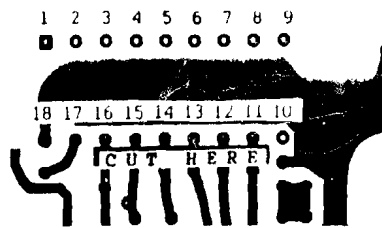


# 99 CHANNEL READOUT SERIES

For: Cobra 142/148/2000, UNIDEN Madison/Grant,  
and RADIOS which use the MB8719 PLL chip

- STEP # 1 Disconnect the antenna, microphone, and the power plug. Remove the covers and turn the radio so the controls face you with the soldered side facing up. Locate the PLL chip (MB8719). Cut the circuit board traces at pins 11, 12, 13, 14, 15 and 16 as close as possible to the PLL pins. NOTE: If the radio you are working on is a Cobra 142GTL or similar type chassis you will need to also cut the number 10 circuit trace on both sides of the pin as to remove any connection to other circuitry.



- STEP # 2 Place the kit in front of you, locate wiring harness (A). Now just below the PLL chip are six staggered holes, solder the **YELLOW thru WHITE** wires to these points on the radio circuit board as follows.

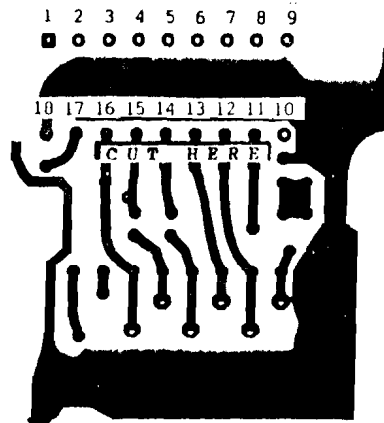
GRN - ● PUR - ● WHI - ●

YEL - ● BLU - ● GRY - ●

- STEP # 3 Now locate wire harness (B). These wires are to be soldered to a SPDT center off switch. Solder the **WHITE** wire to one side of the switch, the **GRAY** wire to the other side of the switch and the **BLACK** wire to the center.

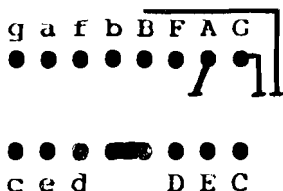
- STEP # 4 Locate wire harness (C). This set of wires are to be soldered to the Pins on the PLL chip where you made the circuit board trace cuts.

Solder the **ORANGE** wire to pin #16, Solder the **RED** wire to pin #15  
Solder the **BROWN** wire to pin #14, Solder the **YELLOW** wire to pin #13  
Solder the **GREEN** wire to pin #12, Solder the **BLUE** wire to pin #11  
Solder the **PURPLE** wire to pin #10



FOIL PATTERN OF PC BOARD

**STEP # 5** Now locate the LED Display Circuit Board inside the front panel of the radio. You will see a pattern of solder points marked similare to the diagram below. Several cuts must be made on this circuit board, the easiest way to do this is to make the cuts as close to the designated letter as possible. **Cut the circuit trace from the capital B, also capital A, and capital G.**



Now solder the wires from wiring harness (D) as follows.

Solder the **BROWN** wire to the point marked with a capital F,  
 Solder the **RED** wire to the point marked with a capital G,  
 Solder the **ORANGE** wire to the point marked with a capital A,  
 Solder the **YELLOW** wire to the point marked with a capital B,  
 Solder the **GREEN** wire to the point marked with a capital C,  
 Solder the **BLUE** wire to the point marked with a capital D,  
 Solder the **PURPLE** wire to the point marked with a capital E,

Now locate wiring harness (E), we are going to do the same thing only to the lower case letters.

Solder the **BROWN** wire to the point marked with a lower case f,  
 Solder the **RED** wire to the point marked with a lower case g,  
 Solder the **ORANGE** wire to the point marked with a lower case a,  
 Solder the **YELLOW** wire to the point marked with a lower case b,  
 Solder the **GREEN** wire to the point marked with a lower case c,  
 Solder the **BLUE** wire to the point marked with a lower case d,  
 Solder the **PURPLE** wire to the point marked with a lower case e,

After this is completed you should have only two wires left to hook up, wire harness (F). **BEFORE** you connect these wires go back and double check all work up to this point. When you are sure you got it right connect the **BLACK** wire to the **PC board ground** and the **WHITE** wire to the switched side of the **RADIO POWER** a power wire that goes on and off with the radio switch, which is usually an orange wire.

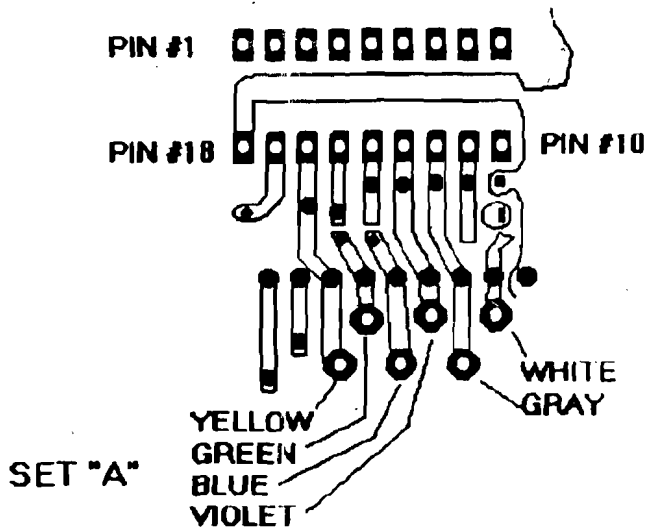
**STEP # 6** Find a good place to mount the toggle switch, and secure the kit inside the radio, hint (double faced tape works pretty good, or velcro it to one side of the radio case). Now put the radio back together and fire it up.

You're **DONE**.

**Radio preparation:**

Cut traces at Pin #16 thru #11 of the MB8719 PLL chip. Make the cuts between the pin and the first component lead (first black dot). Use the following drawing as a reference.

**SOLDER SIDE OF PC BOARD FACING UP**



**FRONT OF RADIO POINTING TOWARDS YOU**

**Set "A" connections:**

Solder the yellow thru white wires of set "A" to the points marked in the previous drawing.

**Set "C" connections:**

Solder the brown thru violet wires of set "B" to the pins of the MB8719 PLL chip that were isolated in the Radio preparation step. Use the same drawing for a guide as was used in Set "A" connections. The connections are as follows:

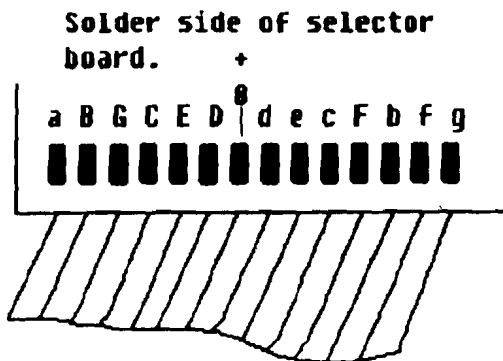
Brown	= Pin #14
Red	= Pin #15
Orange	= Pin #16
Yellow	= Pin #13
Green	= Pin #12
Blue	= Pin #11
Violet	= Pin #10

### Cobra 148GTL:

The diagram below is the front solder side of the channel selector with the clear ribbon wires extending downwards from these solder connections. You'll be soldering the kit wires to these same points.

The first step is to cut all 13 resistors on the component side of the channel selector board.

The next step is to cut the trace on the L.E.D. display board that connects segment "A" to segment "D" of the Most Significant Digit (tens). The "A" segment wire (orange) for this segment is the only one that must be soldered directly to the L.E.D. display As in all of the previous radios described, it may be helpful to use the L.E.D. display board diagram of the Uniden Madison.

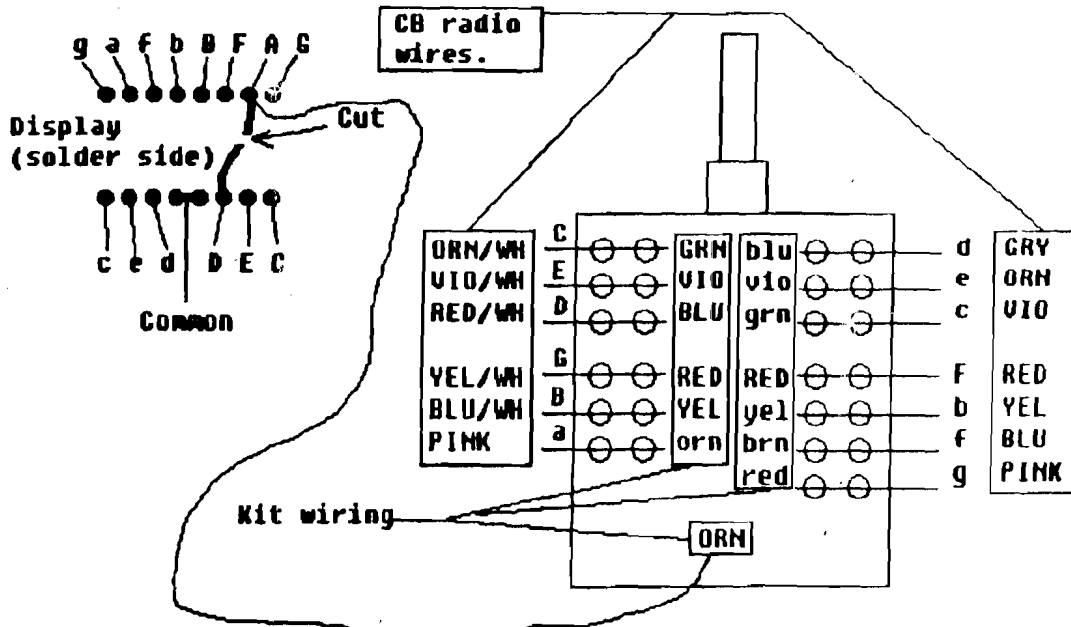


### Cobra 2000GTL:

The following drawings are based entirely on the Cobra 2000GTL due to it's unique characteristics. By following these simple instructions the installation of the 99 Channel Readout kit will go much quicker and smoother.

The first step is to cut or remove all the 13 resistors located on the channel selector PC board.

The next step is to cut the trace on the solder side of the LED PC board that connects segment "A" to segment "D" of the Most Significant Digit. The back side of this LED display will not look like any of the other radios mentioned earlier in this document.

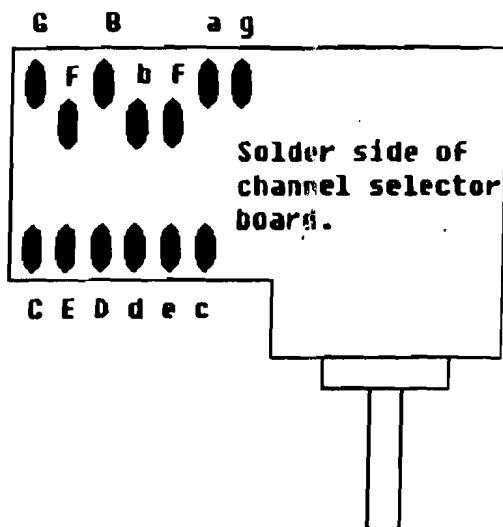


**Cobra 142GTL:**

The next in this series of wiring instructions is the Cobra 142GTL SSB base. This is much like any of the other channel selectors outlined in this set of instructions. Simply solder all the wires of the kit to these points and you'll eliminate the need to wire directly to the display.

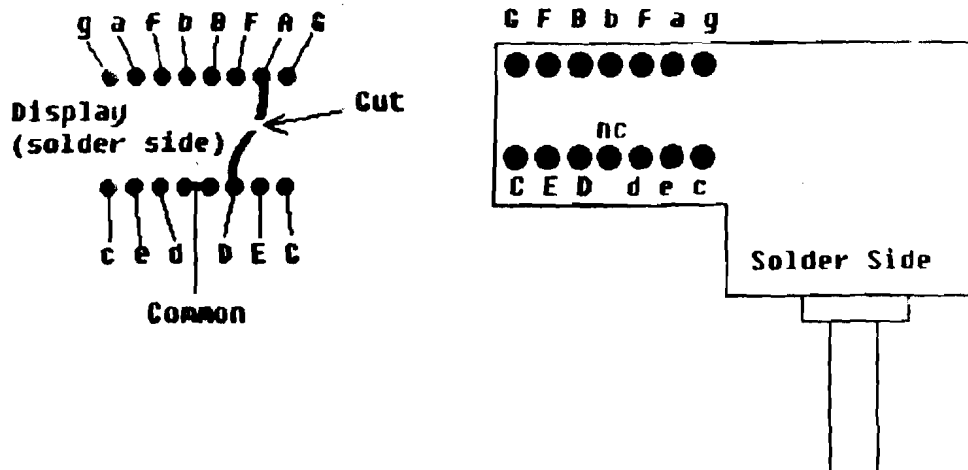
The first step like all the rest is to cut all 13 resistors located on the component side of the channel selector board.

The last step is to cut the trace that connects segment "A" to segment "D" of the Most Significant Digit of the L.E.D. display board.



### Uniden Grant:

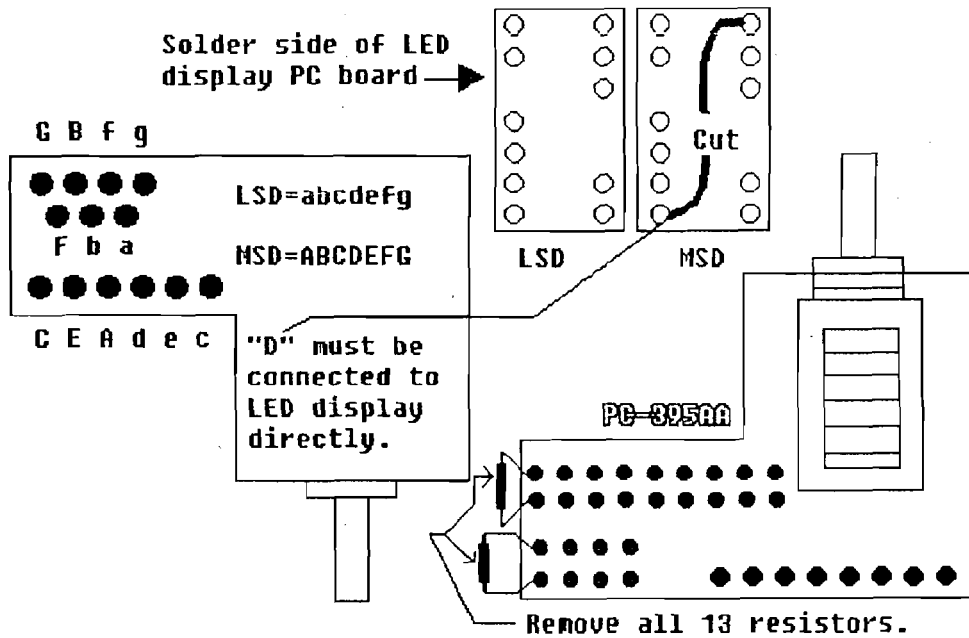
The following diagram is a simplified approach to wiring the L.E.D. display in the Uniden Grant SSB mobile. This eliminates the need to solder directly to the display itself. The diagram is drawn with the solder side of the radio facing upwards and the front of the radio towards you. It may be necessary to bend the ribbon wire of the channel selector slightly in order to solder to these points. Don't be too rough as these wires are not particularly strong. The next step is to cut all 13 resistors located on the component side of the channel selector. This disconnects the normal channel selector outputs from the display. The only other step is to cut the trace on the L.E.D. display (solder side) that connects segment "A" to "D" of the Most Significant Digit (tens).



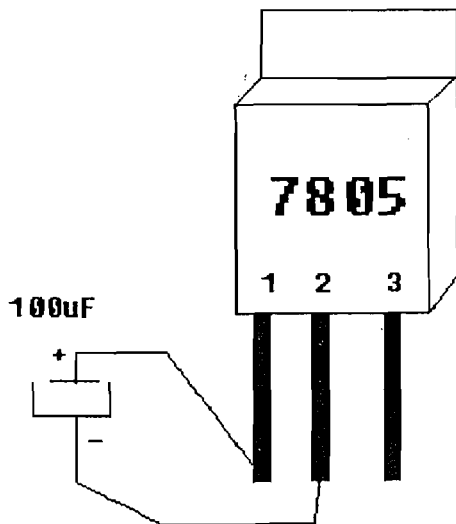
### Uniden Madison:

The following diagram is for the Uniden Madison SSB base. You may have noticed that there are two sets of different wires specified as CB radio wires and Kit wiring. The set marked CB radio wires are the ones that connect the channel selector to the L.E.D. display and the ones marked Kit wiring are the ones that you will be connecting to the channel selector.

The first step is for you to cut all 13 resistors located on the component side of the channel selector board. The only other step is to cut the trace that connects segment "A" to segment "D" of the Most Significant Digit (tens) of the L.E.D. display and solder the remaining orange wire to the "A" segment side of the cut.



These instructions will be continually updated as new information becomes available. The older radios such as the Tram D-300/80 and Cobra 140GTL, etc. are not covered in this documentation. However, all these chassis are very similar. Apply this documentation to any MB8719/8734 type chassis (NO EXPORTS).



Solder the 100uF capacitor to the regulator as diagrammed in the drawing above. There are holes in the Readout/Hightech board that can be used for mounting it if you'd like.

## KIT #1 : 99 Channel Readout Installation Instructions

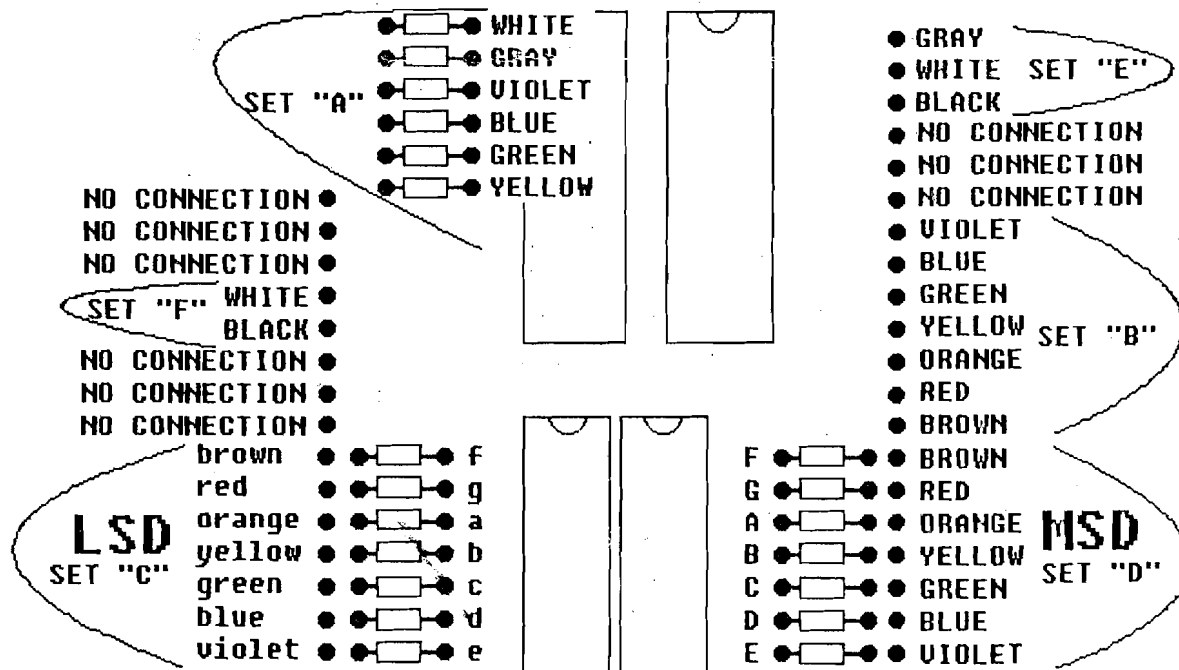
**Tools required:** Soldering pencil  
 22 gauge wire strippers  
 Wire cutters  
 Single edge razor blade or Xacto knife  
 DVM  
 Frequency counter (50MHZ)

**Radio requirements:** MB8719 PLL chip  
 11.3258 MHZ mixer crystal

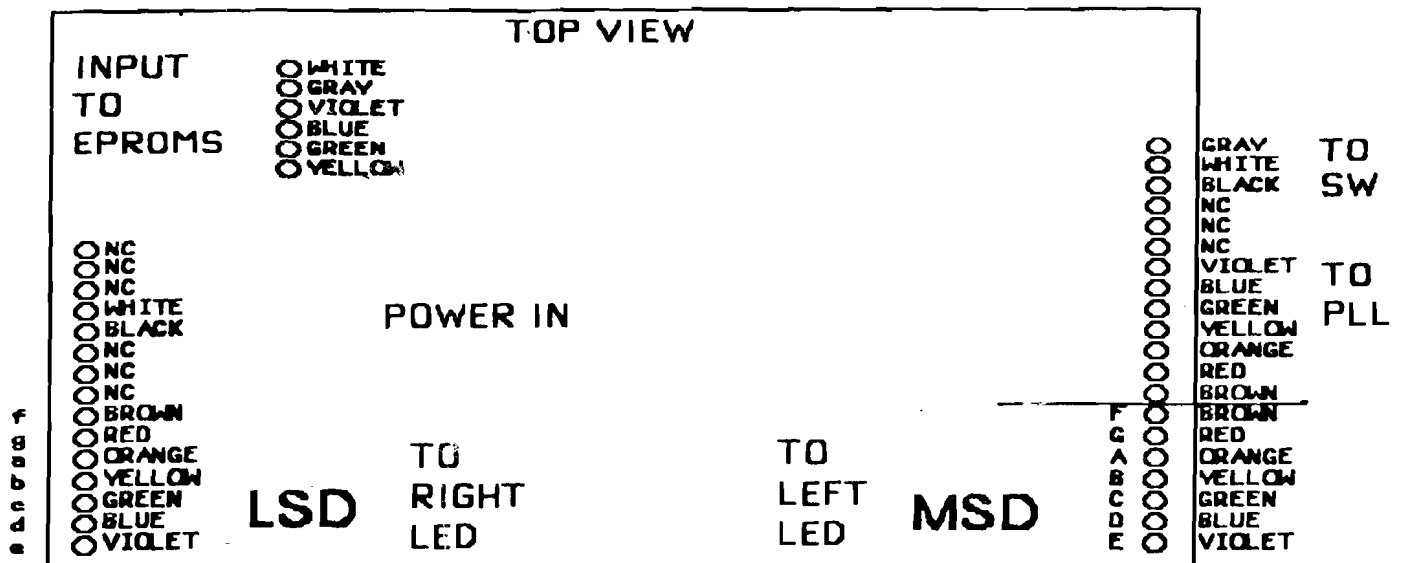
**Parts included:** Kit #1 99 Channel Readout Board  
 7805 regulator  
 100uF electrolytic capacitor for filtering

**Radios documented:** Cobra 142GTL                      Uniden Madison  
 Cobra 148GTL                                      Uniden Grant  
 Cobra 2000GTL

### *Board Layout Diagram:*







### Trouble Shooting the Readout Board

**Preliminary:** All readout boards operate in a very similar manner. There are no radio frequencies present on this board. Only High and Low logic states or +5 volts and 0 volts. They can be easily trouble shot using a common DVM. Very rarely is there a component failure on these boards, however they can be damaged by miswiring which would lead to IC destruction.

**Step 1.** Make sure that you have 5 volts at the regulator, and that an electrolytic cap (25 to 100 mfd/16V) is attached to the output to prevent switching noise from causing problems.

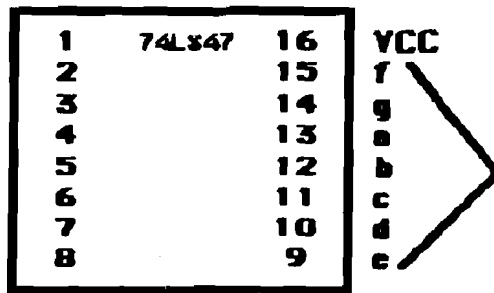
**Step 2.** Look at the board with the two large chips at the top. The upper left large chip is the Eprom which controls the LED driver chips which are labeled 74LS47 or 74LS 47 and are the small chips at the bottom of the board. The upper right large chip is the Eprom which controls the PLL in the radio. The input wires are connected to the inputs of both EPROMS. These Eproms are simply transiators which take input instructions from the channel selector and toggle switch. They send the converted information to the PLL in the radio and corresponding instructions to the LED driver chips.

**Step 3.** Almost all problems are caused by miswiring, solder hairs, cutting the wrong trace etc. Take your DVM and measure each input line to make sure that they are changing from High to Low by changing the channel selector and toggle switch. Do the same to the PLL wires (Set B). Likewise check the input and output pins on the LED drivers. Use the tables and diagrams to check correct operation of each device. If you have strange operating symptoms like channel or frequency hopping, crazy displays etc., then recheck your wiring. Look for wires soldered together, don't assume, look!!!!

INPUT B  
INPUT C

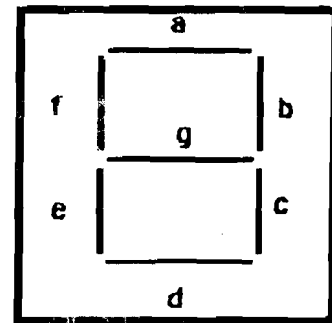
INPUT D  
INPUT A

GND



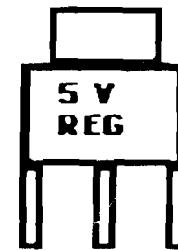
LED SEGMENT OUTPUTS

LED



### FUNCTION TABLE

DISPLAY	INPUTS			
	D	C	B	A
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	L	H	L	H
6	L	H	H	L
7	L	H	H	H
8	H	L	L	L
9	H	L	L	H
10	H	L	H	L
11	H	L	H	H
12	H	H	L	L
13	H	H	L	H
14	H	H	H	L
15	H	H	H	H



IN GND OUT

\*\*\*\* The following is an abbreviated truth table for the MB8719 PLL. With your toggle switch in the normal "40" position you should see the following codes on the input & output lines, Set "A" & "B".

CH. PLL Pin #'s & corresponding CH. selector traces.

	10	11	12	13	14	15	16
1	H	L	L	H	H	H	H
2	H	L	H	L	L	L	L
3	H	L	H	L	L	L	H
15	H	H	L	L	L	L	L
16	H	H	L	L	L	H	L
17	H	H	L	L	L	H	H
23	H	H	L	H	H	L	L
29	H	H	H	L	L	L	L
30	H	H	H	L	L	L	H
31	H	H	H	L	L	H	L
37	H	H	H	H	L	L	L

H = +8.0 OR 5.0 VOLTS

L = 0.0 OR 0.5 VOLTS