Price $39.95

C.B. TUNE-UP MANUAL

MASTER EDITION

Volume III

Covers standard radio tune-up information

Channel modifications

Repair tips

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MASTER EDITION
VOLUME III

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CB. TUNE-UP MANUAL MASTER EDITION

VOLUME III

THOMAS PUBLISHING

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INTRODUCTION

Improving CB performance is often attempted by many without knowing which adjustments to use, or modifications to make. Even more frustrating is trying to remember or compile this information for future use. It has been our goal to supply good useful information in an easy to understand MANUAL FORMAT. We feel that it is very important to supply information that will be informative and profitable for you.

With this volume we have again included several channel conversions on many popular PLL Chips and Radios. This is in response to the many requests that we have had for this type of information. We realize that some of you may already know some of these modifications. Regardless, it is our intention to cover all bases and supply a wide range of requested information, hopefully providing something for everyone.

THOMAS PUBLISHING 128 EAST WOOD PARIS, IL 61944

HOW TO USE TUNE-UP INFORMATION

In COLUMN 1 you will find the MODEL NUMBER of each radio, COLUMN 2 provides MODULATION information, COLUMN 3 provides AM POWER ADJUSTMENTS, and COLUMN 4 lists S.S.B. ADJUSTMENTS if applicable. On some S.S.B. models we have shown 2 adjustments. The first will be for S.S.B. modulation and the second is for the S.S.B. power (ALC). If only one adjustment is shown in the SSB column then it will be for S.S.B. power (ALC).

MANUFACTURER NAME			
MODEL	MODULATION	AM POWER	SSB POWER
MCB-5000[1] ←	R268 or Cut D207 or Rem.C273	L202,L204	RV8,RV5
Footnote for more specific	Adjust R268 for modulation or cut one end of D207 or remove C273 from the circuit board.	Adjust L202 & L204 for Am Power.	Adjust RV8 for SSB Modulation & RV5 for SSB Power/ALC.

Some of the POWER ADJUSTMENTS listed do not have tuning slugs. However these coils can still be adjusted by either spreading the coils or by moving the coils closer together. These coils can also be modified by removing 1 turn in order to allow you to move them closer together, and thus increase the tuning range.

GALAXY RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
JUPITER	VR14 or Cut R249	VR13	VR12

GE. RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
3-5809B	RV4 or Cut D8	L10,L11,L12	
3-5809C	RV4 or Cut D8	L10,L11,L12	

MIDLAND RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
77-202B	RV201 or Cut D203	L304,L305,L306	

REALISTIC RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
TRC-415	RV4 or Cut D19	L11,L12	
TRC-477	RV2 or Cut R222	L10,L11	
TRC-479	Remove Q8	L8,L12	
TRC-482	Cut D208	L305,L306	
TRC-492	Cut D11	L2,L3	

SHARP RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
CB-2460	VR by Audio IC or Cut D101		

SUPERSTAR RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
GR	VR14 or Cut R249	VR13	VR12

TEK RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
HR-3950	RV203 or Cut R270	RV300	RV304

UNIDEN RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
PRO-538w	Cut D12	L11,L10	

USACO RADIOS			
MODEL	MODULATION	AM POWER	SSB POWER
U900CB	VR3 or Remove C80	T11,T13,T14	

CORRECTIONS TO VOLUME I MASTER EDITION

(Earlier Volumes Only)

MANUFACTURER	MODEL	MODULATION	AM POWER	SSB POWER
COBRA	31PLUS	Cut D19	L13,L12,L11	
COLT	350	R121 or Cut D19 & D20	L34,L37	
CONVOY	400	R121 or Cut D19 & D20	L34,L37	
MONTGOMERY WARDS	GEN-696A	VR3 or Cut D8	L6,L7,L9	
PEARCE-SIMPSON	Cheetah SSB	Cut D54 & D55	L13,L10,VR15	L12,VR17
PEARCE-SIMPSON	Lynx 23	VR9 or Cut D14	L7,L11,L12	
TRS CHALLENGER	600	VR1 or Cut D2	T214,L208,VR210	

IMPROVING BASE STATION PERFORMANCE

One of the weakest points in many base station radios is the power supply. Keep in mind that these units come from the factory with just enough capacity to power the unit when it is operating at normal specifications. However once the unit has been peaked or modified, the power supply in its present form, may not provide the needed power for the radio to operate at full potential.

In order to remedy this situation, one of the easiest things to do is to replace the large filter capacitor in the power supply. In most radios these are either *2200µf* to *3300µf* and the voltage range is from 25 to 35 volts. Just by replacing the standard electrolytic with a *6800µf* 50 volt electrolytic will give the power supply some very much needed breathing room, as well as additional filtering. This will go a long way toward eliminating any power line noise from your radio thus improving your receive as well.

Another weak point that is often overlooked is the on/off switch. Again these switches are often not capable of supplying the radio with enough power for normal operation. This is true not only in base radios but also many mobile radios as well. Their performance is severely hampered by the on/off switch. A bad on/off switch can often cause many strange problems to occur, such as garbled transmit to frequency instability.

A good solution is to mount a toggle switch in the back of the radio or any location of your choice and wiring it up so that it replaces the standard on/off switch. We recommend using a DPST switch rated at least 5 amps and using both poles for double switching. This way you will be doubly assured that the unit is getting adequate power. Again you will probably be surprised at the difference that this modification alone will make in your radios performance on transmit.

DAK MARK X
POWER MODIFICATION

Note: *Use caution when working on any tube type device. The voltages present can be lethal. Always discharge the filter capacitors completely before attempting any repairs or modifications.*

Instructions

1. Locate VT201, the Driver Tube.(*12BY7*). This is the tube with the metal twist off cover over it just behind the relay. Remove this tube and install a 12GN7 in its place. We recommend using only Sylvania Tubes when possible.

2. Next locate VT202, the Final Tube (*6DG6*). Remove this tube and install a 6Y6 in its place. The 6Y6 will be a little larger than the original tube so you will have to bend the heat sink in order to get it to fit. Be sure that after you are done that the heat sink still makes good contact with the tube.

3. Now turn the unit over and locate the two big black 10 watt power resistors mounted on the bottom. One of them is R309 a 2.2K (*2200 Ohm*) and the other is R310 a 1K (*1000 Ohm*). Normally R310 is mounted on the top of the array. Before proceeding be sure that the unit is not plugged in and that the filter capacitors are totally discharged.

4. Now mount a SPDT toggle switch in any place of your choice. Be sure to use a switch that is rated at least 3 amps. Now solder a piece of 16 gauge 2 wire hook-up wire to the switch. Use a long enough piece to reach from the switch to the location of R310. One side of the wire goes to the center pole and the other wire goes to the bottom pole on the switch. Solder the other ends to each side of R310 so that when you flip the switch up R310 is effectively shorted across. You now have will HIGH POWER with the switch flipped UP and LOW POWER with the switch flipped DOWN.

DAK MARK X POWER MODIFICATION (Cont.)

5. Next locate R211 (*3.9K 2 watt)* resistor connected to the base of the VT202 tube socket. One end of R211 connects to pin 4 on the tube socket and the other end is connected to L202 (*RF Choke).* Now remove R211 and replace it with a 470 Ohm 2 Watt resistor. Be sure to recheck your connections before turning the unit on.

6. Now turn the unit on and set the unit to channel 19 on USB . Using a peak reading meter, key the unit and inject a constant tone into the mike. Adjust L201, L902, C902 and then C903 for maximum power swing. L201 is the adjustable coil located between VT201 and VT202 tubes. L902, C902 and C903 are located inside of the square metal box just behind the VT202 tube. C903 is the large white trimmer cap and C902 is the small trimmer cap.. Be sure to use an insulated driver while adjusting C902 and C903. Also be sure to adjust these on SSB only in order to assure proper alignment..

6. If everything has gone well you should find that the unit now develops between 25 to 40 watts of power on AM, and SSB output power should be between 35 and 50 watts of peak power. Naturally it is assumed that the radio has already had the standard tune-up performed before this modification was done.

Standard Tune-Up Adjustments

AM MODULATION	Adjust RV12, RV204 or remove Q37
SSB MODULATION	Adjust RV11
SSB ALC	Adjust RV2 or remove Q38

DAK MARK X

CHANNEL CONVERSION

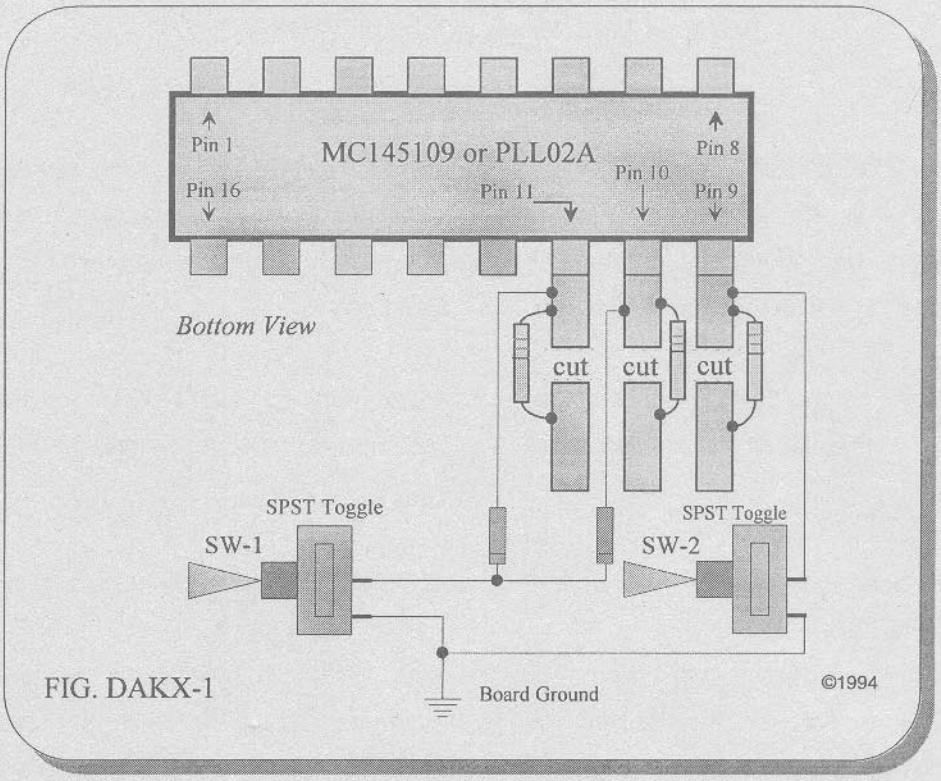


FIG. DAKX-1

Instructions

1. Locate on the bottom side of the circuit board, Pin 9, Pin 10, and Pin 11 of the main PLL chip (IC1). On some units this will be an 02A chip and others will have the MC145109 chip. However they are both identical and have the same functions. Now totally isolate each of these pins with a small cut. Pin 9 is connected to a larger land and will require special care in order to totally isolate it.

2. Next solder a 3.3K 1/4 watt resistor across each one of these cuts as shown in the diagram above. Next twist together the wire from the cathode end (banded end) of 2 small signal diodes (1N914 or equivalent). Using some cutters cut the other 2 ends (anode end)[1] to about 1/2" in length. Solder one of the anode ends to pin 11 and the other to pin 10.

1. Note that we have shown the leads of the signal diodes in the above illustration as being long. This is for illustration purposes only. In reality you should keep all leads as short as possible. This not only looks better and helps to prevent any problems from short circuits as well as making a stronger connection.

DAK MARK X CONVERSION (Cont.)

3. Next mount 2 Single Pole Single Throw toggle switches in a convenient location, normally on the front radio panel. Now tie the two bottom poles of the two switches together by soldering a piece of hook-up wire across them. Use a long enough piece of wire for this so that after you tie these two poles together you have enough to solder the other end to the circuit board ground.

4. Now Solder a piece of hook-up wire from the middle pole of the first switch (SW-1) to the cathode ends (banded ends) of the diodes. Next solder a piece of hook-up wire from center pole of the second switch (SW-1) to pin 9.

5. Next re-check all your connections in order to be sure that you haven't any shorts or solder bridges.

6. Now turn the unit on and check for normal operation. With both switches in the down position you should have the normal 40 channels. Now put the unit on channel 30 AM With the SW-1 switch down and SW-2 switch up, key the radio and check for 27.945. If it's not there you will need to carefully adjust the VCO slightly in order to get it to pop in. The VCO is the adjustment located in the oblong metal can just to the upper right of the main PLL chip.

7. Once that you have 27.945, check for power output on channel 1 (leave switches in the same position) compared to the power output on 27.945. Usually it will be lower on the upper channels. In order to correct this you will need to balance the power by adjusting T4[1] while on 27.945. Adjust T4 in USB transmit mode while injecting a constant tone into the mike. Adjust T4 until the power output is equal or fairly close to the output on channel 1. See the next page for the channel chart of your new channels.

Notes:

1. T4 is located just to the right of the large 10.7 MHz filter. T5 is right next to T4. T5 controls the balance of the power level on the lower channels in comparison to Channel 40.

See clarifier modification for the DAK X in CB Tune-Up Manual Master Edition Volume 5 on page 26.

DAK X CHANNEL CHART

Position #1 = SW-1 DOWN and SW-2 DOWN = Normal Channels

Position #2 = SW-1 UP and SW-2 DOWN =

1 = 27.445	5 = 27.495	9 = 27.545	13 = 27.595
2 = 27.455	6 = 27.505	10 = 27.555	
3 = 27.465	7 = 27.515	11 = 27.565	
4 = 27.485	8 = 27.535	12 = 27.585	

Position #3 = SW-1 Down and SW-2 UP =

1 = 27.605	11 = 27.725	21 = 27.855	31 = 27.955
2 = 27.615	12 = 27.745	22 = 27.865	32 = 27.965
3 = 27.625	13 = 27.755	23 = 27.895	33 = 27.975
4 = 27.645	14 = 27.765	24 = 27.875	34 = 27.985
5 = 27.655	15 = 27.775	25 = 27.885	35 = 27.995
6 = 27.665	16 = 27.795	26 = 27.905	36 = 28.005
7 = 27.675	17 = 27.805	27 = 27.915	37 = 28.015
8 = 27.695	18 = 27.815	28 = 27.925	38 = 28.025
9 = 27.705	19 = 27.825	29 = 27.935	39 = 28.035
10 = 27.715	20 = 27.845	30 = 27.945	40 = 28.045

Cobra 142GTL, Teaberry Stalker XV, Uniden Washington, President P400
Channels without Xtal Change

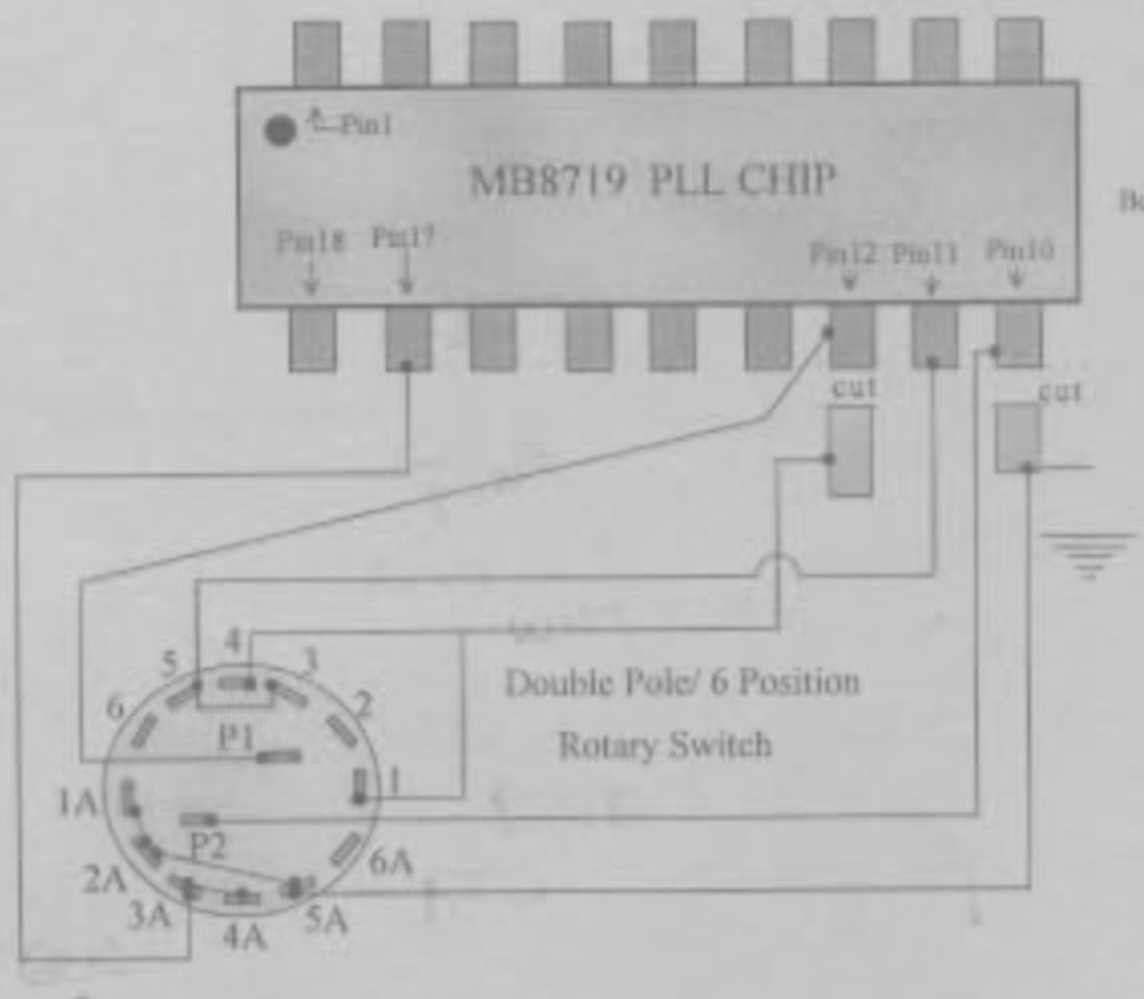


Fig 8719ROT

Instructions

1. Obtain a Double Pole / 6 Position Rotary Switch. Refer to the above diagram. Note that Pin 3 & Pin 5 are tied together, Pins 1 & Pin 4 are tied together, Pins 3A & Pin 4A are tied together, and that Pins 1A, 2A, and 5A are also tied together. You will need to solder small jumpers across these pins as shown. Next obtain a piece of 6 wire ribbon wire and wire to the switch as shown in the above diagram. Be sure to use a long enough piece of wire in order to reach from the switch to the PLL once the switch is installed in it's permanent location. Note which color of wire goes to the switch pins in order to make it easier when connecting the other end to the PLL Chip.

2. Next using an x-acto carefully cut and isolate Pin 10 and Pin 12 of the MB8719 PLL chip. Be sure to isolate just these PLL pins. Once this has been done connect the wires from the switch to the correct locations as shown in the above diagram, and mount the switch. Refer to the channels on the next page and check each position of the switch for these channels. You will probably find that some do not match. If this is the case you will need to carefully adjust L18 (Tripler Can) until all channels are there. This is a very critical Adjustment in order for this modification to work without changing the 11.1125 xtal. Usually just a small amount is needed.

8719 CHANNEL CHART USING 11.1125 XTAL

POSITION #1 = Normal Channels

POSITION #2 =

23 = 27.415	26 = 27.425	27 = 27.435	28 = 27.445

POSITION #3 =

1 = 27.605	8 = 27.535	14 = 27.605	21 = 28.015
2 = 27.455	9 = 27.545	15 = 27.935	22 = 28.025
3 = 27.465	10 = 27.555	16 = 27.955	23 = 28.055
4 = 27.485	11 = 27.565	17 = 27.965	24 = 28.035
5 = 27.495	12 = 27.585	18 = 27.975	25 = 28.045
6 = 27.505	13 = 27.595	19 = 27.985	26 = 28.065
7 = 27.515	14 = 27.605	20 = 28.005	27 = 28.075
			28 = 28.085

POSITION #4

1 = 27.605	11 = 27.725	21 = 27.855	31 = 27.955
2 = 27.615	12 = 27.745	22 = 27.865	32 = 27.965
3 = 27.625	13 = 27.755	23 = 27.895	33 = 27.975
4 = 27.645	14 = 27.765	24 = 27.875	34 = 27.985
5 = 27.655	15 = 27.775	25 = 27.885	35 = 27.995
6 = 27.665	16 = 27.795	26 = 27.905	36 = 28.005
7 = 27.675	17 = 27.805	27 = 27.915	37 = 28.015
8 = 27.695	18 = 27.815	28 = 27.925	38 = 28.025
9 = 27.705	19 = 27.825	29 = 27.935	39 = 28.035
10 = 27.715	20 = 27.845	30 = 27.945	40 = 28.045

POSITION #5 =

2 = 26.815	5 = 26.855	8 = 26.895	11 = 26.925
3 = 26.835	6 = 26.865	9 = 26.905	12 = 26.945
4 = 26.845	7 = 26.875	10 = 26.915	13 = 26.955
			14 = 26.965(Ch1)

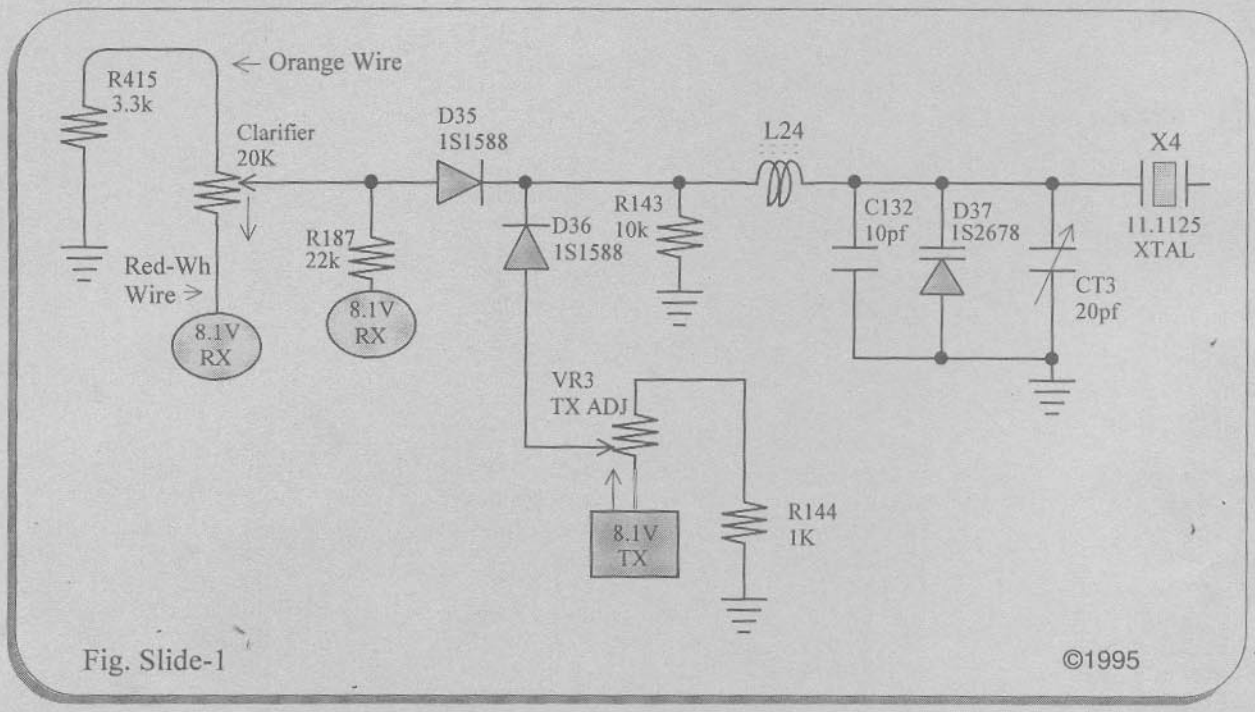
POSITION #6 =

1 = 26.485	11 = 26.445	21 = 26.735	31 = 26.675
2 = 26.335	12 = 26.465	22 = 26.745	32 = 26.685
3 = 26.345	13 = 26.475	23 = 26.775	33 = 26.695
4 = 26.365	14 = 26.485	24 = 26.755	34 = 26.705
5 = 26.375	15 = 26.655	25 = 26.765	35 = 26.715
6 = 26.385	16 = 26.675	26 = 26.785	36 = 26.725
7 = 26.395	17 = 26.685	27 = 26.795	37 = 26.735
8 = 26.415	18 = 26.695	28 = 26.805	38 = 26.745
9 = 26.425	19 = 26.705	29 = 26.655	39 = 26.755
10 = 26.435	20 = 26.725	30 = 26.665	40 = 26.765

SUPER SLIDE

for

COBRA 142GTL, TEABERRY STALKER XV, UNIDEN WASHINGTON, P400

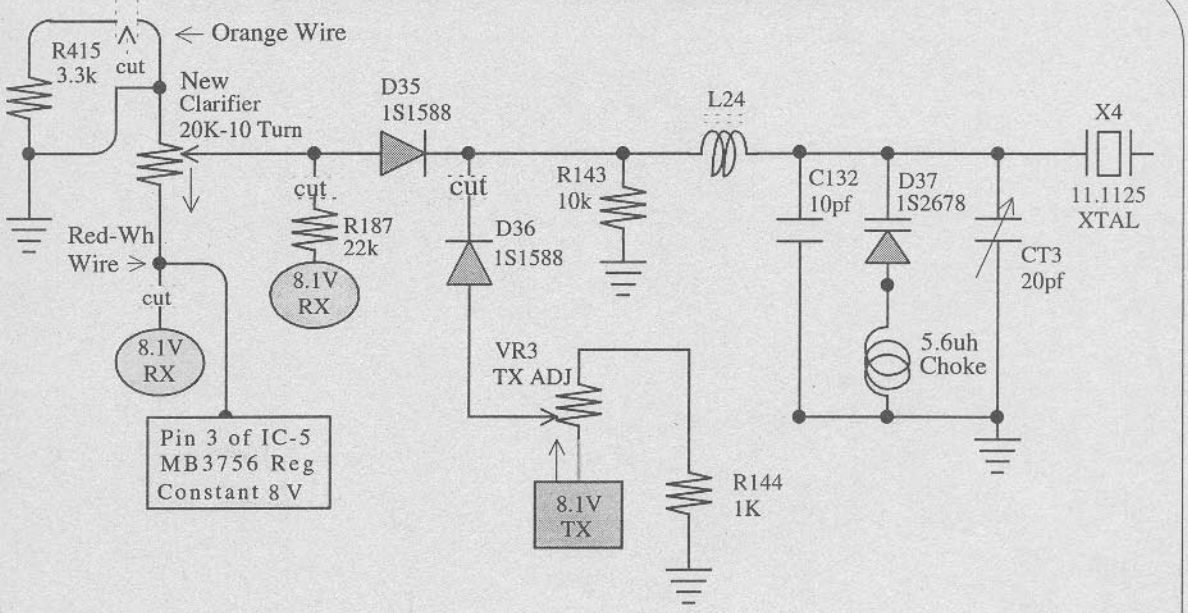


Installation Instructions

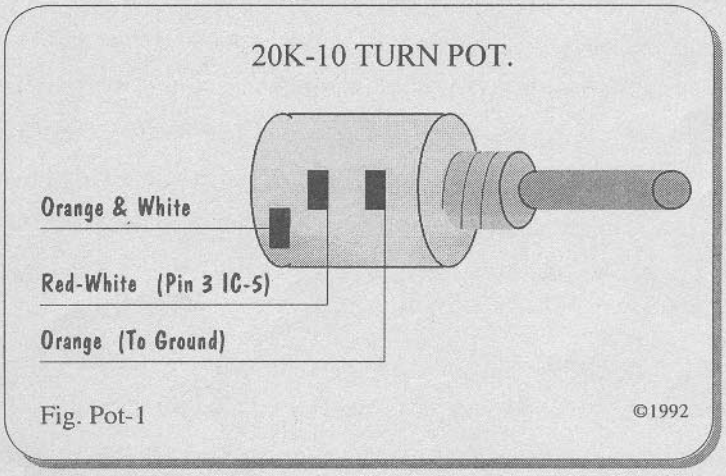
The above diagram above shows the stock clarifier circuit as the above Radios come from the factory. In all cases once this circuit has been modified, the stock clarifier control is just not adequate for all practical purposes. Not only is it difficult to clarify, the unit will also tend to drift off frequency due to the lack of clarifier control stability. The cure for this problem is to install a 10-Turn Precision Potentiometer in place of the stock clarifier control. This will allow you cover the same range in 10 complete turns versus 1 turn with the stock control. Your clarifier will then operate like a fine tune clarifier control and will have much improved stability, with very little frequency drift.

On the next page we have shown what the above circuit should look like once modified and how to wire your new 20k - 10 turn pot in place of the stock control. This modification also uses a 5.6 µh choke in series v :ith the varactor diode in order to increase clarifier slide range.

SUPER SLIDE



20K-10 Turn Pot Diagram



Note: *This modification can be used with any SSB unit for improved clarifier performance. Please note, however, that you will need to acquire a 10-turn that has the correct value before changing the stock control. These pots are available with values from 5 to 100k.*

COBRA 2000
Rotary Switch Channel Conversion

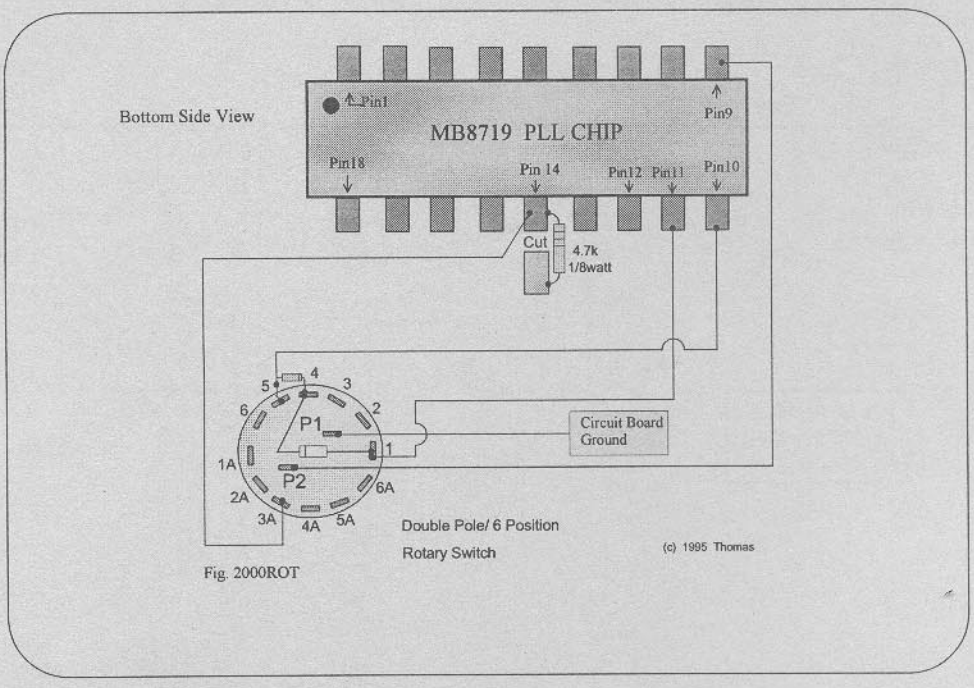


Fig. 2000ROT

Instructions

1. Obtain a Double Pole/ 6 Position Rotary Switch. Be sure to get the Break Before Make type. You will also need 2 small signal diodes (1N914, 1N4148 or Equivalent), a piece of 5 wire ribbon cable long enough to reach from the switch to the PLL chip connections, and 1 4.7k 1/4 watt resistor. Also if the MB8734 has not been changed to an MB8719, you will need to change it before proceeding. Next solder the diodes to the switch as shown in the diagram above. Be sure that the cathode ends (Banded) are as shown once you have completed this step. The diode that connects between Pin 4 & Pin 5 should have the banded end to Pin 4 and the diode the connects between Pin 1 & Pin 4 should be the same.

2. Next locate Pin 14 of the PLL and using an ex-acto knife carefully isolate Pin 14. Next solder the 4.7k resistor across this cut in order to allow Pin 14 to operate at it's normal state. Once this has been done you may connect the ribbon cable to switch prior to mounting the switch in it's permanent location. Be sure that the wires are connected as shown in the above diagram. Once that you have mounted the switch you may then make the connections to the PLL chip as shown above. Re-check all your connections before turning the unit on . The channel chart on the next page shows your new frequencies. Check all positions of the switch for these channels. Some adjustment of the VCO coil (L19) may be necessary in some cases for full channel coverage.

COBRA 2000GTL CHANNEL CHART
ROTARY SWITCH CONVERSION

POSITION #1 =

15 = 26.815
16 = 26.835
17 = 26.845
18 = 26.855
19 = 26.865
20 = 26.885
21 = 26.895
22 = 26.905
23 = 26.935
24 = 26.915
25 = 26.925
26 = 26.945
27 = 26.955
28 = 26.965(Ch1)
29 = 26.975(Ch2)
30 = 26.985(Ch3)
31 = 26.995(3A)
32 = 27.005(Ch4)

POSITION #2 = Normal Channels

POSITION #3 =

37 = 27.415
38 = 27.425
39 = 27.435
40 = 27.445

POSITION #4 =

15 = 27.455
16 = 27.465
17 = 27.475
18 = 27.495
19 = 27.505
20 = 27.525
21 = 27.535
22 = 27.545
23 = 27.575
24 = 27.555
25 = 27.565
26 = 27.585
27 = 27.595
28 = 27.605
29 = 27.615
30 = 27.625
31 = 27.635
32 = 27.645
33 = 27.655
34 = 27.665
35 = 27.675
36 = 27.685
37 = 27.695
38 = 27.705
39 = 27.715
40 = 27.725

POSITION #5 =

1 = 27.605
2 = 27.615
3 = 27.625
4 = 27.645
5 = 27.655
6 = 27.665
7 = 27.675
8 = 27.695
9 = 27.705
10 = 27.715
11 = 27.725
12 = 27.745
13 = 27.755
14 = 27.765
15 = 27.775
16 = 27.795
17 = 27.805
18 = 27.815
19 = 27.825
20 = 27.845
21 = 27.855
22 = 27.865
23 = 27.895
24 = 27.875
25 = 27.885
26 = 27.905
27 = 27.915
28 = 27.925
29 = 27.935
30 = 27.945
31 = 27.955
32 = 27.965
33 = 27.975
34 = 27.985
35 = 27.995
36 = 28.005
37 = 28.015
38 = 28.025
39 = 28.035
40 = 28.045

POSITION #6 = Normal Channels

TRAM D80 CHANNEL CONVERSION

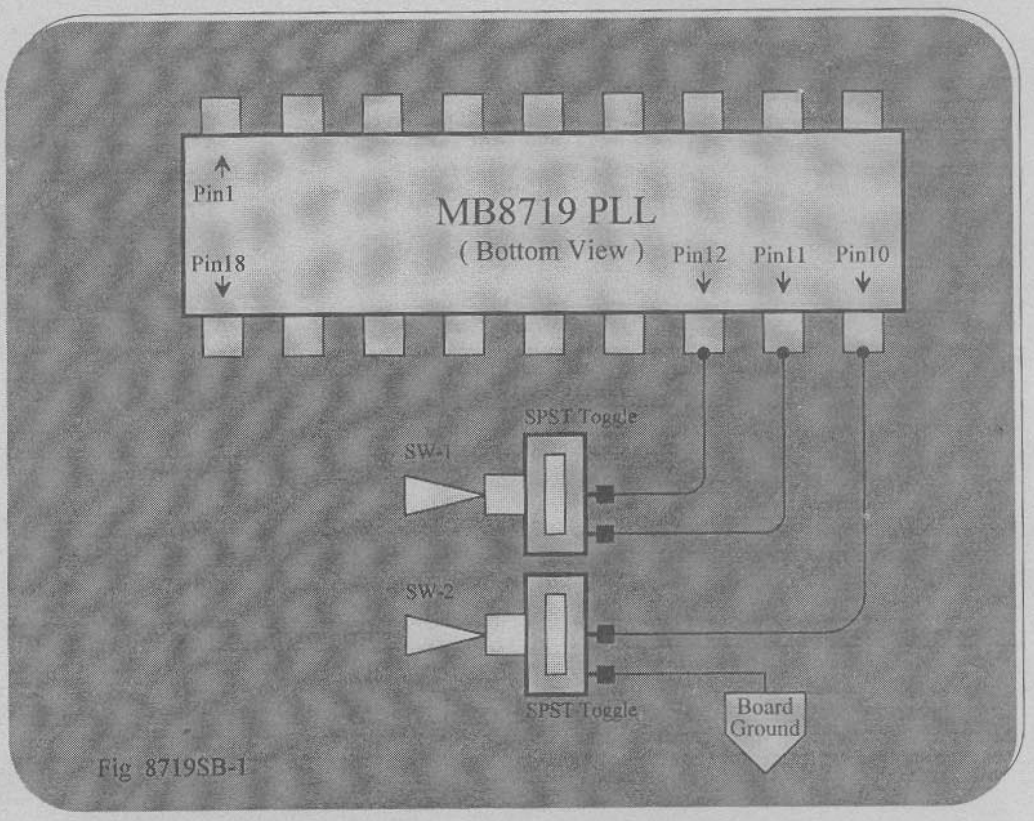


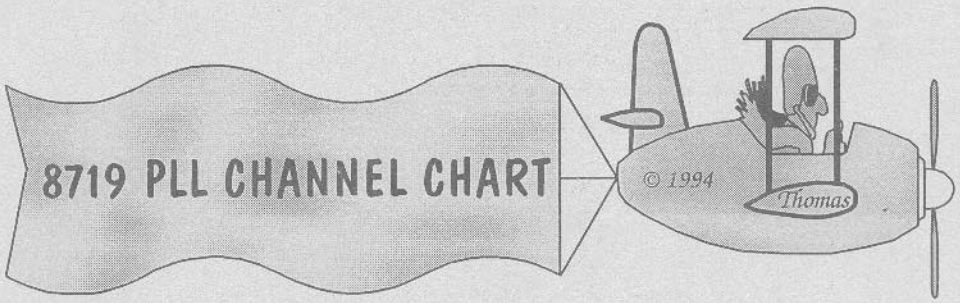
Fig 8719SB-1

Instructions

1. The TRAM D80 came from the factory with a MB8734 PLL chip installed . The above modification will work after changing this chip to a MB8719 PLL chip. Procedure is to carefully unsolder and remove the MB8734 chip, taking special note to how it was installed. The MB8719 is a direct replacement and on the older radios has pin 18 marked with a dot the same as the MB8734 chip. However please note that some of the newer radios have the dot on pin 1 of the MB8719 chip. So be very careful, be sure the new chip is installed properly. We recommend that you use a 18 pin IC socket to install the new MB8719 chip. Once that you are sure that you that you have the new MB8719 chip installed correctly, and that the radio works properly , then you may proceed with the above modification.

2. Mount 2 SPST Toggle switches in a convenient location . Be sure to wire the switches up as shown , and to solder each wire carefully.

3. Now with both switches in the down position you will still have the normal channels. Refer to the 8719 Channel chart for the switch positions and their associated channels.



POSITION #1 SW-1 DOWN and SW-2 DOWN = Normal Channels

POSITION #2 SW-1 UP and SW-2 DOWN =

15 = 26.815
16 = 26.835
17 = 26.845
18 = 26.855
19 = 26.865
20 = 26.885
21 = 26.895
22 = 26.905
23 = 26.935
24 = 26.915
25 = 26.925
26 = 26.945
27 = 26.955
28 = 26.965(Ch1)
29 = 26.975(Ch2)
30 = 26.985(Ch3)
31 = 26.995(3A)
32 = 27.005(Ch4)

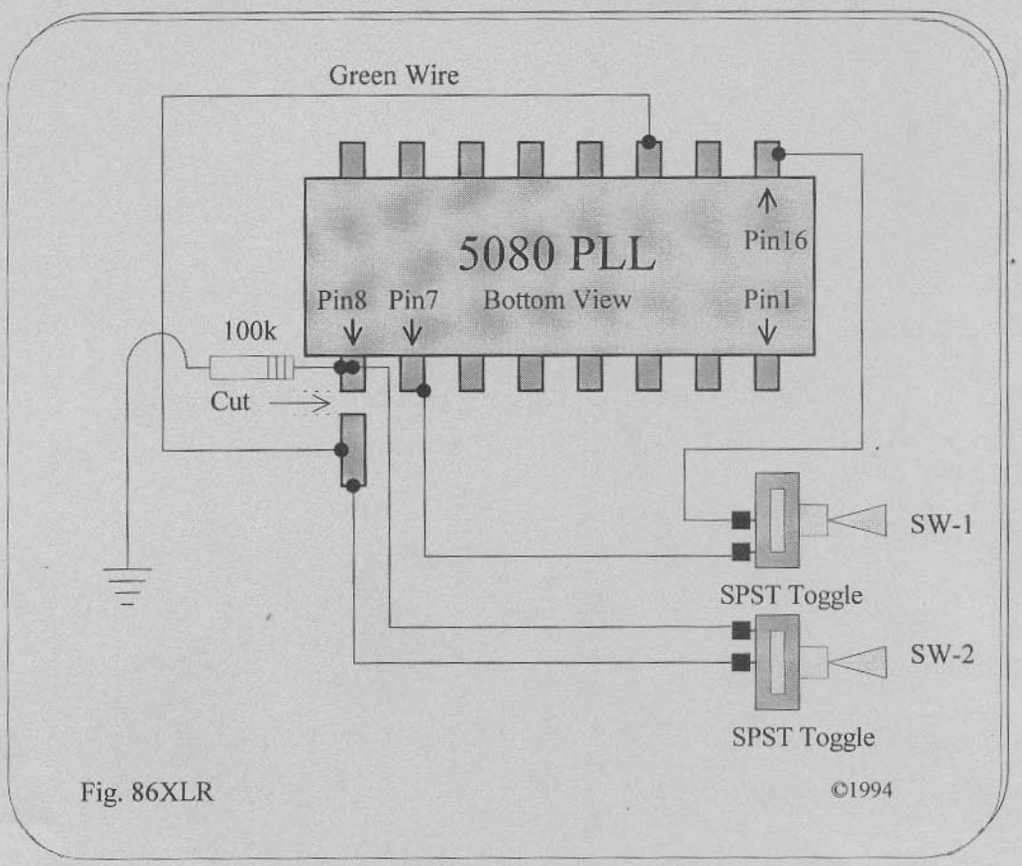
POSITION #3 SW-1 UP and SW-2 UP =

1 = 27.605
2 = 27.455
3 = 27.465
4 = 27.485
5 = 27.495
6 = 27.505
7 = 27.515
8 = 27.535
9 = 27.545
10 = 27.555
11 = 27.565
12 = 27.585
13 = 27.595
14 = 27.605
16 = 27.475
20 = 27.525
23 = 27.575

POSITION #4 SW-1 Down and SW-2 UP =

1 = 27.605
2 = 27.615
3 = 27.625
4 = 27.645
5 = 27.655
6 = 27.665
7 = 27.675
8 = 27.695
9 = 27.705
10 = 27.715
11 = 27.725
12 = 27.745
13 = 27.755
14 = 27.765
15 = 27.775
16 = 27.795
17 = 27.805
18 = 27.815
19 = 27.825
20 = 27.845
21 = 27.855
22 = 27.865
23 = 27.895
24 = 27.875
25 = 27.885
26 = 27.905
27 = 27.915
28 = 27.925
29 = 27.935
30 = 27.945
31 = 27.955
32 = 27.965
33 = 27.975
34 = 27.985
35 = 27.995
36 = 28.005
37 = 28.015
38 = 28.025
39 = 28.035
40 = 28.045

COBRA 32 XLR, 86XLR, TRAM D42
CHANNEL CONVERSION



Installation Instructions

1. Locate Pin 8 of the 5080 PLL. There will be a green wire connected to it. The other end of this green wire goes to Pin 13. Carefully unsolder the green wire from Pin 8. Next remove the excess solder from the Pin 8 land with some solder wick. Once this is done make a small cut with an ex-acto knife in order to isolate just Pin 8 of the 5080 PLL. Be sure to totally isolate this pin. Next carefully solder a 100k 1/4watt resistor from Pin 8 to ground. Now re-solder the green wire to the other side of the cut.

2. Next mount 2 SPST toggle in a convenient location. Be sure to orient the poles of the two switches as shown in the above diagram. Next using some 4 wire ribbon cable connect the switches to the circuit board as shown in the above diagram. Be sure to check for any solder bridges that may have occurred while soldering the wires to the PLL chip. Once completed your conversion should match the diagram above. Refer to the 5080 Channel Chart on the next page for your new frequencies.

5080 PLL CHANNEL CHART

POSITION #1 SW-1 Down and SW-2 DOWN = Normal Channels

POSITION #2 SW-1 UP and SW-2 UP

3 = 26.665	9 = 26.745	15 = 26.815	21 = 26.895
4 = 26.685	10 = 26.755	16 = 26.835	22 = 26.905
5 = 26.695	11 = 26.765	17 = 26.845	23 = 26.935
6 = 26.705	12 = 26.785	18 = 26.855	24 = 26.915
7 = 26.715	13 = 26.795	19 = 26.865	25 = 26.925
8 = 26.735	14 = 26.805	20 = 26.885	26 = 26.945

POSITION #3 SW-1 UP and SW-2 DOWN

11 = 27.405	15 = 27.455	19 = 27.505	23 = 27.575
12 = 27.425	16 = 27.475	20 = 27.525	24 = 27.555
13 = 27.435	17 = 27.485	21 = 27.535	25 = 27.565
14 = 27.445	18 = 27.495	22 = 27.545	26 = 27.585

CORRECTION
Clarifier Modification for the 858 SSB Chassis
Volume II Master Edition

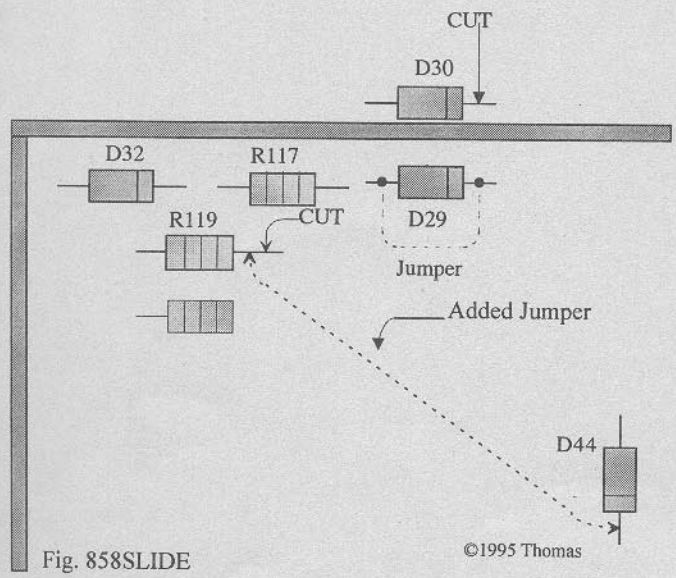


Fig. 858SLIDE

Instructions:

1. Cut D30 as shown and jumper D29.
2. Cut R119 as shown and add the jumper to D44.
3. Trace the purple & white wire from the clarifier to where it connects to the circuit board and cut it loose. Re-solder this wire to the circuit board ground. This should give you about 3khz down and 1 khz up of slide.

REALISTIC TRC-431
CHANNEL CONVERSION

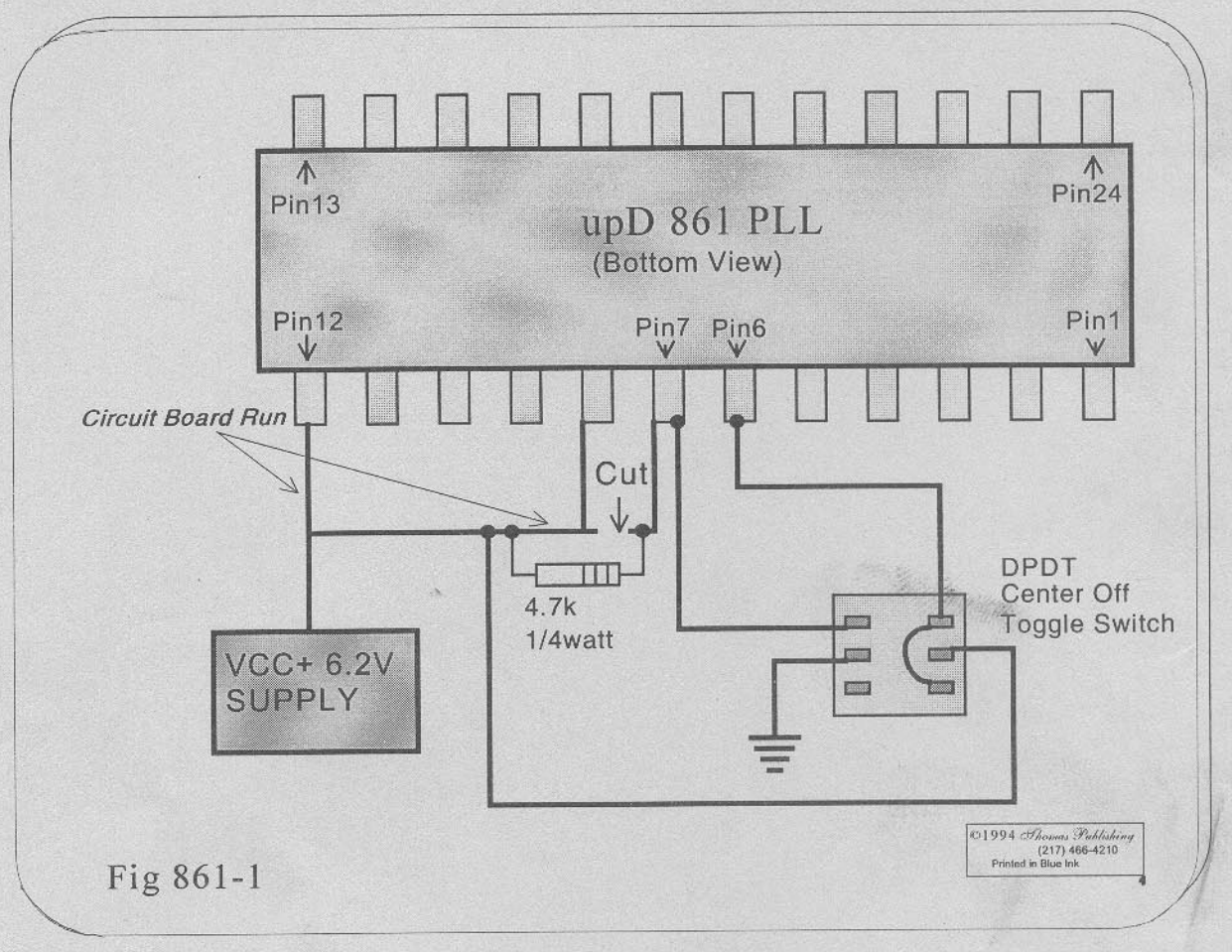


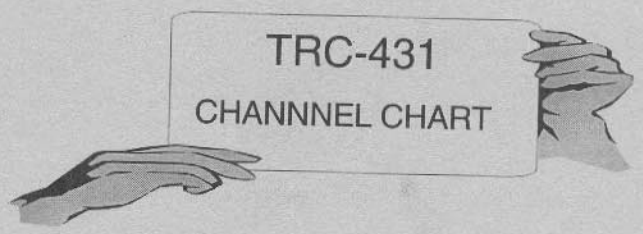
Fig 861-1

Instructions

1. Locate the metal plate on the bottom of the board which covers the upD861. Carefully bend up the tabs in order to remove and to expose the board underneath. This plate will need to be re-installed once the conversion is completed.

2. Notice that Pin 7,8,12 are all tied to the VCC+ (6.2V Supply). Using an ex-acto knife, carefully cut the circuit board in order to totally isolate pin 7 of the PLL chip. Next solder a 4.7k resistor across this cut. This will allow Pin 7 to still operate at it's normal state.

3. Next mount a DPDT/Center Off toggle switch in a convenient location. Following the diagram in fig. 861-1 wire the switch to the radio circuit board as shown. Once completed recheck all connections. If all the channels are not present as shown on the next page, some slight adjustment of T802 (VCO) and T803 (37 MHz Can) may be required in order to pop them all in.



POSITION #1 Switch Down

1 = 26.645	11 = 26.765	21 = 26.895	31 = 26.675
2 = 26.655	12 = 26.785	22 = 26.905	32 = 26.685
3 = 26.665	13 = 26.795	23 = 26.615	33 = 26.695
4 = 26.685	14 = 26.805	24 = 26.915	34 = 26.705
5 = 26.695	15 = 26.815	25 = 26.605	35 = 26.715
6 = 26.705	16 = 26.835	26 = 26.625	36 = 26.725
7 = 26.715	17 = 26.845	27 = 26.635	37 = 26.735
8 = 26.735	18 = 26.855	28 = 26.645	38 = 26.745
9 = 26.745	19 = 26.865	29 = 26.655	39 = 26.755
10 = 26.755	20 = 26.885	30 = 26.665	40 = 26.765

POSITION #2 SWITCH CENTER

NORMAL CHANNELS

POSITION #3 SWITCH UP

11 = 27.405	15 = 27.455	18 = 27.495	21 = 27.535
12 = 27.425	16 = 27.475	19 = 27.505	22 = 27.545
13 = 27.435	17 = 27.485	20 = 27.525	24 = 27.555
14 = 27.445			

Note : Due to your many requests for information and conversions covering the upD861 PLL Chip, we will be covering many more different models in future manuals. This chip is used in many different radios. However each one seems to have a different configuration which requires a different modification for conversion.

GALAXY SATURN

Eliminating Frequency Counter Noise

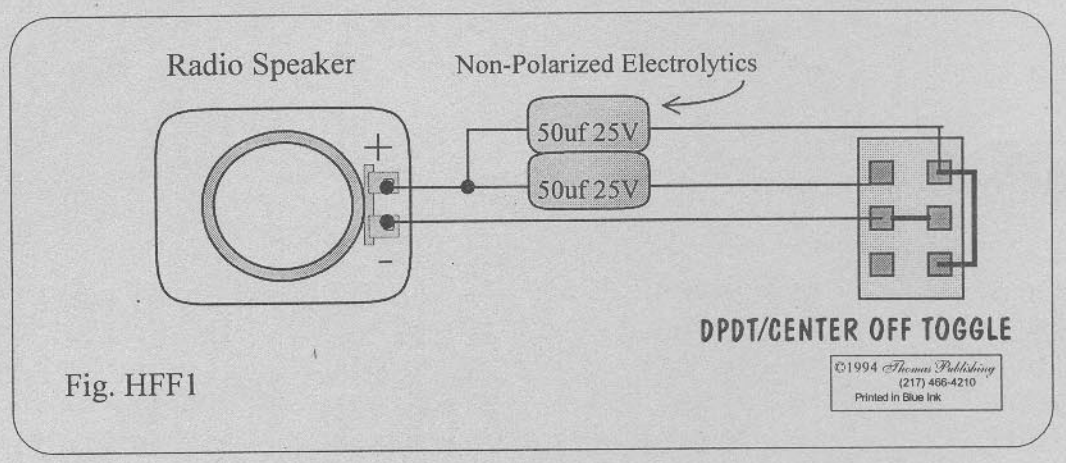


Fig. HFF1

Instructions

The Galaxy Saturn tends to have a constant high pitched whine caused by the frequency counter module. Though this noise can't be heard while receiving a strong signal it is usually very prevalent while the radio is squelched. The above diagram shows a way of passing this whine to ground or at least greatly reducing it. The above filter will also greatly reduce most High-Frequency Noise and can be used on any radio for this purpose.

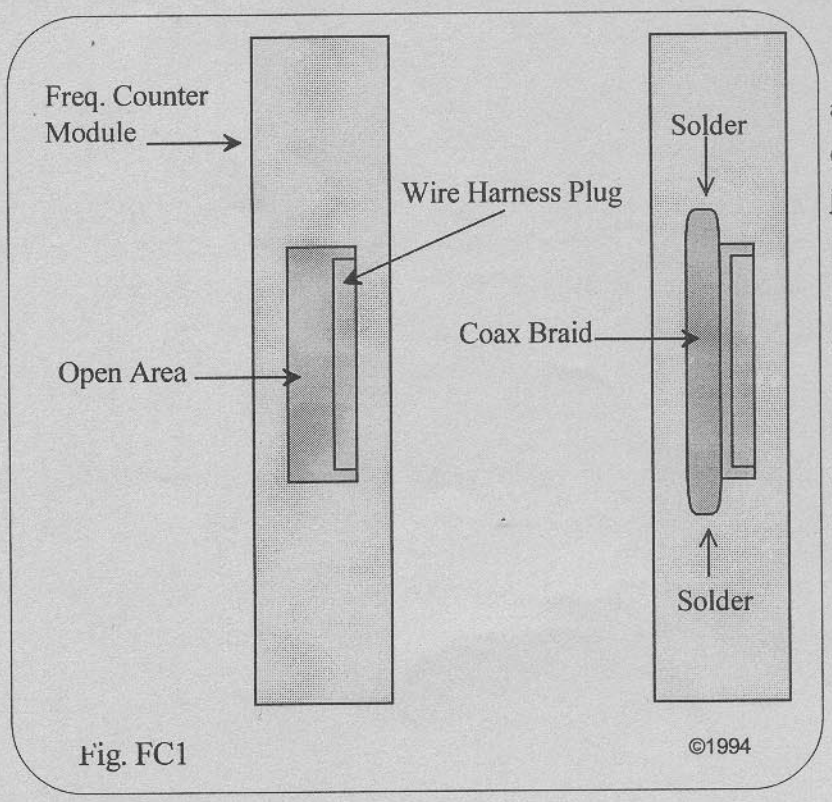


Fig. FC1

Next you will need to add additional shielding to the frequency counter module. Notice the opening just to the left of the wire harness plug. Although this opening isn't very large, it still allows a large amount of stray RF to be radiated from the module. The fix is to carefully cover this opening with a small piece of coax braid. Carefully solder each end of the coax braid to the metal can. Be sure that none of the braid touches any connections on the counter circuit board.

PAGE 25 CORRECTION
for
Volume II Master Edition

Clarifier Modification for the Grant 8719, Madison 8719

1. Locate and cut one end of D52, and R148, thus effectively removing them from the circuit. Locate R174 and solder a jumper across this resistor.

2. Now trace the red wire from the clarifier control to where it connects to the circuit board and cut loose. Now resolder the red wire to circuit board ground. Next trace the orange wire from the clarifier control to where it connects to the circuit board and cut loose also. Resolder this wire to pin 3 of IC4 (MB3756 IC Regulator).

3. Now if everything has been done properly you should have about 4Kz of down slide and 1Kz of up slide.

Clarifier Modification for the Cobra 148GTL

1. Locate and cut one end of R44, and D52. Locate R174 and solder a jumper across this resistor.

2. Now trace the red wire from the clarifier control to where it connects to the circuit board and cut it loose. Now solder the red wire to the circuit board ground. (Please note that some of the earlier models had a Yellow wire instead of a Red wire.) Next trace the orange wire from the clarifier control to where it connects to the circuit board and cut it loose also. Resolder the orange wire to pin 3 of the MB3756 IC Regulator.

3. Now if everything was done properly you should have about 5Kz of down slide and 1Kz of up slide.

Clarifier Modification for the Cobra 2000GTL

1. Locate and cut one end of R44, and D52. Locate R174 and solder a jumper across it.

2. Now trace the yellow wire from the clarifier to where it connects to the circuit board and cut it loose. Now solder the yellow wire to the circuit board ground. Next trace the red wire from the clarifier to where it connects to the circuit board and cut it loose also. Resolder the red wire to pin 3 of the MB3756 IC Regulator. Next cut the brown wire loose from the clarifier and tape back.

3. Now if everything was done properly you should have about 5Kz of down slide and 1 Kz of up slide. The fine tune also will now slide.

NEW PRODUCT RELEASE

SUPER-TALK ™ w/ Variable Power Kit

Once in awhile, a new product comes along for CB radio that serves a very useful purpose. The **SUPER-TALK ™ KIT** is such a product. What does the **SUPER-TALK ™** do you ask ?

Plenty.! It will make your radio's 4 watts operate and sound like 25 Watts and will give you **Variable Transmit Power Capabilities** to boot. It makes your modulation super loud by improving the timing constant of your radios transmit section thus improving performance. The **SUPER-TALK ™** is designed to install easily in most CB radios. Although you can also install it in most SSB radios it only works while you are on AM. Why? Because SSB already works on the same basic principle. This is why SSB will out perform Am on transmit.

The SUPER-TALK ™ w/ Variable Power is available from your local dealer or distributor. Try it, you ' ll like it.

UNIDEN WASHINGTON w/ SUPER-TALK Installed

w/ MB9719 PLL

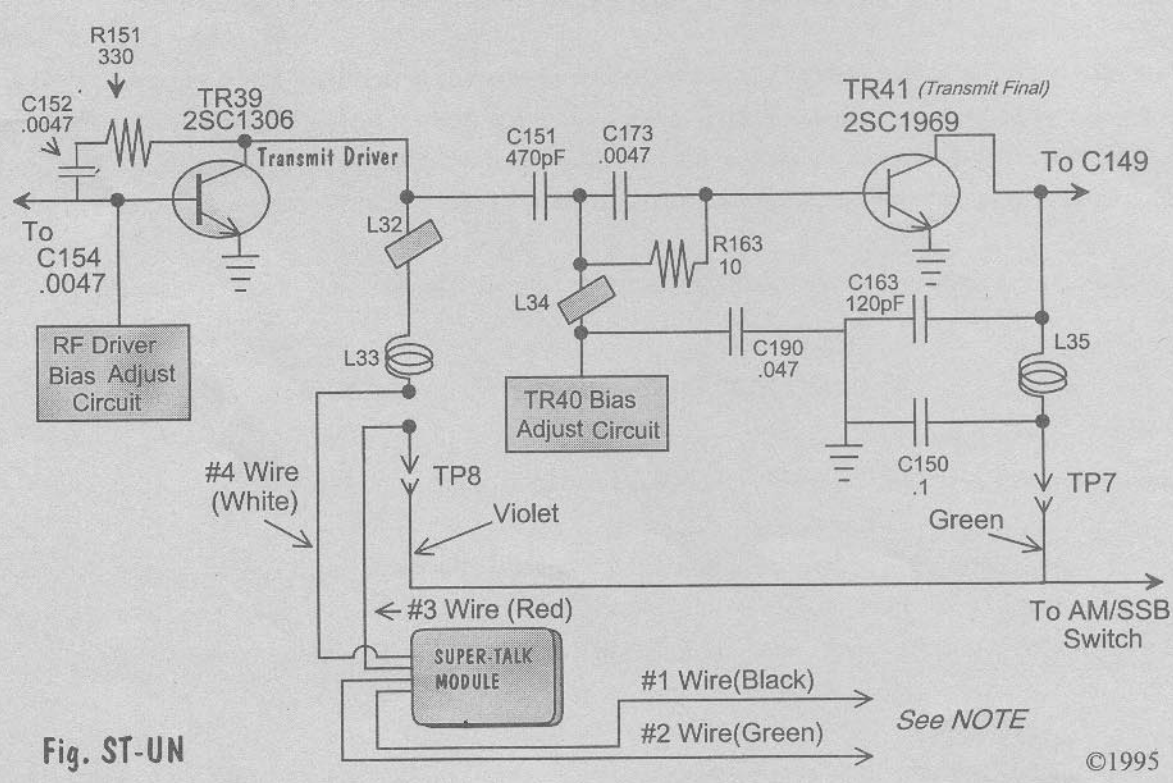


Fig. ST-UN

Note: Due to the lack of a spare pot to use on this radio you will need to install either an extra 10k pot or use the switch hook-up provided in the instructions that come with the SUPER-TALK kit.

GENERAL INSTALLATION INSTRUCTIONS

The **SUPER-TALK™** module will easily install in most CB radios. For this reason it is almost impossible to show all of the different installation instructions. Most radios do not have access points on the top of the board in order to hook-up the #3 and #4 wires. On these radios it will be necessary to locate the input coil to the Driver Amp on the back of the circuit board and make the appropriate cut. One such radio is the Realistic TRC-469 radio shown below. Always be sure that once you have located the Driver input coil that you are on the correct side of this coil before making the cut in the circuit board trace. Always be sure that your cut is after the Final Amp Input coil and just before the input coil to the Driver Amp for proper operation. [Another possibility is to unsolder and lift the correct side of the Driver Input coil . Once this has been done you would Solder the #4 wire to the Input coil, and the # 3 wire goes into the circuit board hole where the Input coil was removed.]

Then solder the #3 wire and the #4 wire in the correct location. Once all your wires are connected , turn the radio on and check for proper operation. Key the radio into a wattmeter and observe that your dead key power should go from 0 watts to maximum wattage by turning the RF GAIN control clock-wise. Next turn the RF GAIN control fully counter-clockwise. Check to make sure that the wattage swings forward as you speak into the microphone. If the module does not function properly recheck your connection and installation. Each module has been checked before leaving the factory for proper operation.

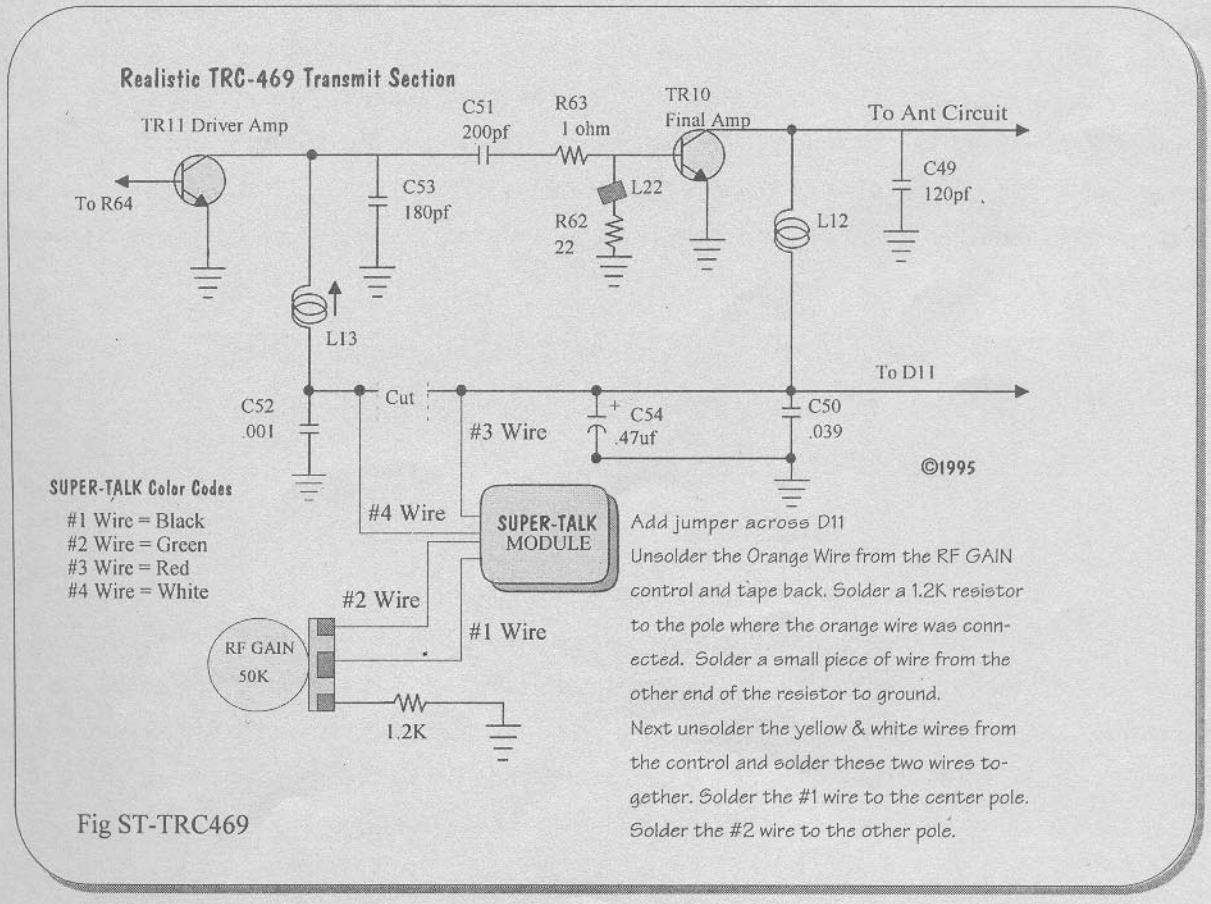


Fig ST-TRC469

SUPER TALK ™ Installation Instructions
for
PRESIDENT Honest Abe, TEABERRY "T" Bear

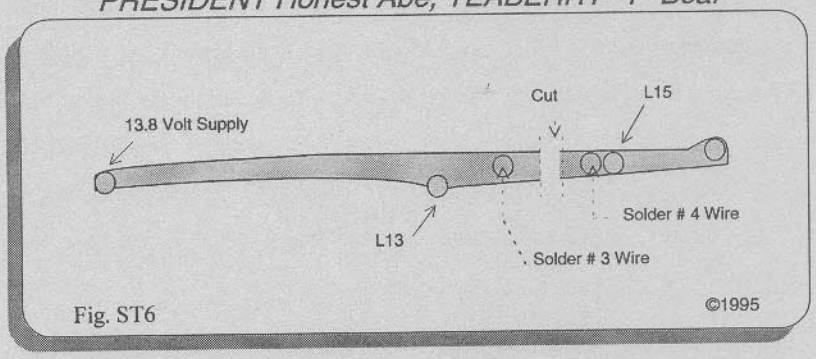


Fig. ST6

1. Locate L13 and L15 on the component side of the radio. These are the two coils in the transmit circuit. Then turn the unit over and find where L15 is soldered on the foil side of the circuit board. Refer to Fig. ST6 above and make the appropriate cut. Solder the # 3 wire and the # 4 wire of the kit to the locations as shown in Fig. ST6. Locate D11 near the Audio Transformer and place a jumper wire across this diode.

TEABERRY "T" BEAR (Only)

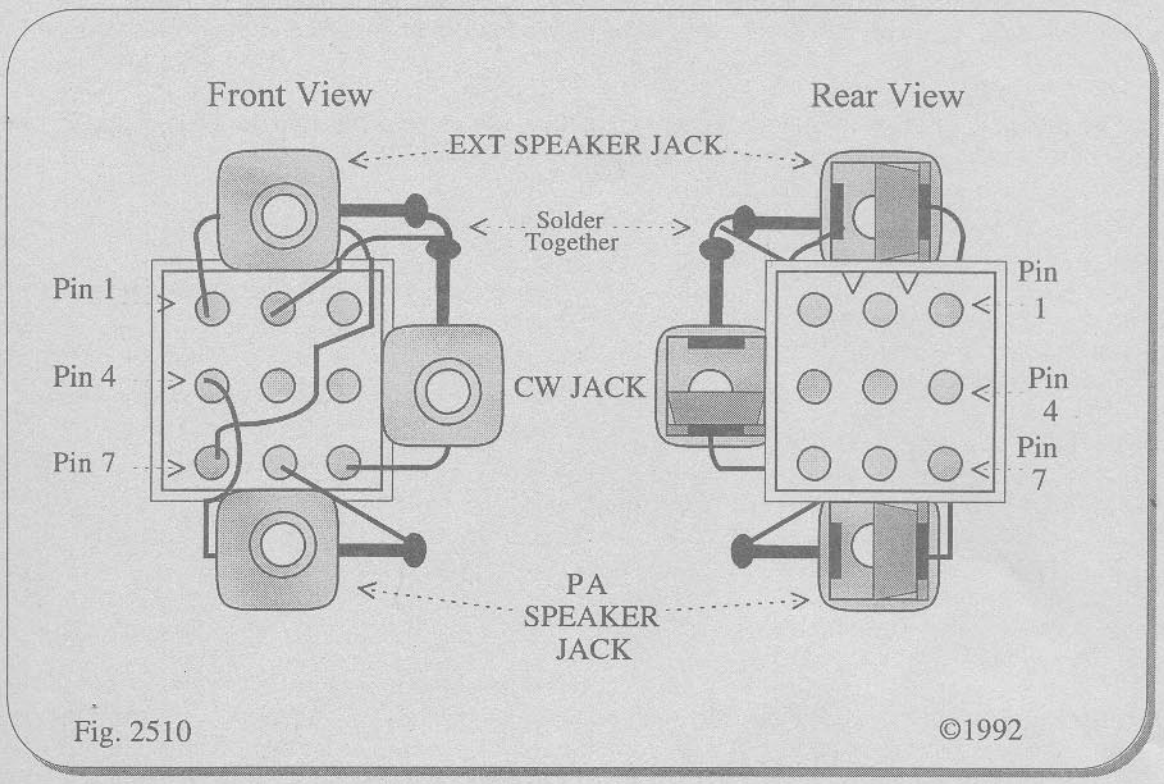
2. Locate the orange wire soldered to the bottom pole (pole nearest to the circuit board) of the RF Gain control. Unsolder or cut this wire loose and tape back. Solder one end the 1.2K resistor to this pole. Solder the other end of the 1.2K resistor to the circuit board ground. Then unsolder or cut loose the brown wire connected to the center pole of the RF Gain control and solder this wire to circuit board ground. Solder the # 1 wire of the kit to the center pole of the RF Gain control. Next unsolder or cut loose the Black wire connected to the top pole of the RF Gain control and tape back. Solder the # 2 wire of the kit to this pole.

NOTE: On some of the earlier "T" Bears you may find that the wires that are connected to the RF Gain control are of a different color. If this is the case the conversion is as follows. Orange = Green, Brown = Yellow, Black = Blue. Also when installing any **SUPER TALK** ™ kit , be sure to keep all wires as short as possible. This will assure optimum performance.

PRESIDENT HONEST ABE (Only)

2. Locate the two orange wires connected to the Dimmer control. Unsolder these two wires from the Dimmer Control. Be sure to keep these two wires soldered together and then tape back. Solder one end of the 1.2K resistor to where the orange wires were removed on the Dimmer Control and the other end of the 1.2K resistor to the circuit board ground. Next unsolder or cut loose the white wire connected to the center pole of the Dimmer Control and tape back. Then Solder the # 1 wire of the kit to the center pole of the Dimmer Control and the # 2 wire of the kit to the last unused pole on this control.

HR-2510 & LINCOLN
External Speaker Adapter



Instructions

The above accessory plug was submitted to us by Mr. Robert "Bob" S. Lipes, '999 Virginia Portable', with his permission to share this with you, our reader. Our thanks to Bob and a free copy of CB TUNE-UP MANUAL VOLUME III for his help and input.

Parts Required:

Molex Plug #02-06-2091, Molex Pins, .063, #02-06066103, 2 small wire ties, 3 Cb/Pa/Ext speaker Jacks from junk CB's, 3 Dabs of super Glue 'gel', heat shrink to insulate connections where needed, covering from RG-8x coax to cover and insulate the threaded portions of the Cb/Pa Jacks.

Construction Details:

Cut humps from the side of the Molex plug where the CW jack will mount. Round the corners of the plug in order to ease the tightening of the cable tie that you will install around the entire unit once the jacks are glued in place. Next glue the 3 jacks in place with the super glue 'gel' and install the wire tie around the unit to add further strength to the jacks. Make and insulate all connections, try to keep all wires as short as possible.

PIN FUNCTIONS:

Pins 2,5, & 8 are ground, Pins 1 & 7 are Internal Speaker, 1 & 2 are External Speaker, Pins 4 & 8 are The PA Speaker, Pins 9 & 5 are CW Key, and Pins 3 & 6 are not used

Talk Back Speaker Conversion for Export Radios

How many times have you wished that you could use a talk-back speaker on many of the popular export mobile units. Or even had a customer request this feature be installed in their units. Well now you can!!

The following conversion will allow you to use any talk-back speaker on the Galaxy Jupiter, Galaxy II, or any other similar export mobile units which use the EPT3600013B Boards.

Instructions

1. Remove the radio covers and carefully unplug the speaker from the jack located in the rear right corner of the unit.

2. Locate D93 located just in front of the CW Jack Receptacle. Either remove or cut one end of D93 in order to effectively remove it from the circuit.

3. Locate and cut Jumper J99 and also the little diagonal jumper located immediately behind Jumper J99 (Do not cut Jumper J100).

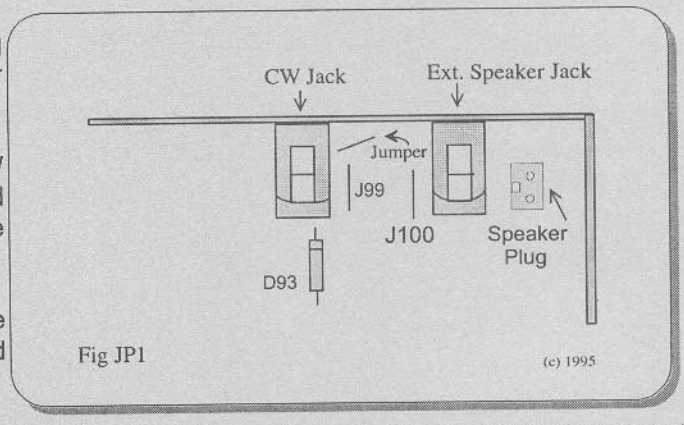


Fig JP1

4. Locate D80. This is the small diode located just to the left of the main audio IC. Unsolder the banded end (cathode end) of this diode and pull it up from the board. Be sure to leave the other end of this diode connected to the circuit board in case you need to install a resistor in series to control talk-back level when not using a talk-back speaker.

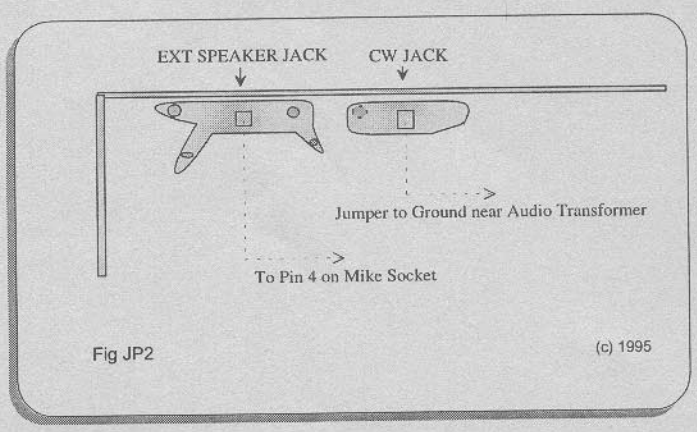


Fig JP2

5. Now turn the unit over and locate the lands as pictured in Fig JP2.

6. Next solder a 2" piece of insulated hook-up wire to the CW land and solder the other end to the circuit board ground as near to the audio transformer as possible. This will help prevent any squeal or feedback problems.

7. Next obtain a long enough piece of insulated hook-up wire that will reach from the External Speaker Jack land to Pin 4 of the microphone socket. Solder one end of this wire to the unused Pin 4 terminal on the microphone socket, and then solder the other end of this wire to the Ext. speaker Jack land as depicted in Fig JP2. Now plug in the talk-back speaker in order make sure that it functions properly, using the CW Jack as the control jack for the talk-back speaker.

NOTE: *The unit will now no longer have receive audio unless the microphone is plugged in to the mike socket.*

GALAXY JUPITER CHANNEL CHART

The Galaxy Jupiter comes from the factory with no channel chart and has three unmarked positions on the Channel Band Selector switch. Below is a channel chart of the available frequencies for reference. This seems to be a very good unit.

LO POSITION	MID POSITION	HI POSITION	#4 POSITION	#5 POSITION	#6 POSITION
Ch 1 = 26.515	Ch 1 = 26.965	Ch 1 = 27.415	Ch 1 = 27.865	Ch 1 = 28.315	Ch 1 = 28.765
Ch 2 = 26.525	Ch 2 = 26.975	Ch 2 = 27.425	Ch 2 = 27.875	Ch 2 = 28.325	Ch 2 = 28.775
Ch 3 = 26.535	Ch 3 = 26.985	Ch 3 = 27.435	Ch 3 = 27.885	Ch 3 = 28.335	Ch 3 = 28.785
Ch 4 = 26.555	Ch 4 = 27.005	Ch 4 = 27.455	Ch 4 = 27.905	Ch 4 = 28.355	Ch 4 = 28.805
Ch 5 = 26.565	Ch 5 = 27.015	Ch 5 = 27.465	Ch 5 = 27.915	Ch 5 = 28.365	Ch 5 = 28.815
Ch 6 = 26.575	Ch 6 = 27.025	Ch 6 = 27.475	Ch 6 = 27.925	Ch 6 = 28.375	Ch 6 = 28.825
Ch 7 = 26.585	Ch 7 = 27.035	Ch 7 = 27.485	Ch 7 = 27.935	Ch 7 = 28.385	Ch 7 = 28.835
Ch 8 = 26.605	Ch 8 = 27.055	Ch 8 = 27.505	Ch 8 = 27.955	Ch 8 = 28.405	Ch 8 = 28.855
Ch 9 = 26.615	Ch 9 = 27.065	Ch 9 = 27.515	Ch 9 = 27.965	Ch 9 = 28.415	Ch 9 = 28.865
Ch 10 = 26.625	Ch 10 = 27.075	Ch 10 = 27.525	Ch 10 = 27.975	Ch 10 = 28.425	Ch 10 = 28.875
Ch 11 = 26.635	Ch 11 = 27.085	Ch 11 = 27.535	Ch 11 = 27.985	Ch 11 = 28.435	Ch 11 = 28.885
Ch 12 = 26.655	Ch 12 = 27.105	Ch 12 = 27.555	Ch 12 = 28.005	Ch 12 = 28.455	Ch 12 = 28.905
Ch 13 = 26.665	Ch 13 = 27.115	Ch 13 = 27.565	Ch 13 = 28.015	Ch 13 = 28.465	Ch 13 = 28.915
Ch 14 = 26.675	Ch 14 = 27.125	Ch 14 = 27.575	Ch 14 = 28.025	Ch 14 = 28.475	Ch 14 = 28.925
Ch 15 = 26.685	Ch 15 = 27.135	Ch 15 = 27.585	Ch 15 = 28.035	Ch 15 = 28.485	Ch 15 = 28.935
Ch 16 = 26.705	Ch 16 = 27.155	Ch 16 = 27.605	Ch 16 = 28.055	Ch 16 = 28.505	Ch 16 = 28.955
Ch 17 = 26.715	Ch 17 = 27.165	Ch 17 = 27.615	Ch 17 = 28.065	Ch 17 = 28.515	Ch 17 = 28.965
Ch 18 = 26.725	Ch 18 = 27.175	Ch 18 = 27.625	Ch 18 = 28.075	Ch 18 = 28.525	Ch 18 = 28.975
Ch 19 = 26.735	Ch 19 = 27.185	Ch 19 = 27.635	Ch 19 = 28.085	Ch 19 = 28.535	Ch 19 = 28.985
Ch 20 = 26.755	Ch 20 = 27.205	Ch 20 = 27.655	Ch 20 = 28.105	Ch 20 = 28.555	Ch 20 = 29.005
Ch 21 = 26.765	Ch 21 = 27.215	Ch 21 = 27.665	Ch 21 = 28.115	Ch 21 = 28.565	Ch 21 = 29.015
Ch 22 = 26.775	Ch 22 = 27.225	Ch 22 = 27.675	Ch 22 = 28.125	Ch 22 = 28.575	Ch 22 = 29.025
Ch 23 = 26.805	Ch 23 = 27.255	Ch 23 = 27.705	Ch 23 = 28.155	Ch 23 = 28.605	Ch 23 = 29.055
Ch 24 = 26.785	Ch 24 = 27.245	Ch 24 = 27.685	Ch 24 = 28.135	Ch 24 = 28.585	Ch 24 = 29.035
Ch 25 = 26.795	Ch 25 = 27.255	Ch 25 = 27.695	Ch 25 = 28.145	Ch 25 = 28.595	Ch 25 = 29.045
Ch 26 = 26.815	Ch 26 = 27.265	Ch 26 = 27.715	Ch 26 = 28.165	Ch 26 = 28.615	Ch 26 = 29.065
Ch 27 = 26.825	Ch 27 = 27.275	Ch 27 = 27.725	Ch 27 = 28.175	Ch 27 = 28.625	Ch 27 = 29.075
Ch 28 = 26.835	Ch 28 = 27.285	Ch 28 = 27.735	Ch 28 = 28.185	Ch 28 = 28.635	Ch 28 = 29.085
Ch 29 = 26.845	Ch 29 = 27.295	Ch 29 = 27.745	Ch 29 = 28.195	Ch 29 = 28.645	Ch 29 = 29.095
Ch 30 = 26.855	Ch 30 = 27.305	Ch 30 = 27.755	Ch 30 = 28.205	Ch 30 = 28.655	Ch 30 = 29.105
Ch 31 = 26.865	Ch 31 = 27.315	Ch 31 = 27.765	Ch 31 = 28.215	Ch 31 = 28.665	Ch 31 = 29.115
Ch 32 = 26.875	Ch 32 = 27.325	Ch 32 = 27.775	Ch 32 = 28.225	Ch 32 = 28.675	Ch 32 = 29.125
Ch 33 = 26.885	Ch 33 = 27.335	Ch 33 = 27.785	Ch 33 = 28.235	Ch 33 = 28.685	Ch 33 = 29.135
Ch 34 = 26.895	Ch 34 = 27.345	Ch 34 = 27.795	Ch 34 = 28.245	Ch 34 = 28.695	Ch 34 = 29.145
Ch 35 = 26.905	Ch 35 = 27.355	Ch 35 = 27.805	Ch 35 = 28.255	Ch 35 = 28.705	Ch 35 = 29.155
Ch 36 = 26.915	Ch 36 = 27.365	Ch 36 = 27.815	Ch 36 = 28.265	Ch 36 = 28.715	Ch 36 = 29.165
Ch 37 = 26.925	Ch 37 = 27.375	Ch 37 = 27.825	Ch 37 = 28.275	Ch 37 = 28.725	Ch 37 = 29.175
Ch 38 = 26.935	Ch 38 = 27.385	Ch 38 = 27.835	Ch 38 = 28.285	Ch 38 = 28.735	Ch 38 = 29.185
Ch 39 = 26.945	Ch 39 = 27.395	Ch 39 = 27.845	Ch 39 = 28.295	Ch 39 = 28.745	Ch 39 = 29.195
Ch 40 = 26.955	Ch 40 = 27.405	Ch 40 = 27.855	Ch 40 = 28.305	Ch 40 = 28.755	Ch 40 = 29.205

RADIO ALIGNMENT SECTION

In our opinion lack of radio repair and tune-up information is one of the biggest problems facing most repair technicians. Your calls and letters have reaffirmed this.

So in keeping with our policy to supply as much requested repair and tune-up information as possible, we will be covering specific radios more in depth.

ROBYN 520D ALIGNMENT

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT TO USE & CONNECTION	RADIO SETTINGS Channel	Mode	Clarifier Pos.	INSTRUCTIONS
Frequency Counter to TP10	19	AM	Center	Check for 10.240 MHz.
Frequency Counter to TP8	19	AM	Center	Adjust CT6 for 34.9850 MHz
	19	USB	Center	Adjust CT4 for 34.9875 MHz
	19	LSB	Center	Adjust CT5 for 34.9825 MHz
RF Voltmeter to TP6	19	AM	Center	Adjust L27 for maximum RF Voltage Reading
DC Voltmeter to TP7	1	AM	Center	Adjust L17 for 2 Volts
RF Voltmeter to TP8	19	AM	Center	Adjust L16 for Maximum RF Voltage Reading
Frequency Counter to TP9		USB		Adjust CT2 for 7.8025 MHz
		LSB		Adjust CT3 for 7.7975 MHz

RECEIVER ALIGNMENT

TEST EQUIPMENT TO USE & CONNECTION	RADIO SETTINGS	INSTRUCTIONS
Audio Wattmeter across speaker terminals. Signal Generator output set to 7.8Mhz, 1000Hz @ 30% Modulation to the secondary side of L4 thru a .01 Capacitor	AM, Ch 19 , Squelch set to Min, RF Gain set to Max., Clarifier set to Center Slot, Noise Blanker Off	Adjust L8, L7, L6, L5 for maximum output
Signal Generator output to Ant jack. Set to 27.185Mhz, 1000Hz ,30 % Modulation	Am,Ch.19,Squelch set to Minimum, RF Gain to maximum, Clarifier Center, NB on	Adjust L4, L3 for maximum output reading on audio wattmeter. Then readjust L6, L7,L8 using these same settings & generator output.
Signal Generator output to Ant jack set to 27.186, no modulation. Set level to 1uV	USB, Ch. 19,Squelch minimum, RF Gain maximum, Clarifier center, NB off	Adjust CT1 for Maximum audio reading.

ROBYN 520D RECEIVER ALIGNMENT

TEST EQUIPMENT TO USE & CONNECTION	RADIO SETTINGS	INSTRUCTIONS
Signal Generator output to Ant jack. Set to 27.185Mhz, 1000Hz ,30 % Modulation , 250uV	AM, Ch. 19, Volume Max, Squelch minimum,RF Gain Minimum,Clarifier Center, NB Off	Adjust VR2 for .5 watts audio (RF Gain Range)
Signal Generator output to Ant jack. Set to 27.185Mhz, 1000Hz ,30 % Modulation , 1uV	AM, Ch. 19, Volume Max, Squelch minimum,RF Gain Maximum,Clarifier Center,NB Off	Adjust VR5 for 1 Watt Audio (AM Receive Gain)
Signal Generator output to Ant jack. Set to 27.185Mhz, 1000Hz ,30 % Modulation , 2000uV	AM, Ch. 19, Volume Max, Squelch Maximum,RF Gain Maximum,Clarifier Center,NB Off	Adjust VR3 until squelch just breaks.
Signal Generator output to Ant jack. Set to 27.185Mhz, 1000Hz ,30 % Modulation , 100uV	AM, Ch. 19, Volume Max, Squelch minimum,RF Gain Maximum,Clarifier Center,NB Off	Adjust VR1 for S9 Reading on Receive Meter

ROBYN 520D TRANSMITTER ALIGNMENT

TEST EQUIPMENT TO USE & CONNECTION	RADIO SETTINGS	INSTRUCTIONS
Inject a 400Hz, 20mV tone at the mike audio input	USB, Ch 19, Key radio while injecting a 400 Hz tone.	Adjust L39, L37, L32, L30 for maximum SSB Power output into an Rf Wattmeter. Then Adjust CT7 (SSB ALC) for Maximum SSB power also.
DC Current meter to TP3 and TP4	USB, Ch 19, Key Radio with No Modulation	Adjust VR15 (Final Bias) for a 60mA reading on DC Current Meter
DC Current Meter to TP1 and TP2	USB, Ch 19, Key Radio with no modulation	Adjust VR16 (Driver Bias) for a 35mA reading on DC Current Meter
RF Wattmeter to Antenna Connector, Output of wattmeter to a 50-ohm Dummy Load.	AM, Ch 19, Key Radio with no modulation.	Adjust VR8 (AM Power) for Desired Am Power Output
RF Wattmeter to Antenna Connector, Output of wattmeter to a 50-ohm Dummy Load.	USB, Ch 19, Key Radio with no modulation.	Adjust VR4 (Carrier Balance) for Minimum RF output.
Inject a 400 Hz, 1mV tone at the mike audio input.	USB, Ch 19, Key Radio while injecting 400 Hz tone.	Adjust VR6 (Mike Gain)for maximum RF, Then rejust CT7 (SSB ALC) or Maximum RF Also.
Connect a modulation meter to the Ant. Jack, then inject a 400 Hz tone, 10mV at the mike audio input.	Am, Ch 19, Key radio while injecting 400 Hz tone.	Adjust VR7 (AMC) for maximum modulation.
RF Wattmeter to Ant. Jack.	Am, Ch 19, Key radio with no modulation.	Adjust VR12 (Transmit Meter) so that the power output reading on the RF wattmeter Matches the Radio's RF Power Meter.

VARIABLE ALIGNMENT ADJUSTMENT SECTION

COBRA RADIOS

19 PLUS (Plastic)

RV1 = Receive Meter
RV2 = Transmit Meter
RV3 = Squelch
RV4 = Modulation AMC

31 PLUS

VR1 = Receive Meter
VR2 = Receive Level Adj.
VR3 = Transmit Meter
VR4 = SWR Mtr Cal.
VR5 = Squelch
VR6 = Modulation Meter
VR7 = Modulation (AMC)

33 PLUS

VR1 = Squelch
VR2 = Transmit Meter
VR3 = Receive Meter
VR4 = Modulation (AMC)

25LTD CLASSIC

VR1 = Squelch Adj.
VR3 = Transmit Meter
VR4 = Squelch
VR5 = Mod. Meter Adj.
VC1 = 10.240 Xtal Adj.

29LTD CLASSIC

VR2 = Receive Meter
VR3 = Squelch
VR4 = Modulation AMC
VR5 = Transmit Meter
VR6 = AWI

78X

VR3 = Squelch
VR4 = Receive Meter
VR5 = Transmit Meter
VR6 = Modulation AMC
VR7 = Receive IF GAIN

86XLR

R4 = Transmit Meter
R17 = Receive Meter
R37 = Squelch
R73 = Power Supply 13.8V

G.E. RADIOS

3-5890B & C

RV4 = Modulation Adj.
RV3 = Squelch
CT1 = 10.240 Xtal Adj.

JC PENNY RADIOS

981-6218

RV1 = Squelch Adj.
RV2 = Modulation AMC
RV3 = Receive Meter
RV4 = Transmit Meter
RV501= SWR Cal Adj.
CT1 = 10.240 Xtal Adj.

VARIABLE ALIGNMENT ADJUSTMENTS

MIDLAND RADIOS

76-860

VC1 = Ant Warning #1
VR1 = Ant Warning #2
VR2 = Transmit Meter
VR3 = Receive Meter
VR6 = Modulation AMC
VR7 = AGC (Rx Gain)
VR10 = Squelch Adj.
VC101 = PLL RF Level
VC102 = 10.240 Adj

77-094

CT1 = 10.240 Xtal Adj.
RV2 = Squelch[1]
RV2 = Modulation

[1] Note: *Unit Has two RV2 Adjustments. The one for the Squelch is located in the lower left hand corner.*

77-104

RV1 = Receive Meter
RV2 = Transmit Meter
RV3 = Squelch
RV4 = Modulation AMC
CT1 = 10.240 Xtal Adj.

77-106

RV1 = Receive Meter
RV2 = Transmit Meter
RV3 = Squelch
RV4 = Modulation Adj.
CT1 = 10.240 Xtal Adj.

77-116

RV1 = Receive Meter
RV2 = Modulation AMC
TC1 = 10.240 Xtal Adj.
RV201 = Modulation
RV202 = Transmit Meter

77-202B

RV101 = Squelch Adj.
RV102 = Receive Meter
RV201 = Modulation Adj.
RV202 = Transmit Meter

78-574

RV1 = Carrier Balance #1
RV2 = Carrier Balance #2
RV3 = SSB Mike Gain
RV4 = SSB Receive Meter
RV5 = AM Receive Meter
RV6 = SSB AGC
RV7 = AM Squelch Adj.
RV8 = SSB Squelch Adj.
RV9 = AM Modulation AMC
RV10= RF Gain Range
RV201=SSB Transmit ALC
RV202=Transmit Meter
RV206=TX Final Bias[1]
CT201=10.240 Xtal Adj.
VR1 = AM Transmit Power

[1]Note: *Adjust RV206 for .70 Volts on the base of Q208*

78-999

RV1 = Carrier Balance #1
RV2 = Carrier Balance #2
RV3 = SSB Mike Gain
RV4 = SSB Receive Meter
RV5 = AM Receive Meter
RV6 = SSB AGC
RV7 = AM Squelch Adj.
RV8 = SSB Squelch Adj.
RV9 = AM Modulation AMC
RV10= RF Gain Range
RV11= Modulation Meter
RV201=SSB Transmit ALC
RV202=Transmit Meter
RV205=SWR Meter Cal.
RV206=TX Final Bias[1]
VR2 = AM Transmit Power

[1]Note: *Adjust RV206 for .70 Volts on the base of Q208.*

VARIABLE ALIGNMENT ADJUSTMENTS

MIDLAND RADIOS

5001

RV1 = Squelch
RV2 = AMC
VR3 = Receive Meter
L2 = Transmit Meter
RV501 = AWI
RV502 = SWR Cal Adj.

PALOMAR RADIOS

SSB-500

VR1 = Receive Meter
VR2 = RF Gain
VR3 = Squelch
VR4 = Carrier Balance
VR5 = AM Receive Gain
VR7 = Modulation AMC
VR8 = AM Transmit Power
CT7 = SSB ALC
VR12 = Transmit Meter
VR15 = Driver Bias 40mA
VR16 = Final Bias 15mA
VR408= AM Mike Gain

PEARCE-SIMPSON RADIOS

TIGER 40A

RV101 = Squelch Adj.
RV102 = Modulation AMC
RV103 = Receive Meter
RV104 = Transmit Meter
CT101 = 11.806 Xtal Adj.

PYRAMID RADIOS

CB-22

RV1 = Squelch
RV2 = Receive Meter
RV3 = Transmit Meter
RV4 = Modulation AMC

CB-24

RV1 = Receive Meter
RV2 = Squelch
RV3 = Modulation AMC

CB-25

RV1 = Transmit Meter
RV2 = Squelch
RV3 = Modulation AMC
RV4 = Receive Meter

CB-28

RV1 = Receive Meter
RV2 = Transmit Meter
RV3 = Squelch
CT1 = 10.240 Xtal Adj.
RV301= Modulation AMC

REALISTIC RADIOS

TRC-415

RV2 = Transmit
RV3 = Squelch
RV4 = Modulation (AMC)
CT1 = 10.240 Adj.

TRC-422

VR1 = Receive IF Gain
VR2 = Squelch Range
VR5 = Receive Meter
VR6 = Transmit Meter
CT1 = 10.240 Xtal Adj.

VARIABLE ALIGNMENT ADJUSTMENTS

REALISTIC RADIOS

TRC-426

VR1 = Receive Gain
VR3 = Receive Meter
VR5 = Squelch Adj.
VR7 = IF Gain
VR8 = Modulation AMC
VR11= Transmit Meter
CT801= 10.240 Xtal Adj.

TRC-427

VR1 = IF Rx Gain
VR2 = Squelch
VR3 = Receive Meter
VR4 = Transmit Meter
VR5 = Modulation AMC
VC1 = 10.240 Xtal Adj.

TRC-431

VR1 = Receive AGC
VR3 = Squelch Adj.
VR4 = Receive Meter
VR5 = Transmit Meter
VR7 = Modulation AMC
VR8 = Volt. Reg.
CT801= 11.5966 Adj.

TRC-440

VR1 = Receive IF Gain
VR4 = Squelch
VR6 = Receive Meter
CT1 = 10.240 Xtal Adj.
CT2 = 10.695 Xtal Adj.

TRC-454

VR102= RF AGC
VR301= IF Gain Range
VR501= Receive Meter
VR502= Squelch
VR504= Transmit Meter
VR505= SWR Mtr Calibrate
VR702= Modulation AMC

TRC-477

RV1 = Squelch
RV2 = Modulation AMC
C512 = 10.240 Adj.

TRC-479

VR3 = Squelch
TC1 = 10.240 Adj.

TRC-482

RV201 = Receive Meter
RV202 = Transmit Meter
RV203 = Squelch Adj.
C528 = 10.240 Adj.
C625 = FM Xtal Adjust

SEARS RADIOS

934.38080700

RT1 = Rx Mixer Gain
RT2 = Receive Meter
RT301 = Transmit Meter

934.38310700

RT101 = AM IF Gain
RT102 = Am Squelch Adj.
RT103 = SSB Squelch Adj.
RT104 = AM Receive Meter
RT105 = SSB Receive Meter
RT202 = SSB IF Gain
RT203 = Carrier Balance
RT301 = AM TX Power
RT401 = Transmit Meter
RT402 = SSB ALC (Power)
RT403 = RF Driver Bias
RT404 = Final Bias
RT451 = SWR Alert Adj.
RT452 = SWR Cal Adj.
CT202 = 11.275 Adj.
CT203 = 11.272 Adj.
CT701 = 36.960 Adj.
CT702 = 36.975 Adj.

VARIABLE ALIGNMENT ADJUSTMENTS

SUPERSTAR RADIOS

GR

VR1 = AM Receive Meter
VR2 = SSB Receive Meter
VR3 = SSB Squelch
VR4 = AM Squelch
VR5 = FM Deviation
VR8 = Transmit Meter
VR12= SSB ALC
VR13= AM Power
VR14= Modulation AMC

TEABERRY RADIOS

STALKER XV

VR1 = Receive Meter
VR2 = Squelch
VR5 = Carrier Balance
VR6 = Am Transmit Power
VR7 = SSB Power (ALC)
VR8 = Driver Bias 35mA
VR9 = RF Final Bias 45mA
VR10= Transmit Meter
VR12= Modulation Meter

TEK RADIOS

HR-3950

RV1 = Squelch Adjust
RV101 = RX RF Meter
RV202 = Fm Deviation
RV203 = Modulation Adj
RV300 = Am Transmit Power
RV304 = Transmit RF Meter
RV303 = SSB Power Adjust
RV400 = Carrier Balance

TRS CHALLENGER RADIOS

1200

VR1 = Modulation AMC
VR2 = Receive AGC
VR3 = Receive Meter
VR4 = Transmit Meter
VR5 = Squelch Adj.
VR6 = AM POWER Adj.
TC1 = 10.240 Xtal Adj.
VR1B= Voltage Adj.

UNIDEN RADIOS

PRO-510XL

VR1 = Squelch
VR2 = Transmit Meter
VR3 = Receive Meter
VR4 = Receive IF Gain

PRO-520XL

VR1 = Squelch
VR2 = Transmit Meter
VR3 = Receive Meter
VR4 = Receive IF Gain

PRO-535e

VR1 = Squelch
VR2 = Receive Meter
VR3 = Transmit Meter

PRO-538w

VR1 = Squelch
CT352 = Weather Xtal Adj.
VR2 = Receive Meter
VR3 = Transmit Meter

PRO-540e

VR1 = Squelch
VR2 = Receive Meter
VR3 = Transmit Meter
VR4 = SWR Meter Cal.

SCANNER REPAIR TIPS

How many times have you had to send a scanner for repair to the manufacturer or to an authorized repair center for a customer due to lack of repair information. Only to have it returned -- many weeks later -- with their standard bill of 42.50 plus parts and shipping. Yet you know that the problem was something minor or something that you could have repaired had you only known.

Even more frustrating is that if you look at the repair invoice to see what they replaced, the invoice does not match the repair job. In other words what they show replaced on the invoice, *shows no sign of being changed* in your scanner. So you wonder, what was the problem.

Keep in mind that close to 85 percent of *all* electronic problems are of a minor nature. Many of these manufacturers are well aware of problems that keep re-occurring in their products, or even what parts are more likely to fail. However as we all know, they are very reluctant to share this information with you and me. Some of them even go to great lengths to disguise repairs, to hide the obvious. Naturally this helps to put money in their pockets, and ends up costing you, the technician.

Our goal is simple — to supply you with as much repair information as possible to remedy this situation and return these dollars to you.

Uniden BC-140XL & BC-145XL

PROBLEM: Unit does not scan, no audio or Squelch.

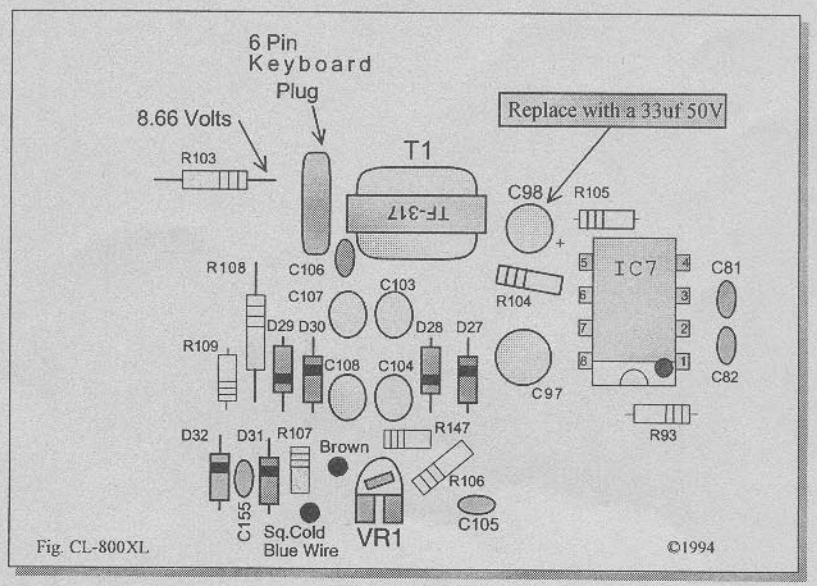
CURE : Locate IC-1 (MC3359P) 18 pin chip. Check the Voltage on Pin 4. This voltage should read about 5.9 Volts. If this voltage is absent or very low the suspect part is C38, a 100uf 10Volt electrolytic capacitor. C38 is located next to FT2, an orange filter with the #SFR 450D on it. Replace C38 with a 100uf 16 Volt or higher capacitor. After replacing C38 you should now have voltage on pin 4 of IC-1 and the unit should now function properly.

Uniden Bearcat 800 XLT

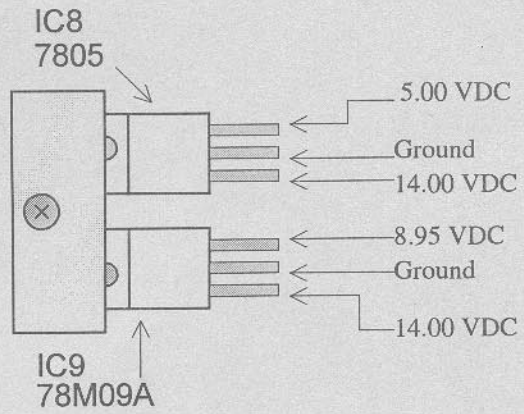
PROBLEM: Unit has no digit display or digits are dim. Unit will not program and has no receive.

CURE : Check for 4.16 Volts on Pin 5 of IC7. If this voltage is off or very low replace the 33uf 35 Volt electrolytic capacitor (C98) located between IC7 and transformer T1 (Labeled TF-317). Replace this capacitor with a 33uf 50 Volt. Be sure that the positive side of this capacitor goes to pin 5 of IC7.

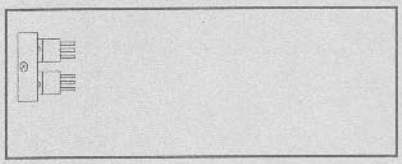
Re-check pin 5 of IC7 for 4.16 volts. If this voltage is still off, T1 may be bad. The negative side of the 33uf 50volt capacitor goes to a winding of T1. The other side of this winding goes to ground. In some cases this winding may be open. Check for continuity of this winding. If open replace T1. Normally just replacing the 33uf capacitor will cure the problem in most units.



Uniden Bearcat 800 XLT
Voltage Pin-Out Information



Main Board Location

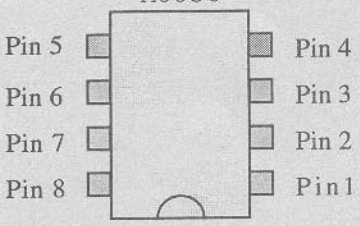


IC8 & IC9 are both voltage regulators which supply the 5.00 vdc & 9.00 vdc for circuit operation. The 7805 regulator seems to fail more often. This should be one of the first areas to check in case of failure.

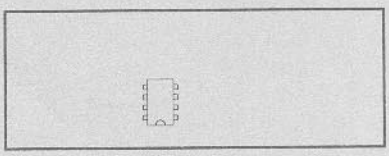
	ORIGINAL PART #	NTE	RCA	RADIO SHACK
IC8	7805	960	SK3245	276-2016
IC9	78M09A			

Fig IC89

IC7 LM 386N-1
M8836



Main Board - IC7 Location



Voltages taken in Manual Mode, Squelch fully clockwise

Pin 1	1.20 volts	Pin 5	4.16 volts
Pin 2	.06 volts	Pin 6	8.35 volts
Pin 3	.05 volts	Pin 7	4.20 volts
Pin 4	.06 volts	Pin 8	1.19 volts

	ORIGINAL PART #	NTE	RCA	RADIO SHACK
IC7	LM386N-1	823	SK9210	276-1731

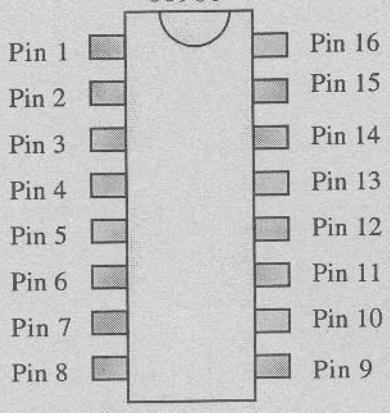
Fig IC7

Uniden Bearcat 800 XLT
Voltage Pin-Out Information

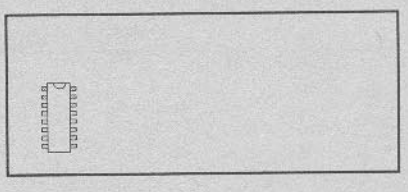
IC3 AUDIO IC CHIP

TDA 1905

88906



Main Board - IC3 Location



Pin #	Pin Function	
1	Output	9 ←
2	VS	10
3	Botstrap	11
4	Threshold	12
5	Muting	13
6	Inverted Input	14
7	SVR	15
8	Non Invert.Input	16 ←

Ground

Man. Mode,Unsquelched

Pin 1	7.34 volts	Pin 9 ←
Pin 2	14.18 volts	Pin 10
Pin 3	12.72 volts	Pin 11
Pin 4	0.00 volts	Pin 12
Pin 5	0.00 volts	Pin 13
Pin 6	2.80 volts	Pin 14
Pin 7	2.77 volts	Pin 15
Pin 8	2.75 volts	Pin 16 ←

0.00 volts

Pins 9 thru 16 tied to ground.

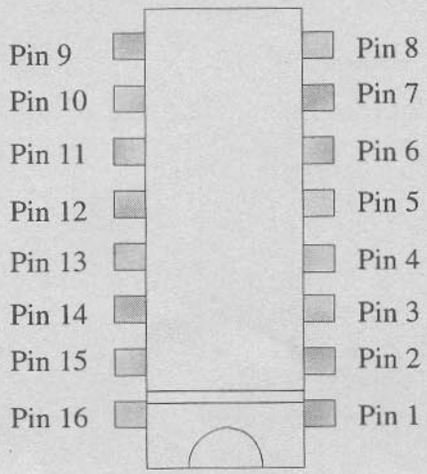
	ORIGINAL PART #	NTE	RCA	RADIO SHACK
IC3	TDA1905			

Fig IC3

NOTE: *At the present time there is no substitute available for the TDA1905 IC. We left the substitute area blank in for you to fill when substitute replacements are available.....*

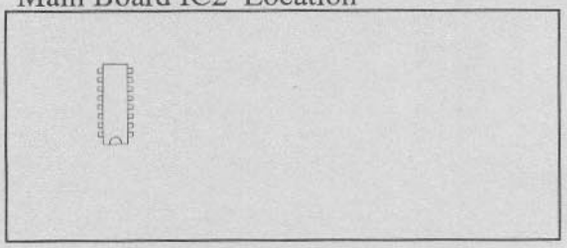
Uniden Bearcat 800 XLT
Voltage Pin-Out Information

IC2 - AM IF CONVERTOR
CA 3088E



Pin 1 = Convertor Input Bypass
Pin 2 = Convertor Input
Pin 3 = Convertor Output
Pin 4 = 1st If Amp Input
Pin 5 = Substrate Ground
Pin 6 = 1st If Output
Pin 7 = 2nd IF Feedback
Pin 8 = 2nd IF Amp Input
Pin 9 = To Detector Filter & Audio
Pin 10= Vcc
Pin 11= AGC Filter
Pin 12= To Tuning Meter
Pin 13= AGC Output
Pin 14= From Detector Filter
Pin 15= Audio Output
Pin 16= Vcc

Main Board IC2 Location



	Manual Mode	Scan Mode
Pin 1	00.00 Volts	00.00 Volts
Pin 2	00.81 Volts	00.81 Volts
Pin 3	00.31 Volts	00.31 Volts
Pin 4	00.65 Volts	00.63 Volts
Pin 5	00.00 Volts	00.00 Volts
Pin 6	07.85 Volts	07.85 Volts
Pin 7	01.38 Volts	01.38 Volts
Pin 8	01.37 Volts	01.37 Volts
Pin 9	00.80 Volts	00.81 Volts
Pin 10	05.40 Volts	05.40 Volts
Pin 11	00.64 Volts	00.64 Volts
Pin 12	00.36 Volts	00.36 Volts
Pin 13	05.38 Volts	05.38 Volts
Pin 14	00.54 Volts	Fluctuating
Pin 15	00.07 Volts	Fluctuating
Pin 16	00.30 Volts	Fluctuating

	ORIGINAL PART #	NTE	RCA	RADIO SHACK
IC2	CA 3088E	787	SK-3146/787	

Fig. IC2