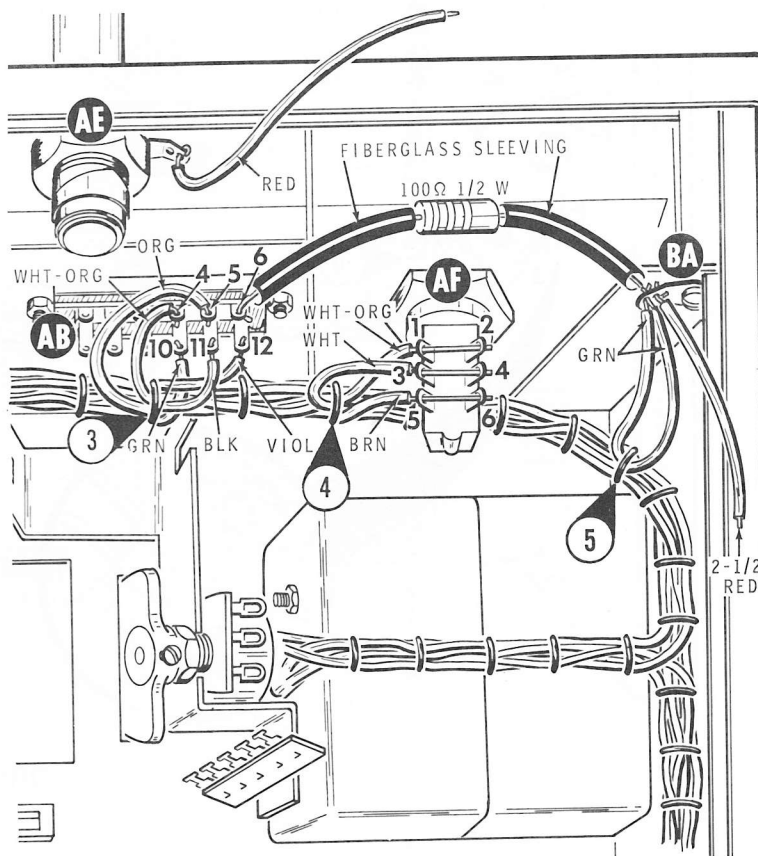
Connect the wires from BO#3 of the wiring harness to switch AB as follows:

- ( ) Green wire to lug 10 (S-1).
- ( ) Black wire to lug 11 (S-1).
- ( ) Violet wire to lug 12 (S-1).
- ( ) Orange wire to lug 5 (S-1).
- ( ) White-orange wire to lug 4 (S-1).
- ( ) Prepare a 4" large red wire.
- ( ) Connect one end of the 4" large red wire to the antenna solder lug AE (S-1). The other end of this wire will be connected later.

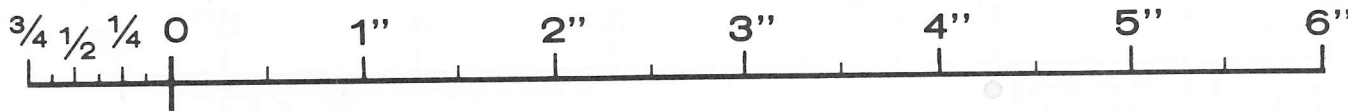
Connect the wires from BO#4 of the wiring harness to switch AF as follows:

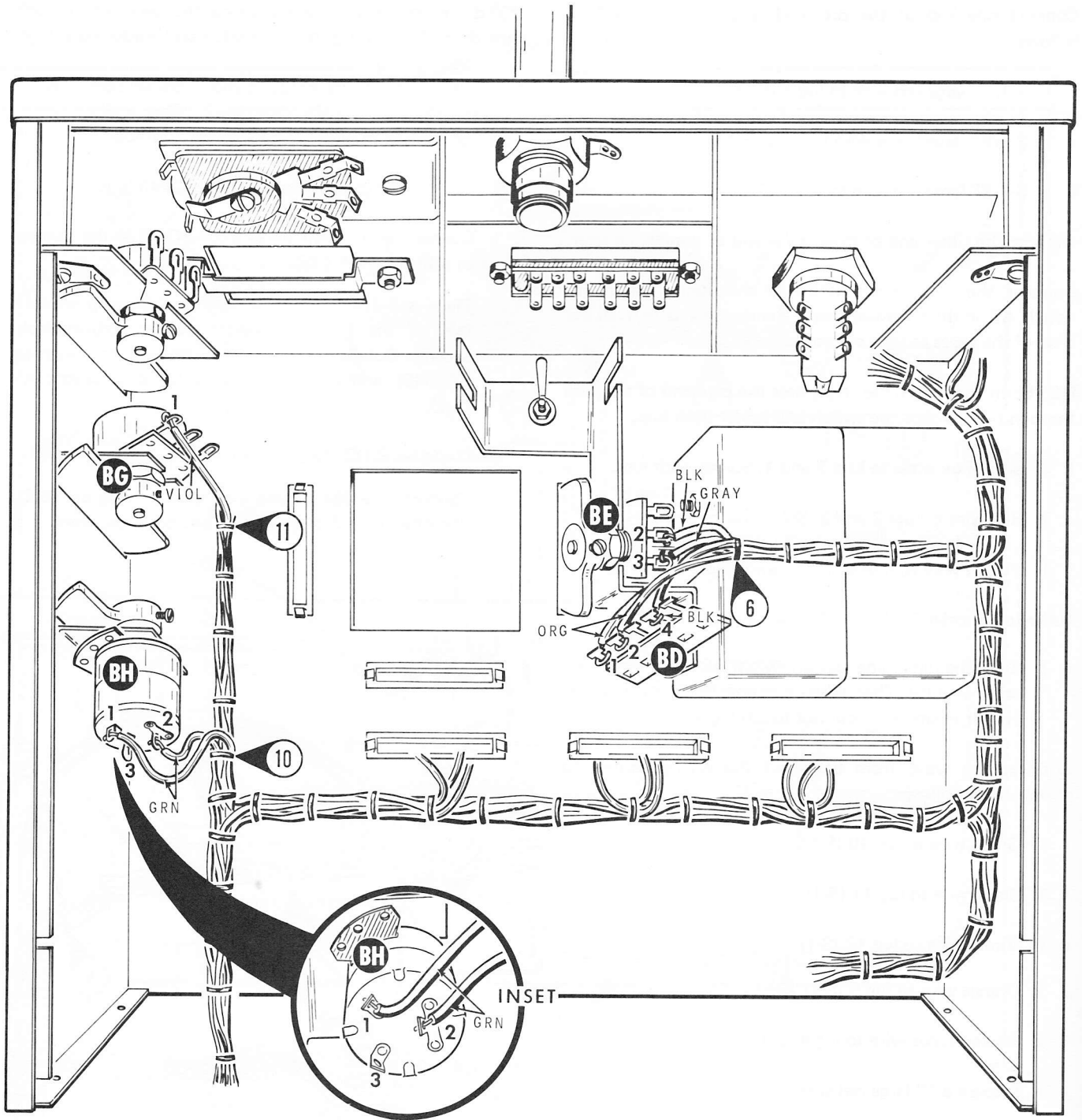
NOTE: In the next three steps pass the bare end of each wire through both lugs on the switch and solder both lugs.

- ( ) White-orange wire to lugs 1 and 2. Solder both lugs.
- ( ) White wire to lugs 3 and 4. Solder both lugs.
- ( ) Brown wire to lugs 5 and 6. Solder both lugs.
- ( ) Connect both green wires from BO#5 of the harness to solder lug BA (NS).
- ( ) Place a 1-1/4" length of fiberglass sleeving on each lead of the 100 Ω, 1/2-watt resistor (brown-black-brown). Connect one of the resistor leads to solder lug BA (NS), and the other lead to lug 6 of switch AB (S-1).
- ( ) Prepare a 2-1/2" large red wire.
- ( ) Connect one end of this wire to solder lug BA (S-4). The other end of this wire will be connected later.



PICTORIAL 2-8





PICTORIAL 2-9





Refer to Pictorial 2-9 for the following steps.

Connect the wires from BO#6 as follows:

- ( ) Gray wire to lug 3 of control BE (S-1).
- ( ) Short black wire to lug 2 of control BE (S-1).
- ( ) Either orange wire to lug 1 of terminal strip BD (S-1).
- ( ) Other orange wire to lug 2 of terminal strip BD (S-1).
- ( ) Remove the tape from the end of the black wire coming from BO#6. Then connect this wire to lug 4 of terminal strip BD (NS).
- ( ) Prepare the end of the red wire coming from the battery. Then connect this wire to lug 4 of terminal strip BD (S-2).
- ( ) Connect the violet wire coming from BO#11 to lug 1 of control BG (S-1).
- ( ) Refer to the inset drawing on Pictorial 2-9 and connect either green wire coming from BO#10 to either indicated lug on switch BH (S-1).
- ( ) Connect the other green wire coming from BO#10 to the other indicated lug on switch BH (S-1).

NOTE: The remaining wires will be connected later.

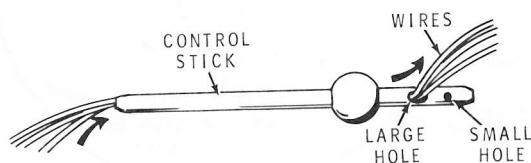
### CONTROL STICK ASSEMBLY

Refer to Pictorial 3-1 (fold-out from Page 22) for an overall view of the control stick assembly as you perform the following steps.

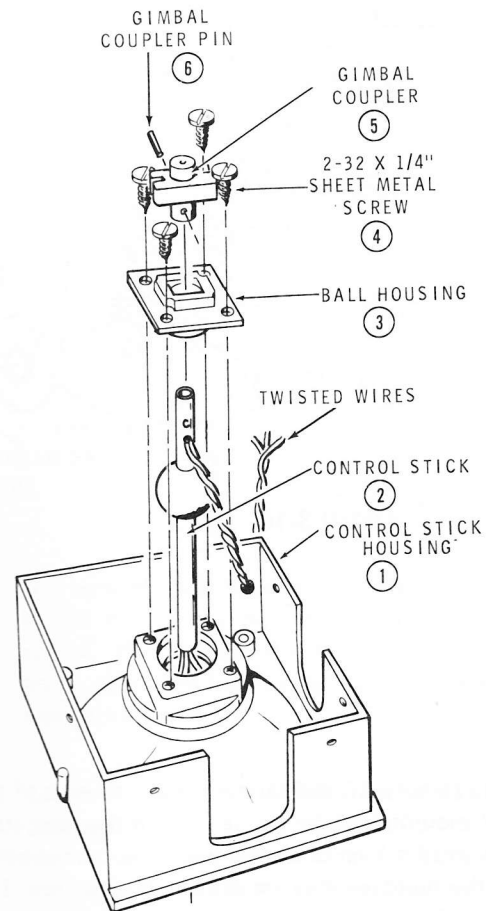
In the following steps you will put together the control stick assembly. Carefully assemble the parts as shown in each of the Details; be sure each part is in its proper place, and that nuts and screws are properly tightened. Before you perform each step, locate the necessary parts for that step.

- ( ) Prepare the following wires:

7" small red  
7" small white                      7" small black



Detail 3-1A



Detail 3-1B

- ( ) Insert these wires through the control stick as shown in Detail 3-1A. Pull the wires through until equal lengths of wire are at either end of the stick.
- ( ) Refer to Detail 3-1B and assemble a control stick assembly. Follow the numbered sequence.

NOTE: To operate properly, the control stick must move freely. Move the control stick knobs in a circular motion and loosen the ball housing screws if necessary.

- ( ) Twist together the red, white, and black wires coming from the control stick. Then route these wires through the hole in the control stick housing.
- ( ) Set the control stick housing aside until it is called for later.