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C.B. TUNE-UP MANUAL

MASTER EDITION



Volume III

Covers standard radio tune-up information

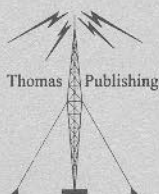
Channel modifications

Repair tips

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TABLE of CONTENTS

| | |
|---|--|
| <p>Radio Tune-Up & Peaking Section..... 4</p> <p>Galaxy Jupiter..... 4</p> <p>General Electric 3-5809B & 3-5809C..... 4</p> <p>Midland 77-202B..... 4</p> <p>Realistic TRC-415..... 5</p> <p>Realistic TRC-477..... 5</p> <p>Realistic TRC-479..... 5</p> <p>Realistic TRC-482..... 5</p> <p>Realistic TRC-492..... 5</p> <p>Sharp CB-2460..... 5</p> <p>Superstar GR..... 5</p> <p>TEK HR-3950..... 5</p> <p>Unden PRO-538w..... 5</p> <p>USACO U900CB..... 5</p> <p>Corrections for Volume 1..... 5</p> <p>Improving Base Station Performance..... 6</p> <p>DAK Mark X Hi/Lo Power Modification..... 7</p> <p>DAK Mark X Channel Conversion..... 9</p> <p>DAK Mark X Channel Chart..... 11</p> <p>MB8719 Channel Conversion w/o Xtal Change</p> <p>Cobra 142GTL..... 12</p> <p>Teaberry Stalker XV..... 12</p> <p>Uniden Washington..... 12</p> <p>President P400..... 12</p> <p>Conversion Channel Chart..... 13</p> <p>Super Slide Conversions for:</p> <p>Cobra 142GTL..... 14</p> <p>Teaberry Stalker XV..... 14</p> <p>Uniden Washington..... 14</p> <p>President P400..... 14</p> <p>Cobra 2000 GTL Rotary Switch Channel Conversion..... 16</p> <p>Cobra 2000 GTL Rotary Switch Channel Chart..... 17</p> <p>TRAM D80 Channel Conversion..... 18</p> <p>TRAM D80 Channel Chart..... 19</p> <p>5080 PLL Chip Channel Conversions for:</p> <p>Cobra 32XLR..... 20</p> <p>Cobra 86XLR..... 20</p> <p>Tram D42..... 20</p> <p>5080 PLL Conversion Channel Chart..... 21</p> <p>Correction</p> <p>Clarifier Modification for 858 SSB Chassis Vol. II p20..... 21</p> <p>upD 861 Channel Conversions for:</p> <p>Realistic TRC-431 Channel Conversion..... 22</p> <p>Realistic TRC-431 Channel Chart..... 23</p> <p>GALAXY SATURN</p> <p>Eliminating Frequency Counter Noise..... 24</p> <p>Page 25 Correction for Volume II Master Edition..... 25</p> <p>SUPER-TALK™ w/Variable Power..... 26</p> <p>Uniden Washington Installation Instructions..... 26</p> <p>General SUPER-TALK™ Installation Instructions..... 27</p> <p>Realistic TRC-469 Installation Instructions..... 27</p> <p>President Honest ABE Installation Instructions..... 28</p> <p>Teaberry "T" Bear Installation Instructions..... 28</p> | <p>Uniden HR2510 External Speaker Adapter..... 29</p> <p>President LINCOLN External Speaker Adapter..... 29</p> <p>Talk Back Speaker Conversion for Export Radios..... 30</p> <p>Galaxy Jupiter Talk Back Conversion..... 30</p> <p>Galaxy II Talk Back Conversion..... 30</p> <p>Exports using the EPT3600013B Circuit Boards..... 30</p> <p>Galaxy Jupiter Channel Chart..... 31</p> <p>Robyn 520D Alignment</p> <p>Synthesizer Alignment Procedures..... 32</p> <p>Receiver Alignment Procedures..... 32</p> <p>Transmit Alignment Procedure..... 33</p> <p>Variable Alignment Adjustments Section..... 34</p> <p>Cobra 19PLUS..... 34</p> <p>Cobra 31PLUS..... 34</p> <p>Cobra 33PLUS..... 34</p> <p>Cobra 25LTD Classic..... 34</p> <p>Cobra 29LTD Classic..... 34</p> <p>Cobra 78X..... 34</p> <p>Cobra 86XLR..... 34</p> <p>GE. 3-5809B & 3-5809C..... 34</p> <p>J C Penny 981-6218..... 34</p> <p>Midland 76-860..... 35</p> <p>Midland 77-094..... 35</p> <p>Midland 77-104..... 35</p> <p>Midland 77-106..... 35</p> <p>Midland 77-116..... 35</p> <p>Midland 77-202B..... 35</p> <p>Midland 78-574..... 35</p> <p>Midland 78-999..... 35</p> <p>Midland 5001..... 36</p> <p>Palomar SSB-500..... 36</p> <p>Pearse Simpson Tiger 40A..... 36</p> <p>Pyramid CB-22..... 36</p> <p>Pyramid CB-24..... 36</p> <p>Pyramid CB-25..... 36</p> <p>Pyramid CB-28..... 36</p> <p>Realistic TRC-415..... 36</p> <p>Realistic TRC-422..... 36</p> <p>Realistic TRC-426..... 37</p> <p>Realistic TRC-427..... 37</p> <p>Realistic TRC-431..... 37</p> <p>Realistic TRC-440..... 37</p> <p>Realistic TRC-454..... 37</p> <p>Realistic TRC-477..... 37</p> <p>Realistic TRC-479..... 37</p> <p>Realistic TRC-482..... 37</p> <p>Microphone Wiring Section..... 39</p> <p>Scanner Repair Tips..... 46</p> <p>Uniden Bearcat 140XL..... 47</p> <p>Uniden Bearcat 145XL..... 47</p> <p>Uniden Bearcat 800XLT..... 47</p> <p>Uniden Bearcat 800XLT IC Voltages & Pin-Out..... 48</p> <p>INDEX (Vol 1 through Vol 6)..... 53</p> |
|---|--|



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CB TUNE-UP MANUAL Master Edition Vol. 3

FIRST EDITION
FIRST REVISED PRINTING - MAY 1992
SECOND REVISED PRINTING - JANUARY 1995

CB TUNE-UP MANUAL MASTER EDITION VOLUME III

Printed in the United States of America

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Paris, IL 61944

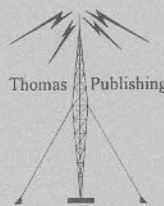
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VOLUME III

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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.

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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' ← | 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 $2200\mu f$ to $3300\mu f$ and the voltage range is from 25 to 35 volts. Just by replacing the standard electrolytic with a $6800\mu f$ 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

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

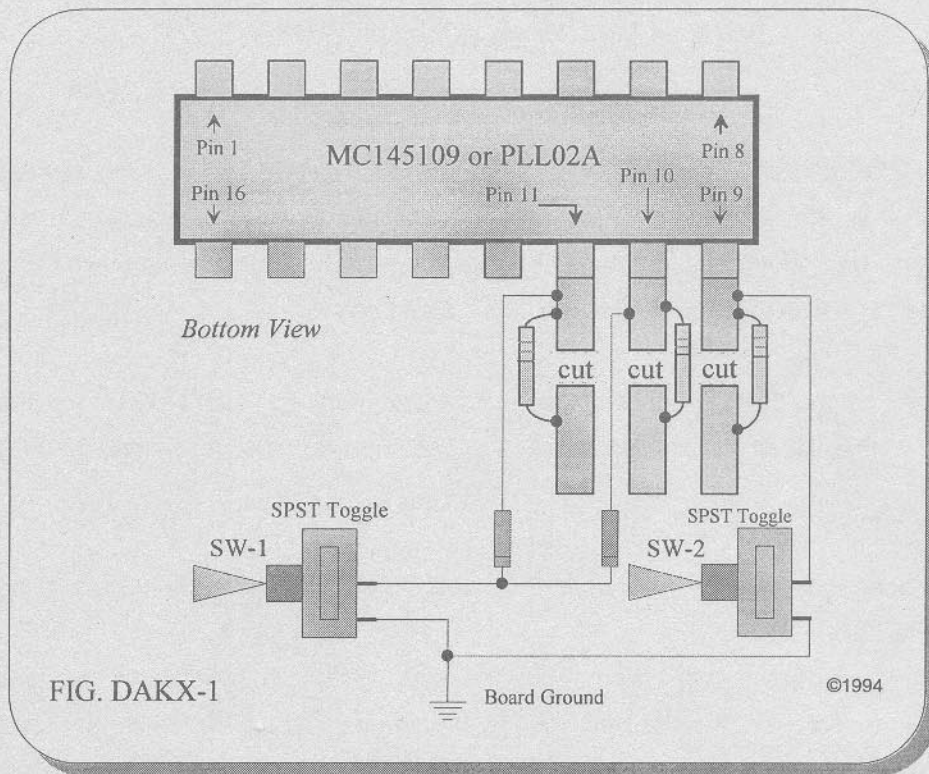


FIG. DAKX-1

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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-2) 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 T4¹ 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

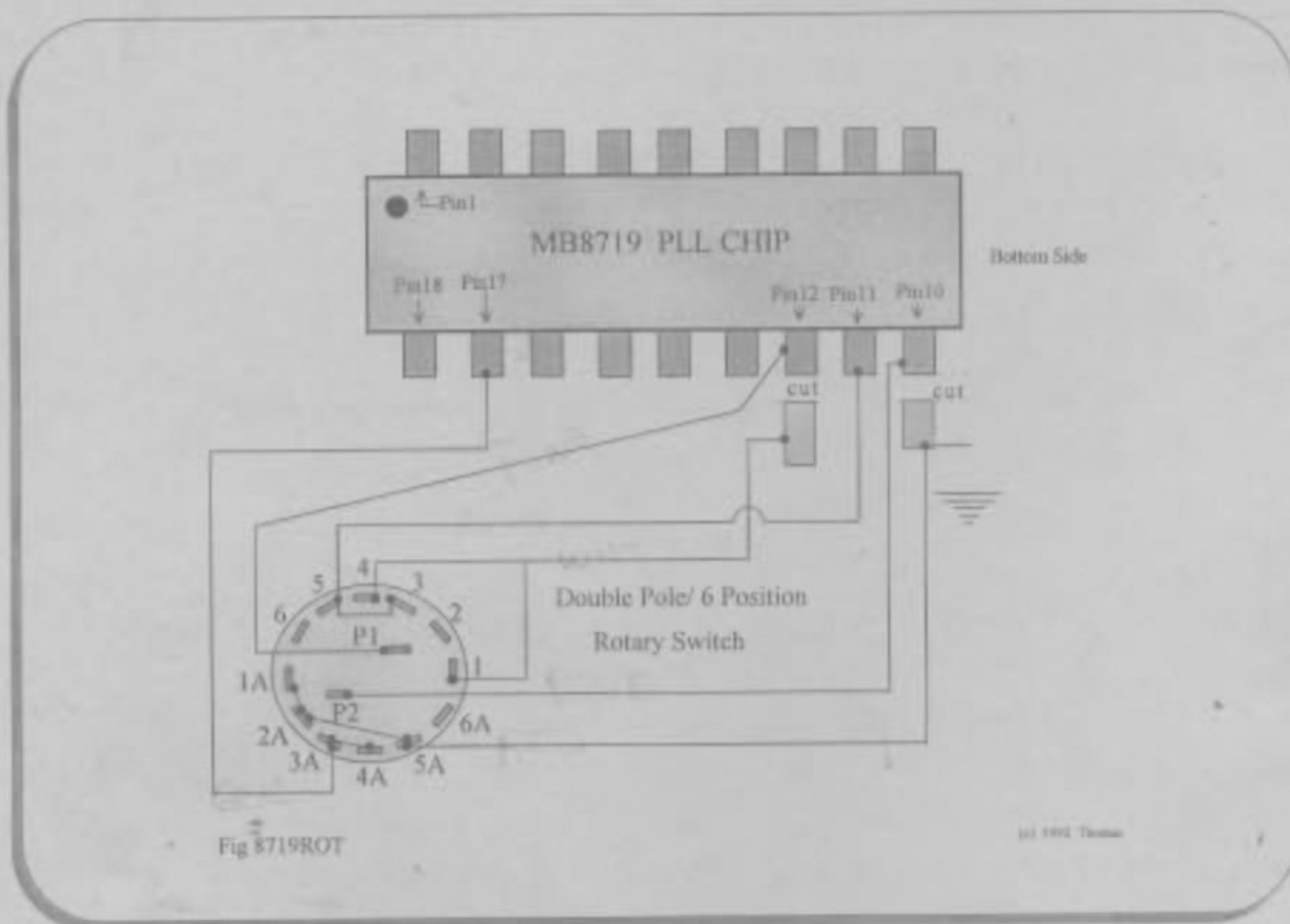
Position #2 = SW-1 UP and SW-2 DOWN =

| | | | |
|------------|------------|-------------|-------------|
| 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**



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 =

3 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

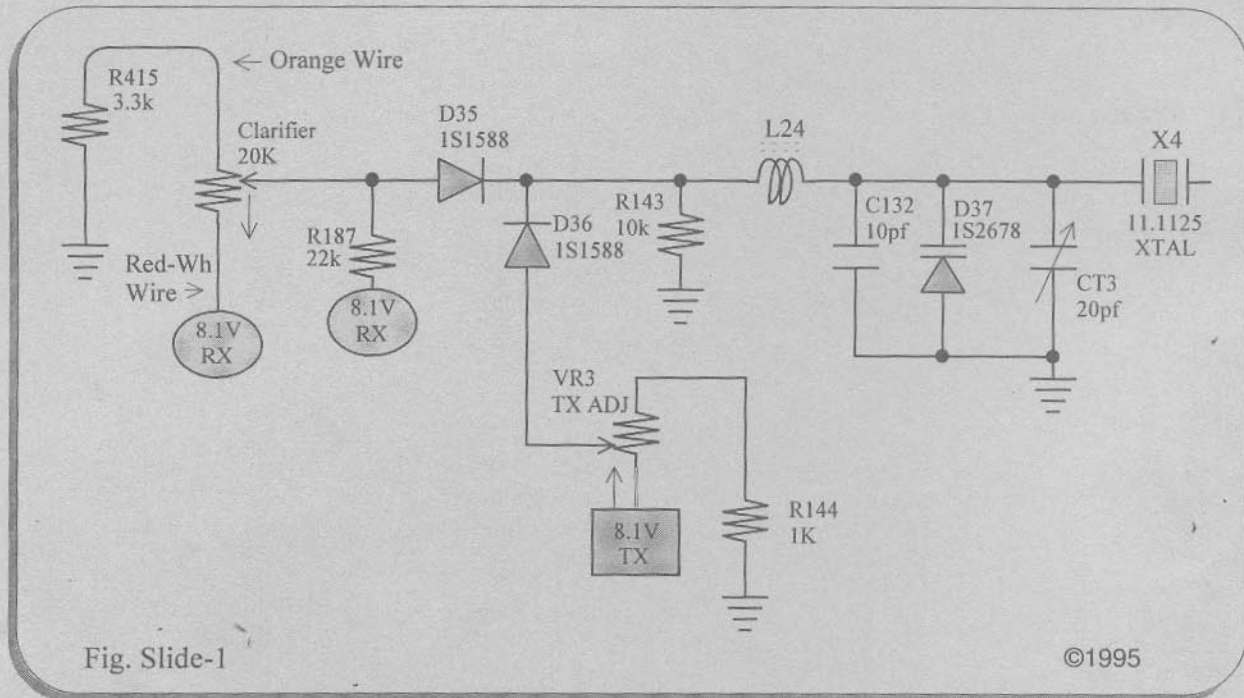


Fig. Slide-1

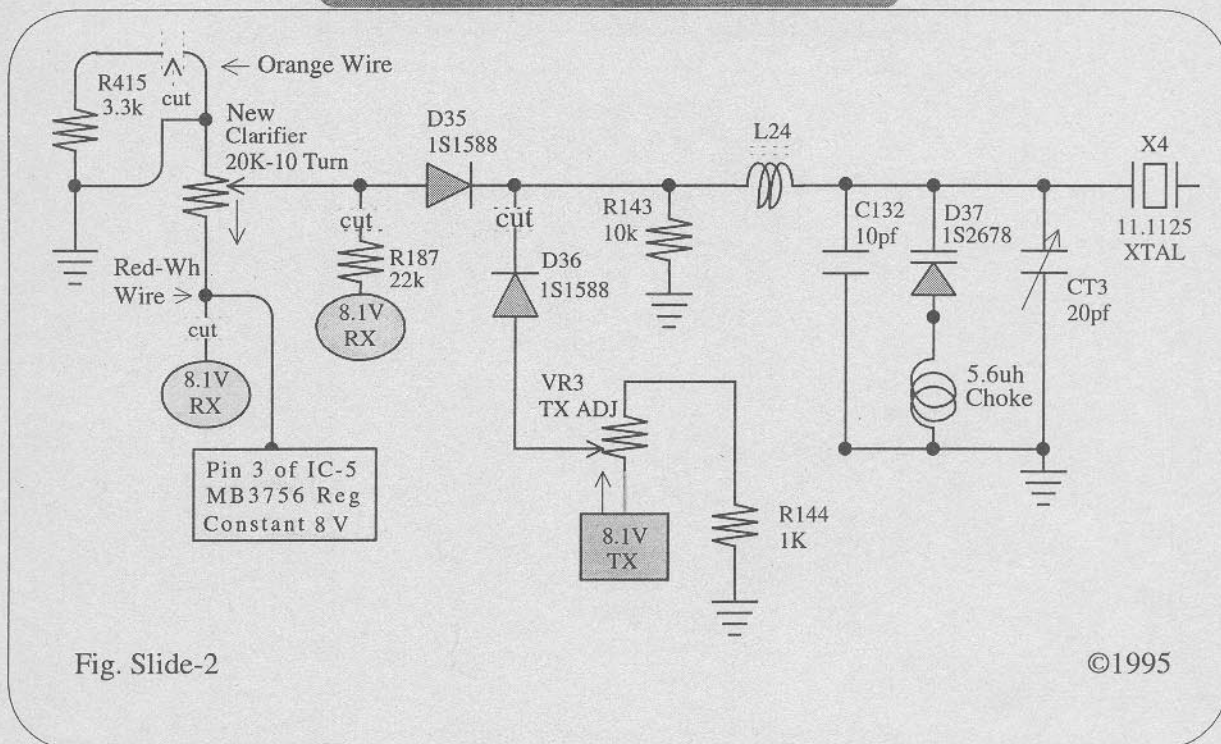
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Installation Instructions

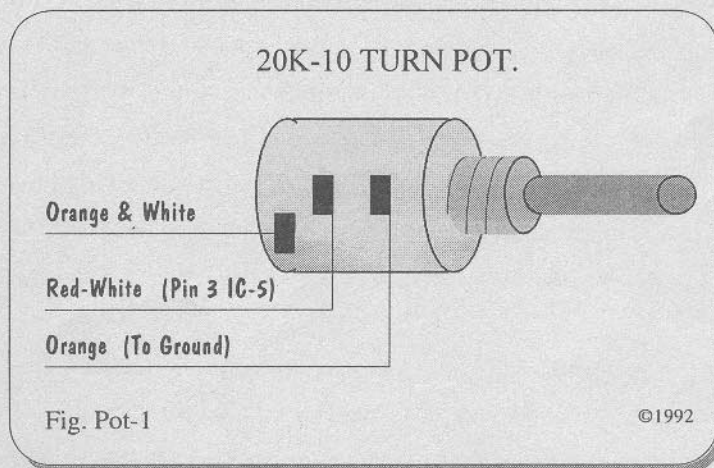
The above diagram above shows the stock clarifier circuit as the above Radios come from the factory. In all cases once this circuit has been modified, the stock clarifier control is just not adequate for all practical purposes. Not only is it difficult to clarify, the unit will also tend to drift off 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 μ h choke in series with the varactor diode in order to increase clarifier slide range.

SUPER SLIDE

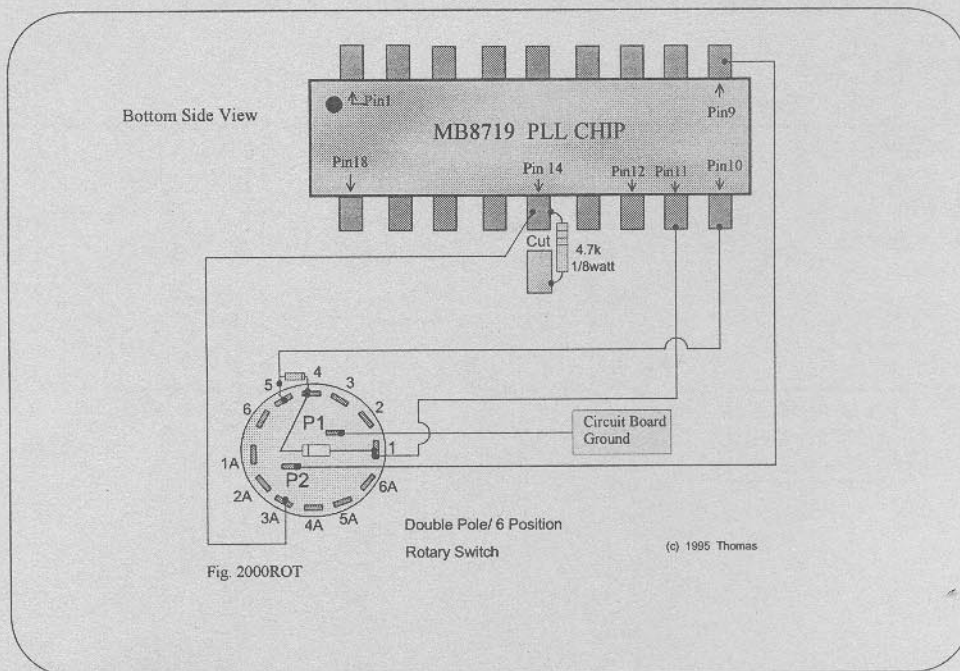


20K-10 Turn Pot Diagram



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



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

POSITION #2 = Normal Channels

POSITION #3 =

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

POSITION #4 =

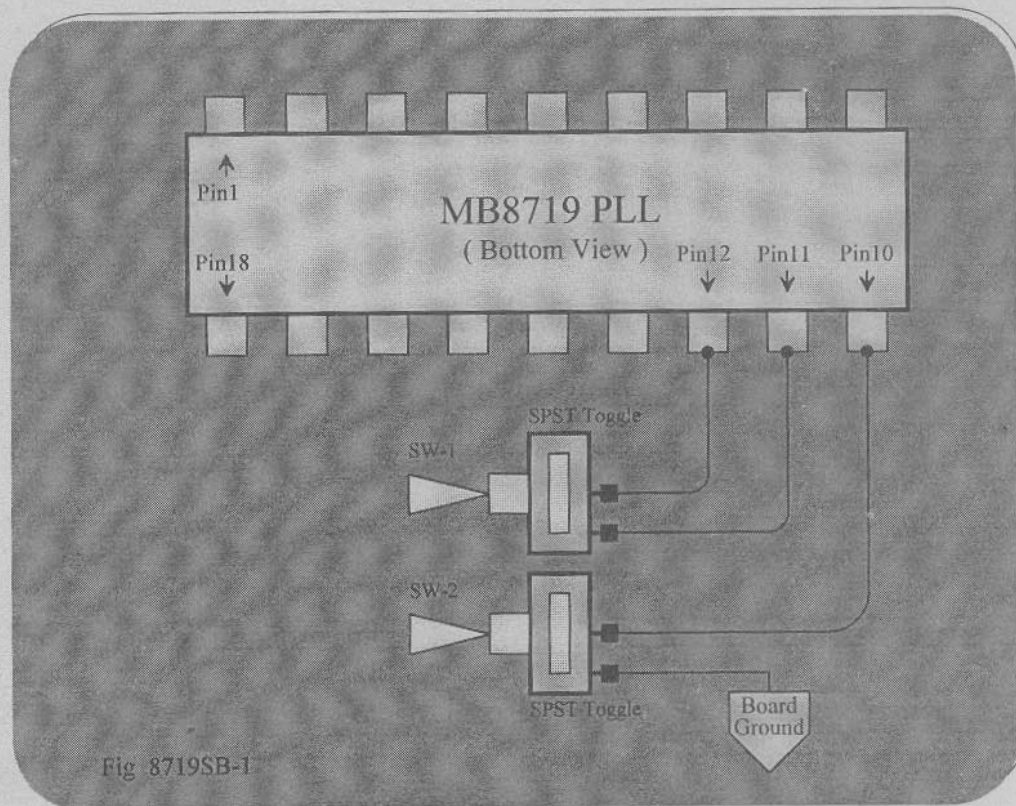
| | | | |
|-------------|-------------|-------------|-------------|
| 15 = 27.455 | 22 = 27.545 | 29 = 27.615 | 36 = 27.685 |
| 16 = 27.465 | 23 = 27.575 | 30 = 27.625 | 37 = 27.695 |
| 17 = 27.475 | 24 = 27.555 | 31 = 27.635 | 38 = 27.705 |
| 18 = 27.495 | 25 = 27.565 | 32 = 27.645 | 39 = 27.715 |
|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

POSITION #5 =

| | | | |
|-------------|-------------|-------------|-------------|
| 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 |

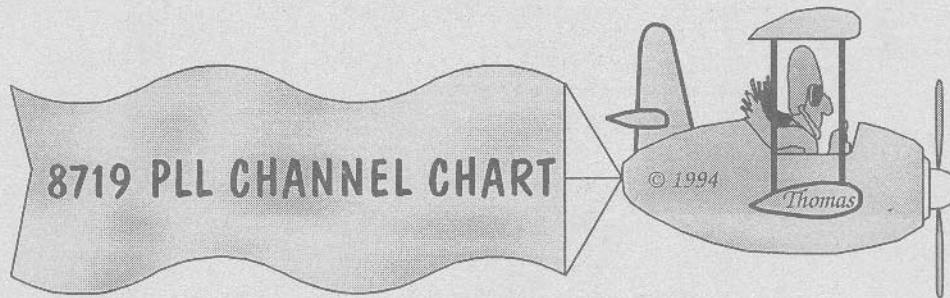
POSITION #6 = Normal Channels

TRAM D80 CHANNEL CONVERSION



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

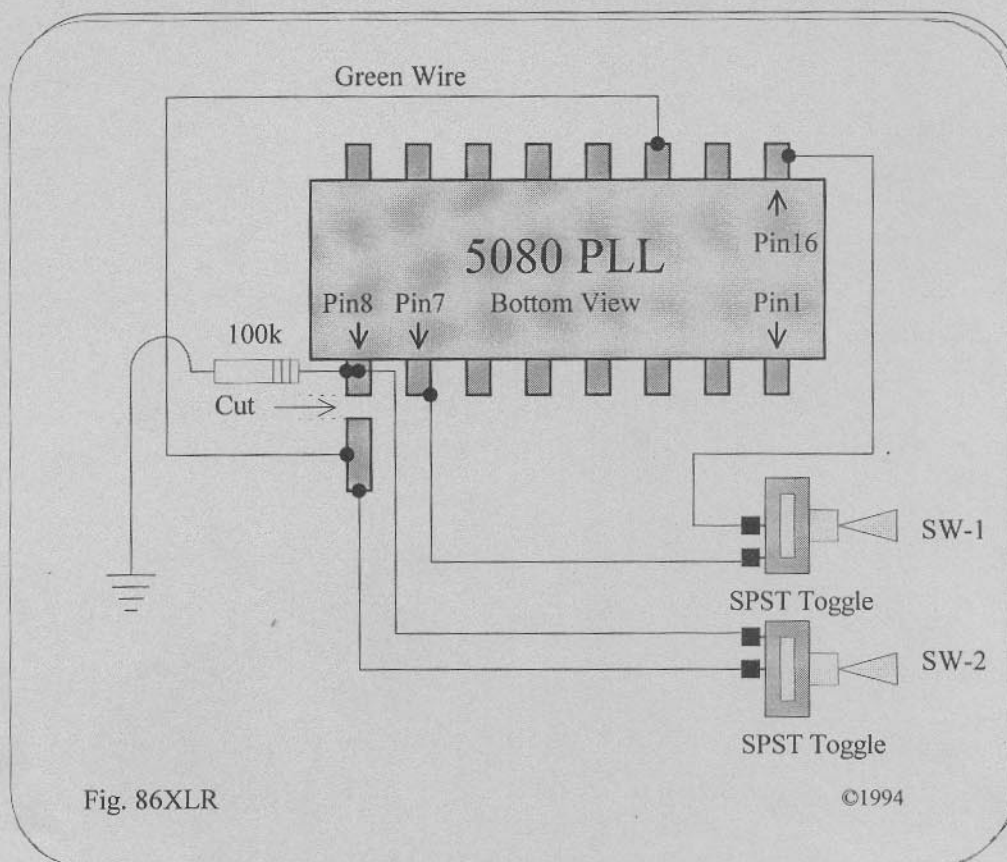
POSITION #3 SW-1 UP and SW-2 UP =

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

POSITION #4 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 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

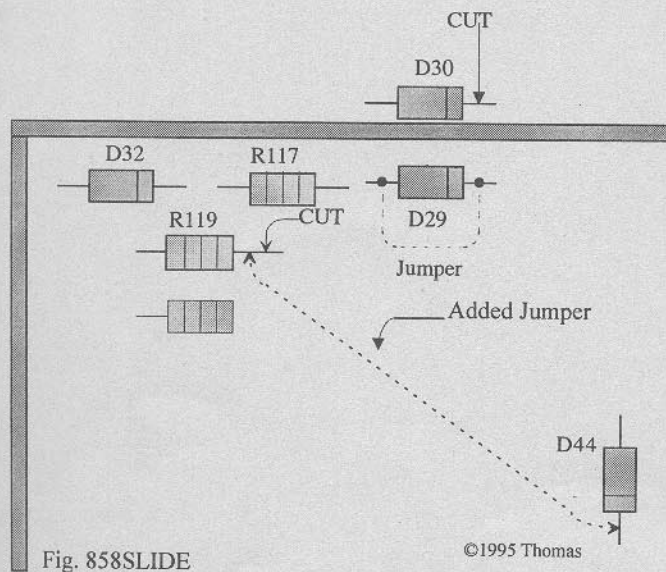


Fig. 858SLIDE

©1995 Thomas

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

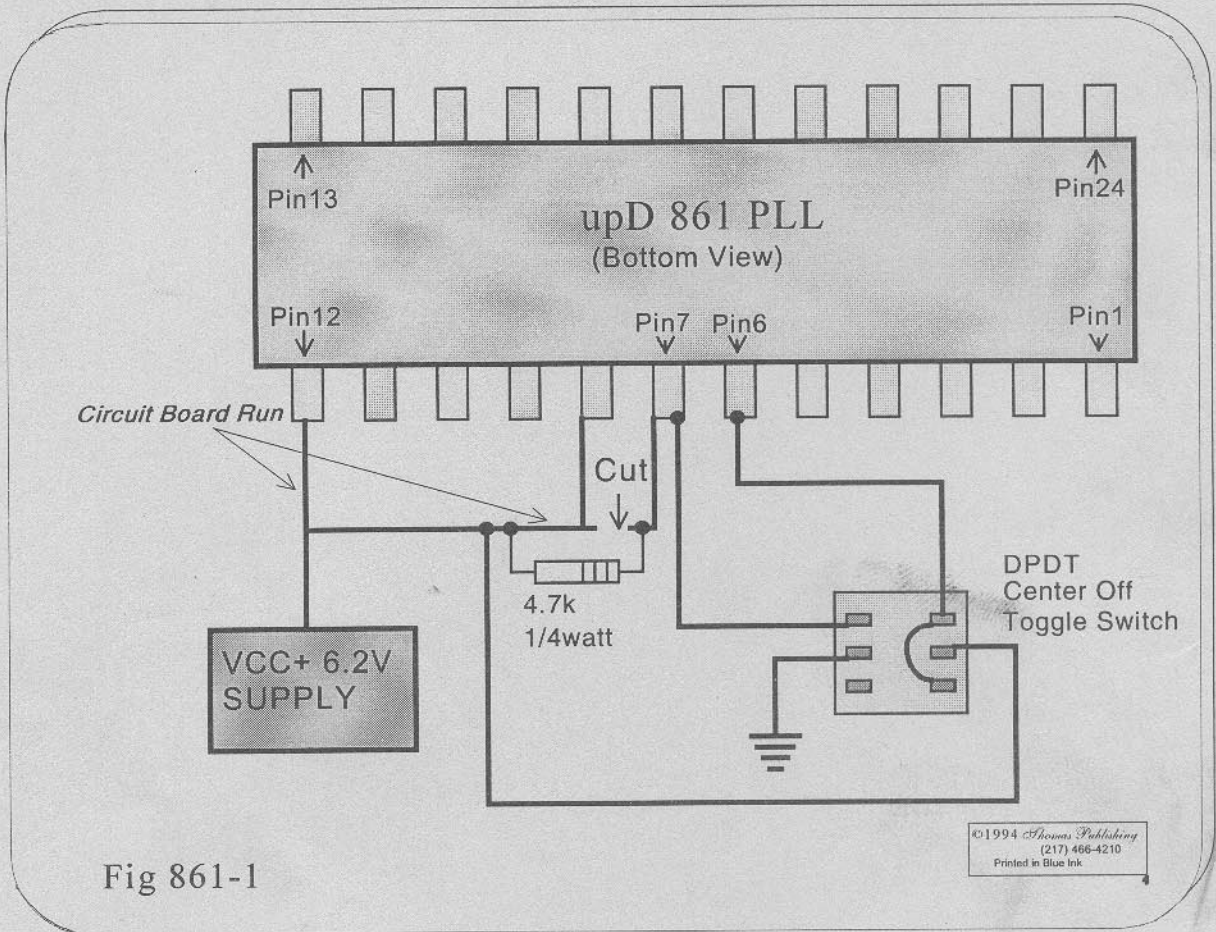
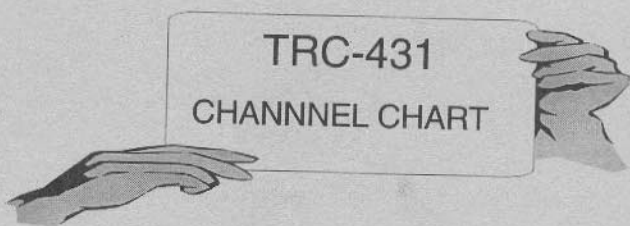


Fig 861-1

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.



TRC-431
CHANNEL CHART

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

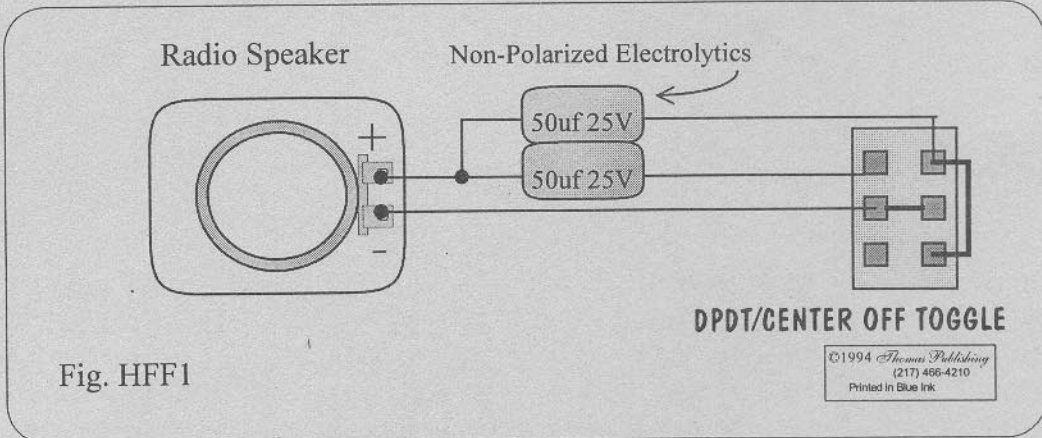
POSITION #3 SWITCH UP

| | | | |
|-------------|-------------|-------------|-------------|
| 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.

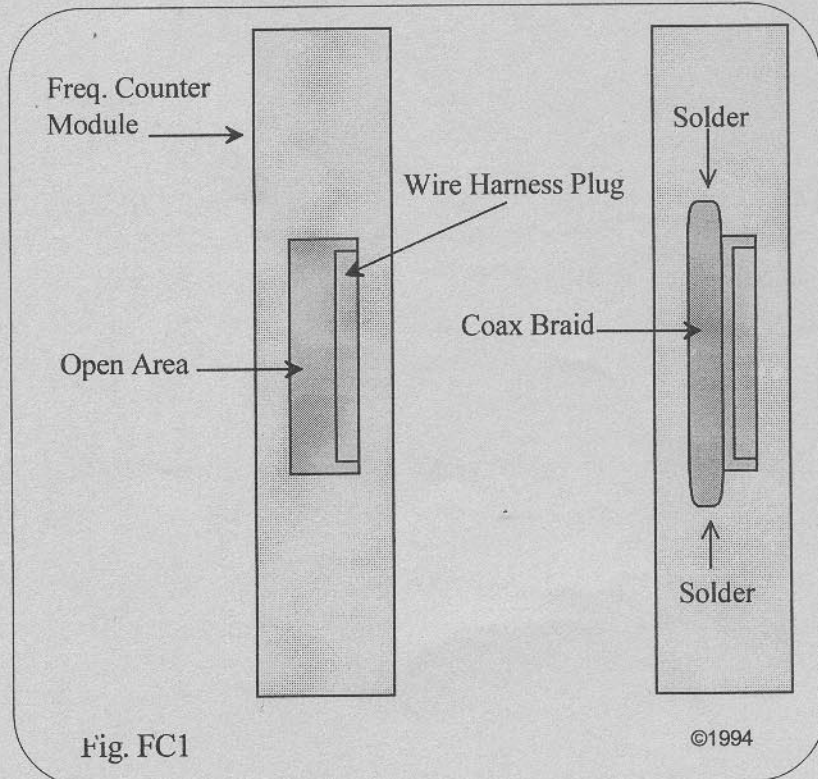
GALAXY SATURN

Eliminating Frequency Counter Noise



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.



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.

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.

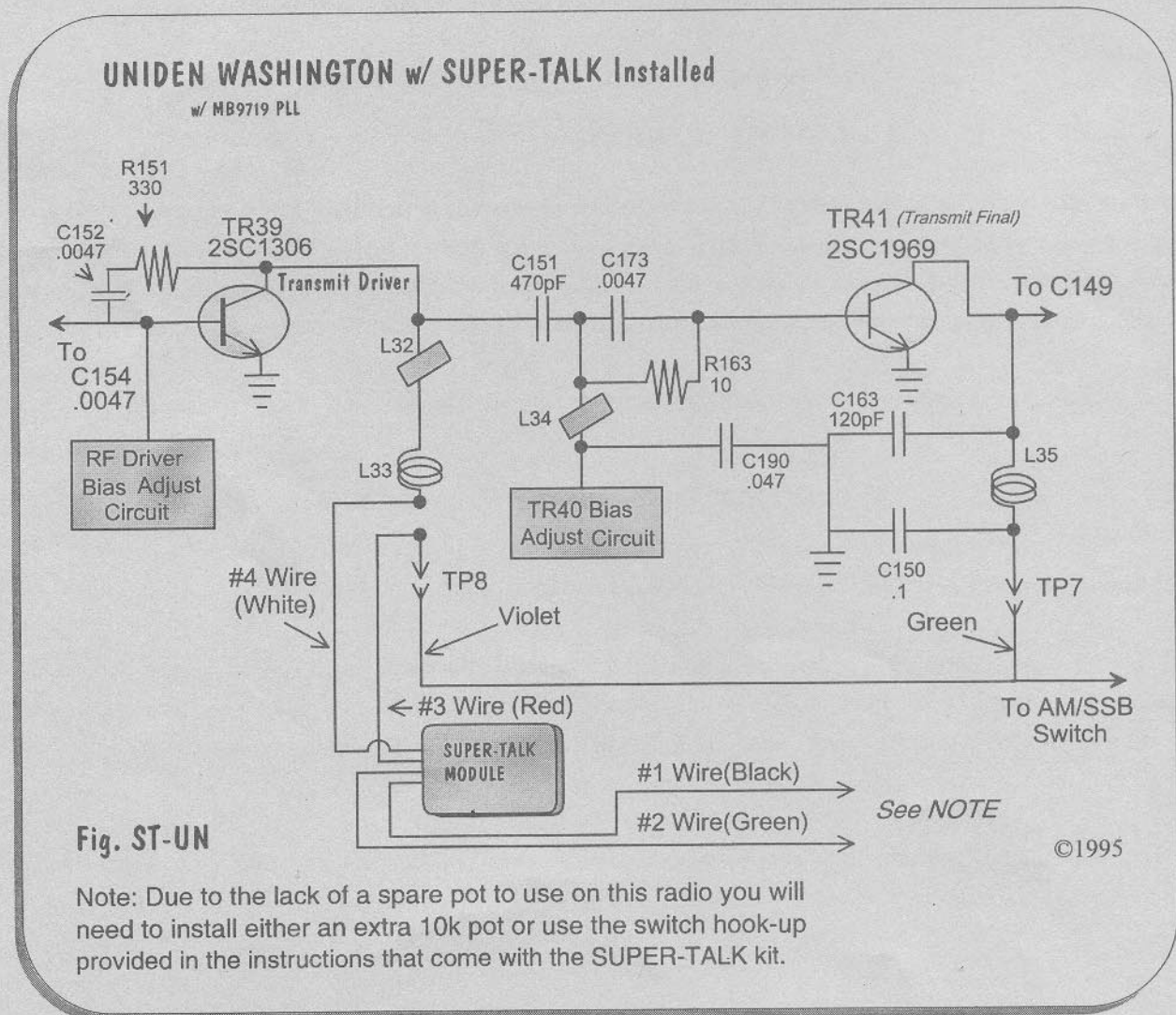
NEW PRODUCT RELEASE

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.

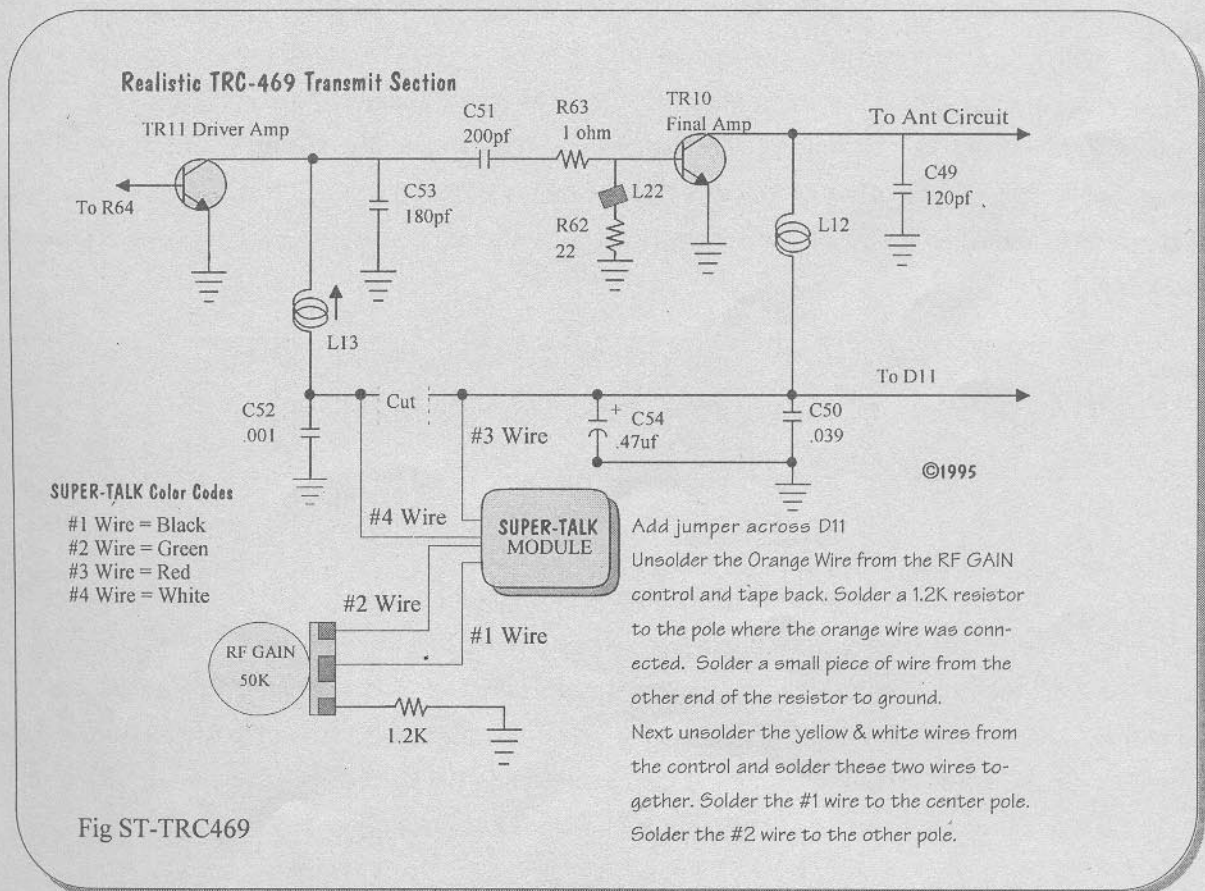
The **SUPER-TALK™** w/ Variable Power is available from your local dealer or distributor. Try it, you'll like it.



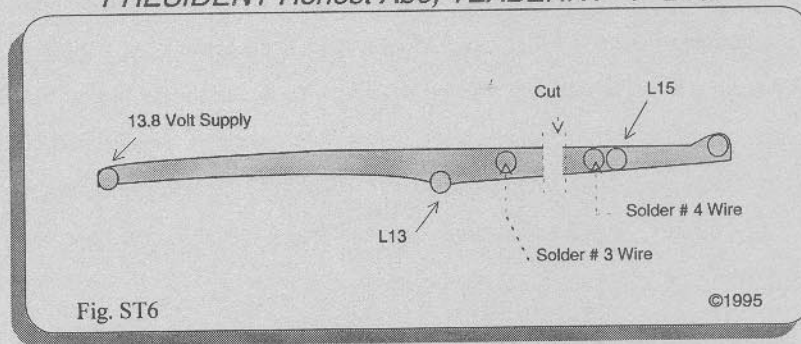
GENERAL INSTALLATION INSTRUCTIONS

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.



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



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)

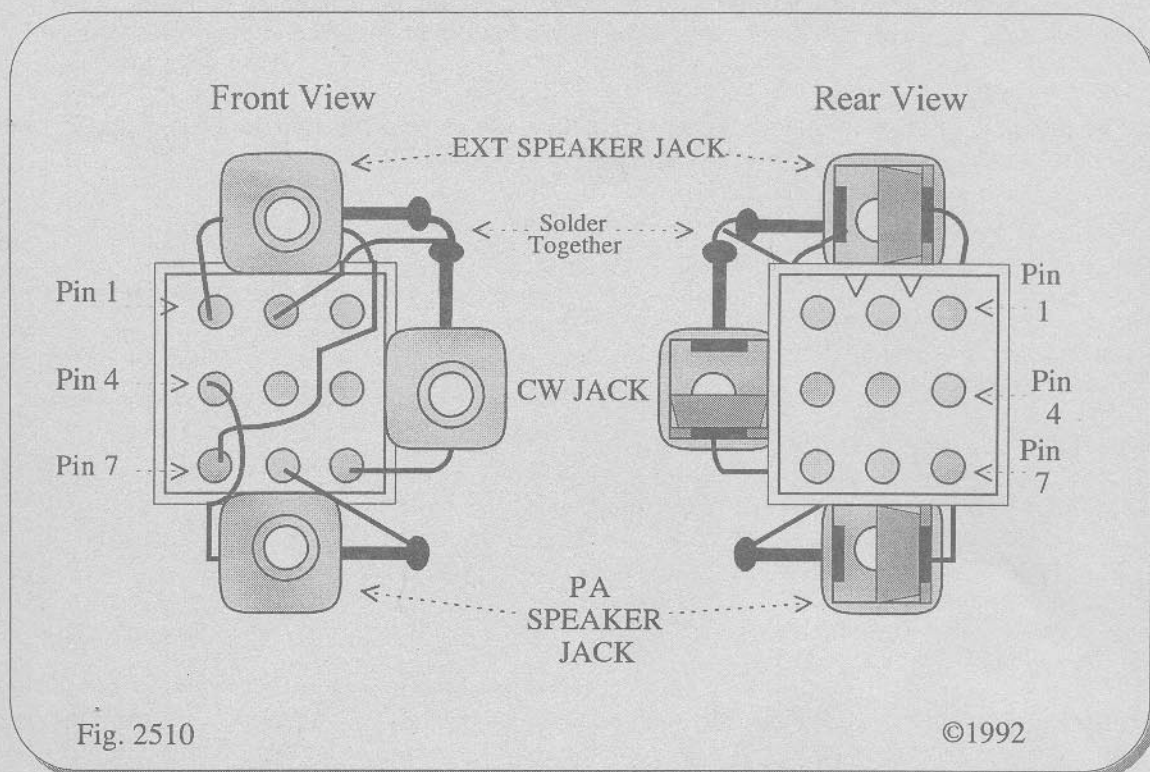
2. Locate the orange wire soldered to the bottom pole (pole nearest to the circuit board) of the RF Gain control. Unsolder or cut this wire loose and tape back. Solder one end the 1.2K resistor to this pole. Solder the other end of the 1.2K resistor to the circuit board ground. Then unsolder or cut loose 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.

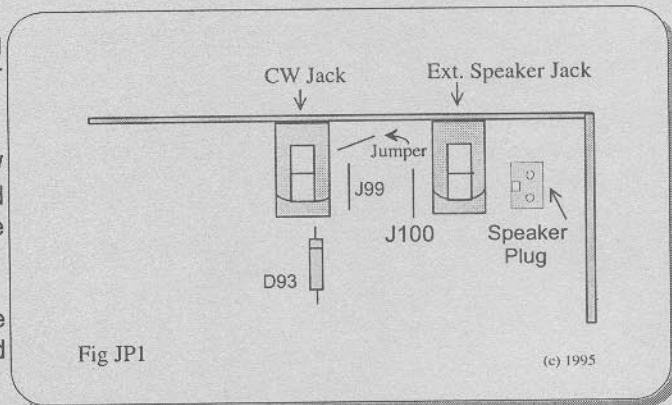
Instructions

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).

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.

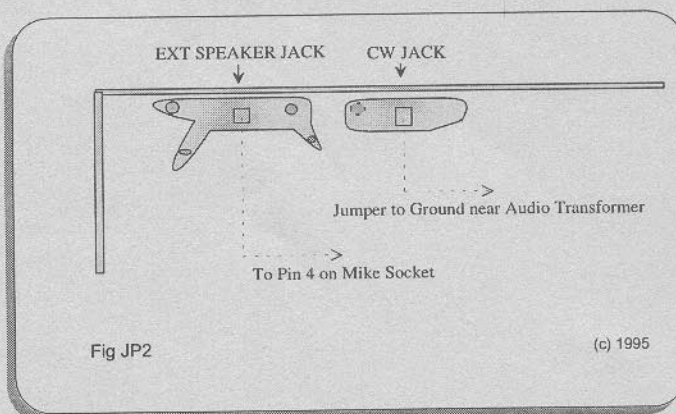


5. Now turn the unit over and locate the lands as pictured in Fig JP2.

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 | | | INSTRUCTIONS |
|---------------------------------------|----------------|------|----------------|---|
| | Channel | Mode | Clarifier Pos. | |
| 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 = Squelch¹

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 Bias¹
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 Bias¹
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 VR4 = AM Squelch VR12= SSB ALC
VR2 = SSB Receive Meter VR5 = FM Deviation VR13= AM Power
VR3 = SSB Squelch VR8 = Transmit Meter VR14= Modulation AMC

TEABERRY RADIOS

STALKER XV

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

TEK RADIOS

HR-3950

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

TRS CHALLENGER RADIOS

1200

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

UNIDEN RADIOS

PRO-510XL

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

PRO-520XL

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

PRO-535e

VR1 = Squelch VR2 = Receive Meter VR3 = Transmit Meter

PRO-538w

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

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.

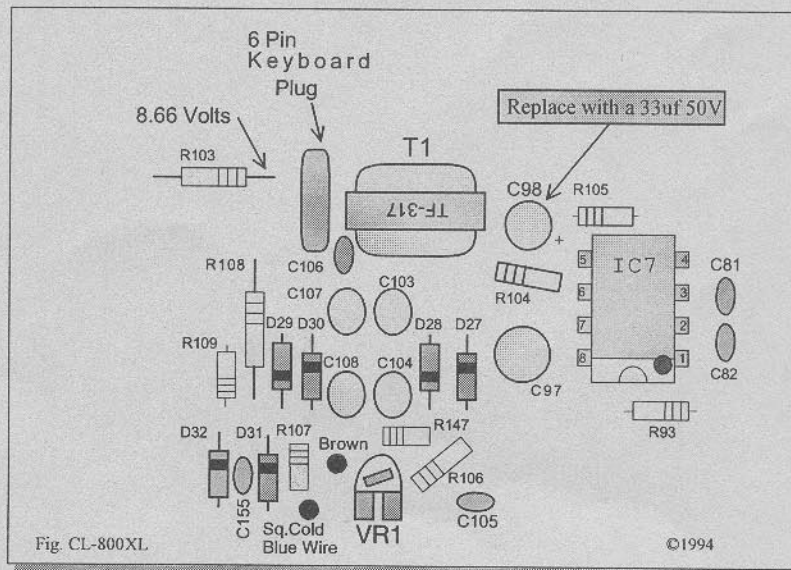
CURE : Locate IC-1 (MC3359P) 18 pin chip. Check the Voltage on Pin 4. This voltage should read about 5.9 Volts. If this voltage is absent or very low the suspect part is C38, a 100uf 10Volt electrolytic capacitor. C38 is located next to FT2, an orange filter with the #SFR 450D on it. Replace C38 with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

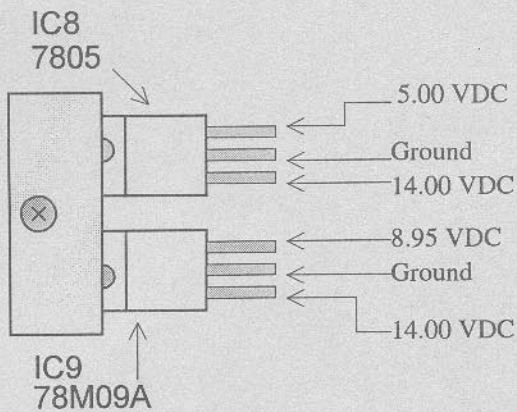
PROBLEM: Unit has no digit display or digits are dim. Unit will not program and has no receive.

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.

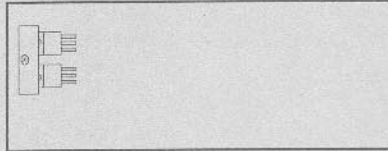
Re-check pin 5 of IC7 for 4.16 volts. If this voltage is still off, T1 may be bad. The negative side of the 33uf 50volt capacitor goes to a winding of T1. The other side of this winding goes to ground. In some cases this winding may be open. Check for continuity of this winding. If open replace T1. Normally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



Uniden Bearcat 800 XLT Voltage Pin-Out Information



Main Board Location

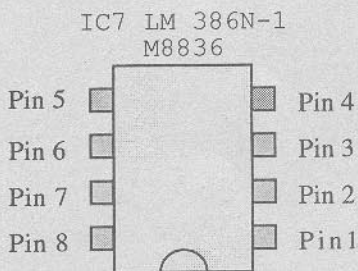


IC8 & IC9 are both voltage regulators which supply the 5.00 vdc & 9.00 vdc for circuit operation. The 7805 regulator seems to fail more often. This should be one of the first areas to check in case of failure.

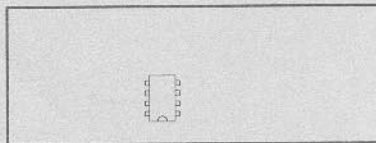
| | ORIGINAL PART # | NTE | RCA | RADIO SHACK |
|-----|-----------------|-----|--------|-------------|
| IC8 | 7805 | 960 | SK3245 | 276-2016 |
| IC9 | 78M09A | | | |

Fig IC89

©1992



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 |

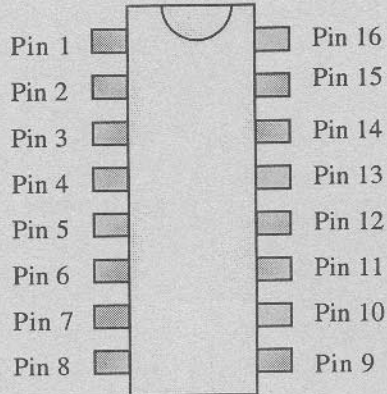
Fig IC7

©1992

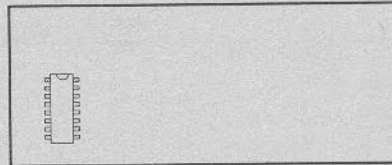
Uniden Bearcat 800 XLT Voltage Pin-Out Information

IC3 AUDIO IC CHIP

TDA 1905
88906



Main Board - IC3 Location



Pin # Pin Function

| 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, Unsqelched

| | |
|-------|-------------|
| Pin 1 | 7.34 volts |
| Pin 2 | 14.18 volts |
| Pin 3 | 12.72 volts |
| Pin 4 | 0.00 volts |
| Pin 5 | 0.00 volts |
| Pin 6 | 2.80 volts |
| Pin 7 | 2.77 volts |
| Pin 8 | 2.75 volts |

| | |
|--------|---|
| Pin 9 | ← |
| Pin 10 | |
| Pin 11 | |
| Pin 12 | |
| Pin 13 | |
| Pin 14 | |
| Pin 15 | |
| Pin 16 | ← |

0.00 volts

Pins 9 thru 16
tied to ground.

| | ORIGINAL PART # | NTE | RCA | RADIO SHACK |
|-----|-----------------|-----|-----|-------------|
| IC3 | TDA1905 | | | |

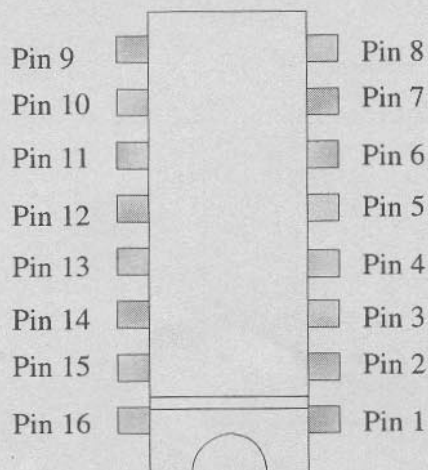
Fig IC3

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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.....

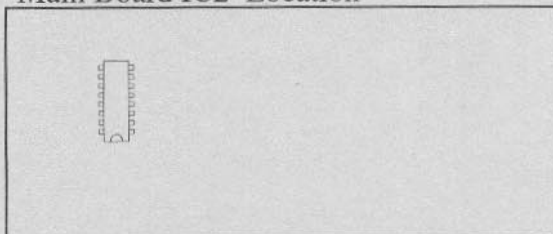
Uniden Bearcat 800 XLT Voltage Pin-Out Information

IC2 - AM IF CONVERTOR CA 3088E



- Pin 1 = Converter Input Bypass
- Pin 2 = Converter Input
- Pin 3 = Converter 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

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