

# The Uniden Grant XL Owners Site



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## Modifications page for the Grant XL

(For Informational purposes only)

The author of this site takes NO responsibility for illegal modifications and/or use of illegally modified radios

or any damages incurred due to performing these modifications.

Author cannot verify these modifications to work.

If your Grant XL pc board displays all transistors as "TR"-(ex. Tr24),

You have the old model Grant XL which is the same board as the OLD Cobra 148, 2000 and the Madison.

All mods on this page are representing the last Grant XL pc board before being discontinued.

**\*\*PB 208AD board\*\***

Hence the newest model represented "Q" for all transistor labels on the pc board.



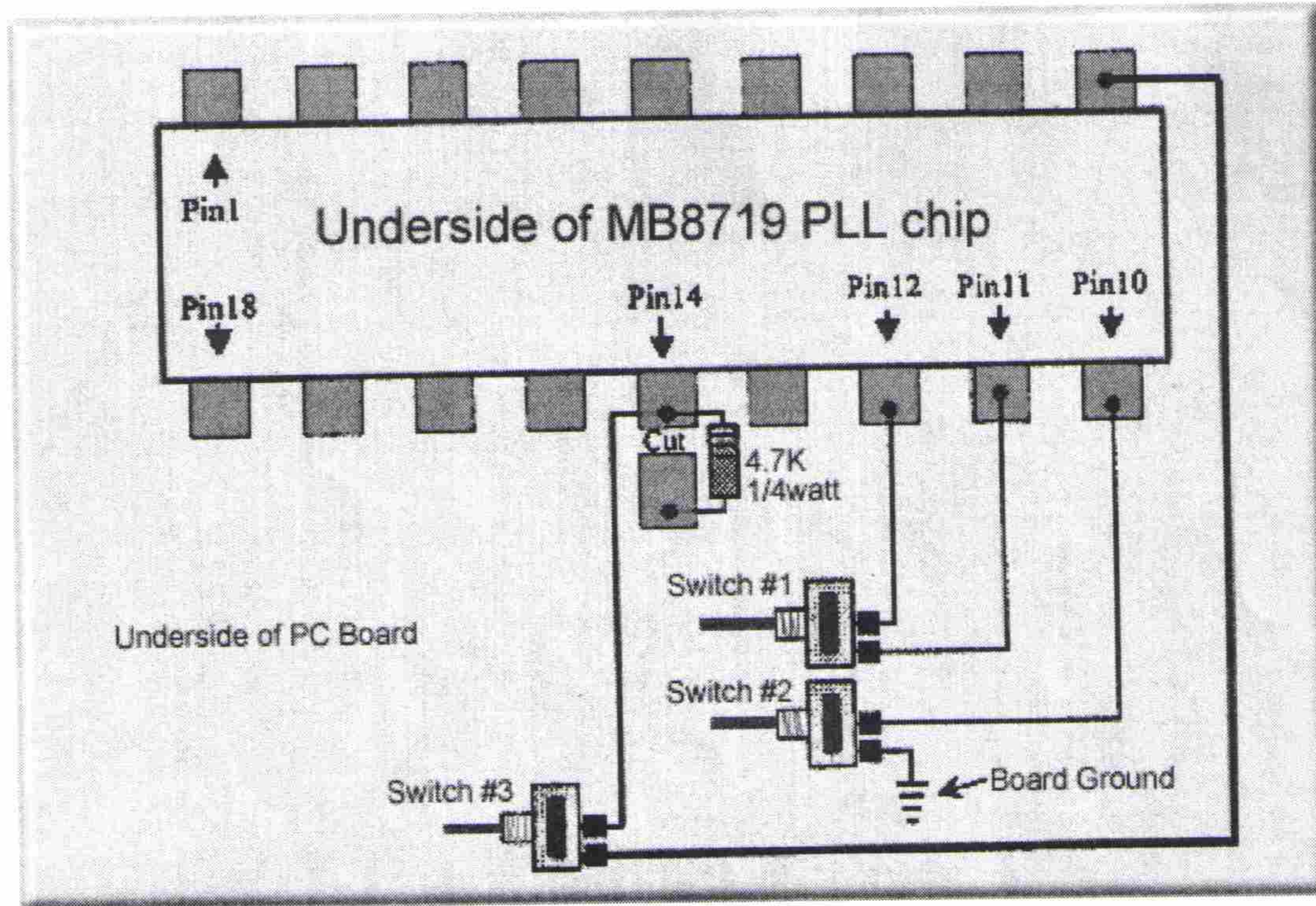
*Always check radio operation in all modes and settings after performing any modification.*

*Not all mods work well with other mods-*

*one can easily defeat the purpose of getting what you want out of the radio if you are not careful and check the radios' performance after each mod.*

*"169"*

## PLL Modifications



Information for image above

1. Locate pin #14 of the 8719 chip on the bottom of the circuit board.  
Cut the trace for pin #14- carefully.

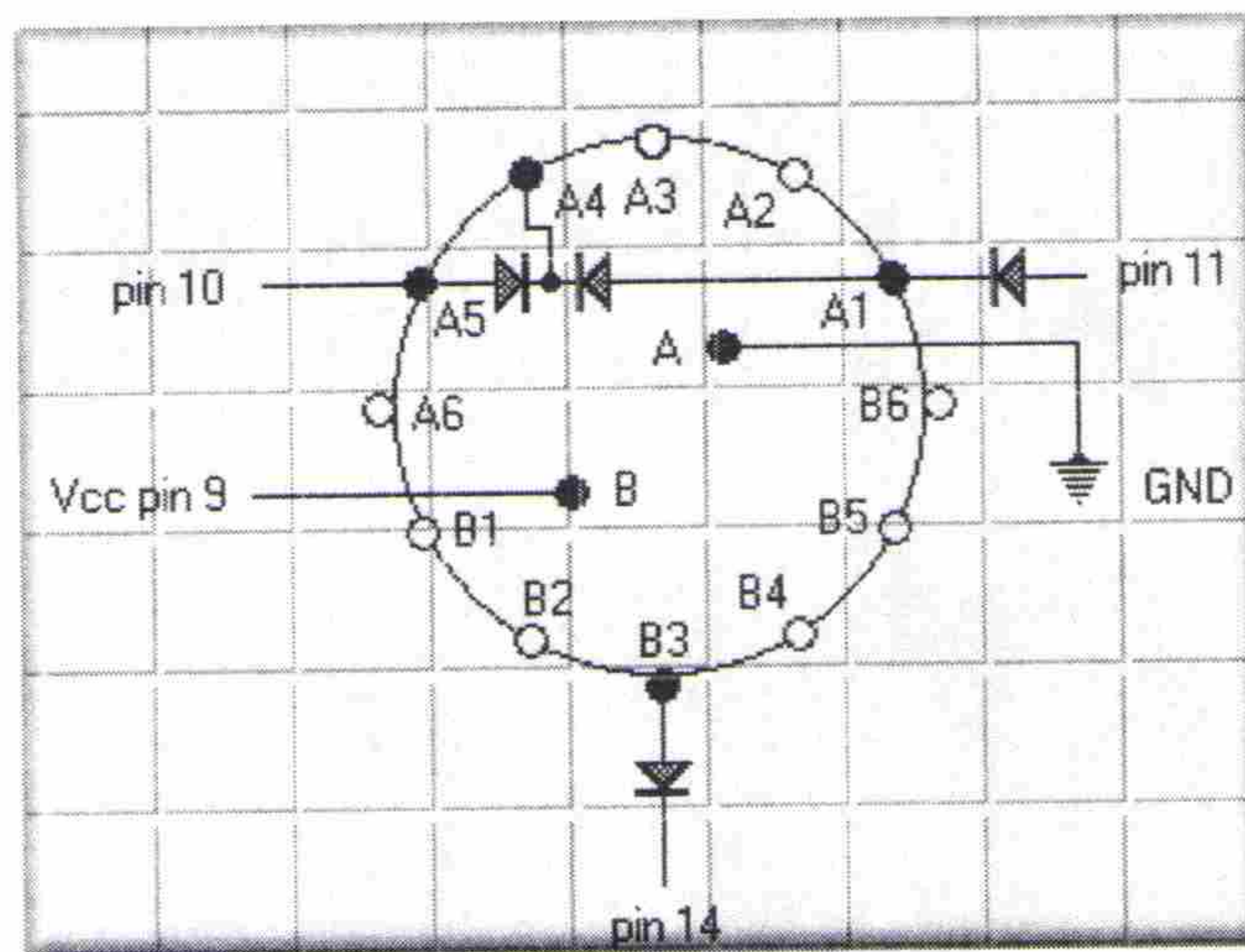
Solder a 4.7K 1/4 watt resistor across the cut- you may have to scrape lightly to make good contacts for the resistor connections.

2. Obtain 3 micro spst switches and find a suitable mounting area on the radio and install.

3. Switch #1 requires wiring to pin #'s 11 and 12.

4. Switch #2 requires wiring to pin #10 and the board ground.

5. Switch #3 requires wiring to pin #9 (across from 10) and to the chip side of the cut trace on pin #14.



\*\*\*All diodes are 1N914 or 1N4148\*\*\*

\*\*\*Rotary Switch is a two pole / six position rotary switch\*\*\*

Cut the Trace on pin 14 of PLL and place 4.7K across cut.  
Next, solder the anode end of a 1N4148 diode to pin 11 of PLL.

Next, solder the cathode (banded end) of a 1N4148 diode to pin 14.

Then wire the rotary switch as shown in the diagram, you'll need an ohm meter to identify the pins on the switch.

In order to do that, you will need to place the switch in position 1, do that by holding the switch with the shaft facing you

and turning the shaft counter-clock wise until it stops, that's position 1.

Then put one probe of an ohm meter on "A", the other probe is used to find 0 ohms, or a dead short, that pin will be your {pin 1A}. Do the same to identify A4 and A5

Do the same to the other side of switch to identify "3B".

Next, solder the remaining diodes as shown and wire them on the switch just like the diagram shows.

And finally, you will have to put the wires on the switch.

A5 to pin #10

A1 to pin #11

B to pin #9

B3 to pin #14

A to GND

For a 10 Kc DOWN jump only:

1. Ground pin #16 using a SPST switch. No cut to the PLL is necessary.

Pulling pin 16 low will cause it to jump down 10Kc.

This will not work on all channels.

## Clarifier Mods (Slider)

Some info may be repeating, but with some differences.

(Different variations on the same operation- you choose which is best)

### UNIDEN GRANT XL

1) Cut R44 and D52. Find R174 and jump it .

2) Follow the red wire from the clarifier knob and cut it just before it connects to the PCB. Take this wire and solder it to Ground.

3) Find the orange wire from the clarifier and cut it the same. Then solder it to pin #3 of the mb3756 ic. This should give you about 6khz of slide.

### Unlocking the Clarifier

1) Remove D52 and R44.

2) Remove R174 and place a jumper in its spot.

3) Follow the Red wire from the clarifier control to where it attaches to the PC board and unsolder it from the board.

4) Resolder the Red wire to the PC board ground.

5) Follow the Orange wire from the clarifier control to where it attaches to the PC board and unsolder it from the board.

6) Resolder this Orange wire to pin 3 of the MB3756 regulator.

You should see about 5 khz of slide. (1khz up and 4 khz down)

1. Find D52, R44 and R174 and remove them.
2. Solder a jumper from where you removed R174
3. Follow the WHITE WIRE from the clarifier control to where it attaches to the PC board and UNSOLDER it.
4. Resolder this WHITE WIRE to the PC board ground.
5. Follow the ORANGE WIRE from the clarifier control to where it attaches to the PC board and UNSOLDER it.
6. Resolder this ORANGE WIRE to pin 3 of MB3756 Regulator.

NOTE: Some radios have different colored wires on the clarifier control.  
They are: YELLOW instead of ORANGE and RED instead of BLUE  
If all goes well, you should slide about 4Khz down and 1Khz up.

If you do the changes below you will get -6kHz to +6kHz with 0 right in the middle. The Tx will track exactly with the Rx

1. jumper R175
2. jumper D51
3. remove R149
4. remove R188
5. remove R44
6. remove the wire from the high side (+ or full clockwise pos) of the clarifier
7. connect pin3 of IC4 to the high side of the clarifier
8. replace R174 with a 3.3k resistor
9. attach a 12k resistor from the jumper of D51 to pin3 of IC4

1. --- Remove R-44, R-175 & D-52.-----
2. --- Install jumper where you removed R-175.
3. --- Move orange wire on Clarifier to Pin 1 of IC-4
4. --- Jump R-174 or clarifier WILL NOT center up.

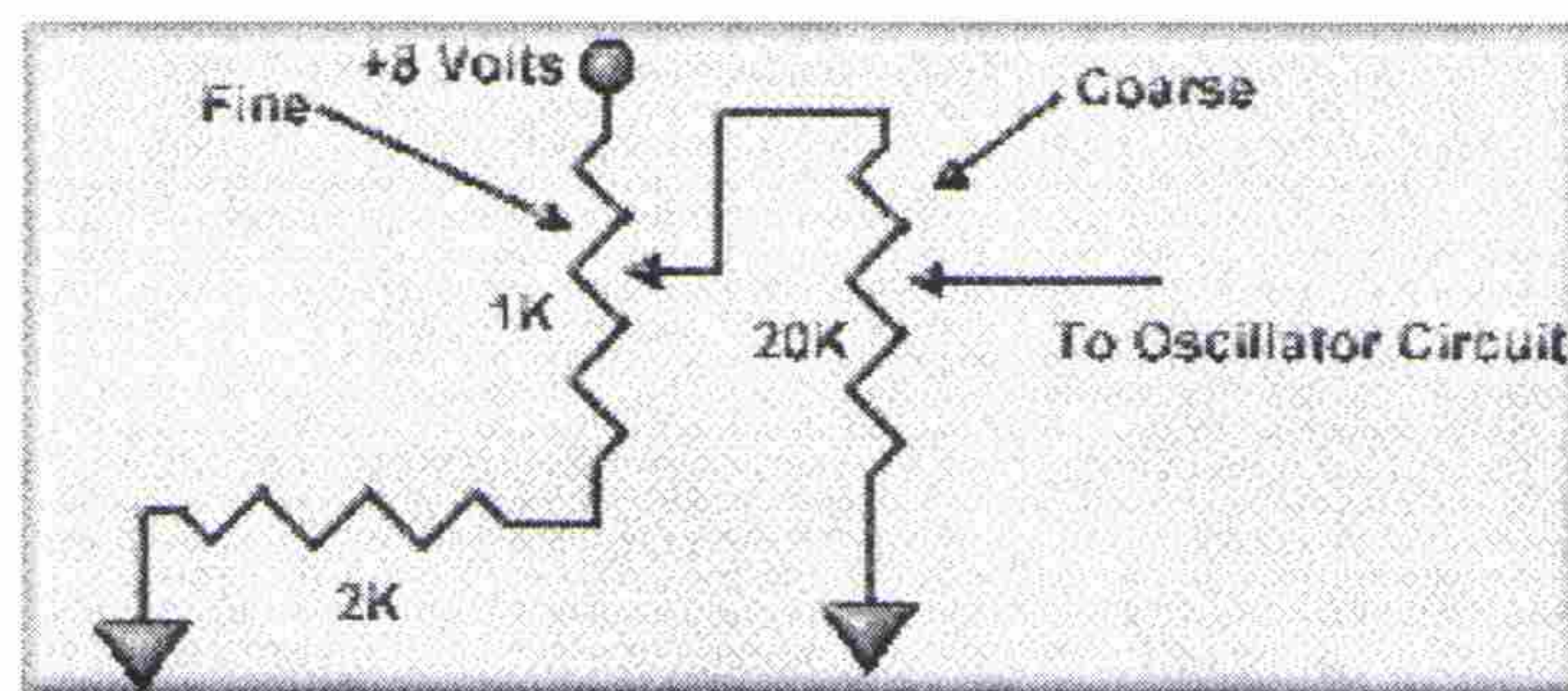
NOTE : L-23 (AM), L-59 (USB), L-22 (LSB), will have to be readjusted for center slot on Clarifier control -

some units slide more than others.

NOTE ALSO: if you change D-35 to a ECG-612, the stock clarifier will be sensitive and hard to control you will have to change VR-502 to a 10 turn pot.

After doing this you MUST re-tune L-23, L-59 and L-22.

Make sure to retune again after radio has been on for many hours.



These could be two separate controls- Fine / Coarse- but one dual potentiometer would be best. The 2K resistor can be larger or smaller depending on the range you prefer from your fine control. Decrease the value to increase the fine range and increase the value to decrease the fine range.

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If your clarifier has been modified to track TX and RX, Installing a 10 turn 20K potentiometer will eliminate drifting off frequency during TX and RX and provide easier operator tuning control and stability during RX.

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## Power output and Audio Modifications

1. Add a 1.5 K resistor on to the middle leg of Q24 (cut the track and bridge with the resistor)
    2. Replace R126 (10k) with a 4.7k.
    3. Replace R124 (10k) with a 4.7k
  4. Re-tune coils L36 and L38 for maximum forward swing on AM mode.
 

MODULATION: Replace R131 (10K) with a 4.7K

AM POWER: VR10

SSB POWER: VR11
- 

If you "have to be loud" on AM, then I suggest this mod-  
Find R131

CAREFULLY clip one side of the resistor leg

(or if experienced, cut trace to R131, solder wires across cut trace)

Now, solder a switch with wires to the now clipped resistor leg and the clipped side of the resistor.

\*I suggest putting a few ferrite beads over both wires that run to the switch.

Mount switch on back of radio.

Now, you can run excessively loud on AM,  
then switch the resistor back into the circuit  
for local good sounding AM TX & SSB.

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Uniden Grant XL: {L38, Q24-AMC, VR11-ALC, VR10-AM PWR}  
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VR1 RX Meter

VR2 SSB Meter

VR3 Squelch

VR4 Carrier balance

VR6 TX Meter

VR7 Modulation

VR10 AM RF Power

VR11 ALC- SSB RF output-

be leary of turning up ALC if you have stock finals, as it will throw your SSB tuned circuit off-

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Remove C207 (47pF) capacitor from pin #3 of IC3 to ground.

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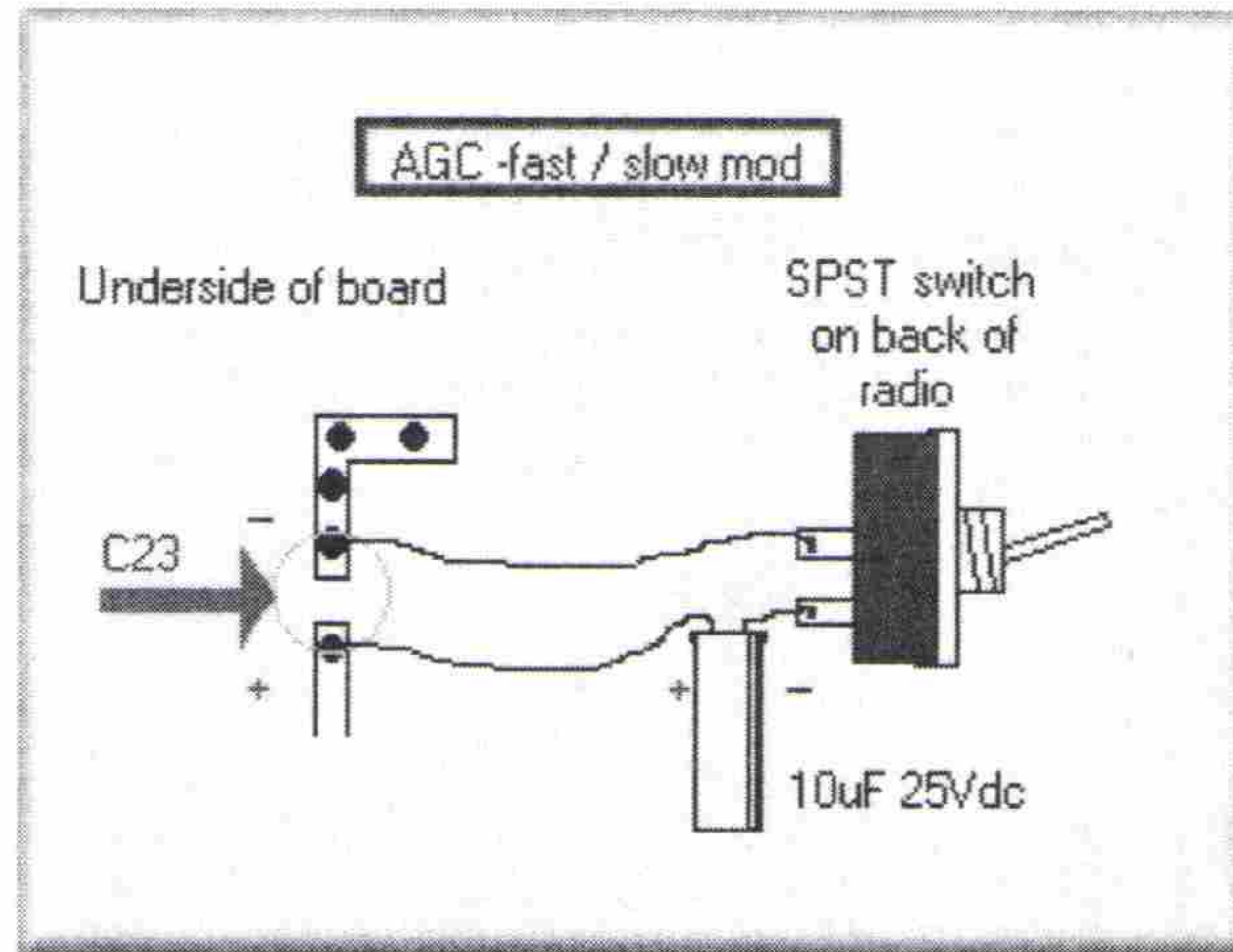
Remove C232- a 2.2uF 50V capacitor

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Lift out one leg of resistor# R166 which is near VR7  
Then check for changes in operation.

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## AGC Modification



1. find C-23
  2. On underside of board, solder wires to both the negative and positive points to C23
  3. Run wires to a SPST switch mounted on back of radio
- with a 10uF 25V+ or 16V+ electrolytic Capacitor attached to one side of switches' solder pin.  
Observe polarity!
- Negative side of cap should run to neg. side of cap on board- same for positive sides.  
Now you will have a switchable AGC -- FAST or SLOW-- like many amateur SSB radios
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## Receive Modifications

RF Amp Mod.

Find Q14- this is a 2SC1674.

Changing Q14 to a 2SC2999 will produce higher amplification of weak signals, and a lower noise floor.

The actual transistor in the circuit can produce noise in your receive-  
This mod will not take away noise that is being received from the antenna.

It only lowers the noise floor that is produced within the radio.

If you have a receive noise problem, this mod may amplify your problem!

If the 2SC2999 is hard to obtain, try a NTE 107

SLIGHTLY Re-Adjust L4, L5 and L6 if necessary.

(Too much adjustment will defeat the purpose of the better transistor-)

If you have to adjust at all, tune L4 and L6 more than L5

Most people that have done this mod say that after

the transistor change, tuning was not needed.  
The gain will improve anywhere between 4-6db with the same signal to noise ratio.

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## SSB Detector Upgrade

What do you do with the spare 2sc1674 ???  
The transistor pulled from Q14-2sc1674 will work VERY well  
in place of the Q19 2sc945 single sideband detector transistor.  
Only do this if you have upgraded Q14 to another transistor.  
(Don't just pull Q14 and put in to Q19s' slot- Q14 NEEDS to be there!)  
Pull Q19- a 2sc945 and replace with a 2sc1674.

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## Schottky Diode Upgrades

For increased receive sensitivity on AM and lower noise  
Replace D1,D2,D21 and D22 with NTE583 Schottky diodes  
or SK9975 Schottkys'.  
You will notice a big difference in your ANL/NB which already works great stock-  
will now work awesome with this mod.

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## 10 Meter Conversion

\*\*\*For Licensed Amateur Radio Operators Only\*\*\*  
This very easy conversion of your XL will give you a back up SSB 10 meter radio.  
Find crystal "X3" which is a 11.325 MHz  
Change crystal "X3" to a 11.6908 MHz  
This will give you 28.060 MHz to 28.500 MHz

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## Widebanding the TX range

This mod will allow for better TX output through the frequency range of the radio  
Remove R206 which is a 270K  
Parallel two 1/2 Watt resistors-  
a 33K, and a 2.2K together  
re-install paralleled resistors in R206 resistor slot.

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## Misc. Component Upgrades (always updating- check in again)

Find Q41.  
This is the AM regulator-2SC1419- and is rated at 2.5 amps and 20 watts.

Replace with a NTE152 rated at 7.0 amps and 50 watts

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A component that should have been upgraded from the factory, but was not-  
Capacitor no.# C18 is a 330uF 10v electrolytic  
change to a 330uF 16v electrolytic.

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Change the 1000uF 25v Electrolytic capacitor- no.# C172  
to a 2200uF 35v or 50v electrolytic capacitor (nearest the transformer)

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Resistor no.#180 is a 270 ohm, metal oxide 1 watt resistor  
this is the limiting resistor which cuts current to bias regulator transistor Q37  
R180 can cause TX audio distortion due to limiting power output and causing final bias to pull negative.  
Place jumper across R180.

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To increase the bandwidth of the transmit bandpass filter  
Change capacitor# C163 to a 3pF  
(between L45 and L46)

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To increase the the bandwidth of the receivers' bandpass filter  
Change capacitor# C41 to a 3pF  
(between L5 and L6)

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Change capacitor# C109 (22uF 50v) to a 10uF 50v

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Change the 2SC458 0.2 watt AF amplifier (Q43) to a SK9229 0.6 watt

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Change the resistor #R114 (27K) to a 10K  
for wider audio response during transmit.

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## **Easy heat sinks**

[Click here to get the heat out.](#)

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## **Negative peak compression - Reduced carrier (NPC-RC) mod**

Remove Q24- for "all out" AM audio

-or-

for AM and SSB quality- add a 1.5K resistor on to the middle leg of Q24 (cut the track and bridge with resistor)



Replace R126 (10k) with a 4.7k.

Replace R124 (10k) with a 4.7k

Replace R131 (10k) with a 4.7k

then,

adjust VR10 AM power to 2 to 2.5 watts output

Solder a 10uF 25V electrolytic capacitor between these points-

Positive leg of cap connects to pin 9 trace of IC6

Negative leg of cap goes to the R271-D63-R228 trace junction.

Take care not to short cap leads on other trace junctions

by using heat-shrink tubing over the length of cap leads to the solder points

## "Volting the final"

1: Perform the "NPC-RC" mod first.

2: Turn AM power (VR10) ALL the way down (use watt meter and dummy load to verify)

3: Unplug power from radio and find "TP8" wire (purple- green on old boards) near VR7.

4: Clip TP8 wire, separate and tape or use heat shrink tubing to keep open ends of wire from shorting on anything.

5: Access pc trace side of board and solder a heavy gauge wire from the C148/L39 (C146/L39 for old board) trace junction to the 13.8+ pos. input coil/red wire/C188/D55 trace junction

6: Add a jumper across R196

7: Apply power to the radio and re-adjust VR10 for a dead key of 2 to 2.5 watts- verified on watt meter and dummy load.

Your XL will now dead key 2-2.5 watts and will be dependent on AM modulation input for an increased RF output upwards of 20 watts peak.



Ready to hook-up a Freq counter?  
I'm working on the pictures and write up  
for both old and new Grant XL's

● [Sneak a peak at the infamous 169s' Triple XL](#)

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