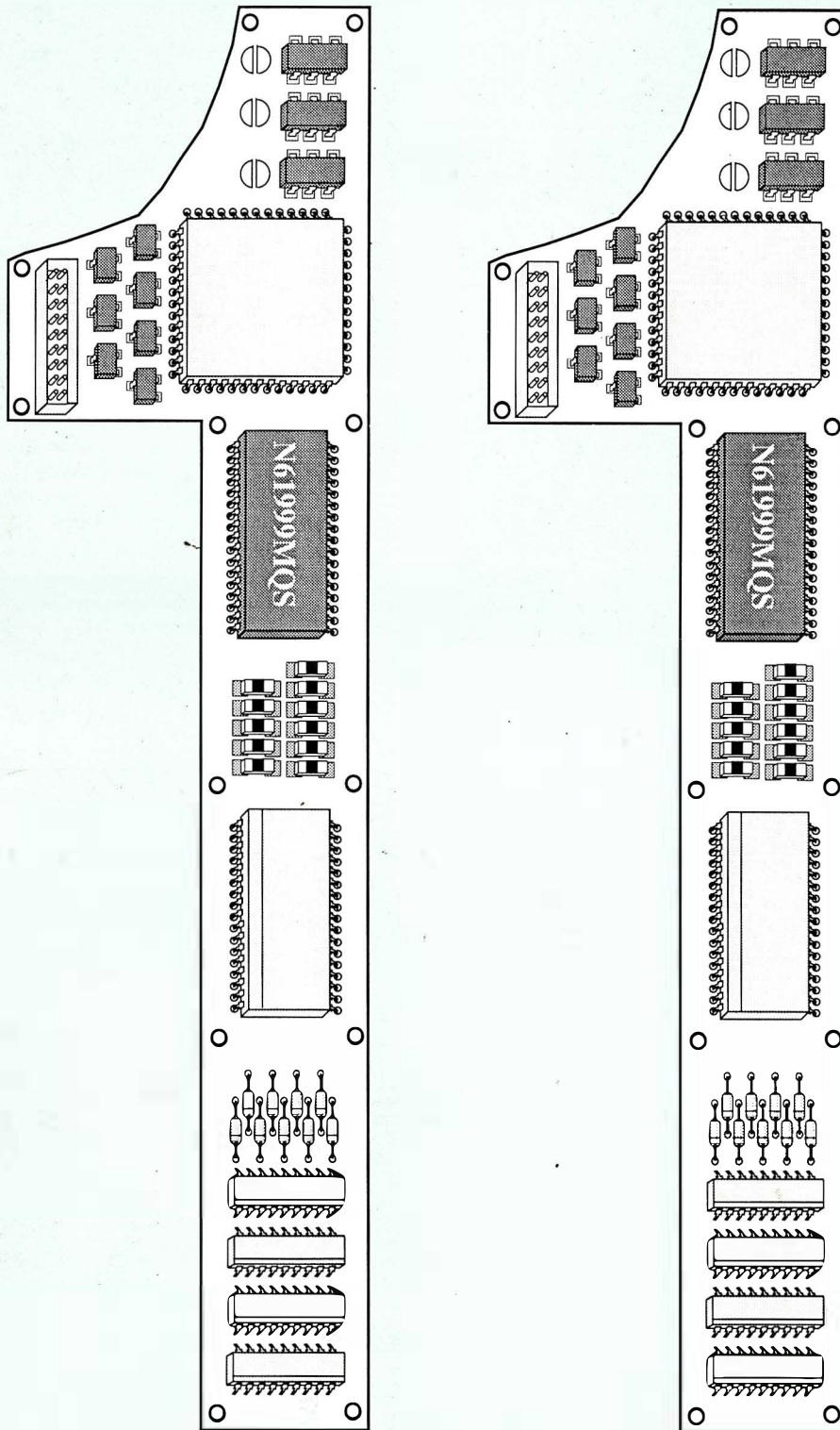


# Radio / Tech Modifications

& Alignment Controls

Edition 11 B

# B



Modifications for:

Alinco  
Standard  
Yaesu  
Others  
CB Radios

See back cover for specific radios



Este manual foi doado por PY2WFG Wilson  
para ser scaneado e disponibilizado  
GRATUITAMENTE a toda a comunidade

Scaneado em cores, 300 DPI (é o maximo que minha maquina faz,  
nao me batam) em uma copiadora Lexmark X864de, imagens  
tratadas com o programa IRFANVIEW e pdf gerado com o Adobe  
Acrobat XI Pro, usando Clearscan

Eu scaneio, trato e disponibilizo manuais gratuitamente meramente  
pelo prazer de faze-lo. Caso voce queira ajudar com manuais,  
insumos e ate mesmo uma merrequinha pra ajudar na conta de luz  
e na manutenção da maquina, entre em contato pelo email  
alexandre.tabajara@gmail.com (tambem é pix)

Obrigado a todos que ajudaram ate aqui

Os sites onde esses scans podem ser encontrados:

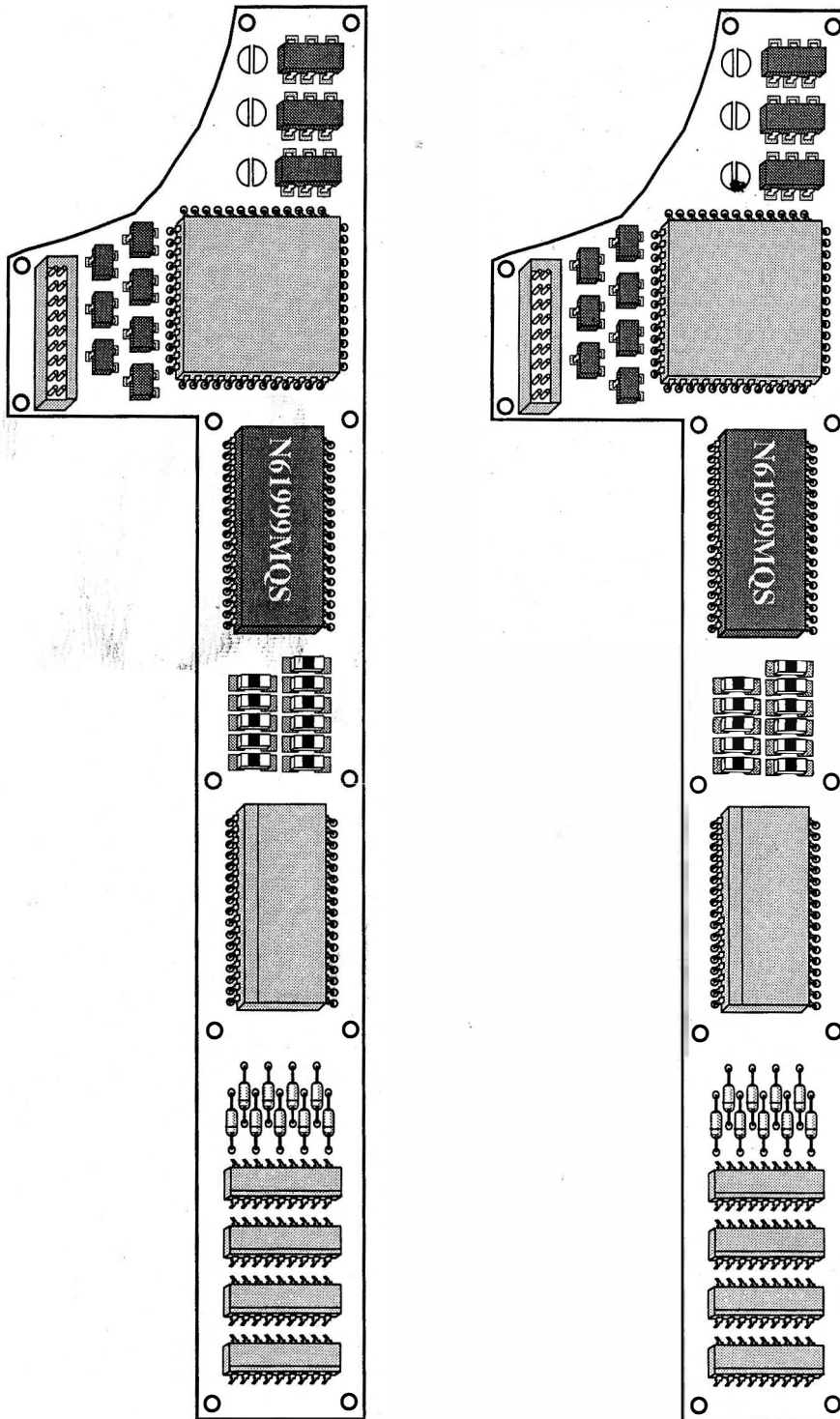
- [www.bama.org](http://www.bama.org)
- <http://tabajara-labs.blogspot.com>
- <http://tabalabs.com.br/esquemateca>
- <https://datassette.org/>

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COMO NO MANUAL. O OBJETIVO DE MANTE-LAS É VOCE  
PODER IMPRIMIR UM MANUAL IDENTICO AO ORIGINAL.  
NAO ESTÁ FALTANDO PAGINA NENHUMA NO MANUAL

Distribuição **GRATUITA**. Respeite o meu trabalho.  
São Paulo, Agosto de 2021

# Radio / Tech Modifications & Alignment Controls

Edition 11 B



# B

Modifications for:

Alinco  
Standard  
Yaesu  
Others  
CB Radios

See back cover for specific radios

Radio / Tech Modifications

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# Grab Hold of ICOM!

**PC Software Available!**

for DOS or Windows™

for IC-W32A - IC-T7AHP

**MORE POWER!**

**IC-T22A**

**SHIRT POCKET SMALL, FUN, EASY-TO-USE!**

The IC-T22A (VHF)/IC-T42A (UHF) is packed with features, power and performance. The slim, compact design fits almost anywhere. Transmit with up to 5 watts (@9.6 V) of output power. The tall antenna, large speaker and precise surface mount circuitry provide

**CRYSTAL CLEAR AUDIO**

Expand receive capability to include AM aircraft with a simple keypad adjustment.

An **ALPHANUMERIC DISPLAY** makes it easy to ID

what's stored in each memory channel, and makes a great alpha message pager. A built-in EEPROM protects memory settings. Battery power runs for up to 10 hours.

**IC-W32A**

**ADVANCED FEATURES, EASY TO USE!**

Slim and compact, the IC-W32A is ICOM's top-of-the-line 2M/440MHz dual bander. Up to 5 watts of power,

**NO FUNCTION BUTTON**

(simple to operate!) and plenty of whistles and bells. For example, a VHF/UHF exchange function allows you to assign VHF/UHF tuning and volume to either knob. A "guide" function provides quick identification for button assignments. Receive two frequencies on one band or search for signals on one band while waiting for a transmission on the other (V/V and U/U).

With **200 MEMORY CHANNELS**

(100 per band) and 8-character alphanumeric tags, your favorite frequencies are always at hand. Use

**PC PROGRAMMING**

the keypad to set features and memories, too. CTCSS encode/decode, CTCSS tone scan, DTMF encode/decode, battery voltage meter, auto power off, battery saver, and much more. Best of all, it's so easy to use!

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**NOW WITH 4 WATTS OF POWER OUT OF THE BOX!**

Dual bands (2M/440MHz) at a single bander size and price! Even with lots of features, learning the IC-T7AHP is a snap.

**NO FUNCTION BUTTON**

"My favorite test is to grab a radio fresh out of the box and measure how long it takes to access my local repeater - without consulting the manual. For the ICOM IC-T7A my watch stopped at 60 seconds!"

- QST, July 1997

Toggle between bands with one touch of the BAND key. Use the thumb "slide" to secure the keypad. Up to 70 memory channels.

**PC PROGRAMMABLE**

allow quick access to favorite frequencies and settings. If you're

IC-W32A and IC-T7AHP:

For CS cloning software, an optional OPC-474 cloning cable is required.

For CSWHH software, the needed cable is included.

**PC Ready!**

Visit your authorized ICOM dealer, or call for a FREE Brochure: (425) 450-6088

Questions? Contact your ICOM dealer, or contact ICOM Technical Support in the HamNet forum on CompuServe® @75540,525 (Internet: 75540.525 @compuserve.com).

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http://www.icomamerica.com

**ICOM®**

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# Introduction

THERE ARE 2 BOOKS IN THIS EDITION SET. AN ORDER FORM FOR THE OTHER BOOK IS AVAILABLE IN THE BACK OF THIS BOOK.

The newest versions of RADIO/TECH MODIFICATIONS are Edition 11, part A (11A) & Edition 11, part B (11B). Edition 11A contains all known modifications for ICOM and Kenwood Radios and modifications for the popular scanners. Edition 11B has all the modifications for: Yeasu, Alinco, Standard, Azden, KDK, Ten Tec, Ranger, Uniden, Radio Shack and popular CB radios.

During the past 9 years we have created 11 Editions of Radio/Tech modifications. Each new edition included the information contained in the previous editions. So if you have the current edition, you do not need to purchase the previous ones.

We make every effort to improve the illustrations with each new edition. The modifications presented here have been performed by many people throughout the world. Unless the manufacturer changes the radio in some significant way, the modifications contained in this book are accurate and current.

We make every effort to provide all available modifications for every radio we can find. In some cases, additional information is available for a radio that can not be presented in this book. We try and keep this information on file and will provide it to verified owners of the current edition for a small fee. We also try to keep the cost of the Radio/Tech modification books as low as possible. We ask that you do not photocopy pages from these books. We will support you however we can, however, if you call us we will ask that you have the book in your hands at the time of the call.



---

It was only logical that we started to include the alignment points for each of the radios. Since you are inside them performing the modification, it is a good time to adjust the modulation and power levels.

## Phone Support and New Modifications

If you find a new radio that is not listed in these pages, contact us and ask about it. We may have a copy that did not make the printing deadline. If you purchased the current book and have sent in the proof of purchase/update request form, we can send the new modification to you for a nominal fee.

We produce new editions of this book every Year. If you have the most current edition, we will mail or FAX you any requested modification we may have available. Send us a note and request a copy of the modification. You **MUST** send in the proof of purchase/update form in the back of this book to receive phone or mail support.

Once we have a new edition available, you must purchase it before we can continue support on any new or revised modifications.

Your comments and suggestions are always welcome. If the modification works great, let us know. If you can't make the modification work, let us know. We can't test every modification, because we don't have all the radios. Your help will make the next volumes better for everyone.

A good percentage of our modifications come from people just like you. They may discover the modification themselves or talked someone into sending them a copy of the manufacturer modification sheet.

When you help us find or improve a modification, we often say "thank you" with no-charge copies of our books. Let's work together to create a high quality book that everyone can use.

---

## *Scanner Modification Problems*

In 1993 the FCC created some new rules about scanners and the frequencies they may receive. (See "Modifications and the law", on the following pages)

The manufactures were forced to modify all versions of their scanners to comply with the new law. The modifications that worked on the old versions no longer work on the new versions.

Most of the scanner modifications presented here work on the older versions but not on the new ones. We have found some of the new modifications and have presented them in this book. As more become available, we will include them in future editions.

We expect that the manufactures have a modification available for the new versions, but are not releasing it to anyone. If they prevented all modifications, they will only be hurting their own future sales.

If you have a problem with a modification, let us know and we will make any new information available to you.

If you purchased one of these new version scanners, write a letter to the manufacturer and express your personal dissatisfaction. If they get enough letters and complaints they may think twice before limiting their products in the future.

If you need a scanner that can be modified, contact a dealer in another country like Canada and purchase one there. It may cost you a bit more for the equipment and the shipping into the US.

Your other option is to purchase an amateur radio receiver. These receivers will be more expensive, but will outperform any other retail scanners.

---

## Modifications and the law

### *Cellular Phone Bands*

The Federal Communications Commission (FCC) is the agency in charge of controlling the airwaves in the United States. It has been their responsibility to oversee the content of the transmissions from broadcasters in the United States.

On April 26, 1993, the FCC decided that they should not only control what information is broadcast on the airwaves, they should also control the sale of radios capable of receiving certain frequencies.

The issue in this decision is protecting the privacy of cellular phone users. The Cellular phone frequency band in the upper 800 MHz range has become a favorite scanner listening band. However the cellular users deserve their privacy. Hence, the FCC has declared a ban on all scanner style radios or converters capable of receiving the cellular band.

The wording of the new law is intended to regulate what type of receivers may be sold in the United States.

***Section 15.121 Scanning receivers and frequency converters designed or marketed for use with scanning receivers.***

*(a) Except as provided in paragraph (b), scanning receivers, and frequencies converters designed or marketed for use with scanning receivers, must be incapable of operating (tuning), or readily being altered by the user to operate, within the frequency bands allocated to the domestic Public Cellular Radio Telecommunications Service in part 22 of this chapter (cellular telephone bands). Receivers capable of "readily being altered by the user: include, but are not limited to, those for which the ability to receive transmissions in the cellular telephone bands can be added by clipping the leads of, or installing, a simple component such as a diode, resistor and/or jumper wire; replacing a plug-in semiconductor chip; or programming a semiconductor chip using special access codes or an external device, such as a personal computer. Scanning*



---

*receivers, and frequencies converters designed or marketed for use with scanning receivers, must also be incapable of converting digital cellular transmissions to analog voice audio.*

*(b) Scanning receivers, and frequency converters designed or marketed for use with scanning receivers, that are manufactured exclusively for, and marketed exclusively to, entities described in 18 U.S.C. Section 2512 (2) are not subject to the requirements of paragraph (a).*

It seems apparent that the FCC is attempting to protect the cellular phone users' privacy. The Cellular industry is also taking reasonable precautions to protect their users with their new digital technology. Perhaps after digital takes over, the FCC will relax or repeal the rule.

### *Transmitting out of band*

The Federal Communications Commission (FCC) has another set of rules that controls the type of transceivers approved for use in the United States. The purpose is to make sure that transmissions are clean and do not cause interference or emissions on other frequencies.

- The FCC has special relaxed rules for amateur equipment that help to encourage lower pricing for transceivers.
- The FCC will approve a radio for use only in the amateur frequency range, but the same radio may be refused for use in the business band.
- Use of a amateur approved radio to transmit outside the amateur band is illegal no matter what type of license you have, (MARS & CAP do have a permission to exceed the limits by 3-4 MHz).

No discussion about transmission on the police bands is needed here. It is illegal and wrong and can cause loss of Human life. If you know of anyone doing it, turn them in.

# ENCODER-DECODERS, CTCSS, DCS

## TS-64 Microminiature CTCSS Encoder-Decoder

**\$54.95**

Programmable CTCSS encoder-decoder for use in FM transceivers. Ideal for most handheld radios and mobiles with limited space. Select from 64 preset CTCSS tones between 33.0 Hz and 254.1 Hz using six PCB jumpers. Tone stability is crystal controlled with accuracy better than 0.05 Hz. Output level can be adjusted from 0V to 3.0V. A time-out-timer feature permits programming transmit duration to eight different intervals decreasing stuck mic problems. Receiver High Pass filter and busy channel lockout are included. Decode sensitivity is 15mv. Operates from 5 to 28 vdc, unregulated @ 9ma. Operating temperature range is from -30° C to +65° C. When P.T.T. switch is released, the TS-64 continues to key transmitter for 160ms. During this time, the TS-64 generates a reverse phase burst which will mute the decoding unit at the other end. A microminiature plug and socket with color coded wires attached is provided for hookup. The TS-64 comes with double sided tape for quick mounting.

## TS-64DS DIP Switch Programmable CTCSS Encoder-Decoder

**\$57.95**

This unit has the same circuit as the TS-64 above, but has an on-board DIP switch to allow tone selection without installing jumpers. All 64 tones are accessible via the 6 position miniature DIP switch. The dimensions of the TS-64DS are 1.25" x 2.0" x .30".

## TSU-64DS Universal Plug-on Type CTCSS Encoder-Decoder

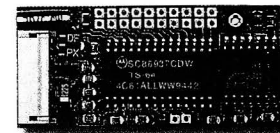
**\$57.95**

This unit has the same circuit as the TS-64 above, but chassis pins extend from the bottom of the board. This facilitates direct plug-on to special application boards that are designed to be plugged right into many popular radios (see Plug-in boards below). The board also features an on-board DIP switch to allow tone selection without installing jumpers. The dimensions of the TSU-64DS are 1.25" x 2.0" x .30", not including chassis pins.

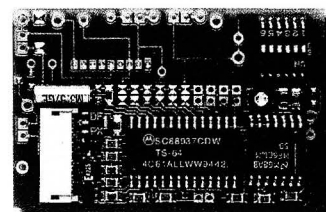
## DCS-23 Microminiature DCS Encoder-Decoder

**\$59.95**

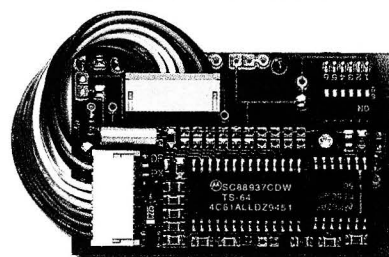
Digital tone coded squelch board is compatible with those used in Land Mobile radios. Will fit inside of all mobile and most portable units. PCB jumpers make it possible to field program all 512 octal codes. A crystal controlled CMOS microprocessor allows low voltage operation from 5 to 28 vdc, unregulated @ 8ma. Temperature range is from -30° C to +65° C. Sensitivity is better than 15mv. A signal-to-noise ratio of better than 4db Sinad reliably operates the decoder. Easy hookup using external diodes facilitates multi-code encode or decode. Automatic squelch tail elimination by turn off code detection. Test code to Set transmitter modulation level included. All connections made with microminiature plug and socket with color coded wires attached. Comes with double sided ape for quick mounting.



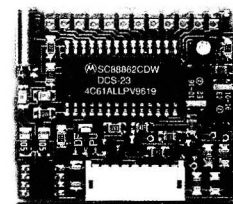
**TS-64 Microminiature CTCSS Encoder-Decoder**  
.78" x 1.70" x .25"



**TS-64DS DIP Switch Programmable CTCSS Encoder-Decoder** 1.25" x 2.0" x .30"



**TSU-64DS Universal Plug-On CTCSS Encoder-Decoder** 1.25" x 2.0" x .30"



**DCS-23 Microminiature DCS Encoder-Decoder**  
1.36" x 1.18" x .25"

## DIRECT PLUG-IN TONE BOARDS

### Aerotron

Aerocom Six, Eight, Mpac, etc.

**TS-64A \$65.50**

### General Electric

MVP

**TS-64MVP \$62.95**

Master II

**TS-64MSTII \$66.95**

### Johnson

PPL Series (6040, 6050, 6060, etc.)

**TS-64JP \$63.50**

### Motorola

Micor

**TS-64MCR \$66.95**

Mitrek

**TS-64MITREK \$62.95**

Syntor

**TS-64SYNTOR \$67.95**

### Regency

U-Series Repeaters, BTH-201B

**TS-64R \$65.50**

### Standard

C790L, C890L

**TSS-64 \$62.50**

766L, 867 and other mobile's w/2 plugs

### Wilson

WU100R, WU151R, WU154SR

**TS-64R \$65.50**

## CTCSS TONE CHART

CTCSS tones included in the SS-64 & TS-64

33.0*	71.9	123.0	183.5*
35.4*	74.4	127.3	186.2
36.6*	77.0	131.8	189.9*
37.9*	79.7	136.5	192.8
39.6*	82.5	141.3	196.6*
44.4*	85.4	146.2	199.5*
47.5*	88.5	151.4	203.5
49.2*	91.5	156.7	206.5*
51.2*	94.8	159.8*	210.7
53.0*	97.4*	162.2	218.1
54.9*	100.0	165.5*	225.7
56.8*	103.5	167.9	229.1*
58.8*	107.2	171.3*	233.6
63.0*	110.9	173.8	241.8
67.0	114.8	177.3*	250.3
69.4*	118.8	179.9	254.1*

\*Non EIA Standard Tones



# ENCODERS, CTCSS (Sub-audible) & BURST TONE

## SS-64 DIP Switch Programmable CTCSS Encoder

\$28.95

Universal design provides CTCSS encode capability to all FM transceivers. A six position DIP switch allows selection of desired tone. Crystal controlled for high accuracy and stability. The standard 64 tone memory contains tones from 33.0 Hz to 254.1 Hz, 37 EIA tones plus 27 non-standard EIA tones. Can be used in systems that need Motorola Reverse-Burst™ feature. Multiple tone switching is easily achieved with your radio's channel select switch or by using diodes and a single pole rotary switch.

**NOTE:** For a remote DIP switch option, use part #SS-64RDS, priced @ \$38.95. This allows the user to change the desired tone without having to go inside the radio. This factory installed option involves removing the existing miniature DIP switch from the board and installing an 8" ribbon cable to a larger six position DIP switch to be mounted by the user through a cutout in the radio.

## TE-32 Multi-Tone CTCSS Encoder

\$49.95

Fully enclosed CTCSS encoder provides, from a front dial rotary switch, all EIA CTCSS tones from 67.0 to 203.5 Hz. A three position toggle switch provides switching between High tones, Low tones and Off. Packaged in a high impact plastic case with mounting bracket/hardware and 3' long shielded cable for installation. Perfect for mobile/base station applications.

## TE-64 Multi-Purpose CTCSS/Burst Tone Encoder

\$79.95

Fully enclosed encoder provides, from a front dial rotary switch, all EIA CTCSS tones from 67.0 to 203.5 Hz PLUS all the common burst tones from 1600 to 2550 in 50 Hz increments. All available tone frequencies are permanently screened onto the faceplate, and selected with a calibrated dial. Great for test bench or service vehicle applications. Operates on 6-30 vdc, and all connections are made to a terminal strip at the rear of the unit. A 9 volt battery plug and cable is included and may be attached at the terminal strip or soldered directly to the circuit board for field operation. Packaged in a high impact plastic case, with mounting bracket and hardware supplied.

## TE-64D Multi-Purpose CTCSS/Burst Tone Encoder w/LED Display

\$129.90

An enhanced version of the TE-64 encoder (see above). The TE-64D features an LED display which shows the desired tone selected (in Hz) by the front panel rotary switch. Perfect for mobile applications, night time operations, or whenever a high visibility read-out is desired. Operates on 6-16 vdc (current draw does not allow operation from a 9 volt battery).

## TE-64D-MOD Kit

\$49.95

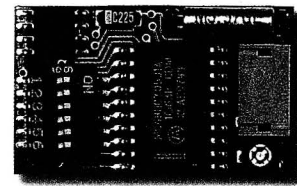
Adapter kit for upgrading a standard TE-64 to a TE-64D (with LED display). Available as a kit or you may return your TE-64 for free factory installation.

# MORSE STATION IDENTIFIER

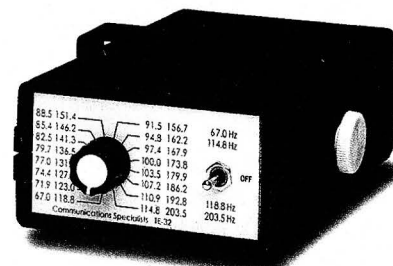
## ID-8 Automatic Morse Station Identifier

\$69.95

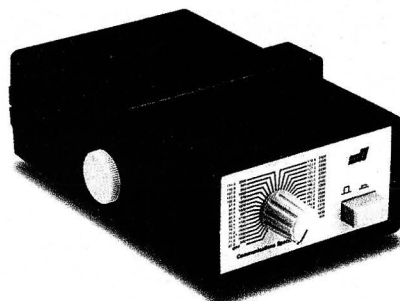
Provides automatic Morse Code identification for commercial, public safety and amateur radio applications, including repeaters, base stations, mobiles, beacons, CW memory keyers, etc. Meets all FCC identification requirements. Low voltage/current operation and small size make it universally applicable. Low distortion, low impedance, adjustable sinewave output. High accuracy crystal controlled. All functions are programmable with a plug-on keypad which is included with each unit. Programmable options include: Eight selectable messages; CW speed 1-99 WPM; interval timer 1-99 minutes; hold off timer 0-99 seconds; CW tone frequency 100-3000 Hz; front porch delay interval 0-9.9 seconds; CW or MCW; etc. All programming is stored in a non-volatile EEPROM, which may be altered at any time via the keypad. Supplied with programming keypad, wire set with microminiature plug for easy installation or removal, double sided tape and easy to follow instructions.



SS-64 Microminiature DIP Switch Programmable CTCSS Encoder .66" x 1.08" x .21"



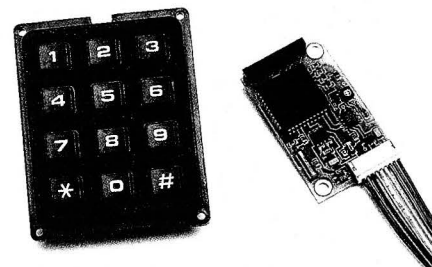
TE-32 Multi-Tone CTCSS Encoder 5.25" x 3.3" x 1.7"



TE-64 Multi-Purpose Encoder 5.25" x 3.3" x 1.7"



TE-64D Multi-Purpose Encoder w/LED Display 5.25" x 3.3" x 1.7"



ID-8 Automatic Morse Station Identifier 1.85" x 1.12" x .35"



# Surface Mount Components

Many of the modifications presented in this text require you to remove or install surface mount components.

Surface mount components come in various configurations, starting with large microprocessors all the way down to single diode packages. You will even find that single diodes and resistors come in different sizes.

Some of these modifications use very small packages with three leads. About a year ago I ordered 50 of a popular package and accidentally dropped them on the carpet, I lost 20 of them because I couldn't find them!!

You will find that with a little care and the proper tools, you will be able to remove or install the components without causing any other problems.

I suggest solder wick as the best method to remove the solder, some people prefer a solder sucker. I find that many people over heat the components and board using a solder sucker. This is of course assuming that you do not have access to a desoldering station (\$3,000 plus).

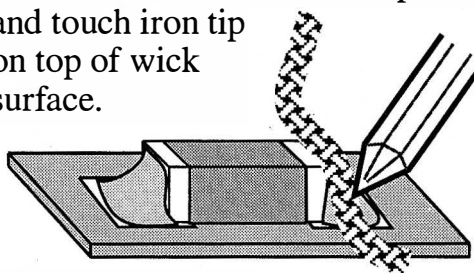
As solder melts and is drawn onto the wick, move the wick to expose a new clean section of the wick. This insures the maximum solder is removed from the board.

Don't be afraid to use lots of solder wick when removing the solder. Clean wick will speed up the process. You don't want to over heat the component while you remove the solder.

Exercise a additional caution to insure that you do not overheat the circuit board. Damaging the circuit board is the most expensive accident you can have.

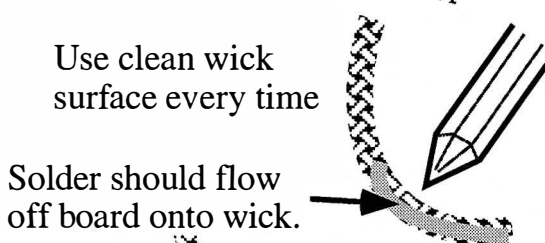
## Removing

Place solder wick on solder pad and touch iron tip on top of wick surface.

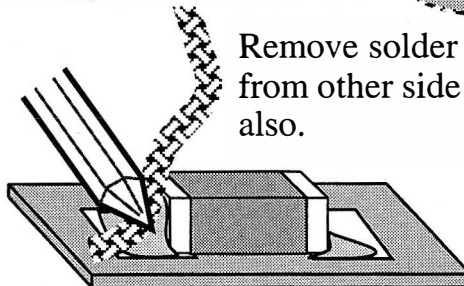


Use clean wick surface every time

Solder should flow off board onto wick.

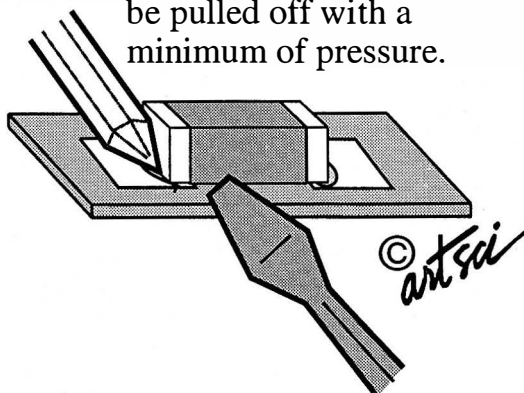


Remove solder from other side also.



You may need to alternate sides 2-5 times to remove 95% of the solder.

After the solder has been removed the component can be pulled off with a minimum of pressure.



Excess heat can lift the circuit board traces right off the board. A small section might stick to the soldering iron and you might not notice until you discover the radio won't work.

Caution must be taken to protect the component also (if you will need it again). Remove a little solder and move to the other side of the component. After 2-5 times the part will pop off!!

Be careful you do not lose the part when you remove it. It may stick to the solder wick or even stay attached to the iron itself.

Make a note of the numbers on the part being removed. You may need to order a replacement part.

## INSTALLING

Installing components is easier than removing them. Excess heat during installation should also be avoided.

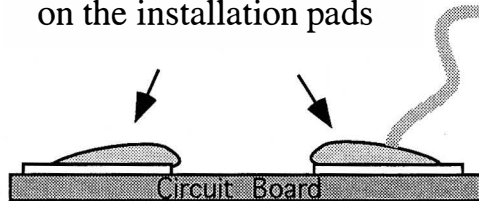
Place a small amount of solder on the circuit board pads before you attempt to install the component. This will allow you to place the part in position and use the iron to melt the solder and it will attach the component in place.

Remember to hold the component in place using a blunt tool or screwdriver. Small surface mount components seem to jump right off the board and glue themselves to a soldering iron.

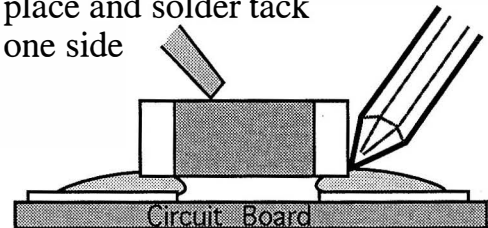
To test if a component is properly attached, use a volt/ohmmeter. Attach one lead to the trace on the circuit board and the other lead to the exposed component lead, and make sure that continuity is present.

## Installing

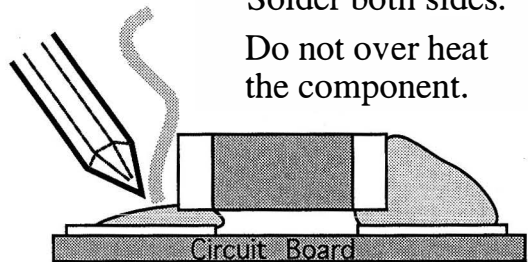
Place a small amount of solder on the installation pads



Place the component on the board  
Hold the component in place and solder tack one side



Solder both sides.  
Do not over heat the component.



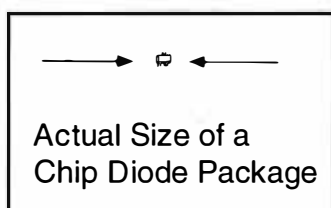
Solder should be smooth and fully bonded to the component

- Some technicians prefer to use a solder sucker to remove solder.
- Components can be damaged by excess heat.
- Components may adhere themselves to the tip of the soldering iron if not held in place.

# Chip Diode Package Layouts

Many of the modifications presented in this text require you to remove or install surface mount components.

Some of these modifications use very small packages with three leads. About a year ago I ordered 50 of a popular package and accidentally dropped them on the carpet, I lost 20 of them because I couldn't find them!!

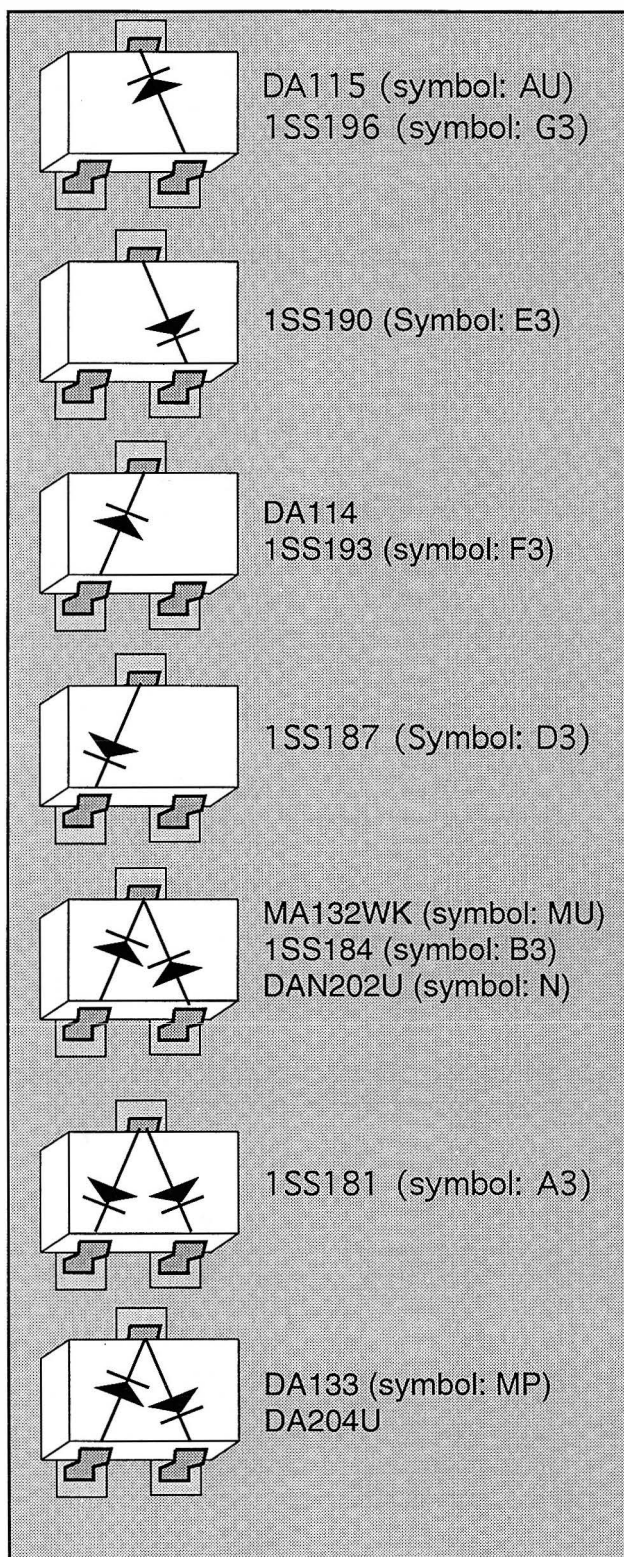
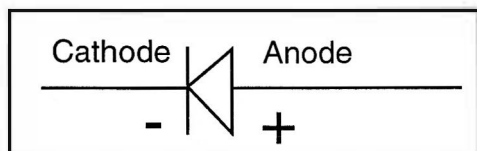


These components are available directly from the radio manufacturers' parts department.

Some experienced technicians may elect to use separate 1N914 diodes in place of these diode packages.

The only problem with using 1N914 diodes is that they are 3-4 times larger than the diode package, and may not fit properly.

However, here are the diode package layouts for the popular packages.



# Alinco Radio Modifications

ALINCO

Radio	Modification	Page #
ALD-24T	Expanded RF/Alignment Controls.....	Alinco - 3
ALR-22	Expanded RF/Alignment Controls.....	Alinco - 4
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DJ-120	Expanded RF/Alignment Controls.....	Alinco - 5
DJ-160	Expanded RF/Alignment Controls.....	Alinco - 7
DJ-162	Expanded RF/Alignment Controls.....	Alinco - 7
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DJ-190	Expanded RF.....	Alinco - 9
DJ-191	Expanded RF.....	Alinco - 11
DJ-460	Expanded RF/Alignment Controls.....	Alinco - 12
DJ-500	Expanded RF/Alignment Controls.....	Alinco - 13
DJ-560	Expanded RF/Alignment Controls.....	Alinco - 14
DJ-580	Expanded RF/Alignment Controls.....	Alinco - 15
DJ-582	Expanded RF/Alignment Controls.....	Alinco - 15
DJ-C1	Expanded RF.....	Alinco - 16
DJ-C4	Expanded RF.....	Alinco - 16
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DJ-G1T	Expanded RF.....	Alinco - 19
DJ-G5T	Expanded RF.....	Alinco - 20
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DJ-S41T	Expanded RF.....	Alinco - 21
DR-110T	Expanded RF.....	Alinco - 22
DR-112T	Expanded RF.....	Alinco - 22
DR-119T	Expanded RF.....	Alinco - 22
DR-130	Expanded RF.....	Alinco - 23
DR-140	Expanded RF.....	Alinco - 25
DR-150	Expanded RF/Alignment Controls.....	Alinco - 25
DR-430	Expanded RF.....	Alinco - 23
DR-510	Expanded RF/Alignment Controls.....	Alinco - 27
DR-570	Expanded RF/Alignment Controls.....	Alinco - 28
DR-590	Expanded RF/Alignment Controls.....	Alinco - 29
DR-592	Expanded RF/Alignment Controls.....	Alinco - 29
DR-599	Expanded RF/Alignment Controls.....	Alinco - 30
DR-600	Expanded RF.....	Alinco - 31
DR-605	Expanded RF.....	Alinco - 33
DR-610	Expanded RF/Alignment Controls.....	Alinco - 34
DR-1200	Alignment Controls.....	Alinco - 35
DR-M06	Expanded RF/Alignment Controls.....	Alinco - 36
DX-70	Expanded RF.....	Alinco - 37
DX-77	Expanded RF.....	Alinco - 38
EDX-2	Expanded RF.....	Alinco - 39
PACKET	Connector pin outs.....	Alinco - 40

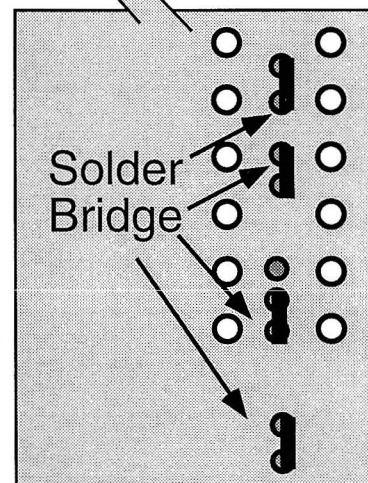
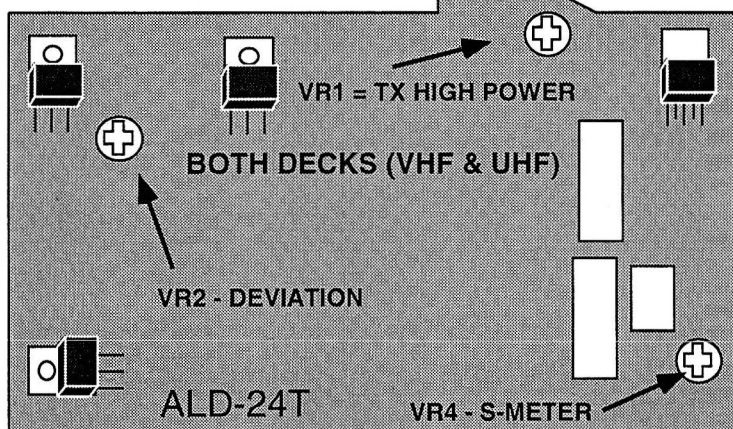
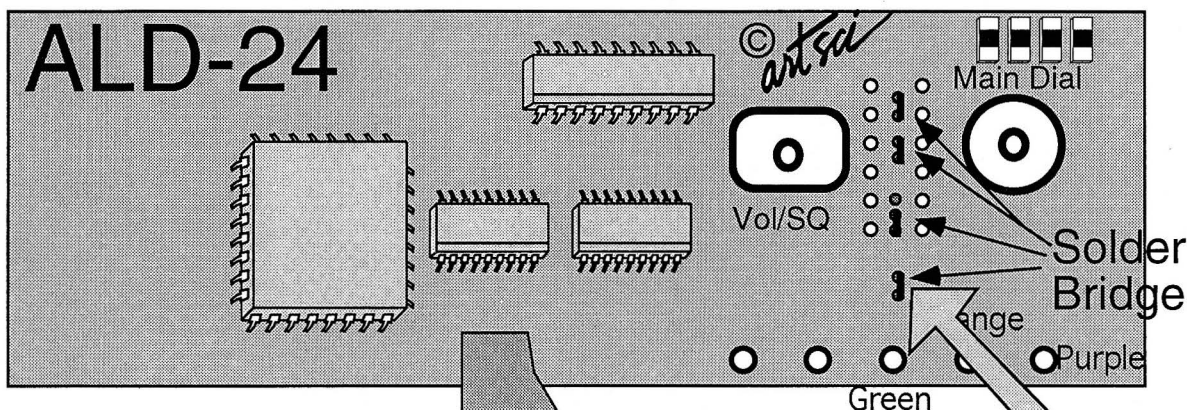
#	Frequency	Offset	PL	Label	Description
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### Expansion Range

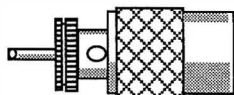
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove top and bottom covers.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove front cover to access front panel circuit board.
5. **Solder bridge four sets of pads as shown.**
6. Reassemble radio.
7. Reset microprocessor (Press reset button)



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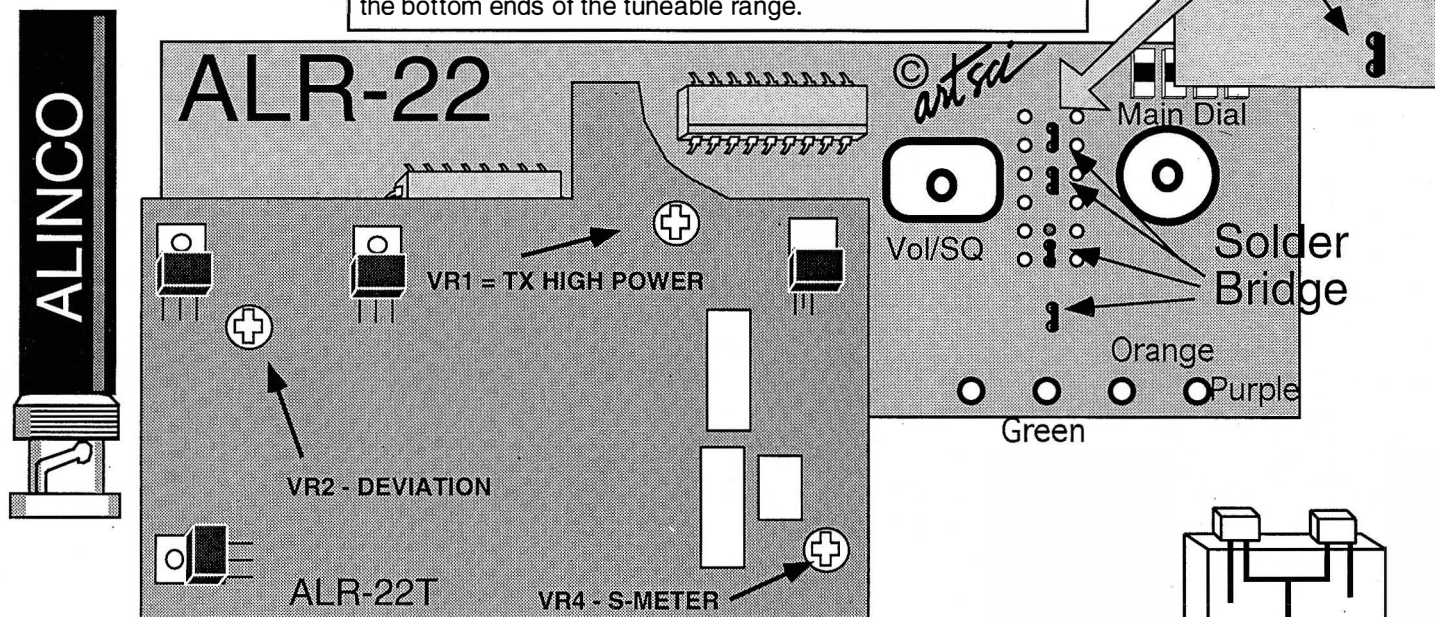


## ALR-22R

## Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

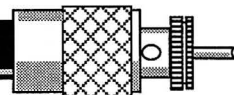


## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove top and bottom covers.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove front cover to access front panel circuit board.
5. **Solder bridge pads as shown.**
6. Reassemble radio

## Microphone Modification

1. Open radio as described above.
2. Locate and remove the Microphone Green, Orange & Purple wires.
3. **Solder the wires as shown in drawing**
4. Reassemble radio.
5. Open Microphone.
6. **Remove the Ground side of the Up/Down buttons and tie them together.**
7. **Connect the Orange wire to the two tied wires.**
8. Reassemble Microphone.



# Receive and Transmit Expansion

ALINCO

DJ-100T  
DJ-120T

## Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

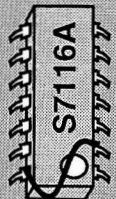
DJ-100T / DJ-120T

1	2	3	A
4	5	6	B
7	8	9	C
*	0	#	D

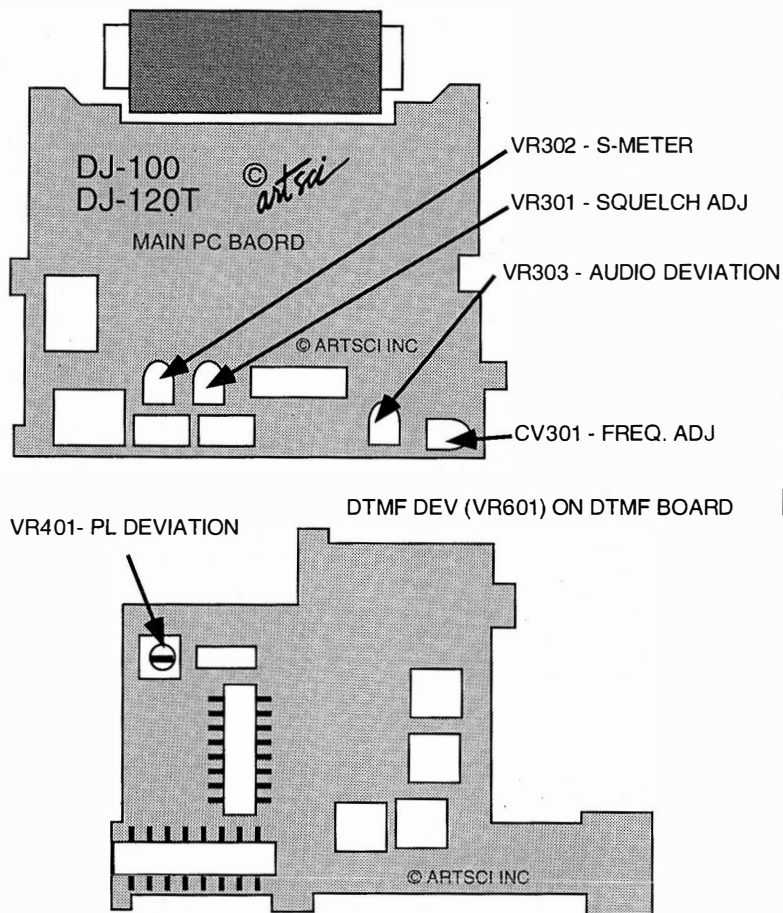
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Cut both  
Jumpers

Cut pin 2 and  
connect it to  
pin 14

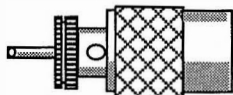


ON TONE  
SW  
BOARD



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws from case and open radio.
3. Locate & **Cut Jumpers per drawing.**
4. **Clip pin 2** on IC401(S7116A) and connect it to pin 14 (for simplex PL tone)  
This chip is located on the TONE SW board.
4. Reassemble radio.
5. Reset the Micro Processor.



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ALINCO - 5

# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

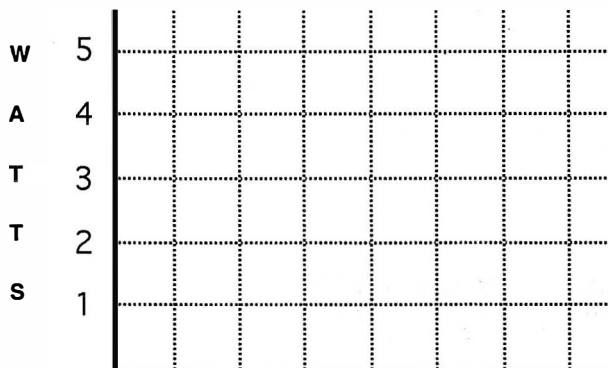
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

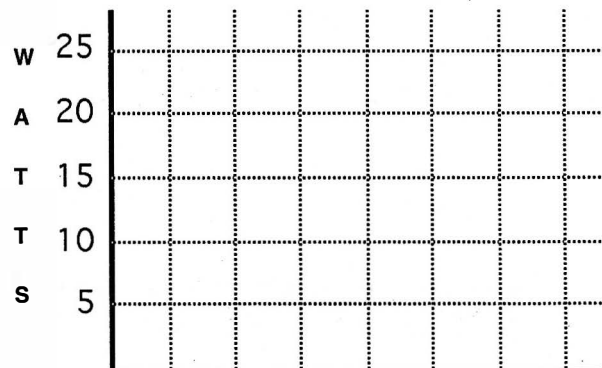
City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

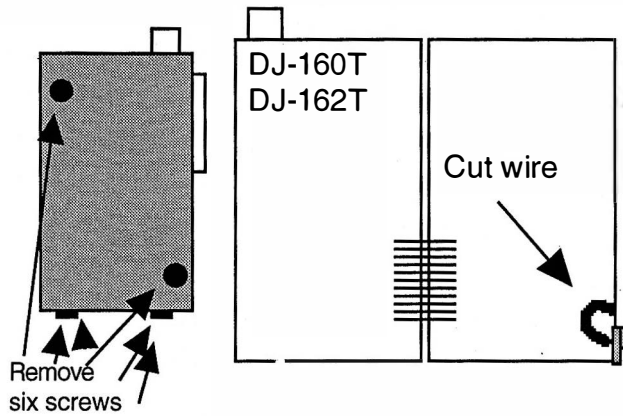
Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (_____MHz)	_____ uv	_____ uv
Receive Sensitivity (_____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



Frequency



Frequency

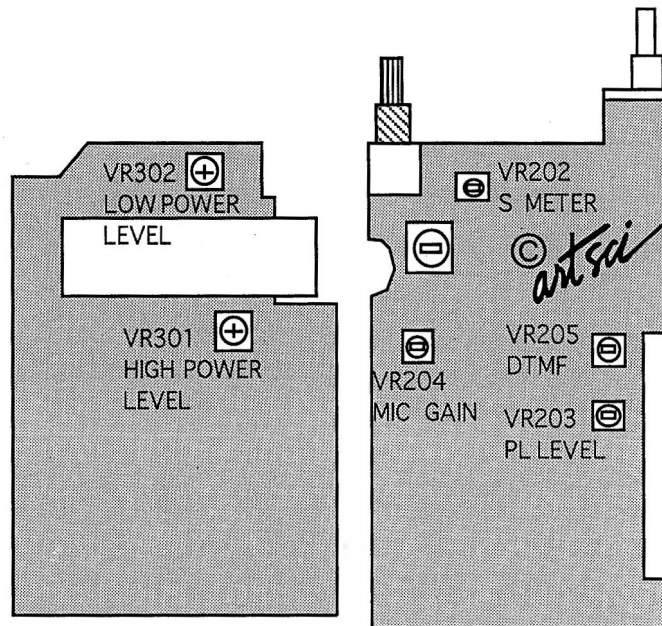


DJ-160T  
DJ-162T

## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz.

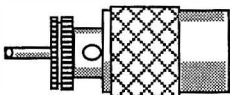
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove 2 screws back of case and four screws from battery slide clip.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove the top cover.
5. Open radio.
6. Locate and **cut yellow wire** behind the battery release button.
7. Reassemble radio.
8. **Reset microprocessor.** (Press and hold [F] key and turn power on.)

DJ-162 AM Mode RX: In VFO Press [B]



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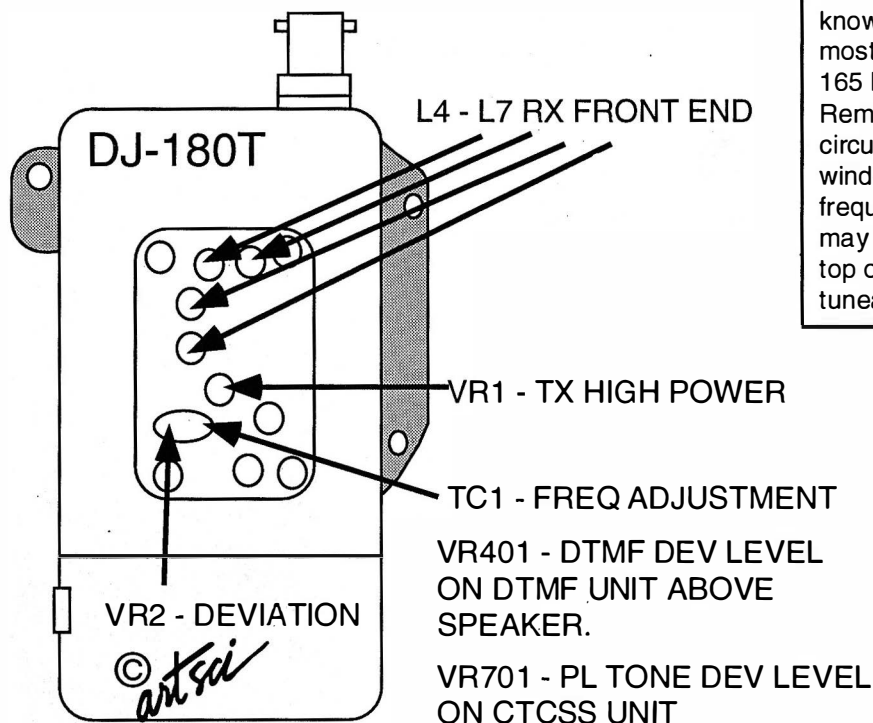
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## Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.

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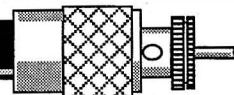


## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the four screws holding the battery slide plate in location.  
(Careful not to break the battery plate wires)
3. Locate and **cut the "PINK" wire**. (Only the PINK wire)
4. Reassemble the unit.
5. **Reset the microprocessor**  
(Press and hold the [FUNC] & [LAMP] button and turn the power on.)

**Optional Receive only mod:** (130 - 173 MHz)

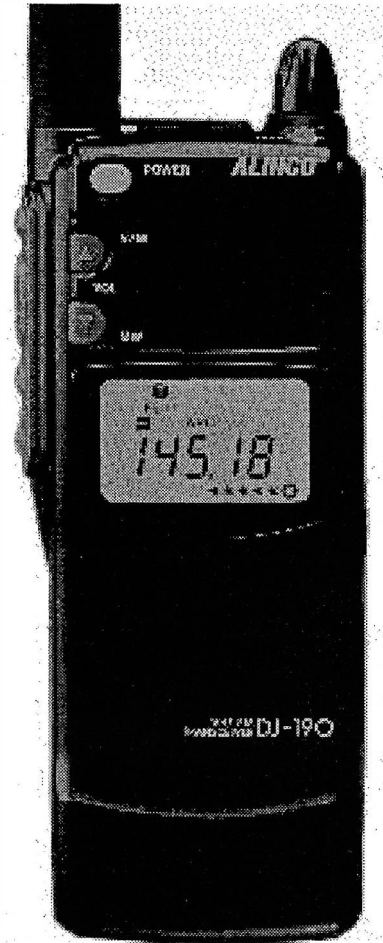
1. Reset the microprocessor  
(Press and hold the [LAMP] button and turn the power on.)



### Expansion Range

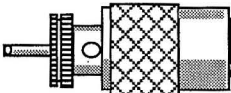
The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove battery and antenna.
2. Remove the Plastic dial knob and rubber base.
3. Remove speaker/mic rubber cover
4. Remove the four screws from the rear of the radio
5. Carefully separate the radio in half
6. Unplug the speaker from the CPU board
7. Remove the four screws on the CPU board and the two screws on the PYYU board
8. Carefully fan out the CPU board to expose the rear of the board where the CPU is located
9. Locate and cut the BLUE wire loop located at the upper right of the CPU
10. Reassemble the radio.
11. Reset the CPU  
(Hold the [FUNCTION] key while turning the radio on)



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*artsci*

# #	Frequency	Offset	PL	Label	Description
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9					
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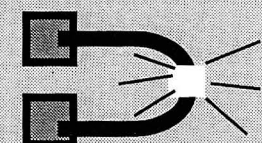
# Receive and Transmit Expansion

ALINCO  
DJ-191T

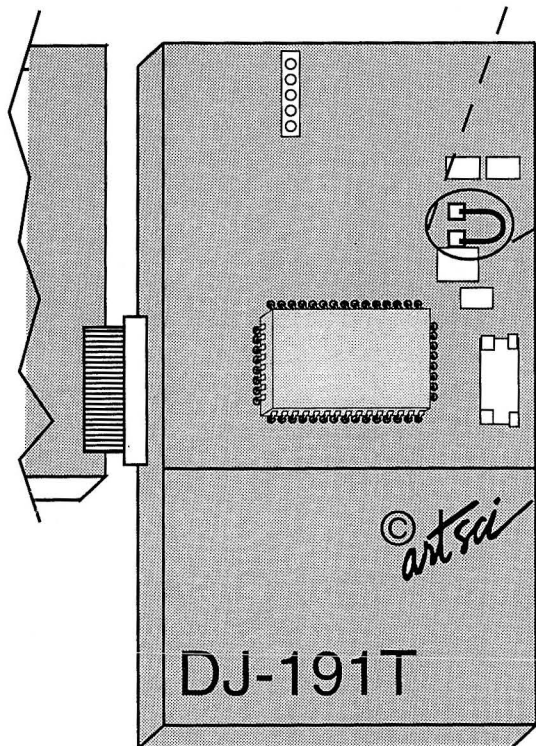
## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



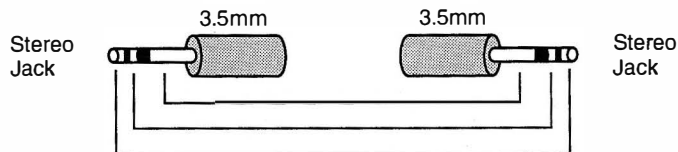
Cut JUMPER Wire



## Cable Cloning

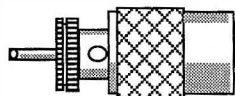
The entire memory and VFO contents may be copied from one DJ-191T to another DJ-191T.

1. Connect speaker jacks together using an interface cable.
2. Turn on both radios.
3. Press and hold [MONI] and press the [PTT] key three times on both radios. ("CLONE will appear)
4. Press [MONI] on the slave radio. (the one that gets the information and "READY": will appear)
5. Press [PTT] on the master radio. ("PUSH" will appear on the display.)
6. Press [PTT] again to start the copy.
7. "END" will appear when the task is complete.
8. Turn off both radios.
9. Remove the cable.



## Expanded RF Modification

1. Remove battery and antenna.
2. Remove four screws on the back cover
3. Open the radio carefully to avoid damage to the ribbon cable.
4. Locate and **cut the "JUMPER" wire.**
5. Reassemble the radio.
6. **Reset the microprocessor.**  
(Press and hold [FUNC] and turn power on)



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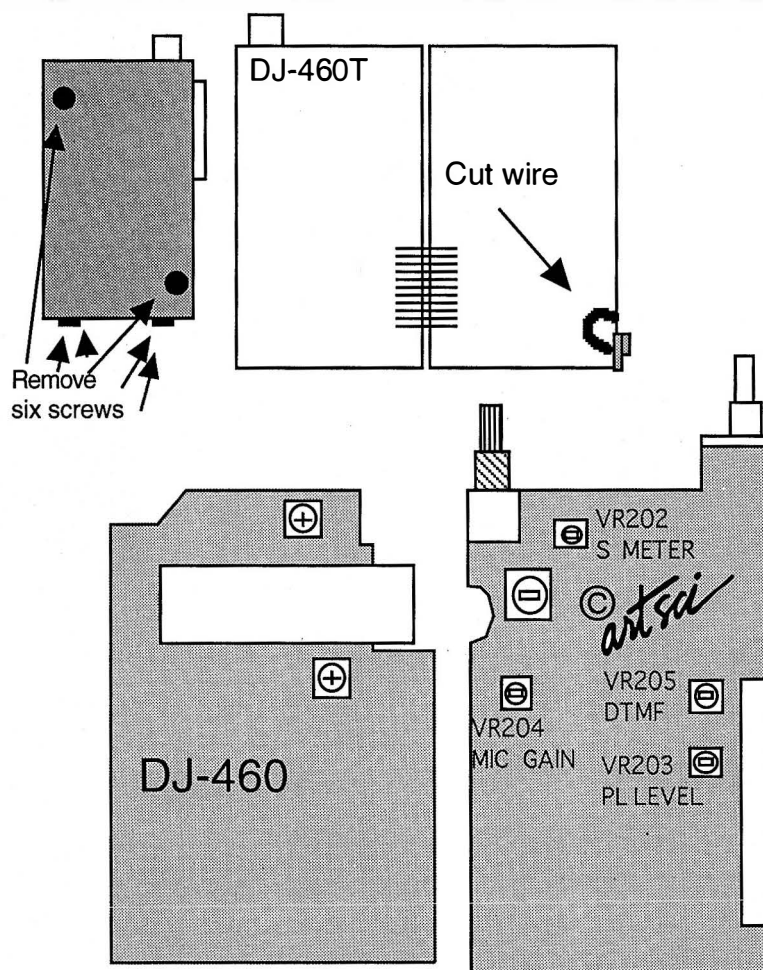
ALINCO - 11



## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

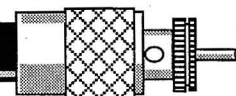
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove 2 screws back of case and four screws from battery slide clip.
3. Remove Main dial, Vol & SQL knobs. Remove the retaining rings.
4. Remove the top cover.
5. Open radio.
6. Locate and **cut wire** behind the battery release button.
7. Reassemble radio.
8. **Reset microprocessor.** (Press and hold [F] key and turn power on.

## Radio/Tech Modifications Volume B



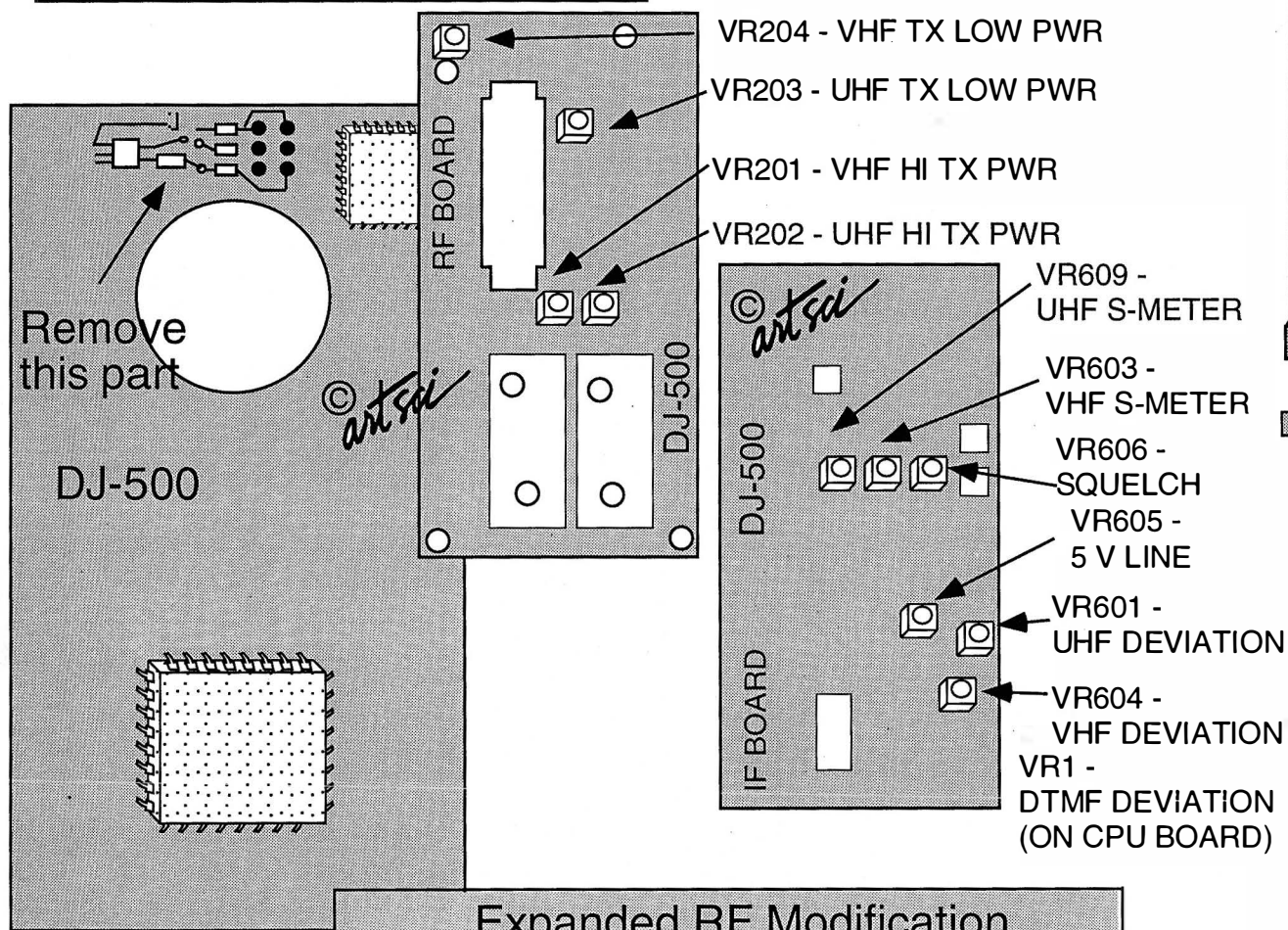
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### Expansion Range

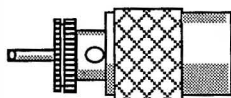
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### Expanded RF Modification

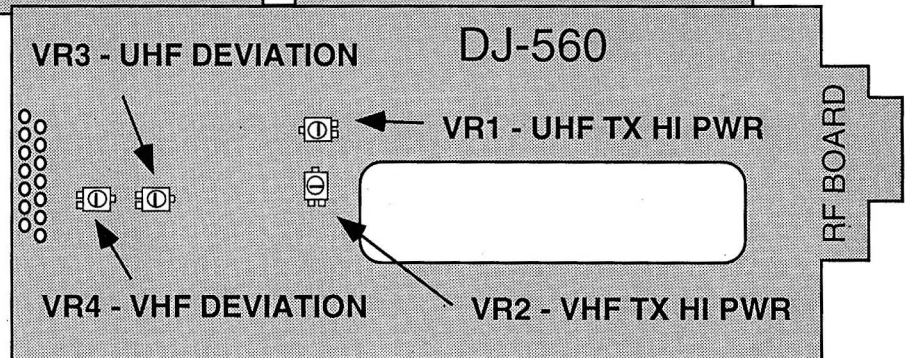
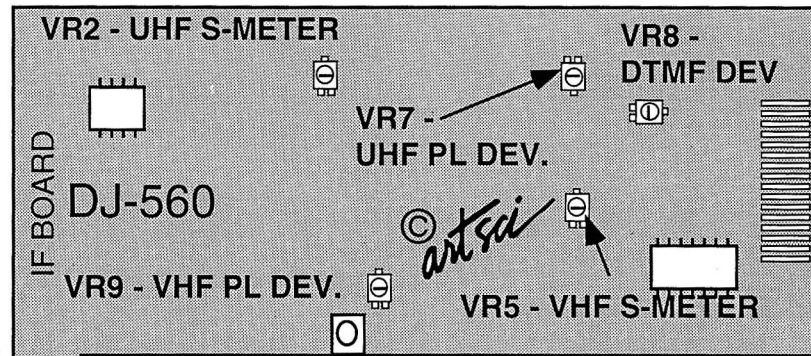
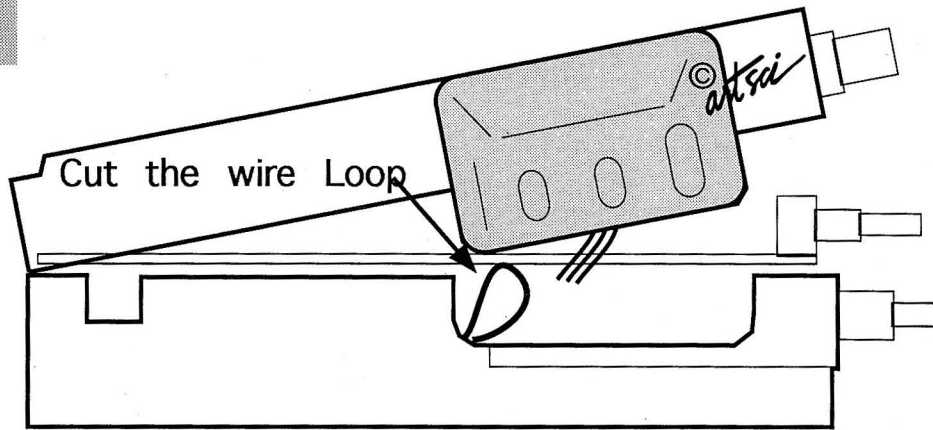
1. Remove Battery and Antenna.
2. Remove screws from case (3 Long & 2 short)
3. **Remove green component** per drawing.
4. Reassemble radio.
5. Reset the Microprocessor.  
(Reset switch is located below the PTT Switch)



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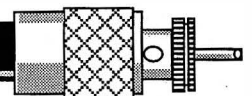


### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove battery and antenna.
2. Remove screws from back of case and.
3. Remove all 4 screws from battery plate.
4. Remove screw next to the BNC connector.
5. Remove the Dial, UHF and VHF knobs.
6. Unscrew the Lock rings under the Dial, UHF and VHF knobs.
7. Remove the top cover and the 4 screws holding the radio together.
4. Locate and **cut orange or Yellow wire** directly below the PTT switch.
5. Reassemble the radio.
6. **Reset the CPU.** (Press and hold [FUNCTION] and turn power on)



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# Receive and Transmit Expansion

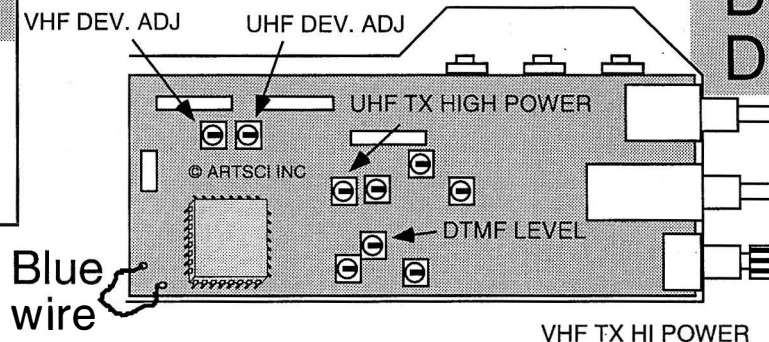
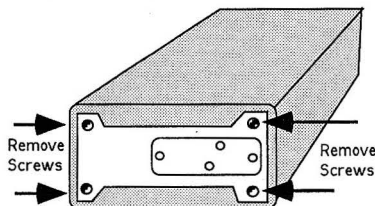
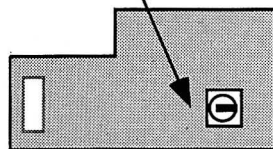
ALINCO

DJ-580T  
DJ-582T

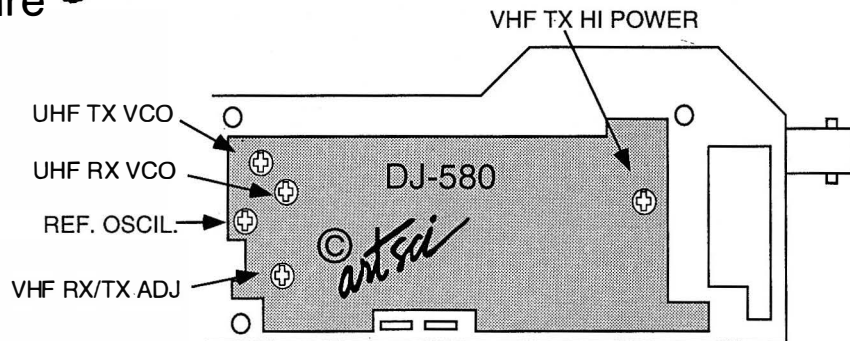
## Expansion Range

Air Band RX  
800 MHz RX  
130-175 MHz TX  
410-475 MHz TX

CTCSS LEVEL ADJ



Blue wire



## Expanded RF Modification

1. Remove battery and antenna.
2. Remove the four (4) screws on the bottom of the radio.
3. Remove the battery slide plate.
4. Locate and **CUT the BLUE wire** (for expanded RF)
5. Locate and **CUT the RED wire** (for aircraft and 800 MHz RX.  
DJ-582T Has no RED wire and no 800 MHz RX. Air band is standard)
6. Reassemble the radio.
7. **Reset the microprocessor.**

(Press and hold the [FUNCTION] key and turn the radio on).

### To Select the AIRCRAFT BAND

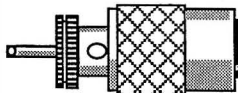
Press the [FUNCTION] and [VHF] key simultaneously.  
The Letter "A" (AM mode) will appear on the display.  
(press again to select the 2 meter band)

### To Select the 800 MHz BAND (No 800 on DJ-582T)

Press the [FUNCTION] and [UHF] key simultaneously.  
(press again to select the 440 MHz band)

### Channel Display Mode (DJ-582T) Freq & PL can not be changed!!

Enter Frequency lock mode by pressing [FUNC] & [\*].  
Enter [#] [9] [8] [6] [3] [1] on the keypad  
Press \*741 to use VHF Channel display  
Press \*753 to use UHF Channel display.  
Press \*222 to unlock the main band  
Press [\*] [2] [8] [4] [D] [C] [A] to display the frequency  
Press [FUNC] and [\*] three times to exit Freq. lock mode.



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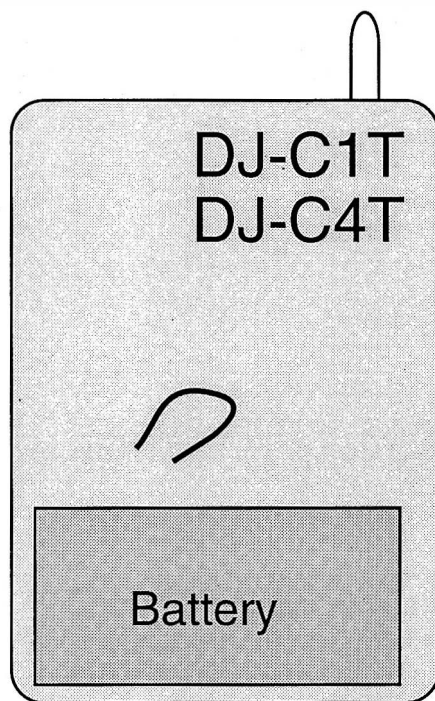
ALINCO - 15



## Expansion Range

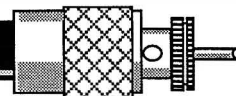
The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove the Three rear case screws.
2. Carefully remove the rear case.  
**DJ-C1T:** Locate and cut the BLUE wire Loop above the Lithium-ion battery.  
**DJ-C4T:** Locate and cut the RED wire Loop above the Lithium-ion battery.
3. Reassemble the radio
4. Reset the microprocessor.  
 (Press and hold [V/M] and [FUNCTION] buttons and turn the radio on)



# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

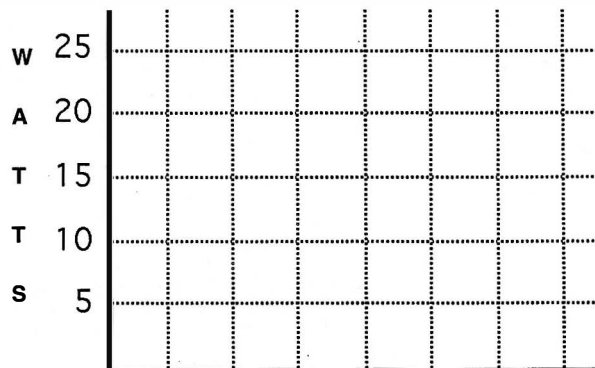
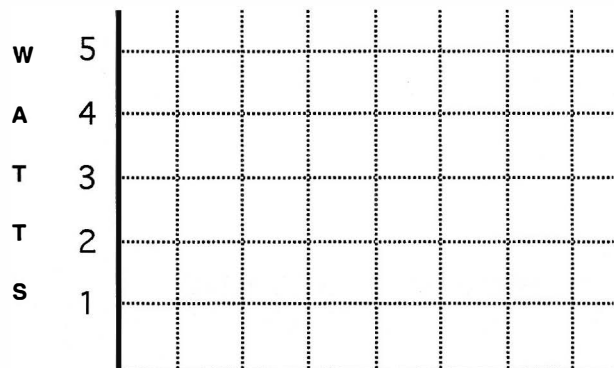
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

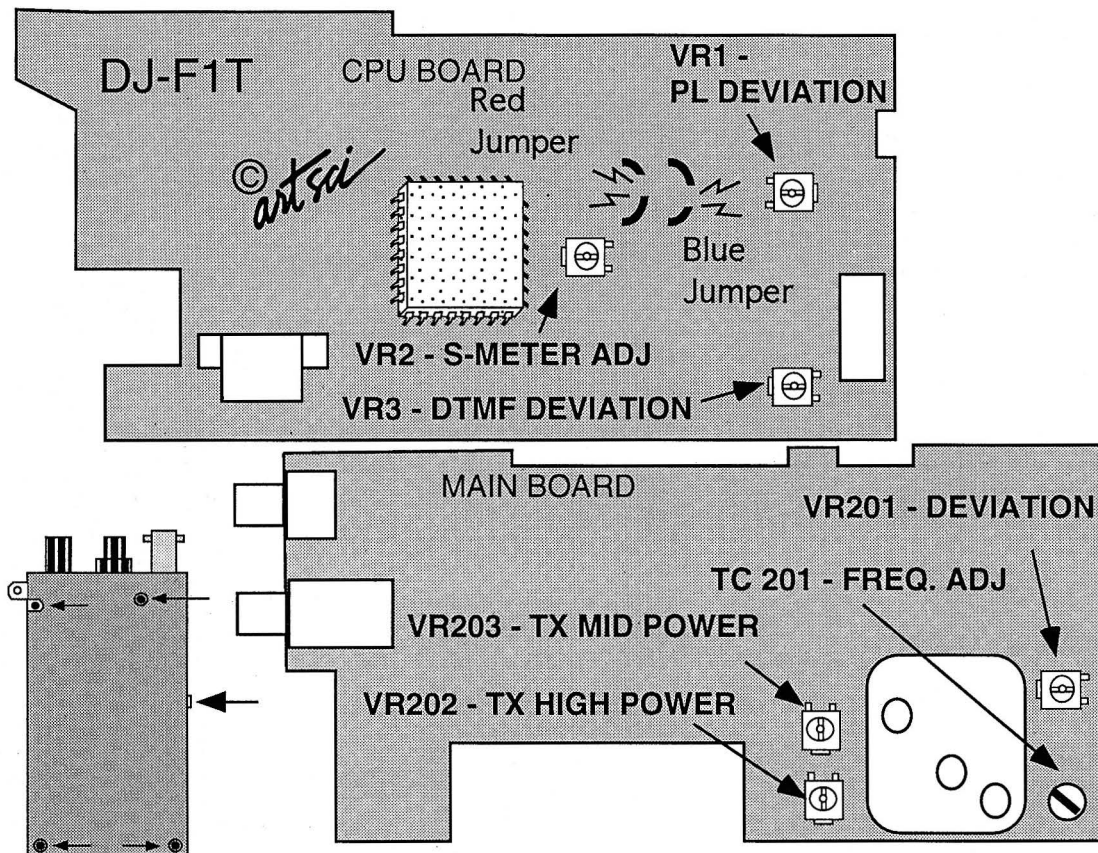
Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove battery and antenna.
2. Remove 5 screws from the back of the case.
3. Slide and hold the Battery lock button open the radio carefully.
4. Locate and **cut the RED jumper wire**. (AM airband reception)
5. Locate and **cut the BLUE jumper**. (Expanded RF)
6. Reassemble the radio.
7. **Reset the microprocessor**. (Press and hold the [F] key and turn the power on)

### TURN ON/OFF AIRBAND:

Press the [B] key. an "A" will appear on the display to indicate the AM mode is operating.

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# Receive and Transmit Expansion

ALINCO

DJ-G1T

## Expansion Range

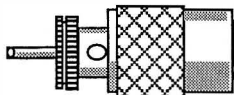
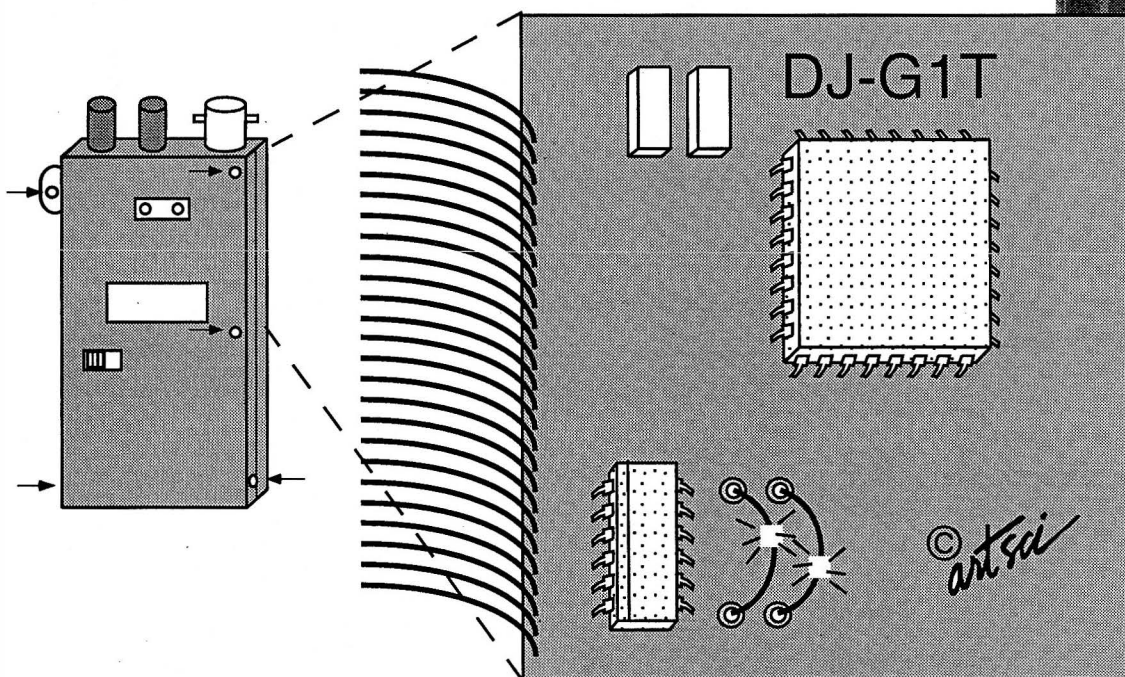
**TX 130 Mhz - 173 Mhz & RX 400 - 512 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove five screws from the back and carefully open the radio.
3. Locate and **cut the BLUE and RED wire loops** on the microprocessor board.
4. Reassemble the radio.
5. **Reset the microprocessor.** (Press and hold [FUNC] and turn the radio on)

**AM AIRBAND** - Press [FUNC] & [Low PTT]



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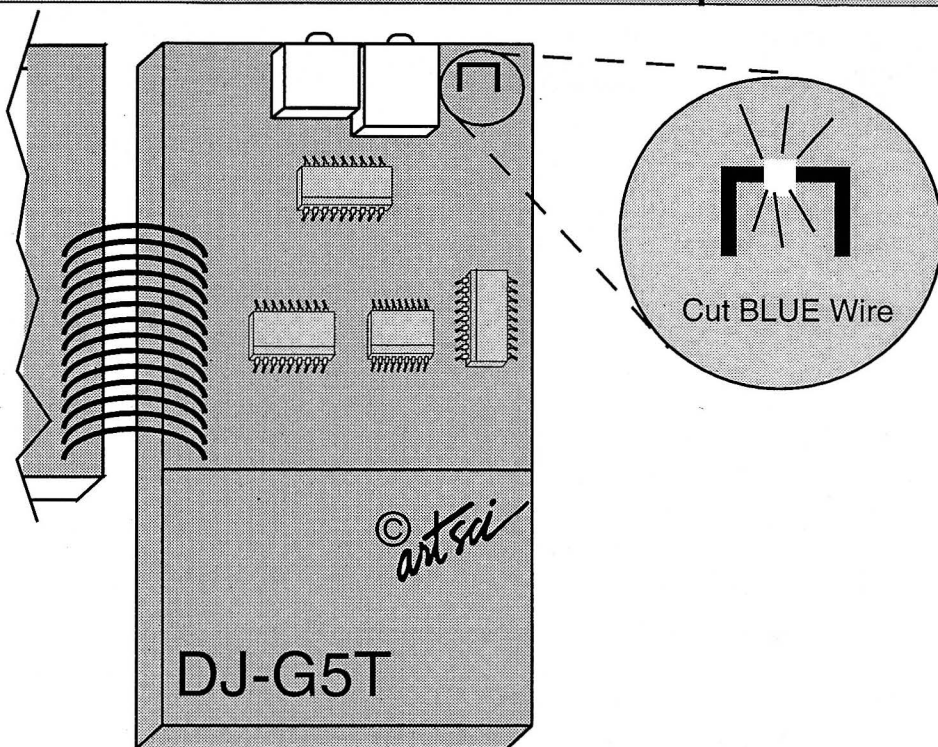
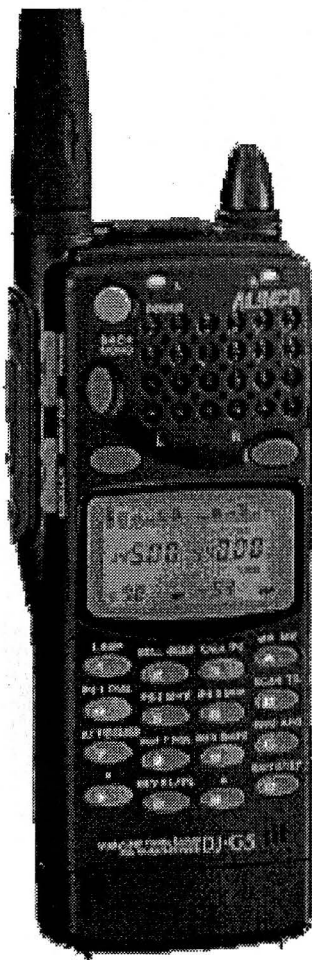
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ALINCO - 19



# ALINCO DJ-G5T

## Receive and Transmit Expansion



### Expansion Range

138 Mhz - 165 Mhz & 420 - 507 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### DJ-G5E 800-1000 MHz expansion

1. Press and hold [F] and press {FL} twice.
2. Press and hold [F] and [#], [2],[1],[2].  
The Display will say OPEN.
3. Press and hold [F] and press [FL].

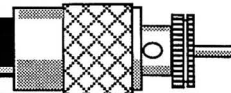
The left hand side receiver will receive  
110-173 MHz & 400-512 MHz

The right hand side receiver will receive  
130-173, 400-512 & 800-1000 Mhz

### Expanded RF Modification

1. Remove battery and antenna.
2. Remove four screws on the back cover
3. Open the radio carefully to avoid damage to the ribbon cable.
4. Locate and **cut the "BLUE" wire.**
5. Reassemble the radio.
6. **Reset the microprocessor.**  
(Press and hold [FUNC] and turn power on)

## Radio/Tech Modifications Volume B



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# Receive Expansion

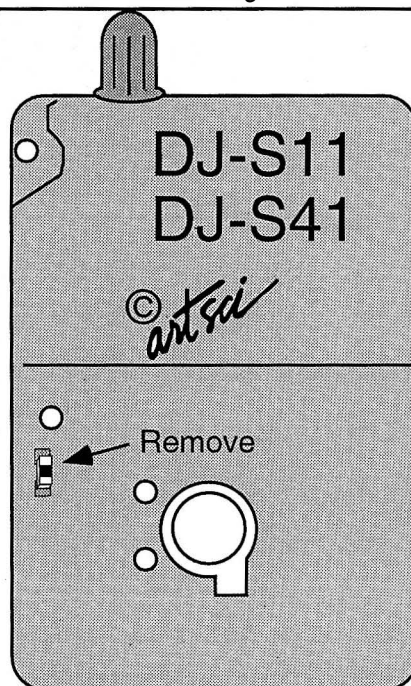
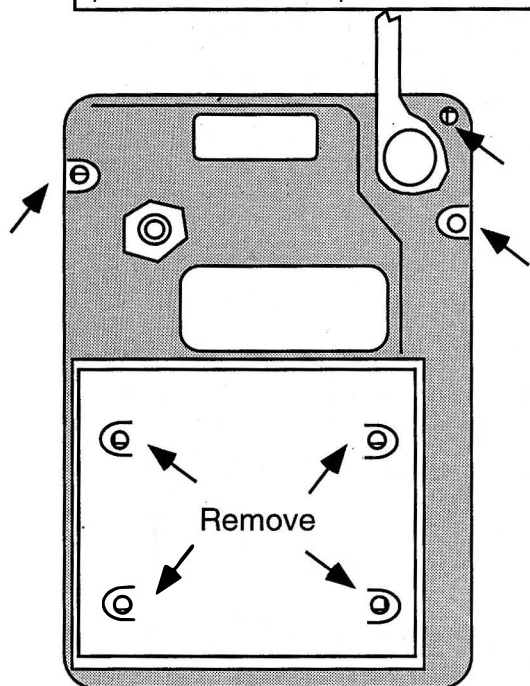
ALINCO

DJ-S11T  
DJ-S41T

## Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138-165Mhz (S1) & 420 - 469 Mhz (S41).

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



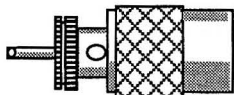
## Expanded RF Modification

- 1) Remove the battery cover and batteries
- 2) Remove seven (7) screws on the back of the radio.
- 3) Carefully open the radio.
- 4) Locate and **remove the GREEN RESISTOR** at the upper-left of the speaker
- 5) Re-assemble the radio
- 6) Reset the microprocessor.  
(Press and hold [F] and turn the power on)

## Clone the DJ-S11

DJ-S11T is not cloneable

1. Program the master radio.
2. Connect the master and slave radio together through the microphone inputs. (use 2.5 mm stereo plugs)  
The PTT wire should not be connected on the plug.
3. Press and hold [UP] & [DOWN] & [PTT] and turn the power on. (The display will read CLONE)
4. Press PTT on the master.
5. In a few seconds, the clone is complete. (ERR will appear if the process did not work)
6. CHANNELIZE the radio by press and holding [V/M] and turn the power on.



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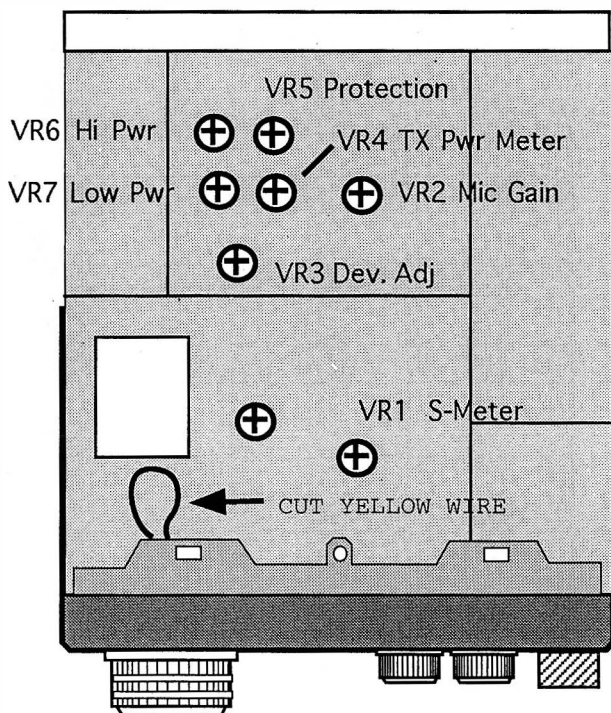
ALINCO - 21

DR-110T  
DR-112T  
DR-119T

## Expansion Range

130 - 169.95 TX/RX  
340 - 379.995 RX  
870 - 889.995 RX

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



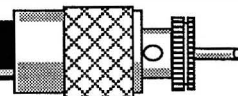
VR1 on  
Tone squelch  
board the  
PL Level

One Report states the Yellow  
wire was Blue in color!

Possible RX Range:  
In VFO Press [F] then [MHz]  
to toggle from 144 to 360 to 870!

## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws from top case and open radio.
3. **Cut the yellow wire** on the control board.
4. Reassemble radio
5. **Reset microprocessor.**  
(Turn radio on. Press and hold [F] and [VFO/M] and turn power off and while still holding keys, turn power back on.



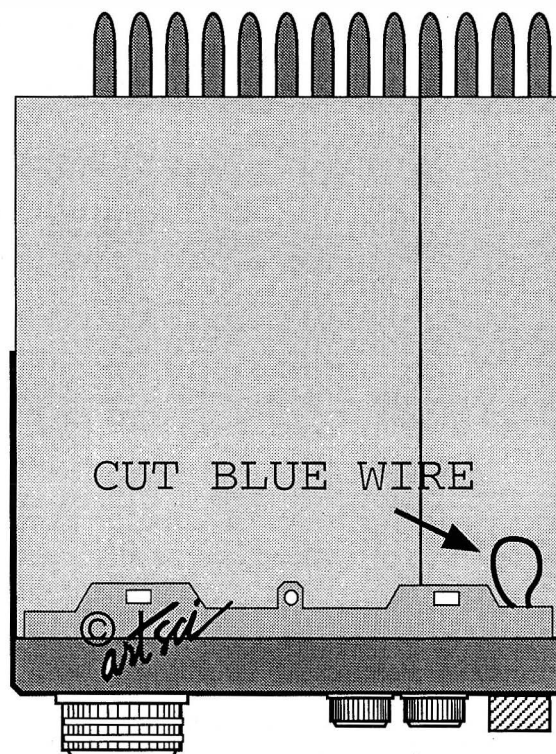


DR-130T  
DR-430T

### Expansion Range

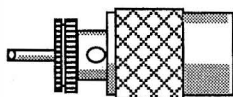
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove power and Antenna.
2. Remove the top cover.
3. Locate and **cut the BLUE** jumper wire.
4. Reassemble the radio
5. **Reset the microprocessor.**  
(Press and hold the [FUNCTION] button and turn the radio on)



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# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

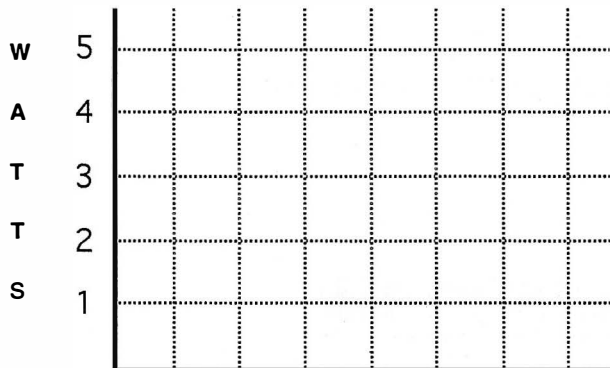
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

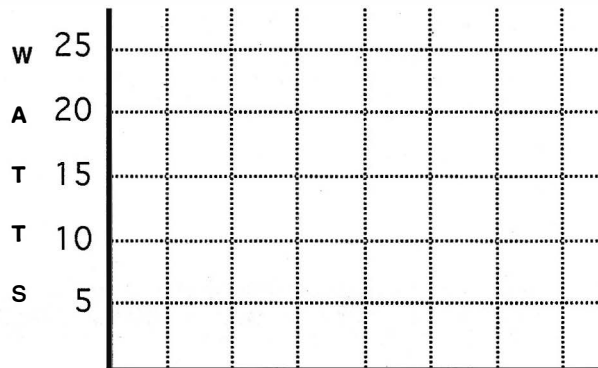
City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



Frequency

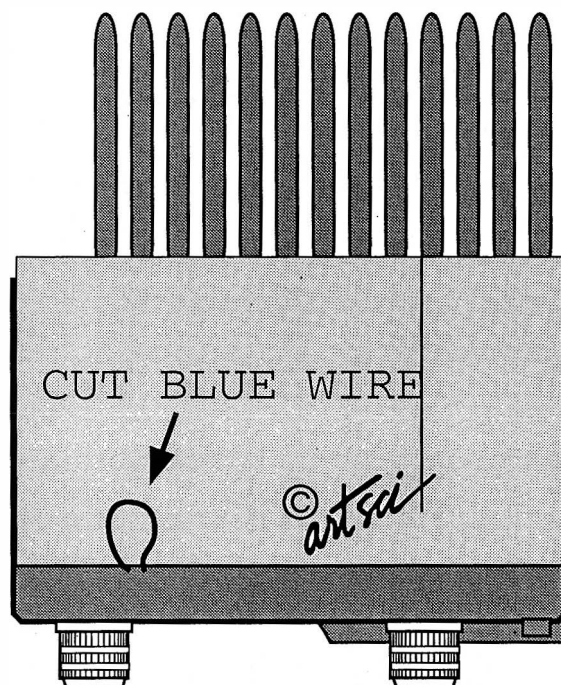


Frequency

#### Expansion Range

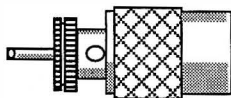
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



#### Expanded RF Modification

1. Remove power and Antenna.
2. Remove the top cover.
3. Locate and **cut the BLUE** jumper wire.
4. Reassemble the radio
5. **Reset the microprocessor.**  
(Press and hold the [FUNCTION] button and turn the radio on)



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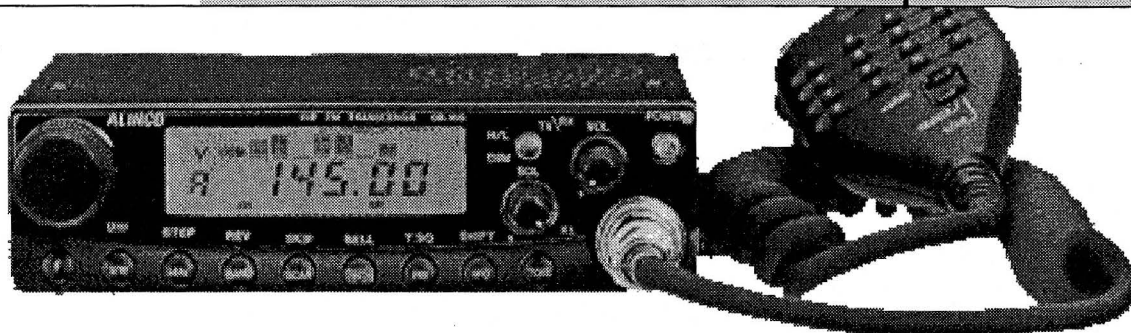
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# ALINCO DR-150

## Receive and Transmit Expansion



### Expansion Range

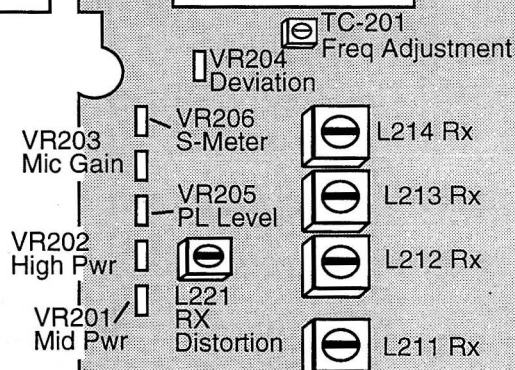
138 MHz - 165 MHz  
430 MHz - 512 MHz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Cut Blue & Red Wire

CP-203

### DR-150 Alignment Controls

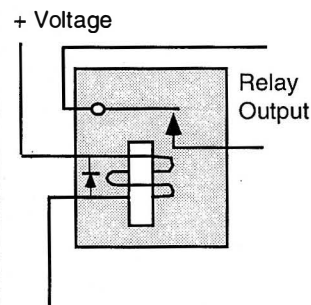


### Expanded RF Modification

1. Remove power and Antenna.
2. Remove the top cover.
3. Locate and **cut the BLUE jumper wire.** ( 2 meter Mod)
4. Locate and **cut the RED jumper wire.** (440 Mod)
5. Reassemble the radio
6. **Reset the microprocessor.**

(Press and hold the [FUNCTION] button and turn the radio on)

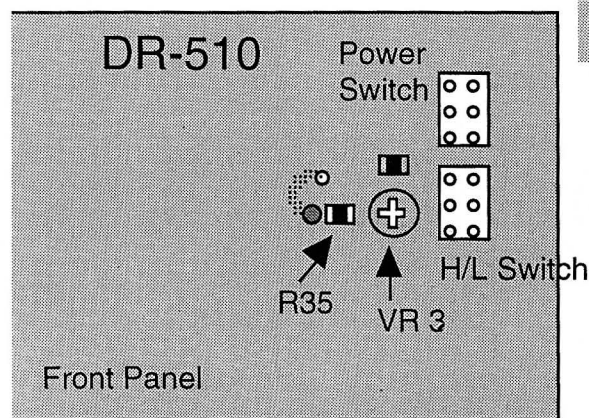
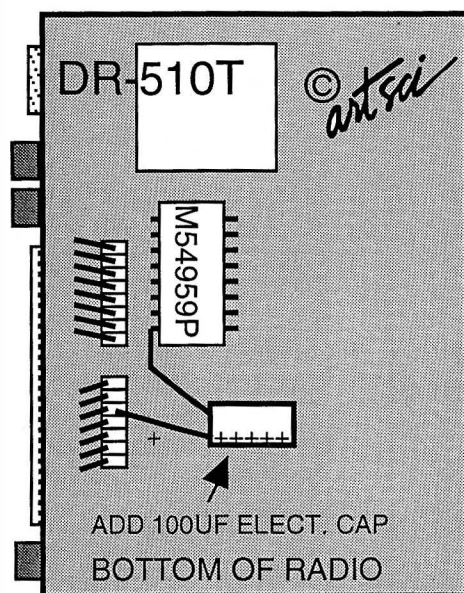
### LITZ Function



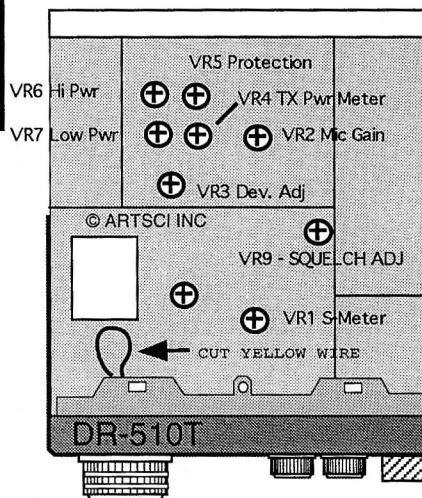
CP-203 15mA max.

## Radio/Tech Modifications Volume B

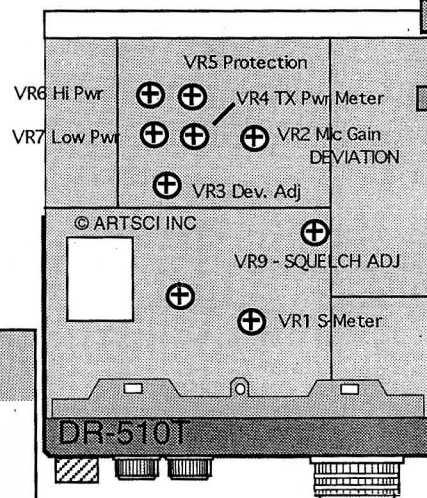
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UPPER SIDE (VHF)



VR1 on  
Tone squelch  
board the  
PL Level  
BOTTOM SIDE (UHF)



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws from case and open radio.
3. **Cut the yellow wire** looped around the blue condenser
4. Remove 2 screws from corners of tone board, to expose motherboard.
5. **Solder a 16 volt 100uf electrolytic** as shown. (note 10-100uf)  
- lead to pin 8 of M54959P + lead to third pin of socket (Orange wire)
6. Remove the front cover
7. **Short chip resistor R35** and solder bridge the pads to the left of the resistor.
8. Reassemble radio
9. **Reset microprocessor** (Push reset button)

### CROSS BAND REPEATER PROCEDURES -

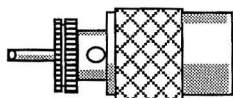
Select the VHF & UHF frequencies and press [SHIFT] until "DUAL" appears.

**TURN ON :** Press and hold [REV] and turn power on. The volume control controls the amount of repeater audio.

**TURN OFF :** Turn radio off.

## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

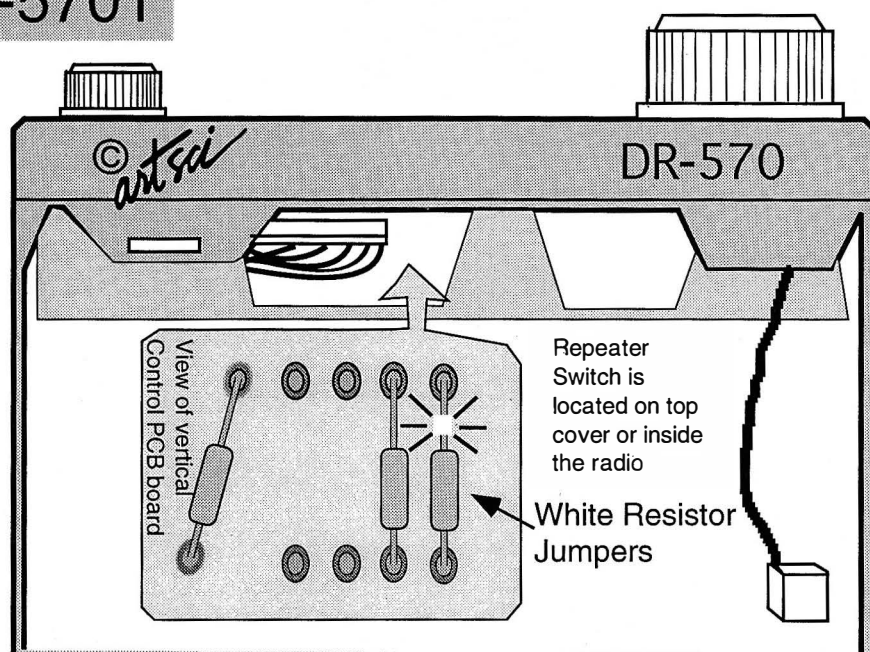


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## Expansion Range

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Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

ALIGNMENT	UHF	VHF
TX HIGH POWER	VR5	VR2
TX LOW POWER	VR7	VR4
RF METER	VR6	VR1
DEVIATION	VR3	VR3
SQUELCH ADJ	VR1	VR1
S-METER	VR2	

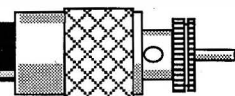
## 300 MHz & 800 MHz Receive

300 MHz  
In 2 Meter sub band  
Press [FUNC] [BAND] [BAND]

800 MHz  
Press [FUNC] [BAND] [BAND] [BAND]

## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws from case and open radio (3 screws in the top and 2 on each side.)
3. Locate and **cut the indicated White resistor jumpers.**  
(They are located on the vertical control PCB board.)
4. **Turn repeater/normal switch to repeater mode.**
5. **Reset the microprocessor.** (Press and hold [FUNCTION] and turn power on)
6. Remove the two pin connector to disable audio bleed in repeater mode.
7. Reassemble radio.



# Receive and Transmit Expansion

ALINCO

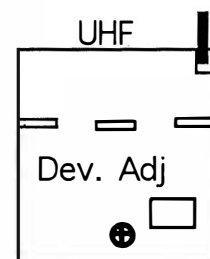
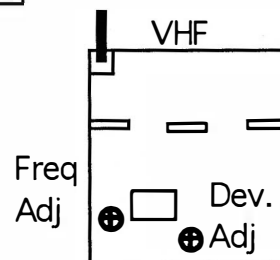
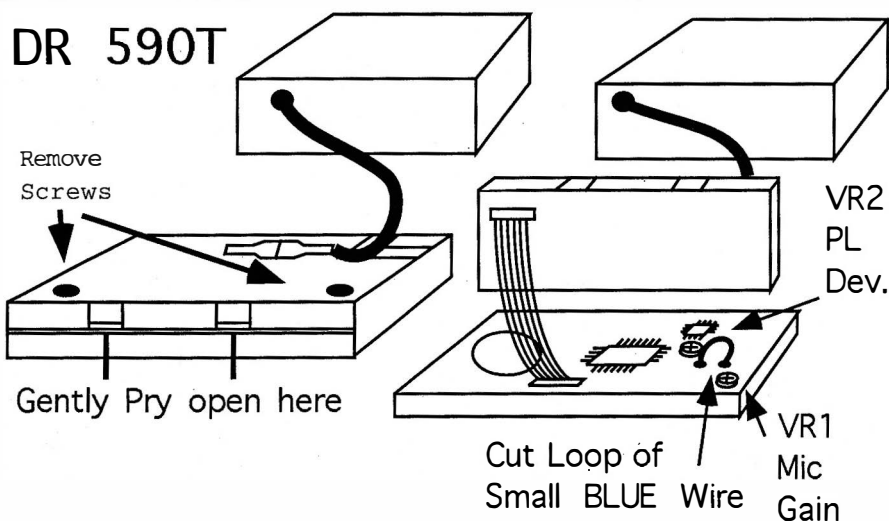
DR-590T  
DR-592T

## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

DR 590T



## Expanded RF Modification

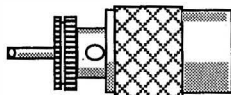
1. Remove Power and Antenna.
2. Remove the four screws, (2 on each side) holding the LCD display to the main body of the radio.
3. **DO NOT DISCONNECT THE BLACK CONNECTOR CABLE FROM THE LCD DISPLAY.**
4. Locate and unscrew the 2 screws holding the LCD display together.
5. Carefully separate the back cover of the display from the front cover. Use a flat blade screwdriver to apply slight pressure to the locking tabs in the top of the display.
6. Locate and **cut the loop of BLUE wire.**
7. Reassemble the radio.
8. **Reset the microprocessor.** (Press and hold the [FUNCTION] key and turn power on.)

## Cross Band Repeater Instructions

**ENABLE REPEATER MODE:** Simultaneously press the [FUNCTION] key and the [VHF] Key.  
The display will alternate between VHF and UHF every 3 seconds.

**DISABLE REPEATER MODE:** Simultaneously press the [FUNCTION] key and the [UHF] Key.

A audio frequency response kit is available from Alinco. Contact them for the parts and instruction sheet.  
(This is for improving the Cross-band repeater audio)



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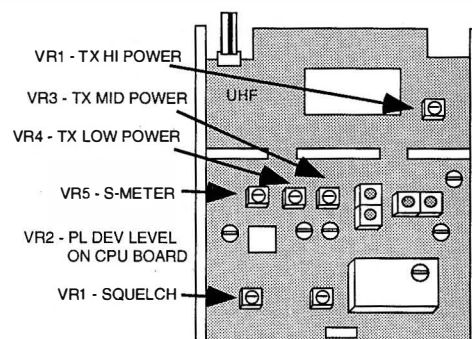
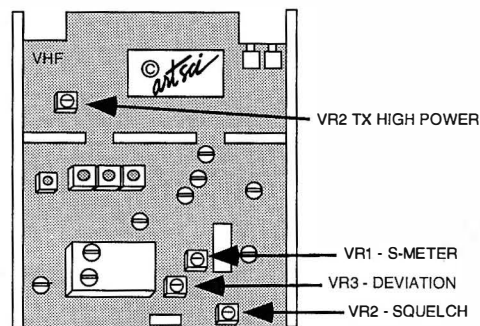
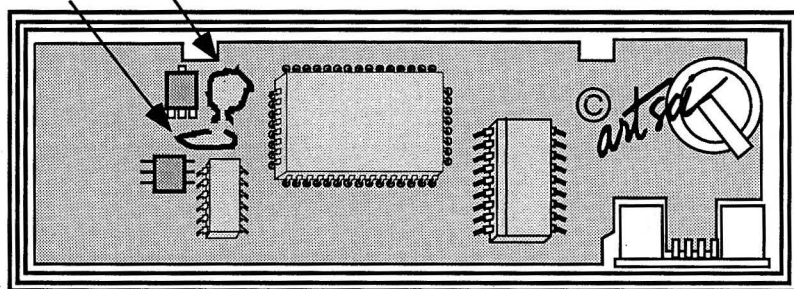
### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Cut These wires



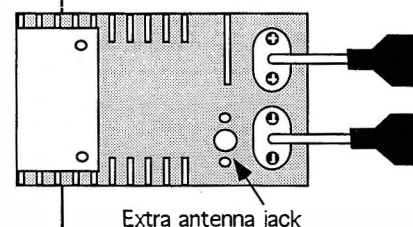
Bottom of radio

800 MHz  
Ant.  
Con.



### Expanded RF Modification

1. Remove the Power cable and Antenna.
2. Remove the 4 screws, (two on each side).  
HOLD THE CONTROL HEAD against the main unit.
3. Remove the 2 screws holding the control head together.
4. Carefully separate the back and front cover of the control unit.
5. **Cut the RED wire** to allow reception in the Aircraft and the 800 MHz band.
6. **Cut the BLUE wire** to expand the TX & RX frequencies.
7. Reassemble the control head.
8. Remove the bottom cover. (two additional screws on the bottom cover)
9. For 800 MHz RX, feed a new antenna cable through the optional antenna jack on the back of the main body of the radio. (Order Optional Ant. Kit EAK-599 from Alinco)
10. Locate antenna connector CN59 and attach the antenna cable.
11. Reassemble the radio.
12. **Reset the Microprocessor.** (Push and hold the [FUNC] key and turn the power on)



Press [VHF] & [UHF] button twice  
to access new Features

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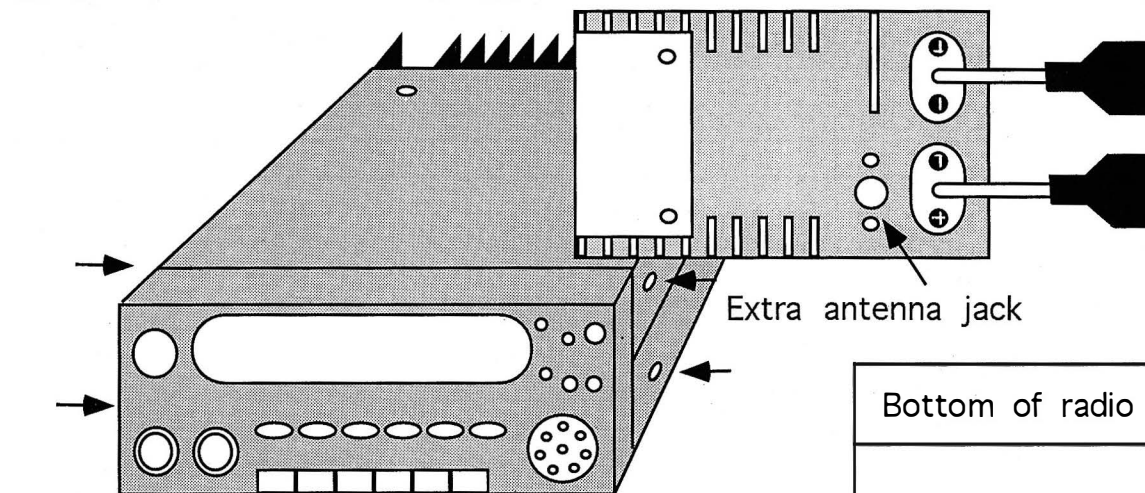
# Receive and Transmit Expansion

ALINCO

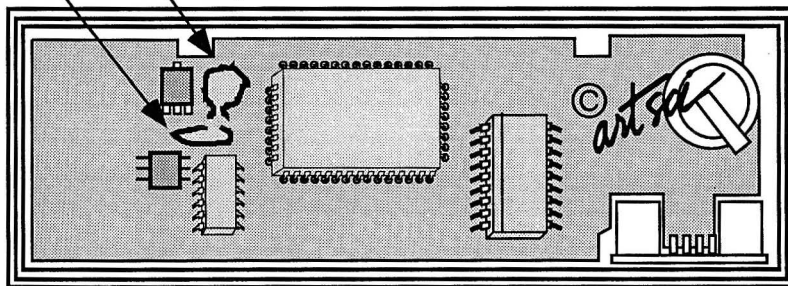
DR-600T  
DR-600TB

## Expansion Range

130-173.999 MHz & 440-519 MHz



Cut These wires



Bottom of radio

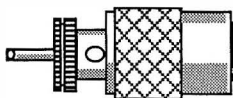
800 MHz  
Ant.  
Con.



Press [VHF] & [UHF] button twice  
to access new Features

## Expanded RF Modification

1. Remove the Power cable and Antenna.
2. Remove the 4 screws, (two on each side).  
HOLD THE CONTROL HEAD against the main unit.
3. Remove the 2 screws holding the control head together.
4. Carefully separate the back and front cover of the control unit.
5. **Cut the RED wire** to allow reception in the Aircraft and the 800 MHz band.
6. **Cut the BLUE wire** to expand the TX & RX frequencies.
7. Reassemble the control head.
8. Remove the bottom cover. (two additional screws on the bottom cover)
9. For 800 MHz RX, feed a new antenna cable through the optional antenna jack on the back of the main body of the radio. (Order optional Ant. kit EAK-599 from Alinco) (**DR-600TB HAVE THE 800 RX REMOVED!! Ser # starts with "TB"**)
10. Locate antenna connector CN59 and attach the antenna cable.
11. Reassemble the radio.
12. Reset the Microprocessor. (Push and hold the [FUNC] key and turn the power on)



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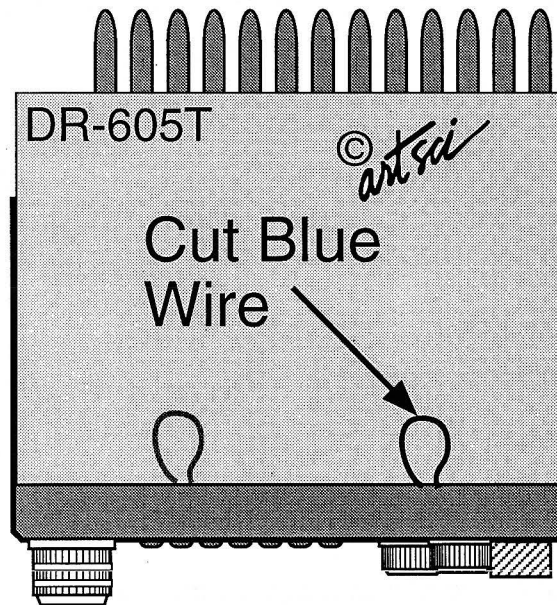
#	Frequency	Offset	PL	Label	Description
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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49					



### Expansion Range

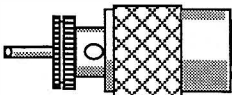
**136 Mhz - 173.995 Mhz & 400 - 480 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

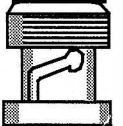
1. Remove the power and the antenna.
2. Remove four screws securing the top cover and the cover.
3. Locate and **cut the BLUE jumper wire** behind the front panel.  
(Place tape on the end of the wires to prevent shorting.)
4. Reassemble the radio.
5. Reset the microprocessor.  
(Press and hold [FUNC] and turn the power on.)



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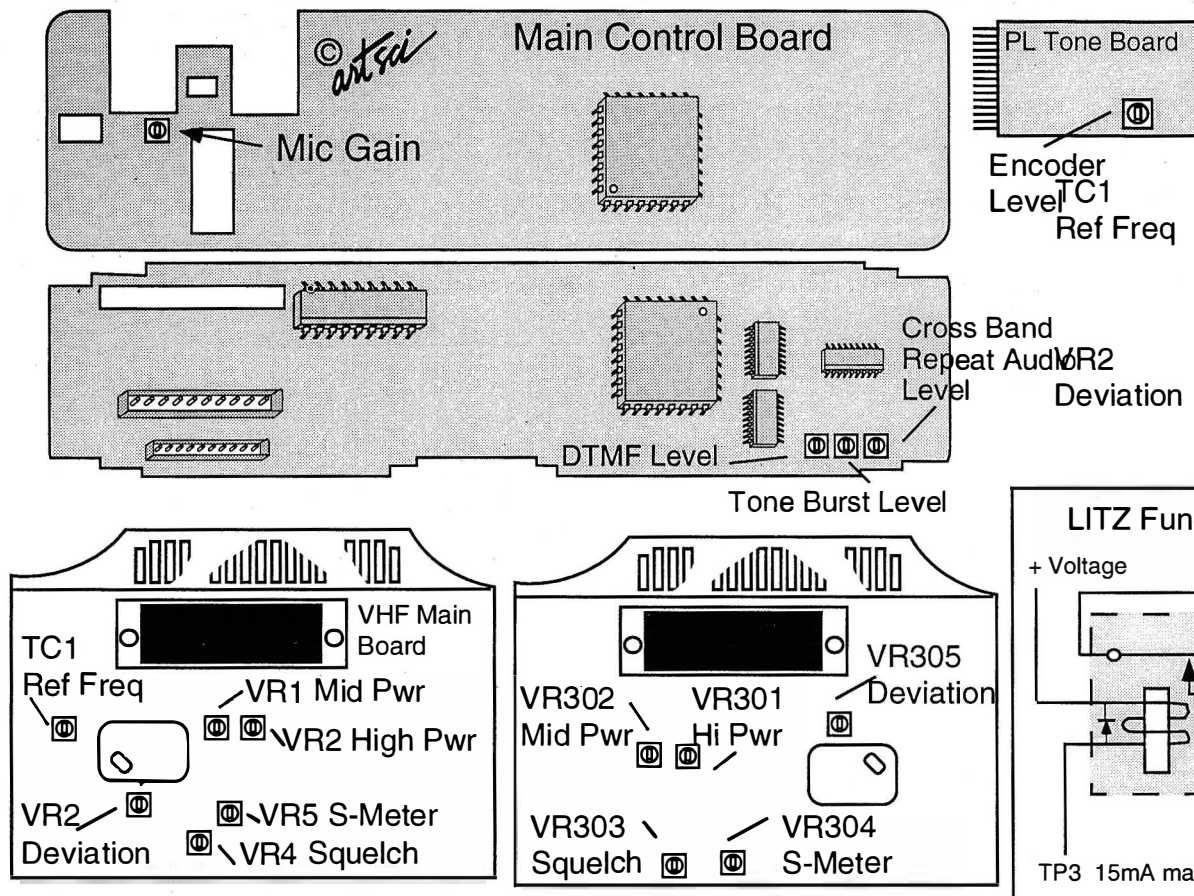
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### Expansion Range

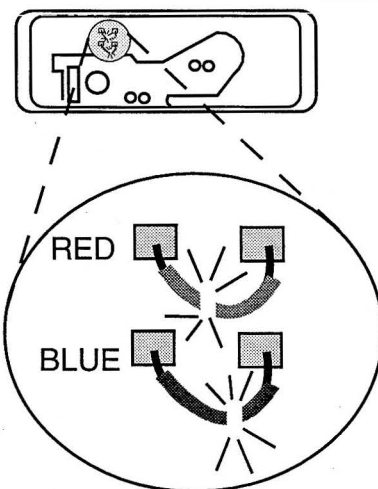
138 Mhz - 165 Mhz & 420 - 507 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

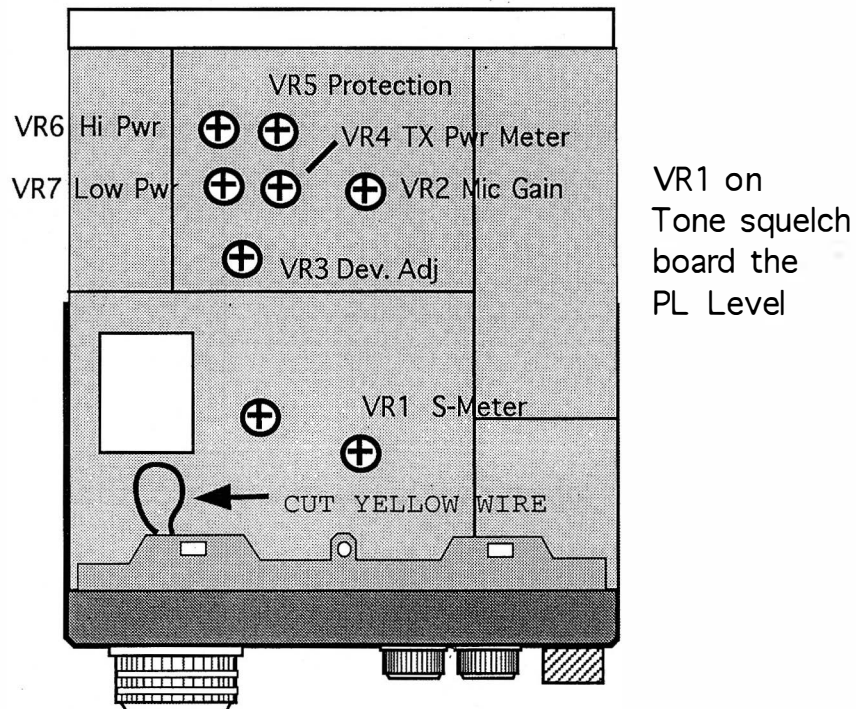


### Expanded RF Modification

1. Remove the Power cable and Antenna.
2. Remove the 4 screws, (two on each side).  
HOLD THE CONTROL HEAD against the main unit.
3. Remove the 2 screws holding the control head together.
4. Carefully separate the back and front cover of the control unit.
5. **Cut the RED wire** to allow reception in the Aircraft and the 800 MHz band.
6. **Cut the BLUE wire** to expand the TX & RX frequencies.
7. Reassemble the control head.
8. Reset the Microprocessor.  
(Push and hold the [FUNC] key and turn the power on)

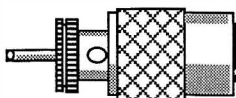


### Radio/Tech Modifications Volume B



After cutting Yellow wire:

Press and hold [FUNC] & [VFO/M] button and turn the power on.





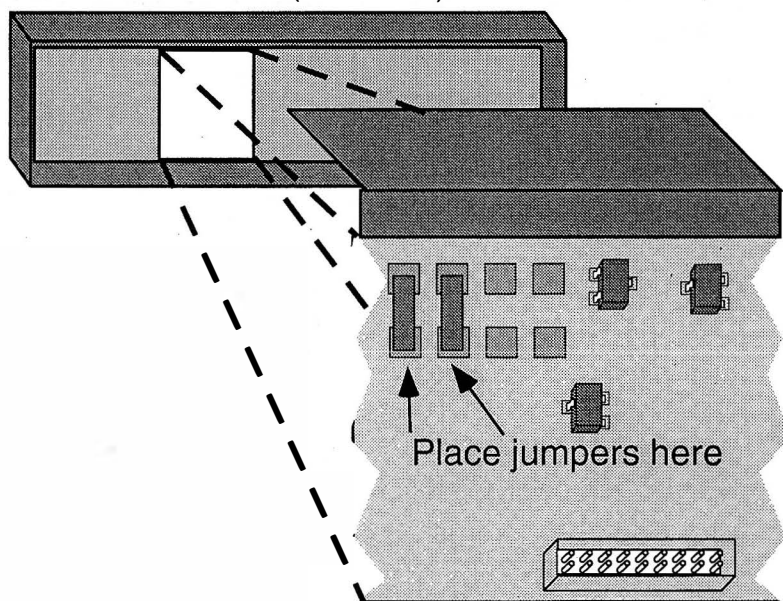
### Expanded RF Modification

1. Remove top and bottom covers.
2. Remove the main dial from the case.
3. Remove the front plastic case.
4. Unscrew the 3 screws on the control unit and remove.
5. Locate jumper locations (see diagram)
6. **Place solder bridges on the left 2 locations.**
7. Reassemble the radio.
8. Reset the microprocessor  
(Press and hold [FUNC] and turn power on)

### Expanded Rx only Modification

1. Press and hold the [CALL] key and turn radio on.
2. Press [MHz]. The last 2 digits will disappear.
3. Use Main dial to tune frequency. (40 - 60 MHz)
4. Press [MHz] to confirm the frequency.

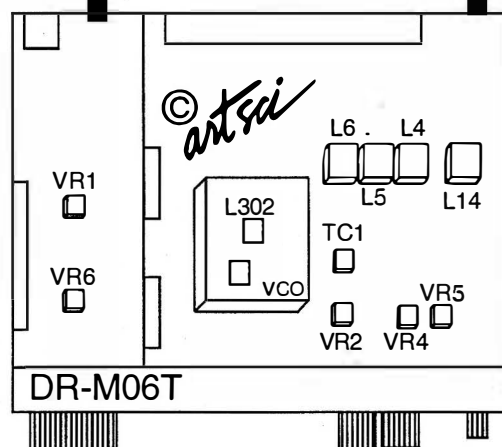
Control Unit (Back side)



### Expansion Range

RX - 32 MHz - 87 MHz  
TX - 42 MHz - 70 MHz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Adjustments

- TC1 -- Reference Freq.
- VR1 -- High TX Pwr
- VR2 -- Deviation
- VR4 -- Mic Gain
- VR5 -- S-meter Adj.
- VR6 -- Low TX Pwr

### Channel display Modification

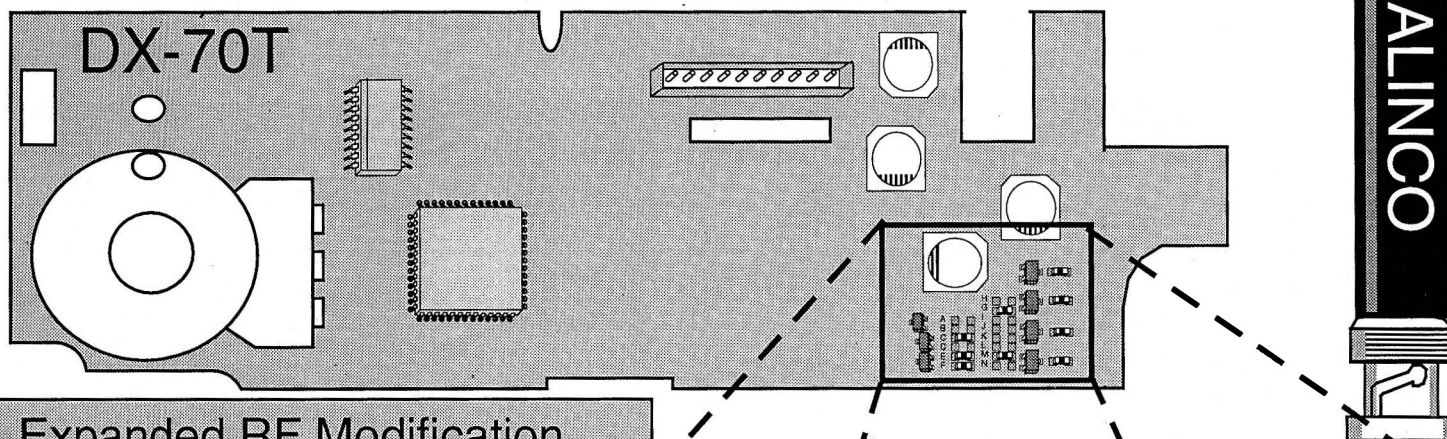
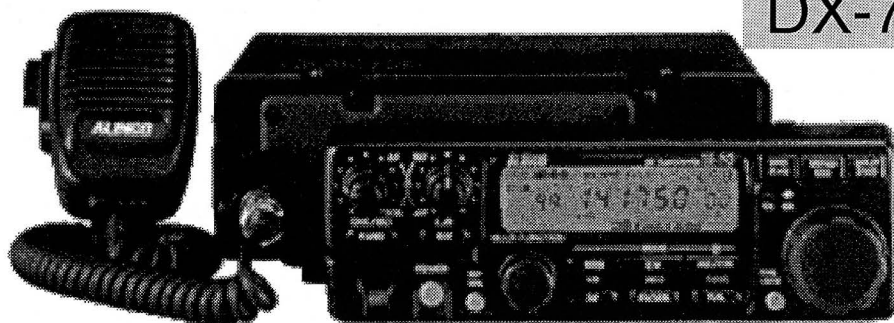
1. Press and hold the [TOT] key and turn radio on.  
The radio will now display channel numbers.

# Receive and Transmit Expansion

ALINCO  
DX-70T

## Expansion Range

30KHz - 35 MHz  
45 MHz - 60 MHz

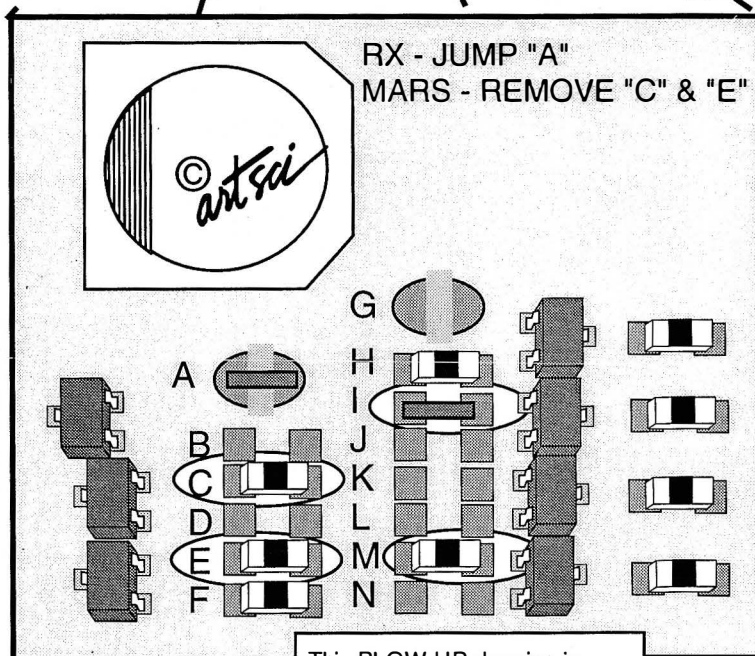


## Expanded RF Modification

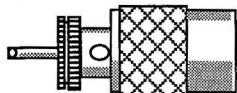
1. Remove power and antenna.
2. Remove control head and disconnect the control cable.
3. Remove 2 screws from the back of the control head.
4. Remove the back cover from the control head.
5. **Remove resistor from "C" & "E"** (Extended TX)  
**Remove "M"** (Extended RX - Low End 30 KHz)  
**Add a jumper to "A"** (Extended RX high end 35 MHz)  
**Add a jumper to "I"** (extended 6 meters 45-60 MHz)
6. Reassemble the radio.  
The board must be put in properly or the buttons will not work.
7. Reset the microprocessor.  
(Press and hold [F] and turn the radio on.)

### CAUTION:

This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



This BLOW-UP drawing is intended to help you locate the proper parts.  
The parts presented here are for reference only. Not all these parts may be present in your radio.



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## Expansion Range

30KHz - 35 MHz

Sor or open pads as shown

For full expansion:

Pad A shorted

Pad C Open

Pad D open



PAD	Purpose	Pad Open	Pad Closed	Comments
A	Frequency Upper Limit	30 MHz	30 MHz	Display Only
B	Frequency Lower Limit	150 Khz	30 Khz	
C	TX Range 1	See Below	See Below	
D	TX Range 2	See Below	See Below	
E	Resetting	Enabled	Disabled	Disable for Commercial Use
F	Set Mode Entry	Enabled	Disabled	Disable for Commercial use
G	VFO / Memory	VFO <> Memory	Memory Only	"Memory only" for Commercial use
H	Memory Display	CH, + Grequency	Ch. Only	Valid only when "G" is shorted
I	<RESERVED>			
J	Function Operation	Enabled	Disabled	Disable for Commercial use
K	Function Long Press	Enabled	Disabled	Disable for Commercial use
L	<Reserved>			

	Pad D Open	Pad D Shorted
Pad C Open	1.6 to 30 MHz (35 MHz if A is shorted)	U.S. Amateur Band Plan
Pad C Shorted	Japanese Amateur Band Plan	EEprom Band Plan

DX-77T

A

B

C

D

E

F

G

H

I

J

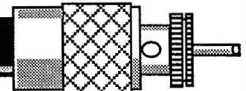
K

L

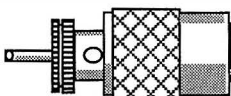
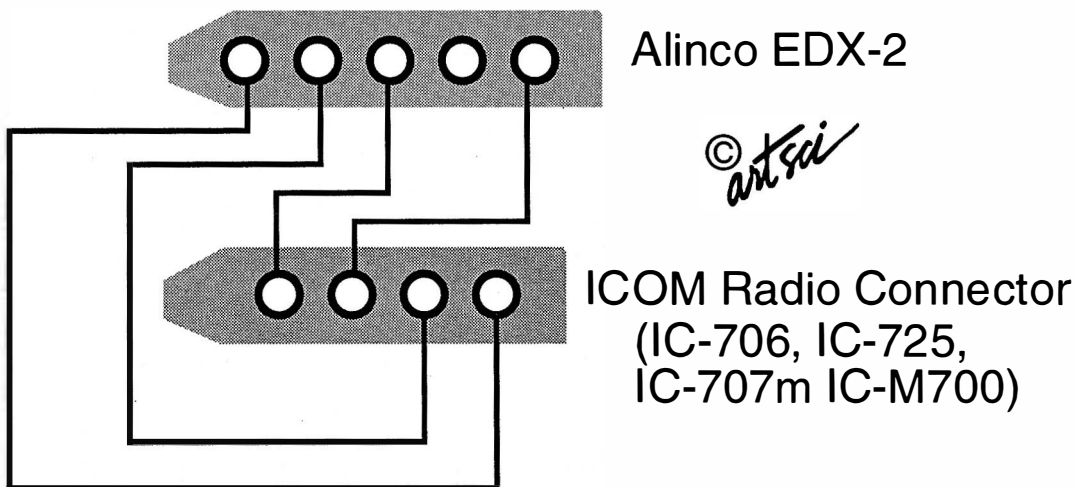
Pad Location:

Back side of Front Control unit to the right of the Speaker

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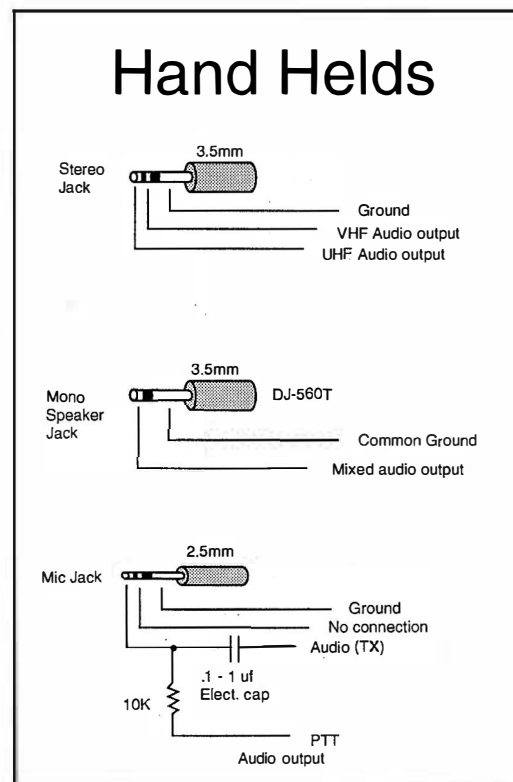
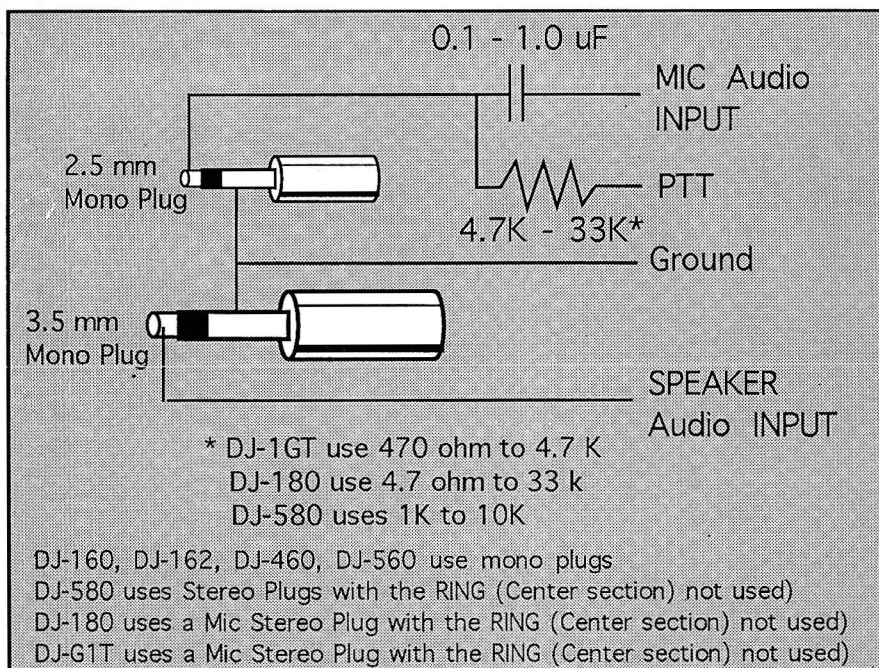
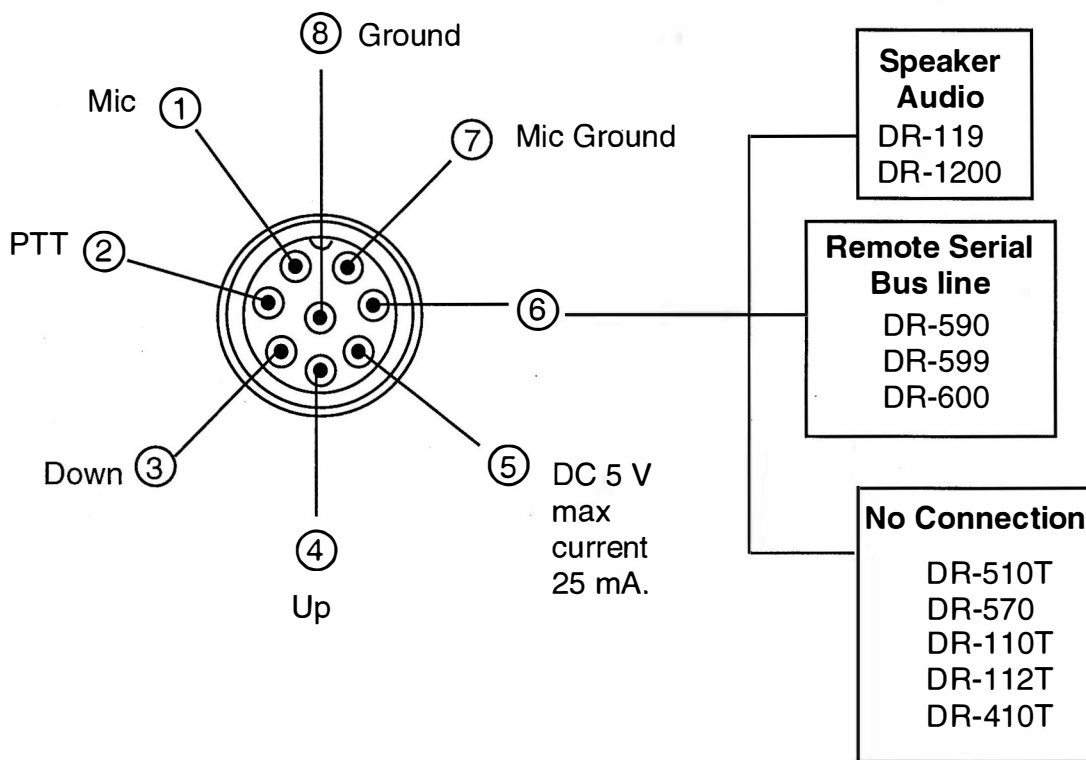


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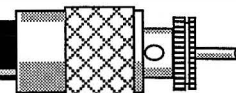
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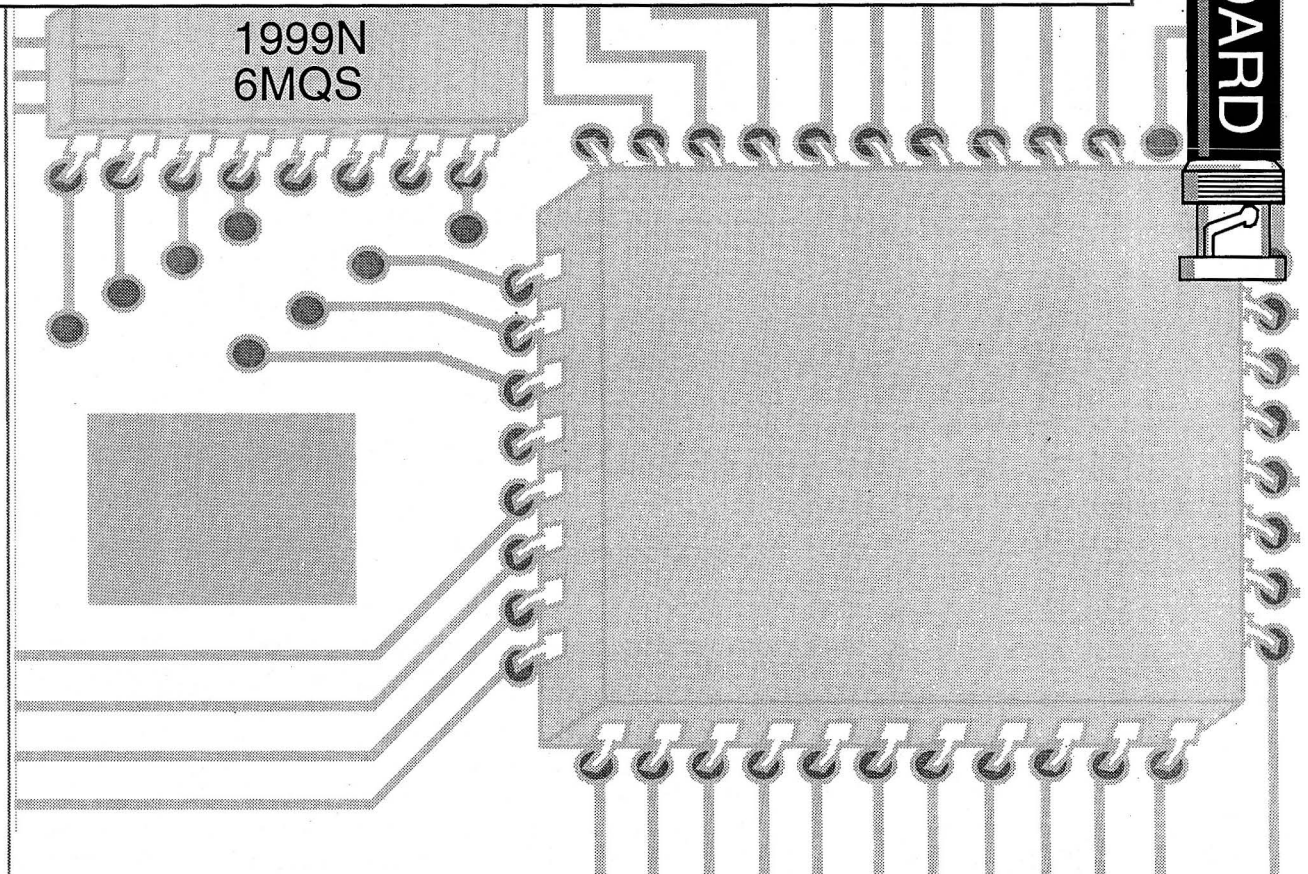


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## Standard Modifications

C-108A	Expanded RF.....	Standard - 2
C-156	Expanded RF.....	Standard - 3
C-158	Expanded RF.....	Standard - 4
C-168A	Expanded RF.....	Standard - 5
C-168S	Expanded RF.....	Standard - 6
C-178	Expanded RF.....	Standard - 7
C-188	Expanded RF.....	Standard - 9
C-228	Expanded RF.....	Standard - 10
C-288	Expanded RF.....	Standard - 12
C-468A	Expanded RF.....	Standard - 13
C-468S	Expanded RF.....	Standard - 14
C-488	Expanded RF.....	Standard - 15
C-508	Expanded RF.....	Standard - 16
C-510	Expanded RF.....	Standard - 17
C-528	Expanded RF.....	Standard - 19
C-558	Expanded RF.....	Standard - 20
C-568	Expanded RF.....	Standard - 21
C-628	Expanded RF.....	Standard - 22
C-1208	Expanded RF.....	Standard - 23
C-5608	Expanded RF.....	Standard - 24
C-5718	Expanded RF.....	Standard - 25
C-5900	Expanded RF.....	Standard - 26
PACKET	Expanded RF.....	Standard - 27



## C108A

## Expansion Range

**RX:** 105 - 138 MHz AM  
140.000 - 174.995 MHz  
**TX:** 120.000 - 160.000 MHz

## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case.
3. Locate Microprocessor.
4. Locate and **cut Diode "B"**. (see drawing)
5. Reassemble the radio.
6. Reset the microprocessor. (see owners manual)

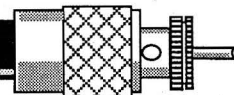


Micro  
Processor

C108A

Remove diode "B"

Radio/Tech Modifications Volume B



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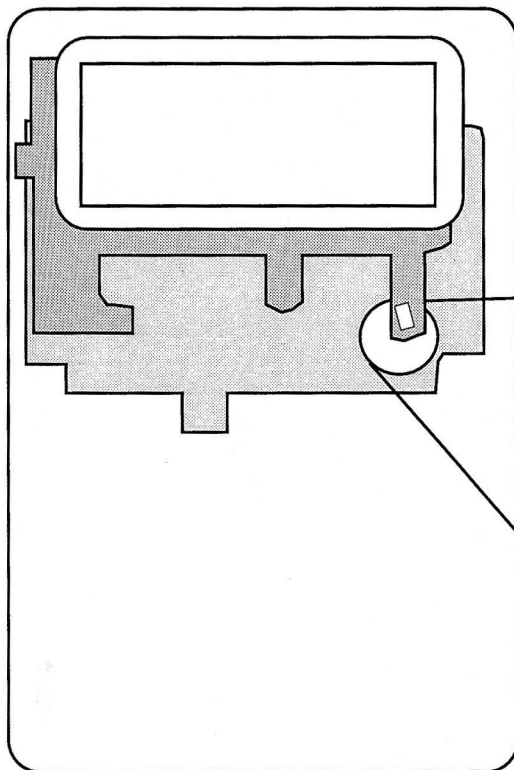
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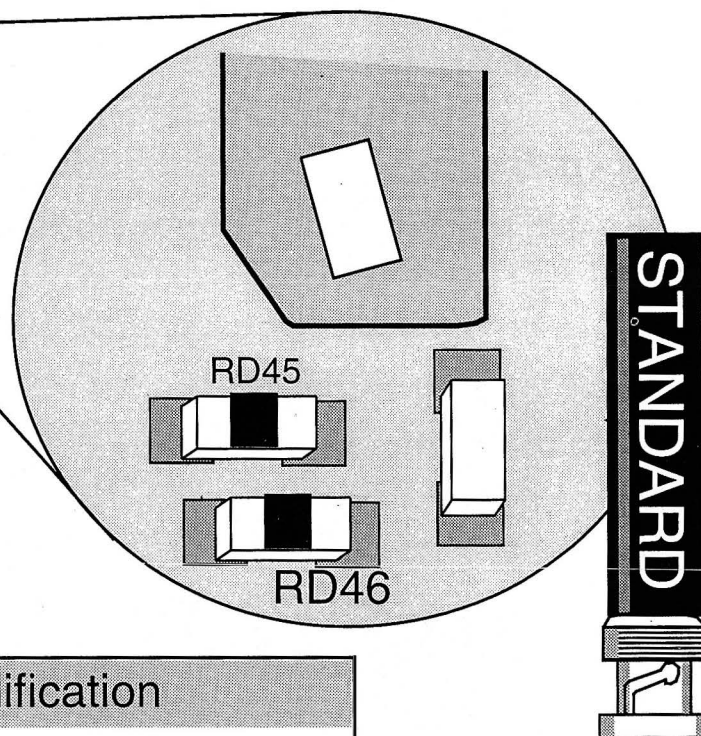
### Expansion Range

#### 100 Mhz - 199 Mhz RX&TX

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

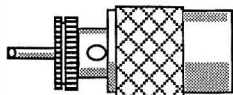


**CAUTION:**  
This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove two screws from rear case .
3. The front panel will lift off by pressing on sides for the keypad.  
(BE CAREFUL no to loose 'ZEBRA" connectors)
4. Locate Chip Resistor RD46 (see drawing)
5. **Remove Chip Resistor RD46.**  
(Note is a very small 100K ohm resistor, not the larger black diode near it.)
6. Reassemble the radio



## Radio/Tech Modifications Volume B

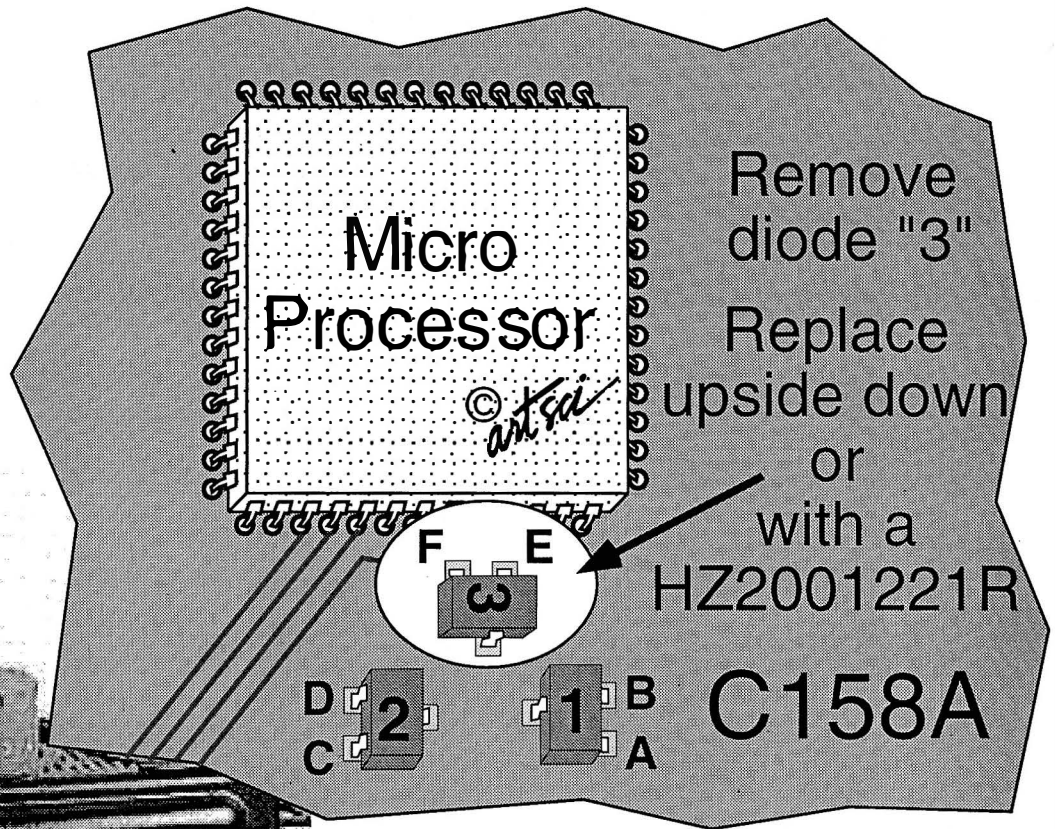
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# STANDARD C158A

## Receive and Transmit Expansion



STANDARD



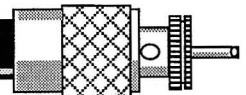
### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz. Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

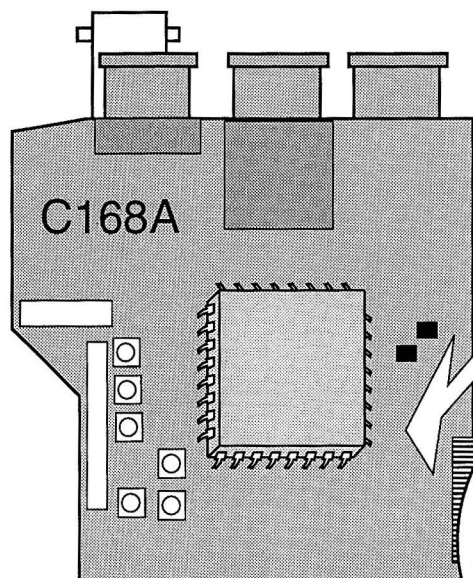
### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case.
3. Locate Chip Diode "3" near microprocessor (see drawing)
4. **Remove Chip Diode "3". (may be already removed)**
5. **Reinstall the diode upside down** (reversing legs E & F) or Install a new Chip Diode DA112. (Standard part # HZ2001221R)
6. Reassemble the radio
7. Reset the microprocessor. (press and hold [FUNC] & turn power on)

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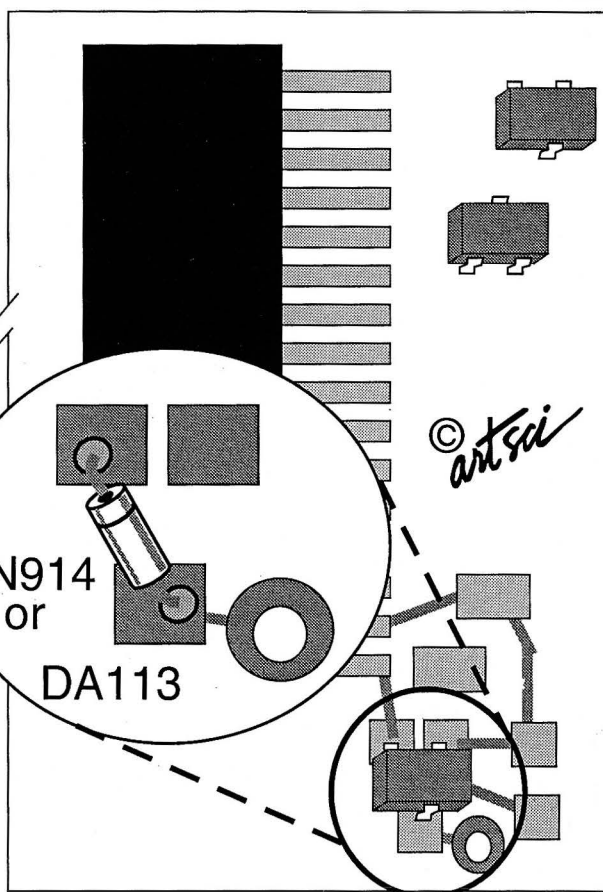


### Expansion Range

**120 Mhz - 180 Mhz .**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

1N914  
or  
DA113



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### Reset Command

1. Switch to the Set Mode.
2. Press and hold [FUNC] & [3]  
(a Dot will appear left of the first digit)
3. Switch to the set mode.
4. Press and hold [FUNC] & [1]  
(the display will blank out and back on)

### DIRECT FREQUENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

### AM / FM mode switch

1. Press and hold [F] then [0].
2. Press and hold [F] then [2].

### RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case.  
(Be careful. Do not break flat cables)
3. Locate microprocessor. (see Drawing)
4. **Install a DA-113 chip diode** in place.  
( A 1N914 may be used)
5. Reassemble the radio.
6. If required, RESET the microprocessor.

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### Expansion Range

57 - 97 MHz RX AM/FM /  
100 - 175 MHz RX AM/FM  
213 - 391 MHz RX AM/FM  
115 - 174 MHz TX/RX FM

### Expanded Receive Modification

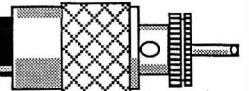
1. Turn Power on.
2. Press [ENT]
3. Press [0], [9].
4. Press [ENT]
5. Press and hold [F] then [0].
6. Press and hold [F] then [ENT].
7. Press and hold [F] then [0].
8. Press and hold [F] then [0].
9. Press and hold [F] then [8].
10. Press [CL]

### DIRECT FREQUENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

### AM / FM mode switch

1. Press and hold [F] then [0].
2. Press and hold [F] then [2].





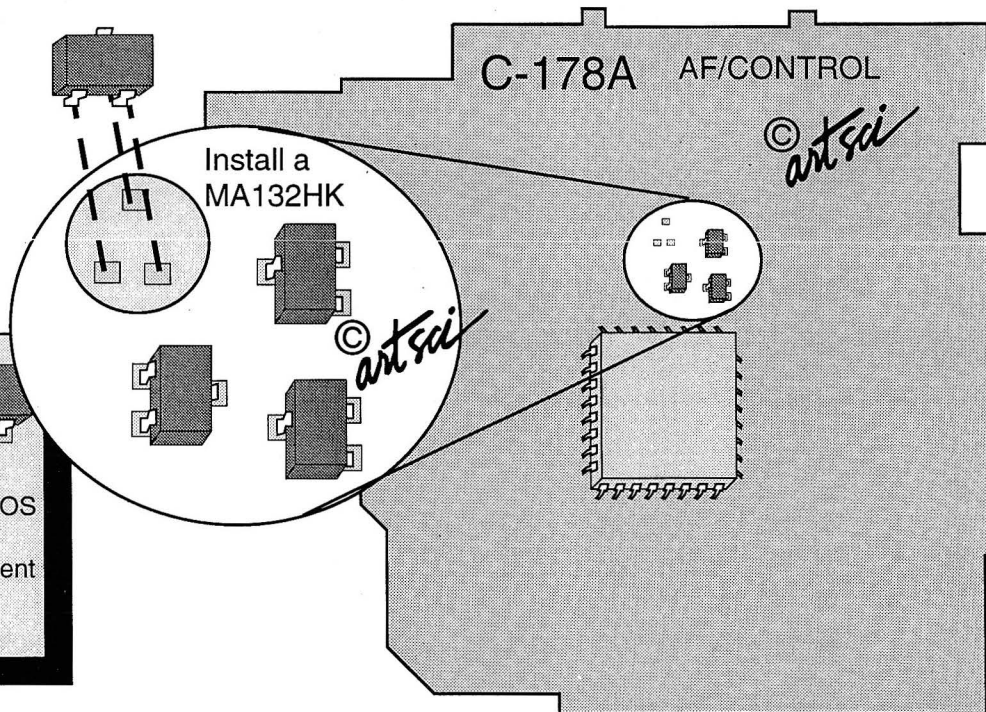
### Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove Battery.
2. Remove 4 screws securing the front case, 2 on the bottom, 1 on right side and 1 on the rear case. and open the radio.
3. Locate Control Board.
4. **Locate and install a MA132HK diode package..**  
If there is already a diode package in place, you may be able to flip the diode package over and reinstall it for proper modification.
5. Reassemble the radio.
6. Reset the microprocessor.  
( Press [FUNC] & [SET], turn channel selector to "rst OFF",  
Press [FUNC] & turn channel selector,  
Press [FUNC] & [POWER ON])



### CAUTION:

This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.

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# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

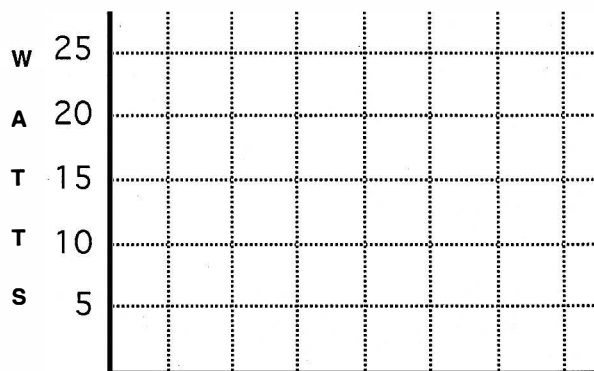
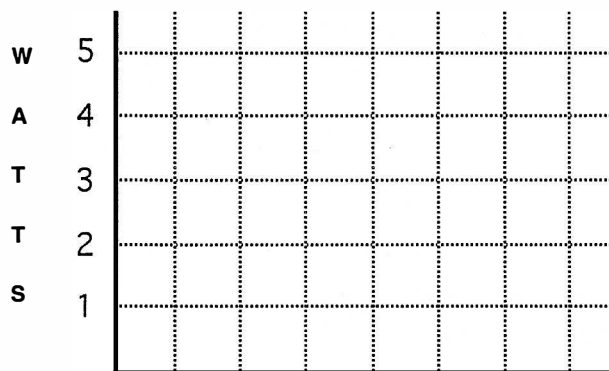
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

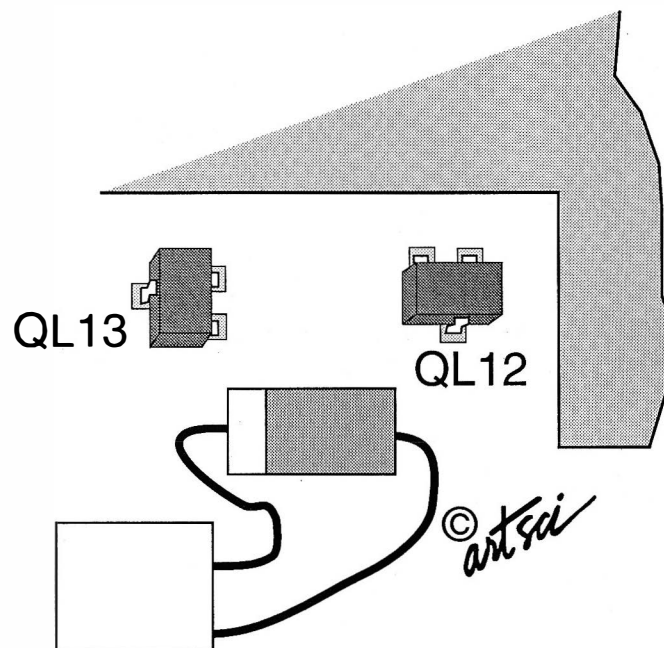
Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



### Expansion Range

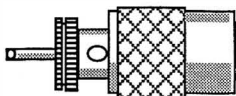
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open case.
3. Locate the microprocessor board
4. Locate QL12 & QL13. (QL13 may already be missing)
5. **Remove QL12 & QL13.** (QL13 may already be missing)
6. Reassemble the radio
7. **Reset Microprocessor** (set mode 8).

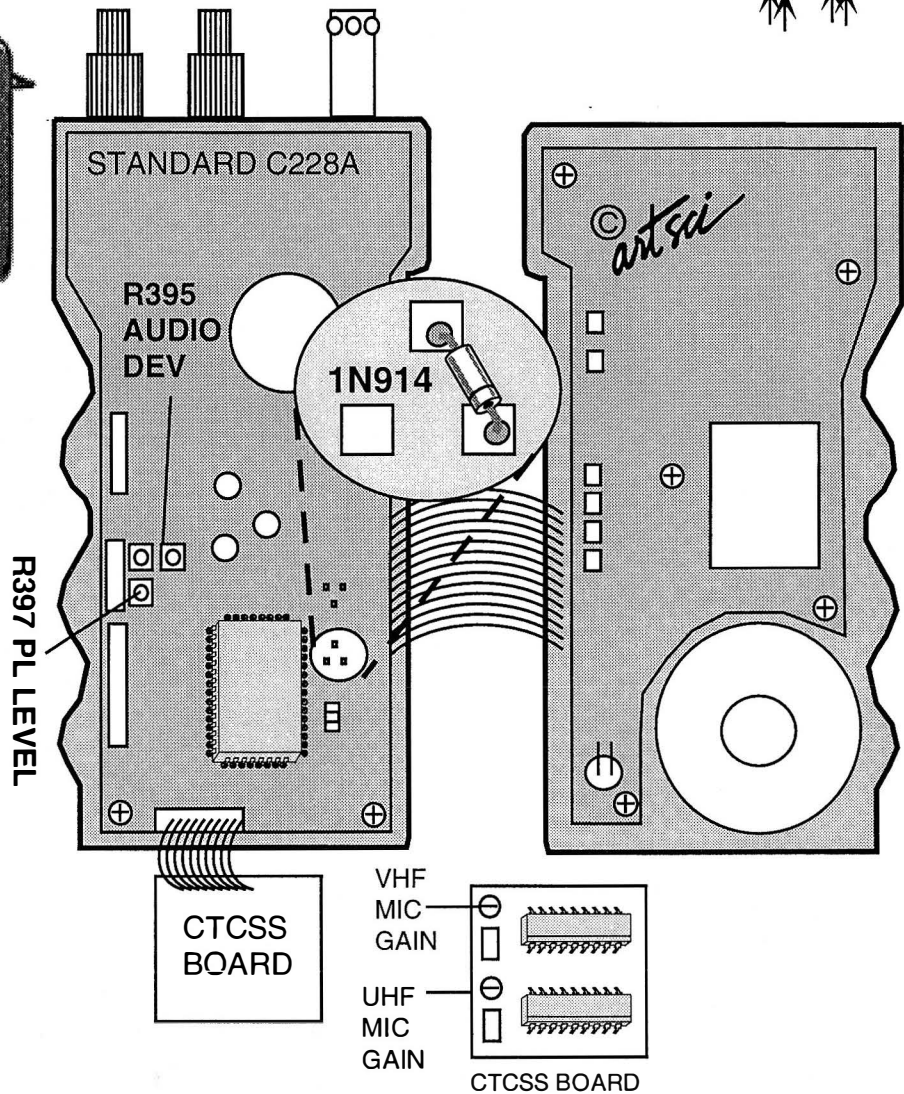


# STANDARD C228A

## Receive and Transmit Expansion

### Expansion Range

RX: 123.5 - 177 MHz  
TX: 125 - 174 MHz



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove two screws from the back case.
3. Remove the four screws from the battery retaining slide.
4. **Install a 1N914 or DA113 chip diode** in the pictured location.
5. Reassemble the radio.
6. Reset the microprocessor (see owners manual)

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# #	Frequency	Offset	PL	Label	Description
1					
2					
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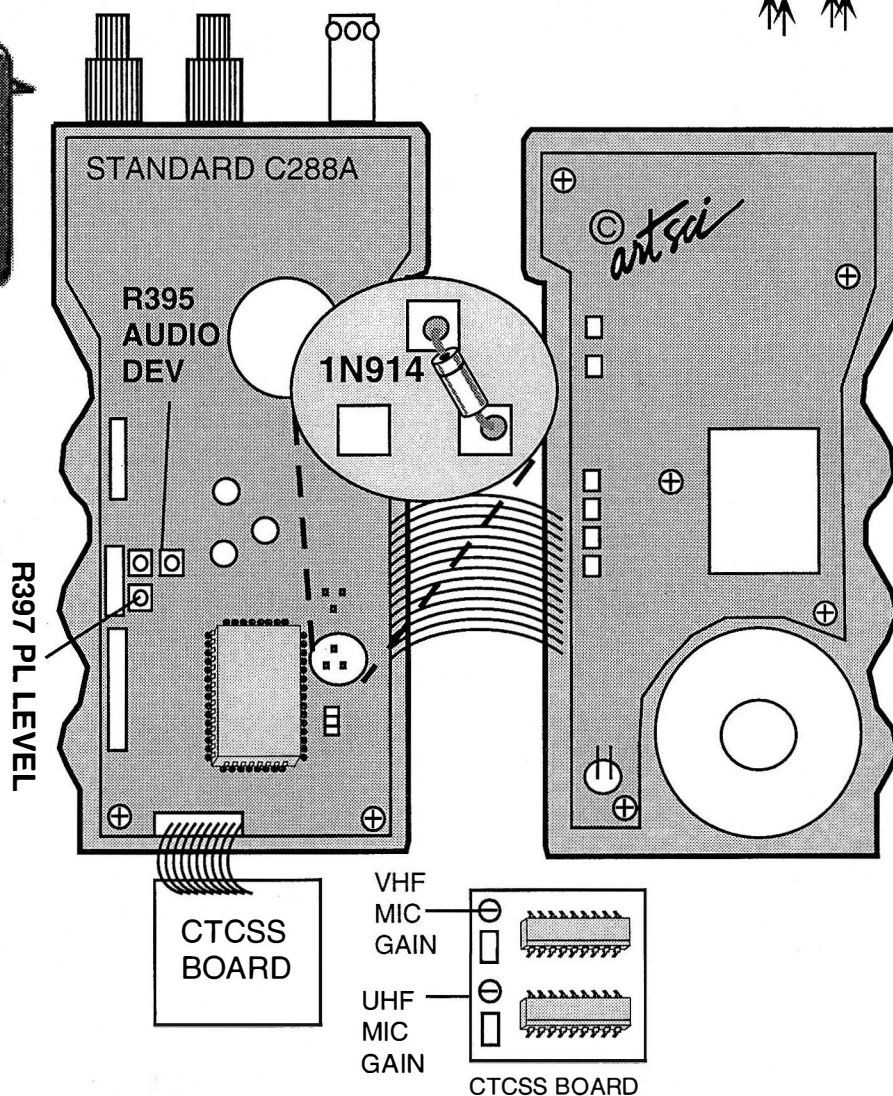
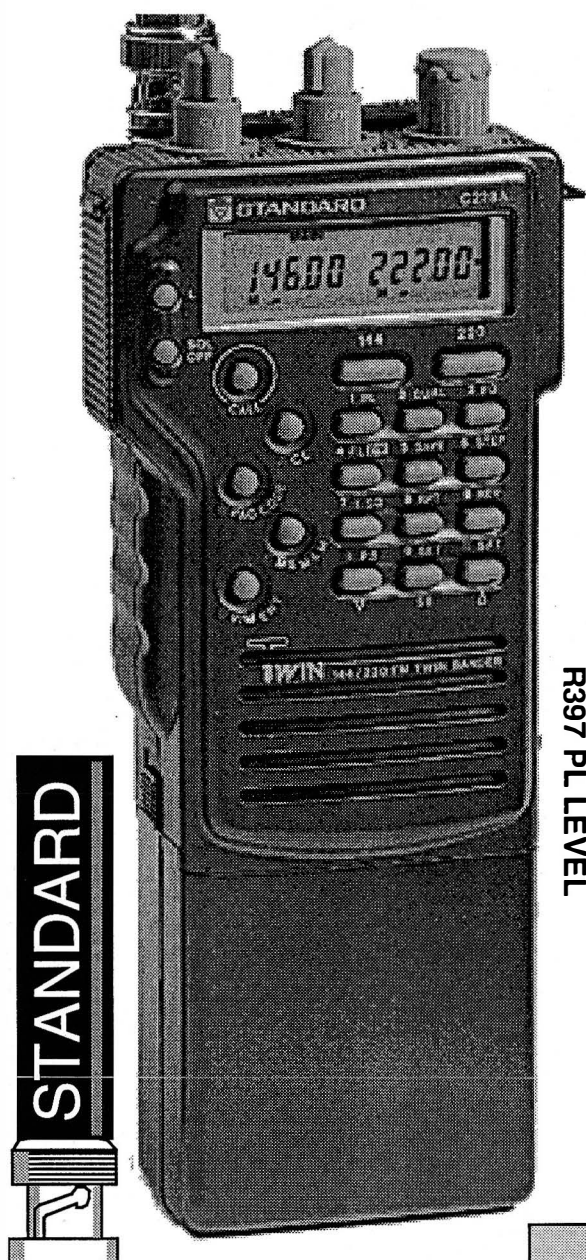


# STANDARD C288A

## Receive and Transmit Expansion

Expansion Range

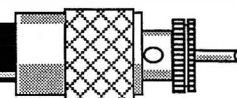
**RX/TX: 200-250 MHz**



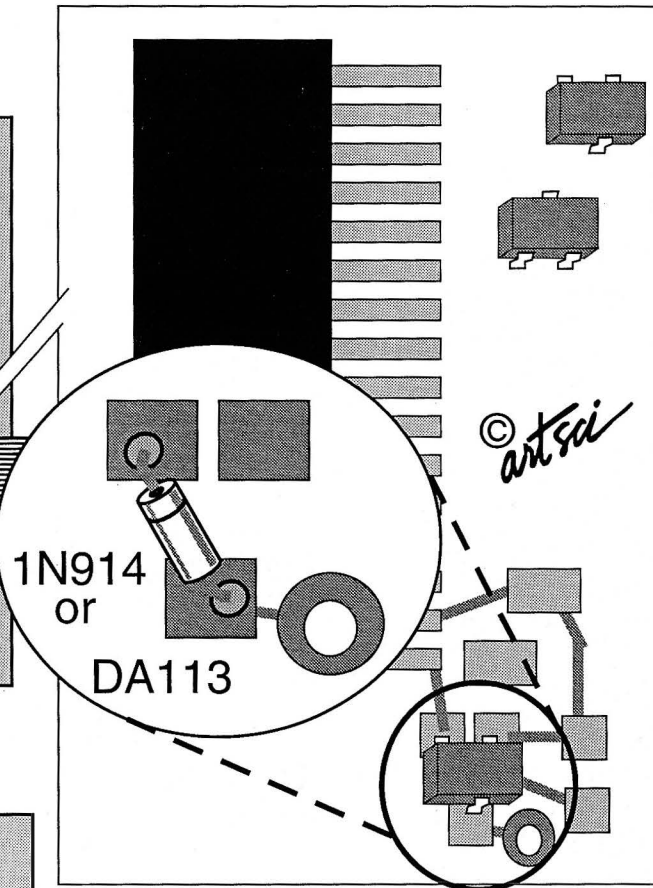
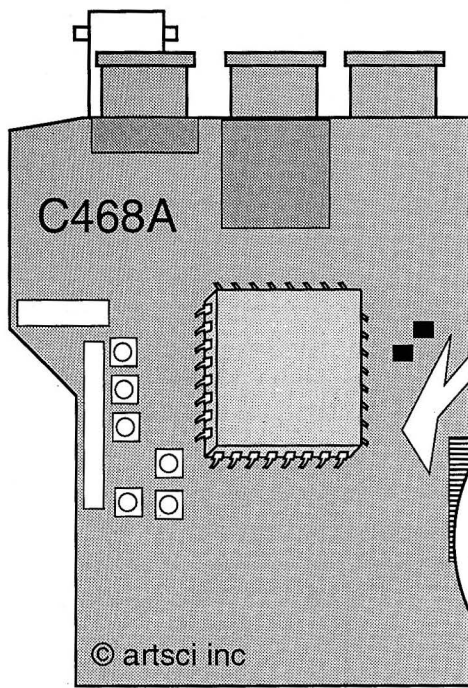
### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove two screws from the back case.
3. Remove the four screws from the battery retaining slide.
4. **Install a 1N914 or DA113 chip diode** in the pictured location.
5. Reassemble the radio.
6. Reset the microprocessor (see owners manual)

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## Expansion Range

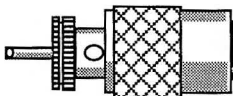
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz . Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## DIRECT FREQUENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove screws and open the case. (Be careful. Do not break flat cables)
3. Locate microprocessor. (see Drawing)
4. Install a DA-113 chip diode in place. ( A 1N914 may be used)
5. Reassemble the radio.
6. If required, RESET the microprocessor (see instruction manual)



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### Expansion Range

340 - 399.995 MHz RX  
400 - 474.000 MHz RX/TX  
801 - 980.000 MHz RX

### Expanded Receive Modification

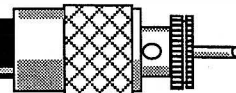
1. Turn Power on.
2. Press [ENT]
3. Press [0], [9].
4. Press [ENT]
5. Press and hold [F] then [0].
6. Press and hold [F] then [ENT].
7. Press and hold [F] then [0].
8. Press and hold [F] then [0].
9. Press and hold [F] then [8].
10. Press [CL]

### DIRECT FREQUENCY ENTRY

1. Press and hold [F] then [0].
2. Press and hold [F] then [0].
3. Press [8].

### AM / FM mode switch

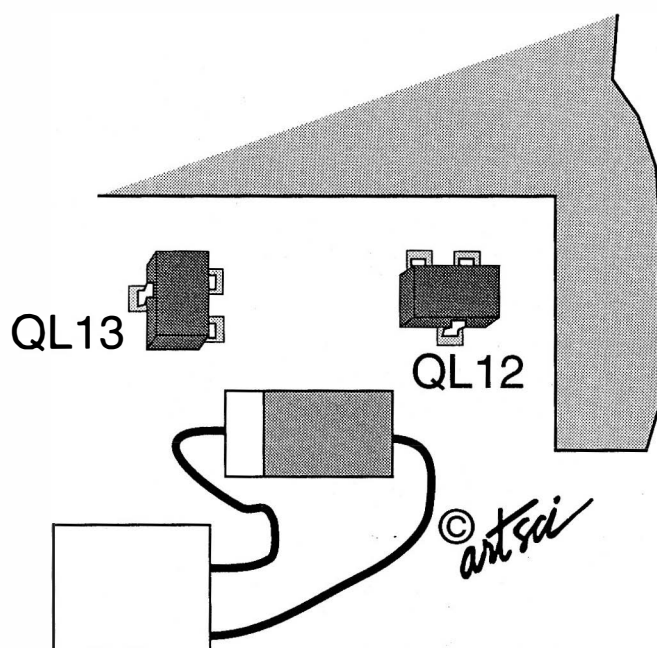
1. Press and hold [F] then [0].
2. Press and hold [F] then [2].



### Expansion Range

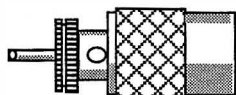
The Exact range of this radio is not know as of press time. However most radios expand from 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20°30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open case.
3. Locate the microprocessor board
4. Locate QL12 & QL13. (QL13 may already be missing)
5. **Remove QL12 & QL13.** (QL13 may already be missing)
6. Reassemble the radio
7. **Reset Microprocessor** (set mode 8).



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## C-508A

## Expansion Range

115 MHz - 164 MHz.

400 MHz - 470 MHz

RX possible: 300 MHz - 399 MHz

800 MHz - 868 MHz

896 MHz - 999 MHz

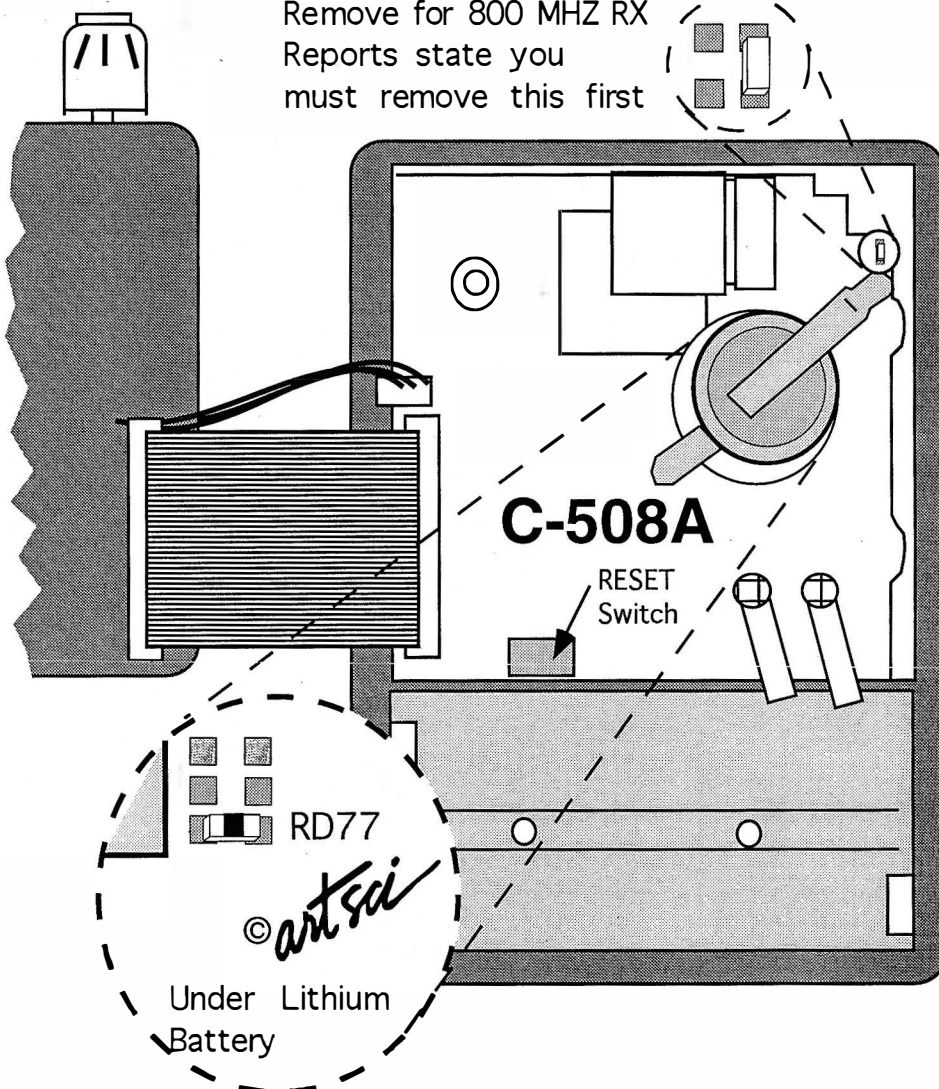
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Battery.
2. Remove four screws from the radio back half and open the radio.
3. Locate Control Board.
4. Locate and remove the lithium battery (memory will be erased)
5. **Locate and remove 800 MHz Resistor** (see Diagram)
6. **Locate and remove chip resistor RD77.** (see Drawing)
7. Locate and remove component (see drawing)
8. Replace lithium battery.
9. Press reset switch SD30. (see Manual for location)
10. Reassemble the radio.

Remove for 800 MHz RX  
Reports state you  
must remove this first

STANDARD



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### Expansion Range

Unknown at press time.

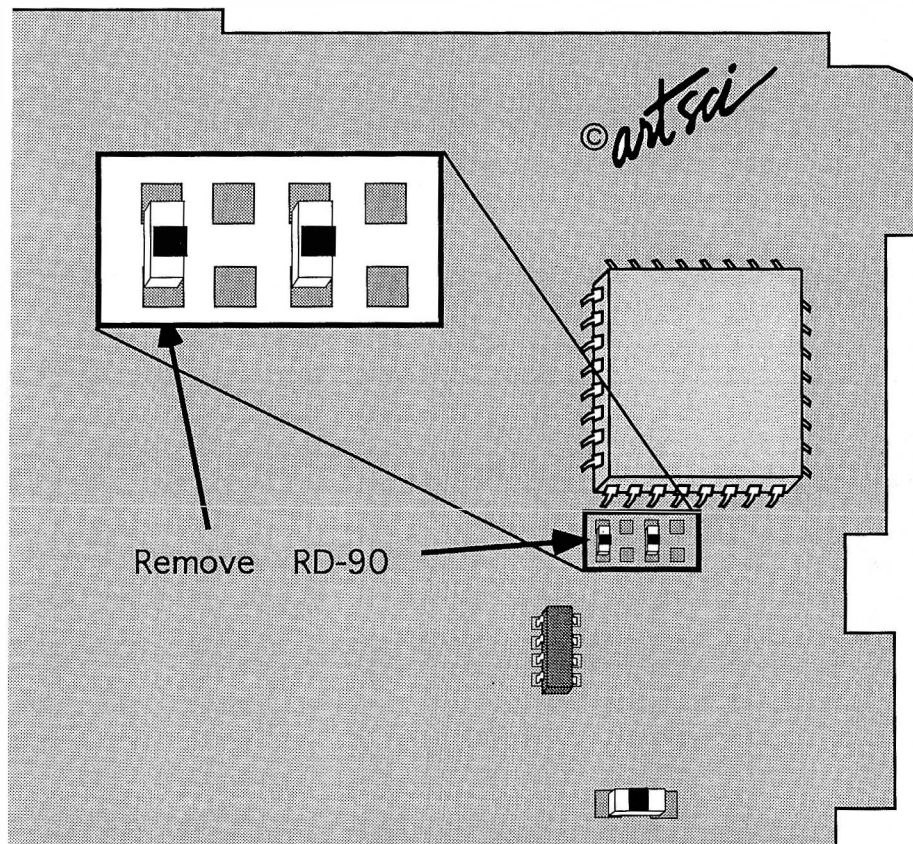
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### CAUTION:

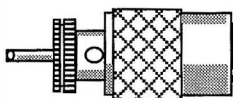
This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.

### Expanded RF Modification

1. Remove Battery.
2. Remove four screws from the radio back half and open the radio.
3. Locate Control Board.
4. **Locate and remove chip resistor RD90** (see Drawing)
5. Press reset switch. (see Manual for location)
6. Reassemble the radio.



STANDARD



# #	Frequency	Offset	PL	Label	Description
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### Expansion Range

RX&TX - 125.75 MHz - 176.150 MHz  
400 MHz - 473.750 MHz  
RX - 821 MHz - 899.9875 Mhz  
900 MHz - 976 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

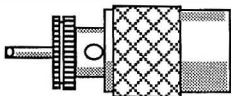
1. Turn Power on.
2. Push RESET.  
Small 'dimple' under key that holds the handstrap
3. Press and hold [FUNCTION] then [0]
4. Press and hold [FUNCTION] then [ENT]
5. Press PTT Briefly.
6. Press [UHF]
7. Press and hold [FUNCTION] then [LAMP]
8. Press and hold [FUNCTION] then [0]
9. Press and hold [FUNCTION] then [CODE]
10. Press and hold [FUNCTION] then [3]
11. Press PTT Briefly.
12. Press [VHF]
13. Press and hold [FUNCTION] then [STEP]
14. Select 12.5 KHz. (Use Selector Knob)
15. Press PTT Briefly.
16. Press and hold [FUNCTION] then [8]
17. Press and hold [FUNCTION] then [8]
18. Press and hold [FUNCTION] then [7]
19. Press and hold [FUNCTION] then [7]
20. Press and hold [FUNCTION] then [MS.M]
21. Select 144.9825 MHz (Use Selector Knob)
22. Press and hold [FUNCTION] then [0]
23. Press and hold [FUNCTION] then [ENT]
24. Press PTT Briefly.
25. Press and hold [FUNCTION] then [8]
26. Press and hold [FUNCTION] then [MS.M]
27. Press and hold [FUNCTION] then [LAMP]

F0 + F1 : 2 Second Tail per Crossband Repeater  
F0 + F2 : Tone Squelch Scan/ Stop  
F0 + F3 : Steps between bands  
F0 + F4 : Allows entry of 10 MHz digit  
F0 + F5 : Voice Output mute  
F0 + F6 : Change rotart Tuning 100 kHz & 1 MHz  
F0 + F7 : Switch between DTMF & Paging Tones  
F0 + F8 : Crossband Repeater  
F0 + F9 : 10 MHz stepping with arrows  
F0 + Fv : DTMF Cloning Do both radios Press PTT  
F0 + FV/m + PTT : Expanded RX  
FL + F0 + FPag + FL + F3 + PTT: 800 RX

STANDARD

### To Receive 300 - 400 Mhz or 800 - 900 MHz

Press [UHF]  
Press and hold [FUNCTION] then [SET]  
Press and hold [FUNCTION] then [3] to Select Bands



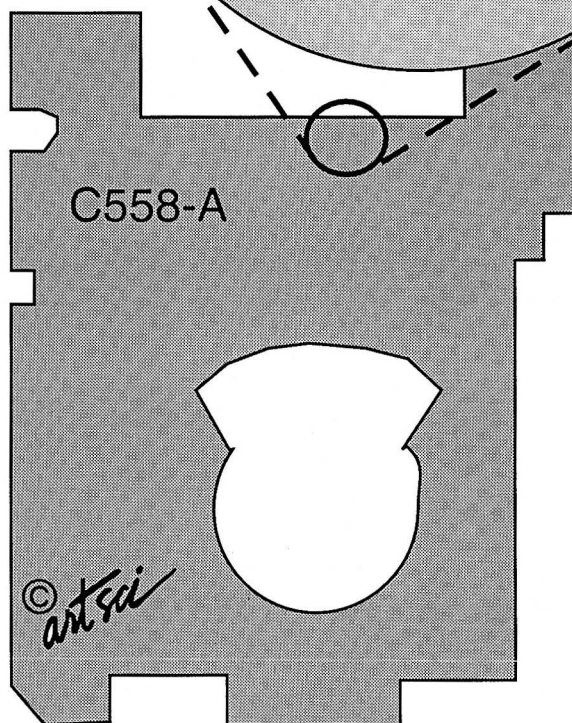
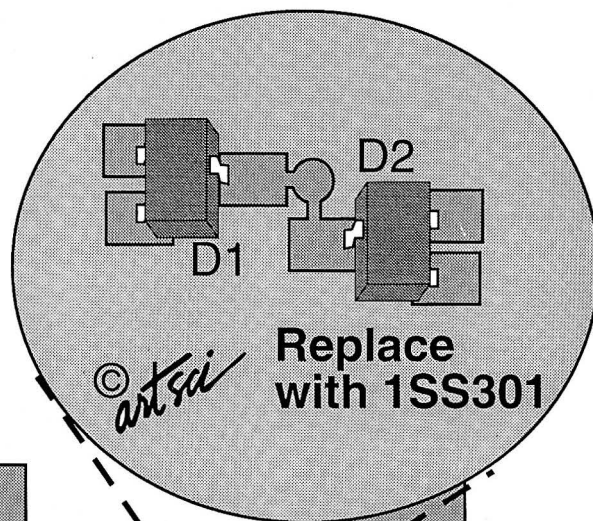
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## C558A



STANDARD

## Expansion Range

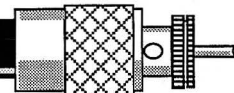
The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Battery and antenna.
2. Locate and remove body screws and open the case.
3. Locate and unsolder the copper plate from the back side of the LCD display.
4. Locate and **remove chip diode D2.** (see drawing)
5. **Attach a 1SS301 chip diode in the vacant D2 position.**  
(You can order this diode direct from STANDARD)
6. Reassemble the radio.
7. Reset the microprocessor, if required.

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### Expansion Range

100-200 MHz , 330-500 RX  
118 - 193 TX, 400 - 485 TX

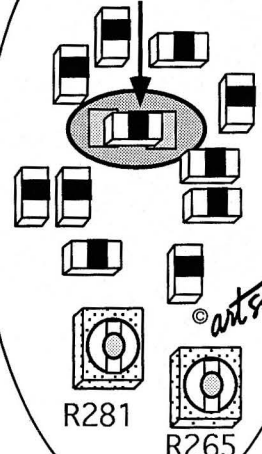
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove Battery.
2. Remove Screws and open the radio.
3. Locate Control Board.
4. **Locate and remove 47K Chip resistor.**  
(see Drawing)
5. Reassemble the radio.
6. Reset the microprocessor.  
(ALL RESET, see user manual)

C-568A

REMOVE CHIP  
RESISTOR  
(47K ohms)

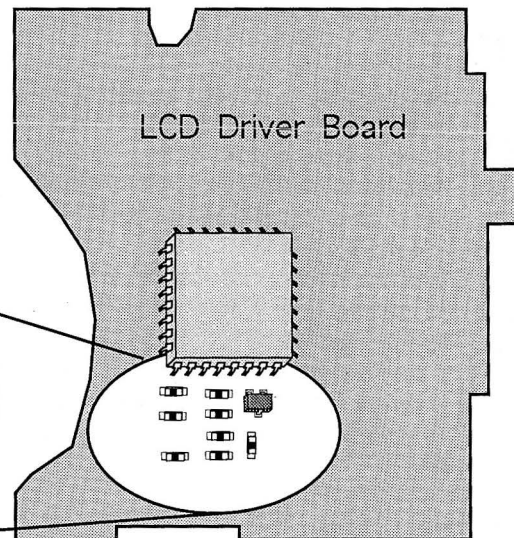
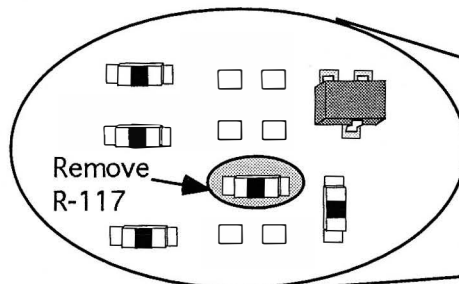


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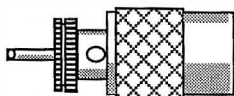
### 800 MHz Expansion

1. While open above, locate and remove the two black and two silver screws holding the top circuit board to the front of the case.
2. Carefully lift board and locate the LCD Driver board.
3. Locate and remove resistor R-117
4. Reassemble the radio
5. Reset the microprocessor.

LCD Driver Board



STANDARD



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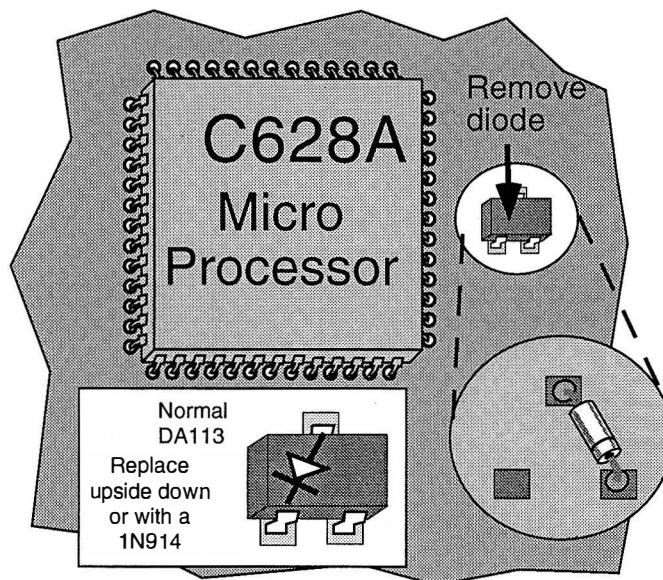
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## C628A



## Expansion Range

RX -	320 - 480 MHz
	820 - 980 MHz
	1220 - 1400 MHz
TX/RX -	400 - 474 Mhz
	1220 - 1340 MHz



## Expanded RF Modification

1. Remove Battery and antenna.
2. Locate and remove body screws and open the case.
3. Locate Microprocessor.
4. Locate DA113 chip Diode. (see drawing)
5. **Remove chip Diode DA113.**
6. **Reinstall the Diode upside down or with a 1N914 diode.**
7. Reassemble the radio.
8. Reset the microprocessor if required. (see owners manual)

## Expanded Rx Modification

1. Turn Power on.
2. Push RESET.  
Small 'dimple' under key that holds the handstrap
3. Press and hold [450] key
4. Press and hold [FUNCTION] then [0]
5. Press and hold [FUNCTION] then [D]
6. Press PTT Briefly.
7. Press and hold [1200] key
8. Press and hold [FUNCTION] then [LAMP]
9. Press and hold [FUNCTION] then [0]
10. Press and hold [FUNCTION] then [B]
11. Press and hold [FUNCTION] then [LAMP]
12. Press and hold [FUNCTION] then [3]
13. Press PTT Briefly.

To toggle bands:

Press and hold [FUNCTION] then [0]  
Press and hold [FUNCTION] then [3]

## Expanded Rx Modification

Do after the RX mod

1. Press and hold [1200] key
2. Press and hold [FUNCTION] then [B]
3. Press [5] key
4. Press [2] key
5. Press [0] key
6. Press and hold [450] key
7. Press and hold [FUNCTION] then [B]
8. Press [6] key
9. Press [2] key
10. Press [0] key
11. Press and [FUNCTION] then [4]
12. Press and [FUNCTION] then [450] key
13. Press and hold [FUNCTION] then [0]
14. Press and hold [FUNCTION] then [D]
15. Press PTT Briefly.

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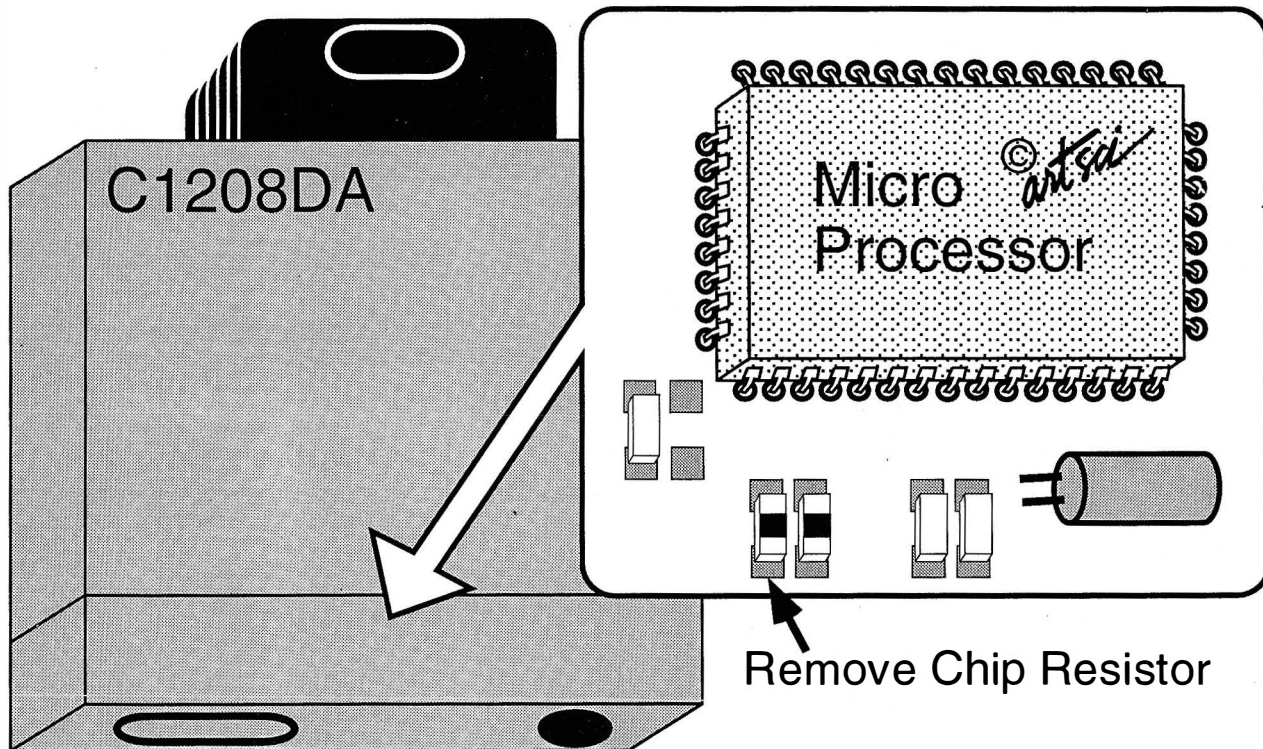
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### Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

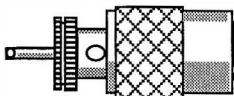
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



STANDARD

### Expanded RF Modification

1. Remove power and antenna.
2. Remove four screws and open top cover.
3. Locate microprocessor.
4. Locate chip resistor. (see drawing)
5. **Remove chip resistor** using caution not to melt the front case plastic.  
(YOU MAY WISH TO REMOVE THE FRONT CASE FOR CLEARANCE)
6. Reassemble the radio.
7. Reset the microprocessor if required.



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# STANDARD C5608DA

## Receive and Transmit Expansion 800 MHz Receive Modification

### Expanded RF Modification

1. Remove power and antenna.
2. Remove 0 ohm resistors near the microprocessor.

Specific data:

RL69 "H" symbol      400-469.996 MHz TX  
                                 250-499.995 MHz RX

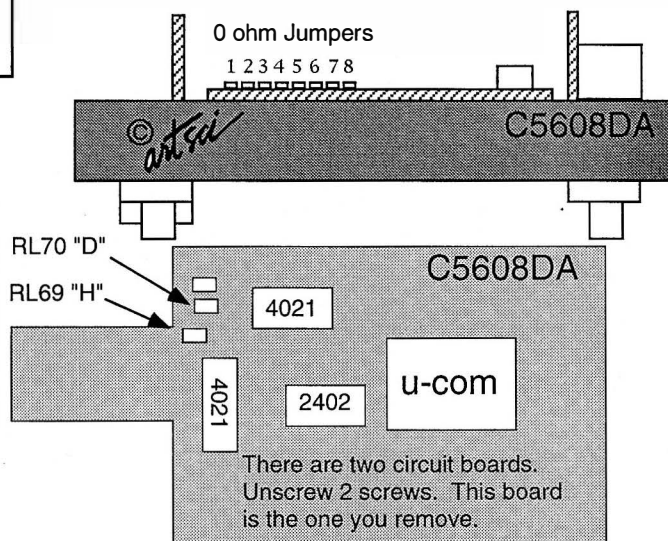
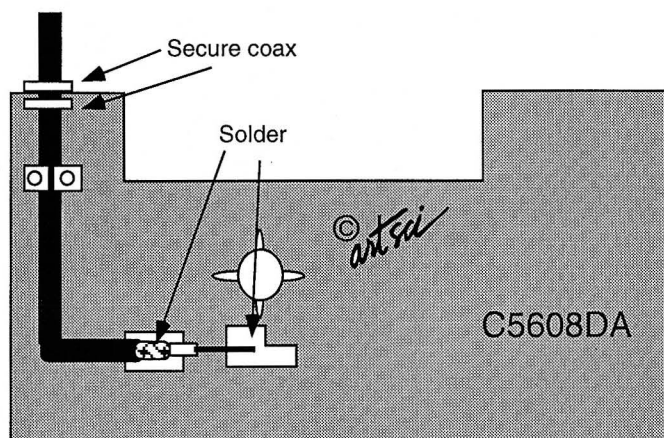
RL70 "D" symbol      130-173.995 MHz TX  
                                 100-199.995 MHz RX

3. Reassemble the radio.
4. Reset the microprocessor (if required)

### Expansion Range

The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove power and antenna.
2. Remove covers
3. Remove black tape patch under the VHF antenna connector.
4. Remove cover from transmitter (5 screws)
5. Remove screws securing the red and black power wires.
6. **Solder attach the new antenna coax as shown.**
7. Secure the coax using wire ties or other method.
8. Replace the power cable screws.
9. Replace the covers.

#### 800 MHz activation:

Select 440 as the main band.

Press [UP] button while pressing the rotary switch

Press [UP] button while pressing the [FUNCTION] button.

To Return to 440 - Press [DOWN] while pressing [FUNCTION] button.

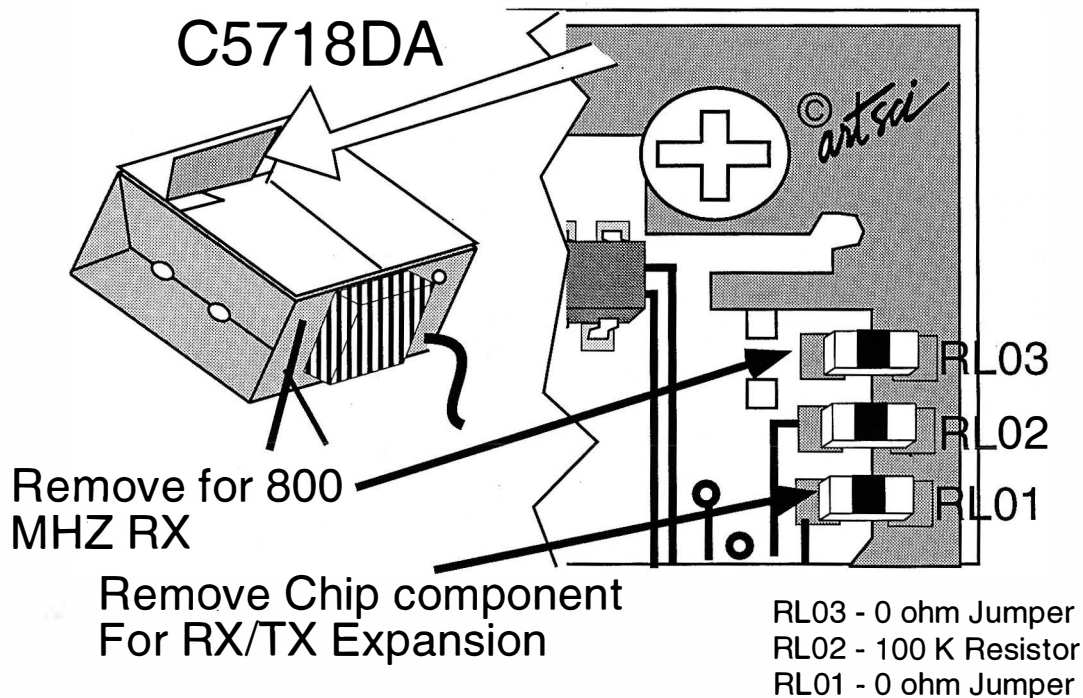
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## Expansion Range

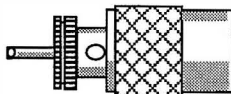
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove power and antenna.
2. Remove four screws and remove top cover.
3. Locate vertical board on the front of the radio.
4. Locate three BLUE chip resistors. (Right side of connector labeled "CTD")
5. **Remove lower most chip resistor** (see drawing)
6. Reassemble the radio
7. Reset the microprocessor. (see owners manual)



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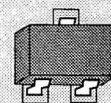
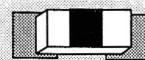
# STANDARD

## C5900DA

### Expansion Range

46 Mhz - 60 Mhz  
100 Mhz - 174 Mhz  
345 Mhz - 495 Mhz

# Receive and Transmit Expansion



### CAUTION:

This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



STANDARD

C5900DA

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CL93

RL99

RL98

CL33

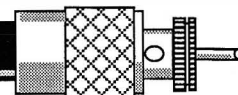
CL43

RL97

### Expanded RF Modification

1. Remove power and antenna.
2. Remove top cover
3. Locate top Board
4. Locate and **remove Resistor RL99**
5. Reassemble the radio
6. Reset is required, see user manual.

## Radio/Tech Modifications Volume B

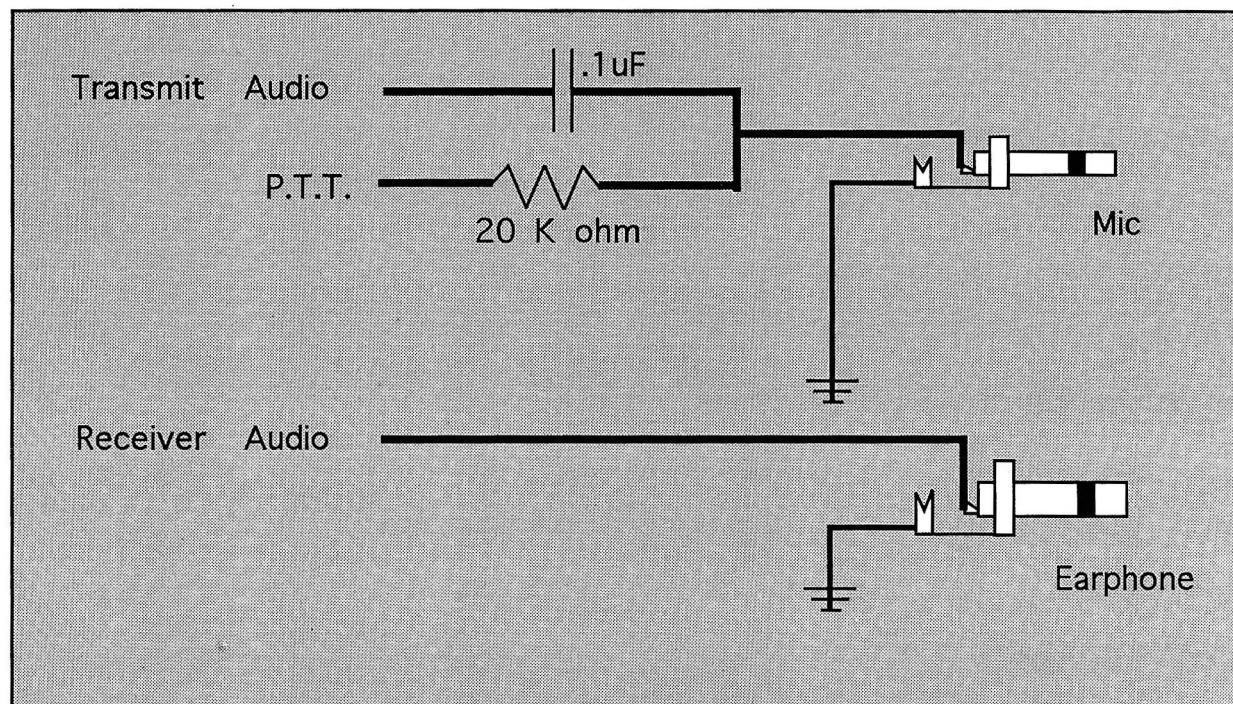


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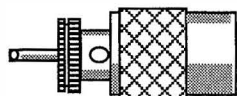
Standard - 26

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# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

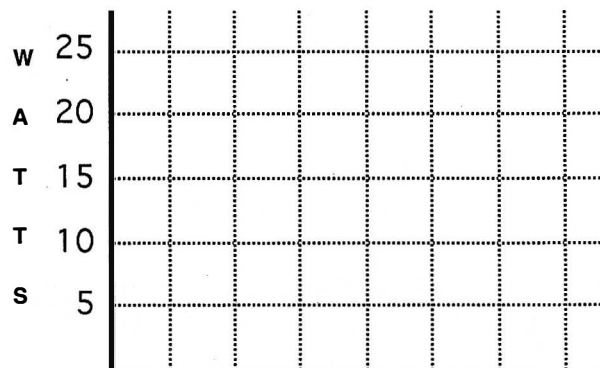
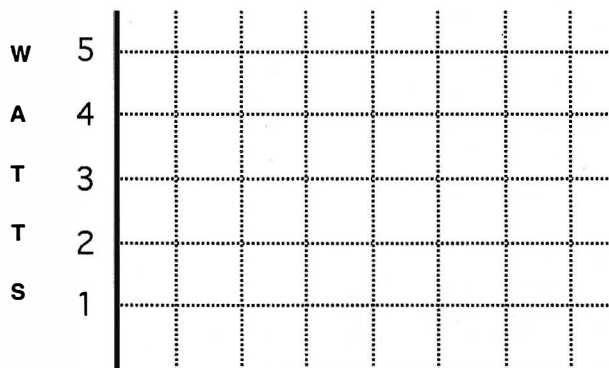
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



# Yaesu Radio Modifications

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FT-11	Expanded RF .....	4
FT-23	Expanded RF / Alignment Controls .....	5
FT-26	Expanded RF / Alignment Controls .....	6
FT-33	Expanded RF / Alignment Controls .....	7
FT-40	Expanded RF .....	8
FT-41	Expanded RF .....	9
FT-50	Expanded RF .....	10
FT-51	Expanded RF .....	12
FT-73	Alignment Controls .....	14
FT-76	Expanded RF / Alignment Controls .....	15
FT-209	Expanded RF / Alignment Controls .....	16
FT-211	Expanded RF / Alignment Controls .....	17
FT-212	Expanded RF / Alignment Controls .....	18
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FT-290	Expanded RF / Alignment Controls .....	20
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FT-530	Expanded RF .....	27
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FT-711	Expanded RF / Alignment Controls .....	32
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FT-736	Expanded RF .....	35
FT-747	Expanded RF .....	36
FT-757	Expanded RF .....	37
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FT-811	Expanded RF / Alignment Controls .....	39
FT-815	Expanded RF / Alignment Controls .....	40
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FT-840	Expanded RF .....	41
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FT-890	Expanded RF .....	44
FT-900	Expanded RF .....	45
FT-990	Expanded RF .....	47

YAESU

# Yaesu Radio Modifications

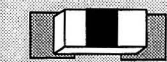
Radio	Modification	Page #
FT-1000	Expanded RF .....	48
FT-2070	Expanded RF .....	49
FT-2200	Expanded RF .....	50
FT-2311	Expanded RF .....	51
FT-2400	Expanded RF / Alignment Controls .....	52
FT-2500	Expanded RF .....	54
FT-3000	Expanded RF .....	55
FT-4700	Expanded RF / Alignment Controls .....	57
FT-5100	Expanded RF / Alignment Controls .....	59
FT-5200	Expanded RF / Alignment Controls .....	60
FT-6200	Expanded RF / Alignment Controls .....	61
FT-7400	Expanded RF / Alignment Controls .....	62
FT-8000	Expanded RF .....	63
FT-8100	Expanded RF .....	64
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FT-VX1	Expanded RF .....	66
FL-7000	Expanded RF .....	67
NC-29	Trickle Mode .....	68
NC-42	Charging Additional batteries.....	69
FT-ONE	Expanded RF .....	70
RESET	.....	71
TNC	.....	73

YAESU

### Expansion Range

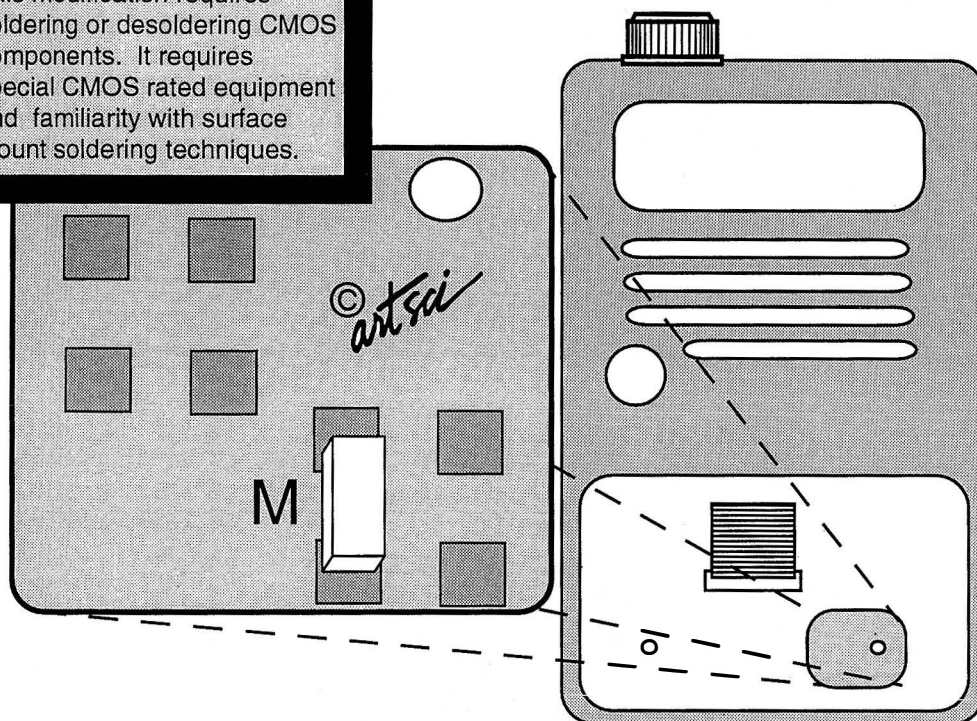
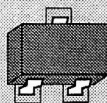
**140 Mhz - 174 Mhz**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### CAUTION:

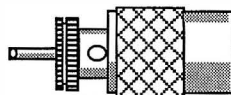
This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



### Expanded RF Modification

1. Remove the battery and the antenna.
2. Remove the 2 screws under the "N-Cd" Sticker.
3. Carefully lift the keypad and locate the jumper pads.
4. Locate and **unsolder the 0 ohm resistor at location "M"**
5. Reassemble the radio.
6. Reset the microprocessor.  
(Press and hold (Top-Notch) and [LAMP] button and turn the radio on)

YAESU



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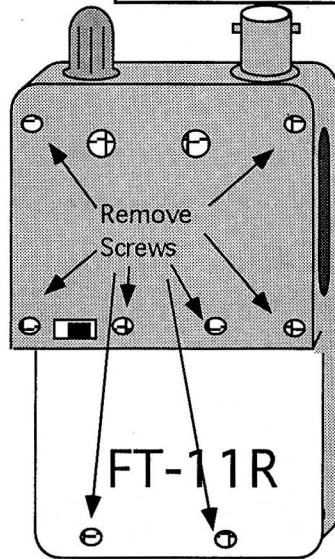
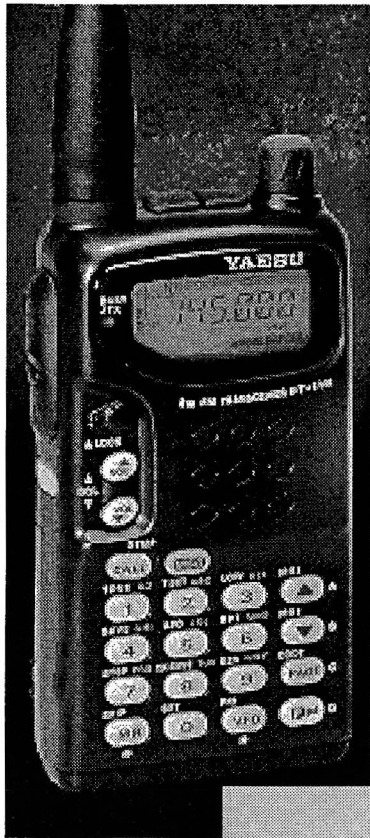
# YAESU FT-11R

## Receive and Transmit Expansion

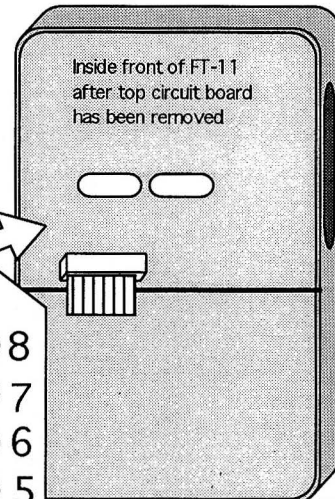
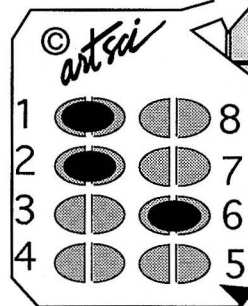
### Expansion Range

**138 Mhz - 180 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Remove  
Jumper  
Pad # 4



Don't do this in the U.S.

Add Jumper #5  
for Tone Burst.

To activate Tone Burst:  
Press [Monitor] &  
[PTT] at the same time.

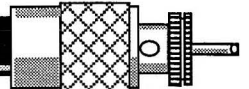
### Squelch adjustment

Press and hold [CALL], [UP vol] & [DOWN vol] and turn the radio on.  
Press [UP MHz] button 3 times. The display will show SQL TI.  
Inject a signal or tune to a strong signal (weather channel etc.)  
Press [F] Button for 1/2 second this sets the level. ("AD" will blink on display)  
Press the [MR] key to set the level  
Press [CALL] to store the level in EEPROM memory.

### Expanded RF Modification

1. Remove Battery and Antenna & belt clip.
2. Remove Screws from the back of the radio. See Drawing.  
(note location of battery release & hand strap clip, they will fall out)
3. Open radio and remove silver battery shield.
4. Remove two silver screws from top circuit board (below speaker/mic connector)
5. Gently pry top and bottom circuit boards apart.
6. Locate and **remove solder from pad #4.**
7. Reassemble the radio. Remember the battery clip and hand strap clips.
8. Reset the microprocessor.  
(Press and hold [UP] & [DOWN] arrow keys (on right side of keyboard) and turn the radio on.)  
(Press [MR], [VFO] & [2] and turn the radio on.)

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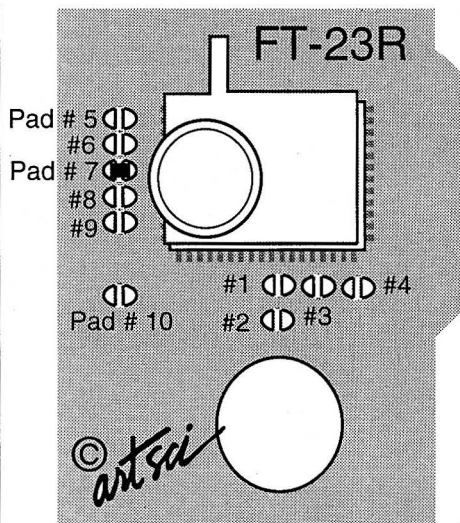
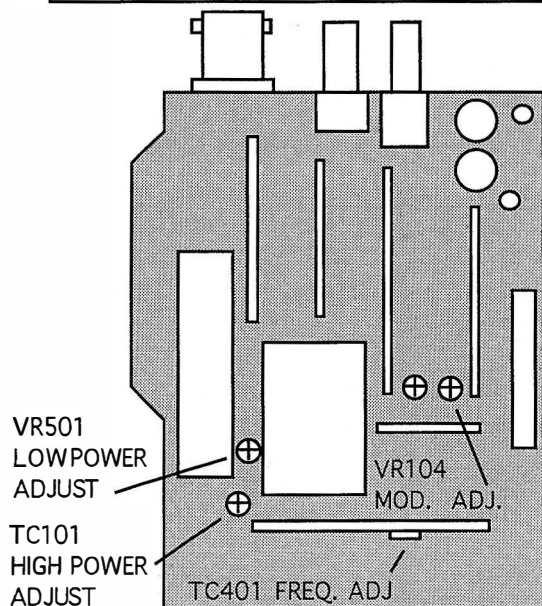
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## Expansion Range

TX/RX: 140 MHz - 163.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Repeater Offset control:

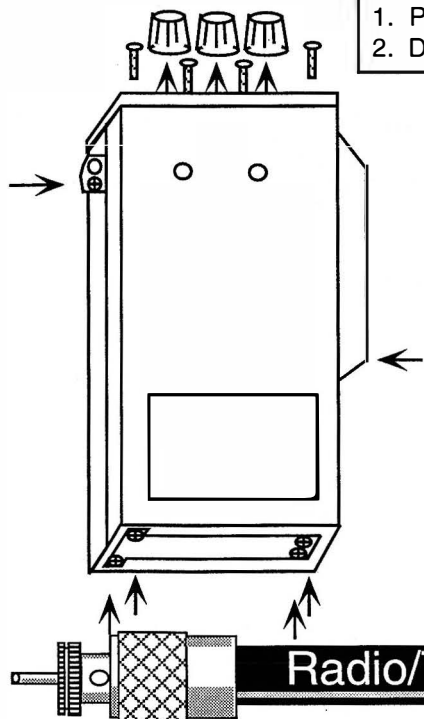
1. PRESS AND HOLD [RPT] & TURN ON THE RADIO.
2. DIAL OFFSET & PRESS [RPT]

## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel, battery mounting track & body screws and open Radio
3. **Remove solder bridge from Pad # 7**
4. Reassemble radio.

## Solder Pad functions

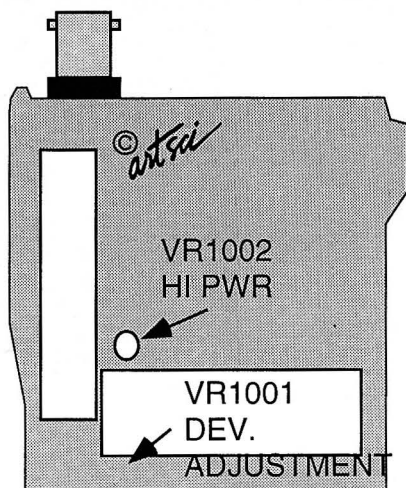
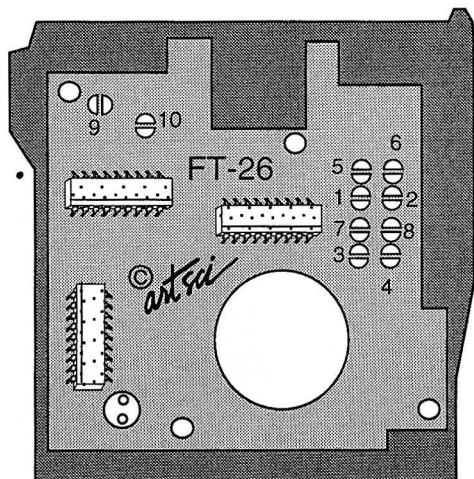
Pad #1	Filter for 140-164 RX
Pad #2	Filter for 164-?? RX
Pad #3&4	Step selection 20 or 25 kHz 3&4 unsoldered = 10 kHz step
Pad #5	5 MHz offset
Pad #6	1.6 MHz offset 5&6 unsoldered = 600 kHz offset
Pad #7,8&9	Band selections
Pad #10	Unknown



## Expansion Range

135 MHz - 174 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the 4 screws holding the battery track.
3. Remove the 2 screws in the back case.
4. Carefully separate the front cover.
5. Locate and **remove solder on Jumper pad 10.** (on control board)
6. Solder jump pads 1, 3, 7 and 8.
7. Reassemble the radio.
8. Turn radio on and each channel indicator will blink.
9. Enter the following frequencies. (use the [F] & up arrow keys)

CH. 1	135.000	Press [D/MR] Lower Rx limit
CH. 2	174.000	Press [D/MR] Upper Rx limit
CH. 3	135.000	Press [D/MR] Lower Tx limit
CH. 4	174.000	Press [D/MR] Upper Tx limit

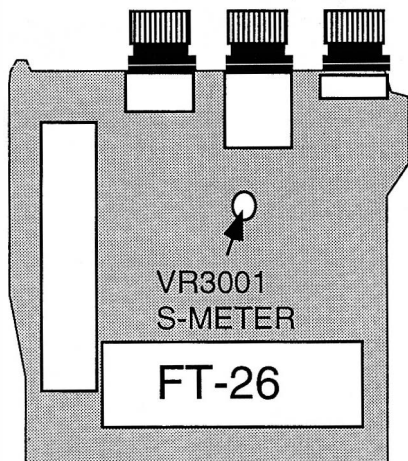
## Reset Commands

### Soft RESET

Press and hold [T] & [REV] and turn power on.

### Master RESET

Press and hold [D/MR] & [T] & [REV] and turn radio on, then enter band Limits below.





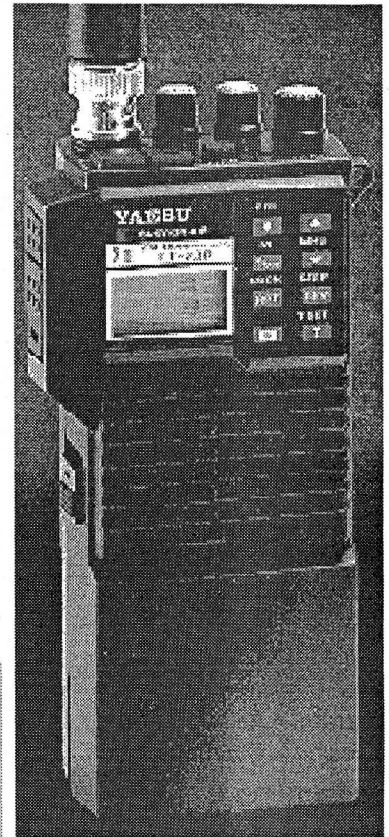
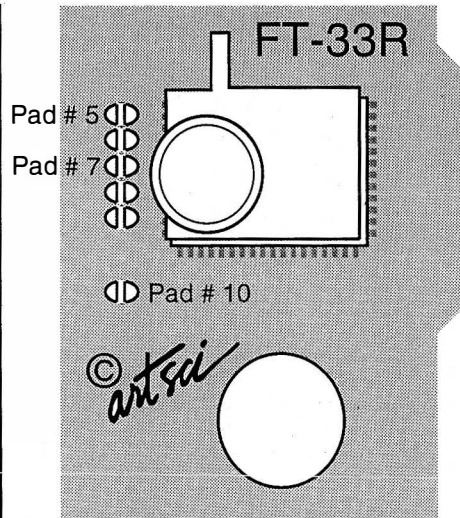
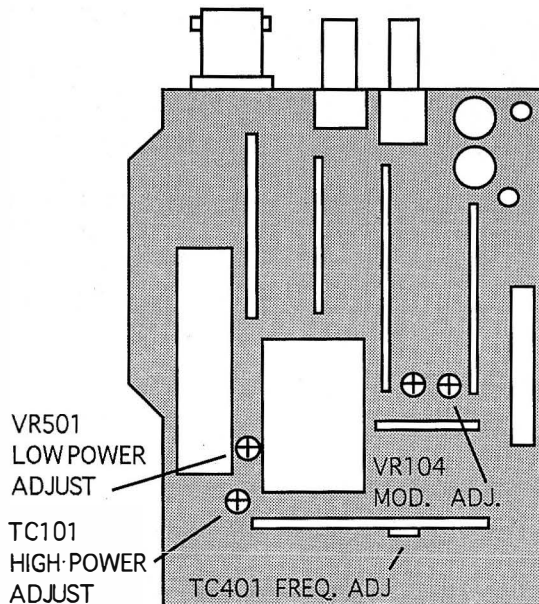
### Expansion Range

The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

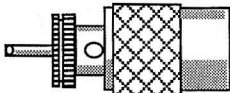
### Repeater Offset control:

1. PRESS AND HOLD [RPT] & TURN ON THE RADIO.
2. DIAL OFFSET & PRESS [RPT]



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel, battery mounting track & body screws and open Radio
3. For display 220-550 MHz **Pads 7,8 and 9 are open**  
For display 50-300 MHz Pads 8 and 9 are open and 7 is bridged
4. Reassemble radio.



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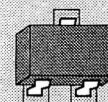
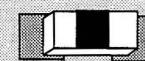
# YAESU FT-40

## Receive and Transmit Expansion

### Expansion Range

**420 - 470 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

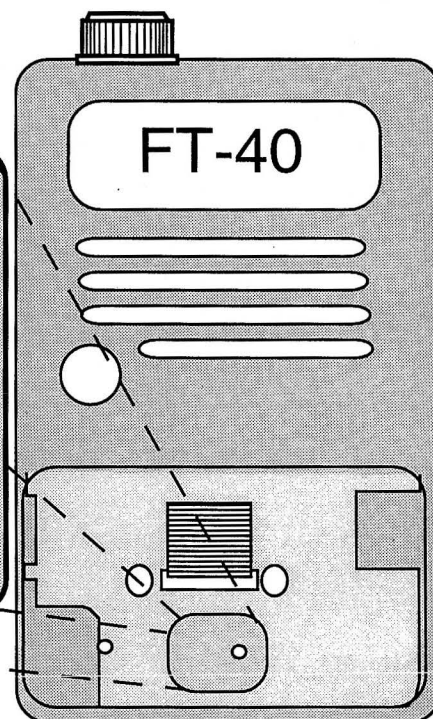
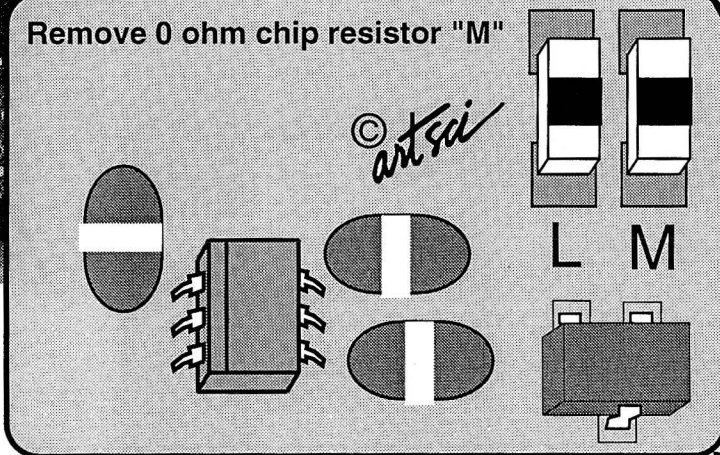


### CAUTION:

This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



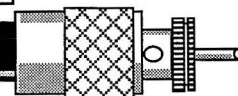
Remove 0 ohm chip resistor "M"



### Expanded RF Modification

1. Remove the battery and the antenna.
2. Remove the 2 screws under the "N-Cd" Sticker.
3. Carefully lift the keypad and locate the jumper pads.
4. Locate and **unsolder the 0 ohm resistor at location "M"**
5. Reassemble the radio.
6. Reset the microprocessor.  
(Press and hold [Squelch knob] and [DIAL knob] and turn power on.)  
(Press and hold [DIAL knob] and [LAMP] button and turn the radio on)

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YAESU

# Receive and Transmit Expansion

YAESU  
FT-41R

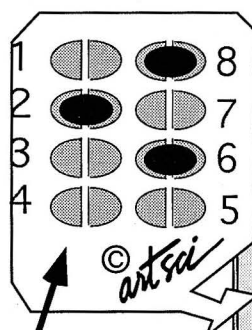
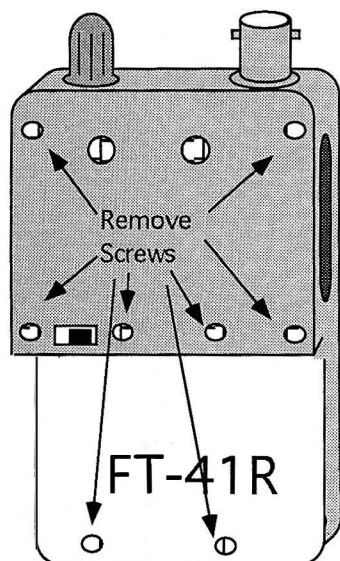
## Expansion Range

**420 - 463 Mhz.**

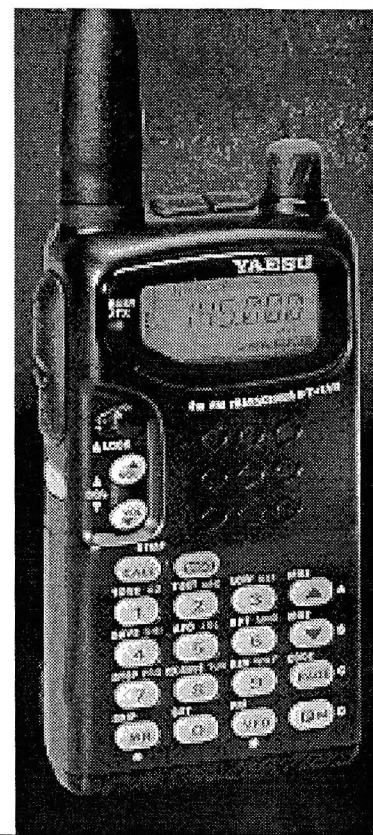
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Remove Jumper #2 for Tone Burst.

To activate Tone Burst:  
Press [Monitor] & [PTT] at the same time.



Inside front of FT-41 after top circuit board has been removed



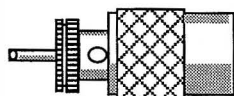
Modification will not work on units with serial numbers: xx17xxxxx or greater

## Expanded RF Modification

1. Remove Battery and Antenna & belt clip.
2. Remove Screws from the back of the radio. See Drawing. (note location of battery release & hand strap clip, they will fall out)
3. Open radio and remove silver battery shield.
4. Remove two silver screws from top circuit board (below speaker/mic connector)
5. Gently pry top and bottom circuit boards apart.
6. Locate and **remove solder from pad #4.**
7. Reassemble the radio. Remember the battery clip and hand strap clips.
8. Reset the microprocessor.  
(Press and hold [UP] & [DOWN] arrow keys(right side of keyboard) and turn the radio on.)  
(Press [MR], [VFO] & [2] and turn the radio on.

## Squelch adjustment

Press and hold [CALL], [UP vol] & [DOWN vol] and turn the radio on.  
Press [UP MHz] button 3 times. The display will show SQL TI.  
Inject a signal or tune to a strong signal (weather channel etc.)  
Press [F] Button for 1/2 second this sets the level. ("AD" will blink on display)  
Press the [MR] key to set the level  
Press [CALL] to store the level in EEPROM memory.



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YAESU - 9



## FT-50R

### Expansion Range

**122 MHz - 215 MHz & 312 MHz - 500 MHz**

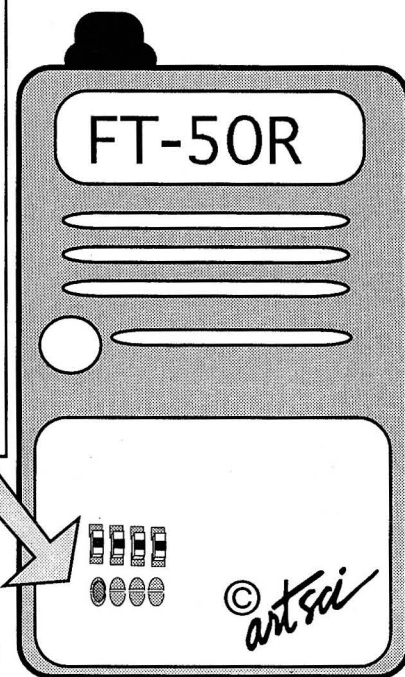
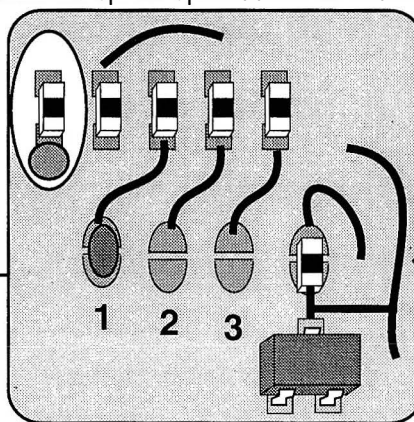
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Perfect "10" Challenge Game

The FT-50 includes a built-in COUNT TO "10" Challenge Game. The Object of the game is to take the number that appears on the screen and add a number from the keypad to equal "10".

EXAMPLE: If a "6" appears on the screen, you should press [4] and then [F]. If a "0" appears on the screen, you should press [1] [0] and then [F]. Remember you always want the total to equal "10". As you continue to play, the game will speed up. At the end of the game, your score is displayed.

Press and hold [MR] and turn the radio on.  
Adjust the volume control for sound level.  
Turn the [TOP-NOTCH] control to adjust the speed.  
Press [PTT] to start the game.  
Press [TOP-NOTCH] to pause/continue the game.



### Expanded RF Modification

1. Remove Battery and Antenna .
2. Remove the Ni-Cd sticker.
3. Remove the two silver screws securing the keypad.
4. Carefully, lift off the keypad and locate the jumper pads.
5. **Locate and remove resistor above Jumper pad JP1**
6. Re-install the keypad and the two screws
7. Replace the battery and antenna.
8. Press and hold [KNOB] & [MON] & [F&W] & turn the power on
9. Press and hold [LAMP] & [PTT] & [DIAL/SELECT] knob and turn the power on.  
(The display will read "A1")
- NOTE: THESE COMMANDS may need to be repeated until properly done.
10. Press [DIAL/SELECT] momentarily until A1 is flashing.
11. Turn selector knob until display reads "FREE".
12. Press [DIAL/SELECTOR] knob again until "FREE" stops flashing.
13. Reinstall chip resistor above solder pad JP1.
14. Reassemble the radio.

**CAUTION:** This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.

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# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

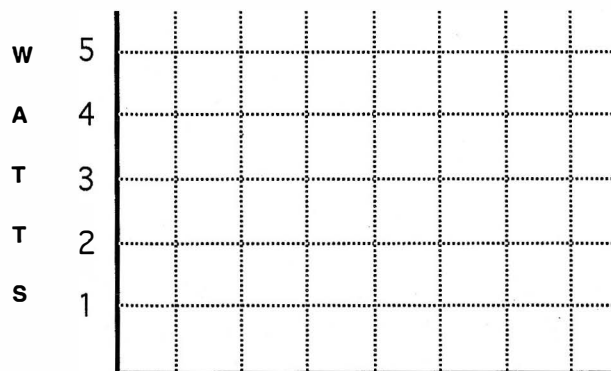
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

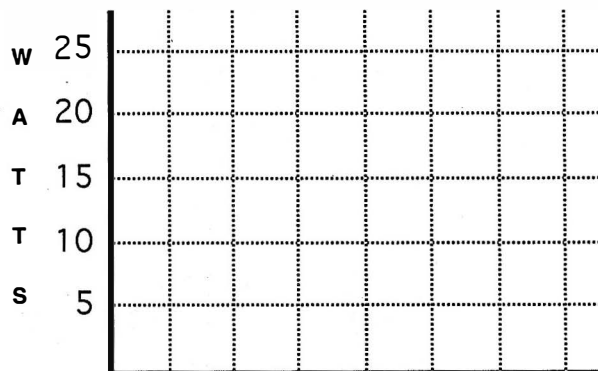
City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (_____ MHz)	_____ uv	_____ uv
Receive Sensitivity (_____ MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



Frequency



Frequency

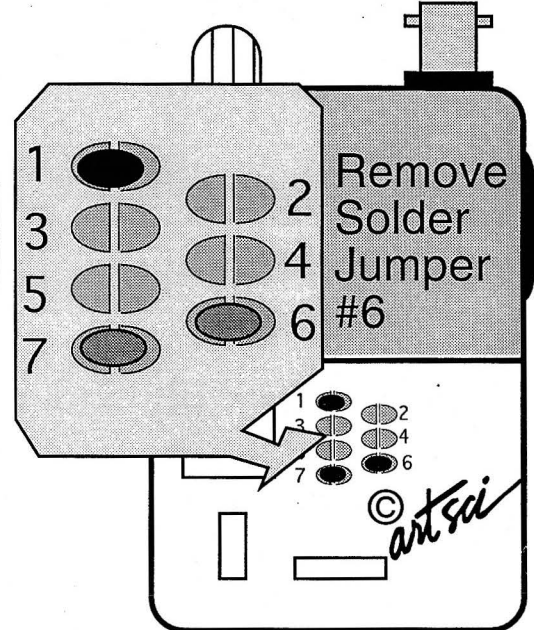
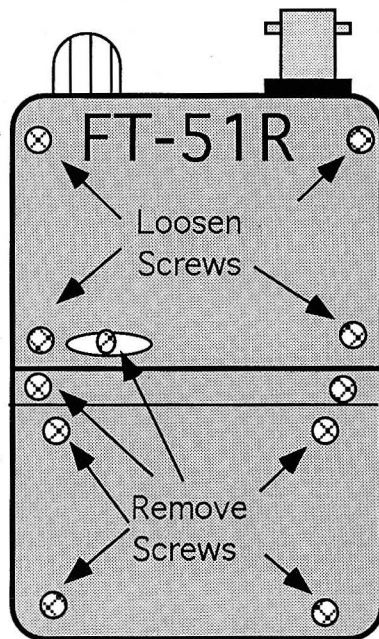


## FT-51R

### Expansion Range

**122 MHz - 180 MHz , 320 - 482 Mhz TX & 110 MHz - 180 MHz, 320 - 500 Mhz RX**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Stock Pads 1, 6 & 7

### Expanded RF Modification

1. Remove Battery and Antenna .
2. Remove the six black screws on the rear plastic cover. (See drawing)
3. Remove the one small black screw on the battery slide button.
4. Loosen the four black screws on the upper rear cover and slightly separate the cover.  
(DO NOT REMOVE THESE SCREWS)
5. Remove the "L" plastic cover. (USE CAUTION NOT TO DAMAGE THE RIBBON CABLE)
6. Locate and **unsolder jumper pads # 6 & 7** (JP1006).  
(Some models may have a small jumper wire on Pad #6, cut it.)
7. See instructions below then reassemble the radio.
8. **Reset the microprocessor.** (Press and hold [Mhz UP] & [MHz DOWN] and turn on the radio.)

One report states that the modification disables the ability to clone the radio.

#### Some models require the following:

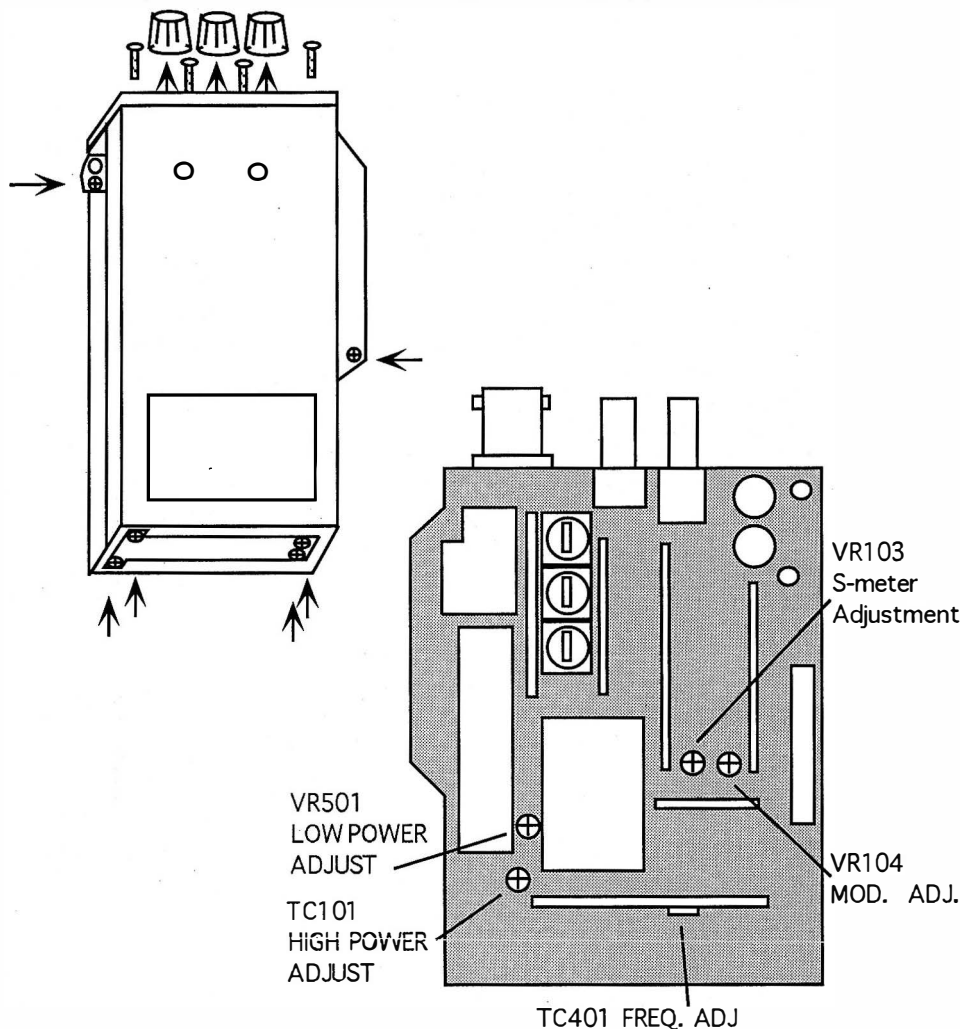
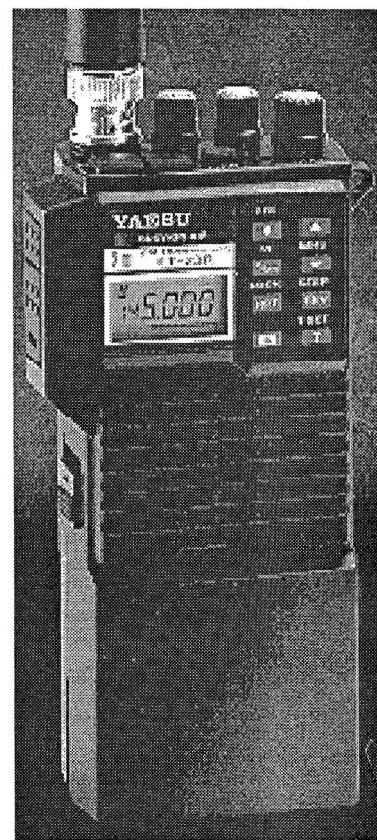
9. Press and hold both volume keys and the [CALL] button and turn the radio on.
10. Press [F/M] button for 1 second, then press [Mhz UP] arrow until the display reads "BAND 7".
11. Press [F/M], Press [CALL] button the radio will power down.
12. Solder jump Pad # 7.
13. **Reset the microprocessor.** (Press and hold [Mhz UP] & [MHz DOWN] and turn on the radio.)\*

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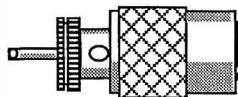
### Repeater Offset control:

1. PRESS AND HOLD [RPT] & TURN ON THE RADIO.
2. DIAL OFFSET & PRESS [RPT]



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel, battery mounting track & body screws and open Radio
3. Make adjustments.
4. Reassemble the radio.



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### Expansion Range

RX: 400 MHz - 485 MHz

TX: 415 MHz - 470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

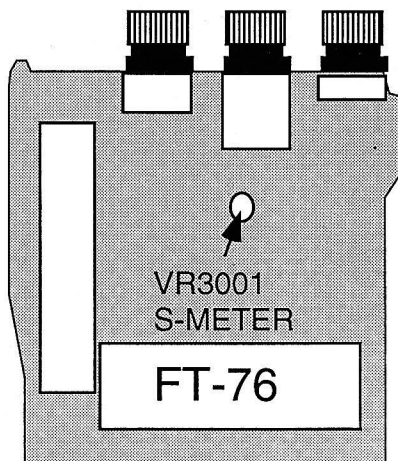
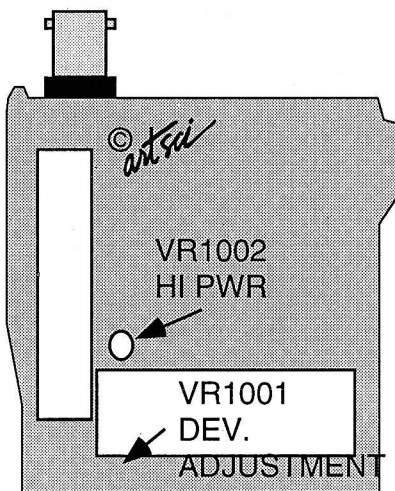
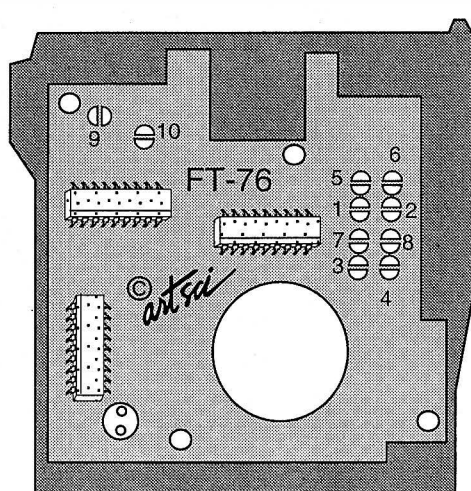
### Reset Commands

#### Soft RESET

Press and hold [T] & [REV] and turn power on.

#### Master RESET

Press and hold [D/MR] & [T] & [REV] and turn radio on, then enter band Limits below.



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the 4 screws holding the battery track.
3. Remove the 2 screws in the back case.
4. Carefully separate the front cover.
5. Locate and **remove solder on Jumper pads 4 and 7.** (on control board)
6. **Solder jump pads 1, 3, 5, 8, 9 and 10** (old mod had pad 4 in place of 5)
7. Reassemble the radio.
8. Turn radio on and each channel indicator will blink.
9. Enter the following frequencies. (use the [F] & up arrow keys)

CH. 1	400.000	Press [D/MR] Lower Rx limit
CH. 2	485.000	Press [D/MR] Upper Rx limit
CH. 3	415.000	Press [D/MR] Lower Tx limit
CH. 4	470.000	Press [D/MR] Upper Tx limit

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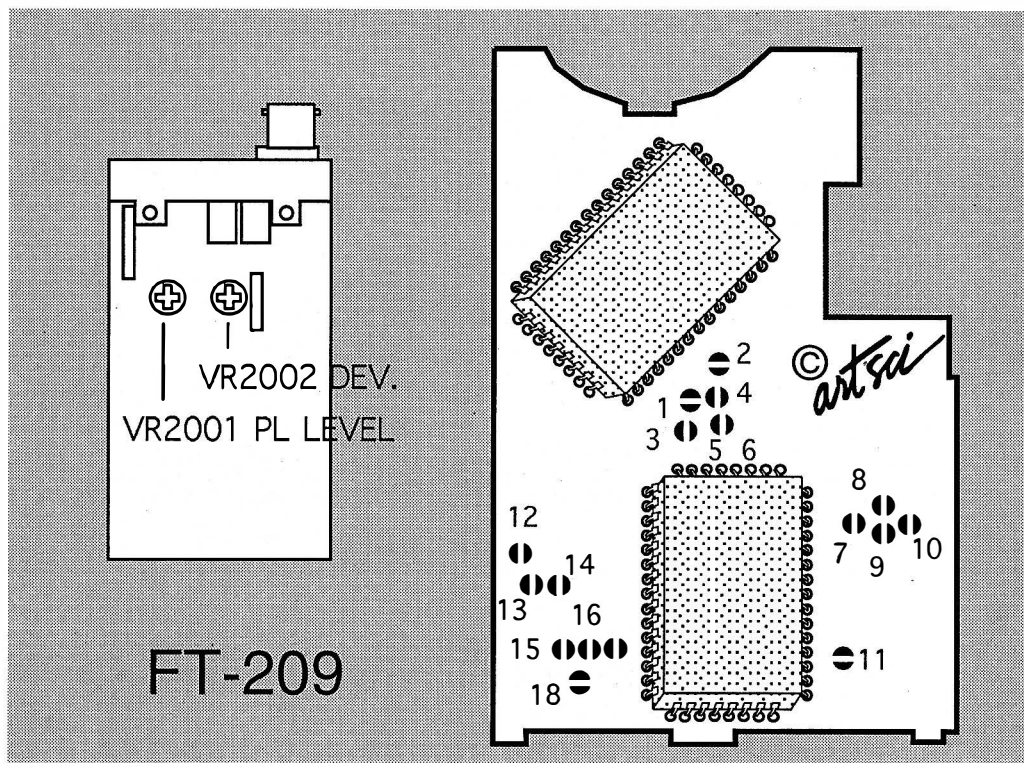
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# #	Frequency	Offset	PL	Label	Description
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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46					
47					
48					
49					





### Expanded RF Modification

1. Remove battery and antenna.
2. Remove battery screws, belt clip screws and side strap screws.
3. Remove black trim on sides of the radio.
4. Remove the two side screws and slide the u-shaped back cover off.
5. Remove the four tiny Phillips screws holding the front panel on.
6. Fold panel to the right to open the radio.

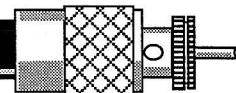
Untested out of band mod #1: **Jumper pads 1,7,9,10 & 13.**

Untested out of band mod #2: **Jumper pads 7,9,10,11 & 13.**

Factory default is pads 1,9 & 13.

7. Locate alignment pots. Make adjustments
8. Reassemble the radio.
9. Reset the microprocessor (If desired)
10. Enter 1440 [D], 1480 [D], 1440 [D], 1480 [D], 0600 [SHIFT]

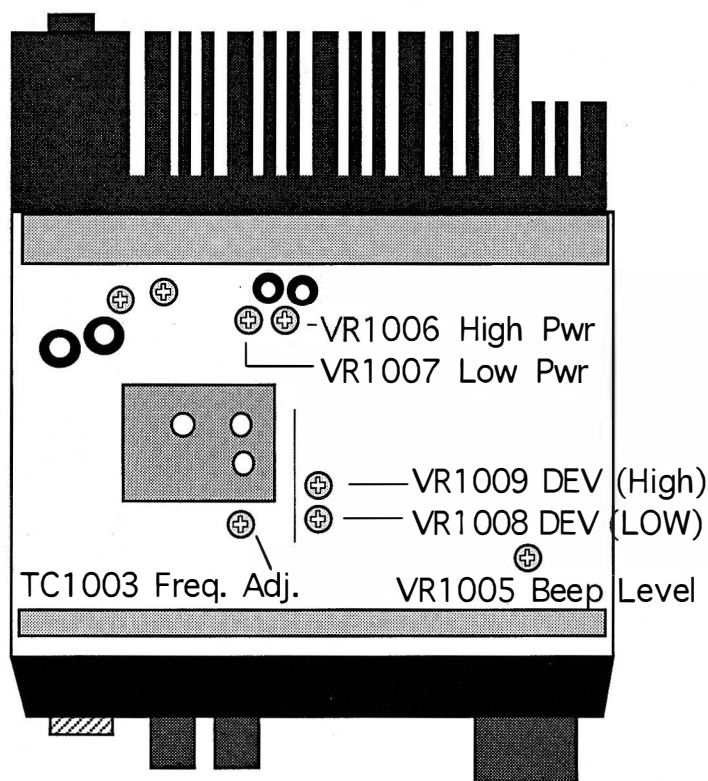
Note: RX range of 144.0 - 148.0 MHz and TX range of 144.0 - 148.0 MHz



## Expansion Range

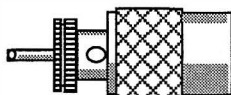
The Exact range of this radio is not know as of press time. However most radios expand from 138 Mhz - 165 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. **Short the reset pins together for one second.**
9. Reassemble the radio.



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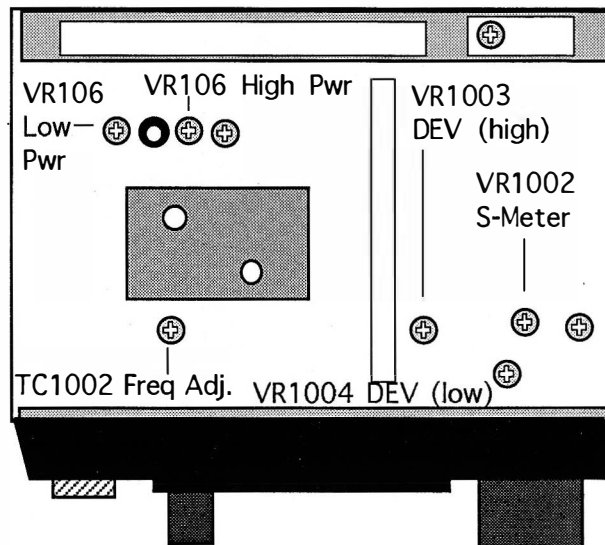
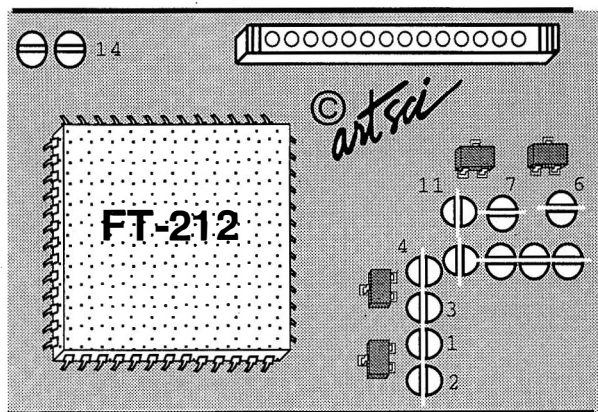
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## Expansion Range

140 - 164 MHz

Auto Repeater offset is lost.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove the top and bottom covers.
3. Remove the speaker.
4. Remove the knobs and nuts from the front panel.
5. Remove the three screws from the control unit.
6. Remove the Control unit from the front panel.
7. **Locate & remove solder from pad #1 on control unit.**
8. **Locate & solder jumper Pads 3,4,11 and 14.**
9. Replace the control unit on the front panel.
10. **Reset the microprocessor.** (using a jumper short D09 on the control unit to ground on the radio. Do not apply power).
11. Reassemble the radio. Replace knobs, screws etc.
12. Apply DC power and turn radio on.
13. Press [MHz] & use the control knob to enter 140 and press [D/MR]. (lower limit)
14. Press [MHz] and use knob to enter 174 and press [D/MR]. (upper limit)
15. Press [F] and then [RPT] button. use the control knob to enter 0.600. Press the [RPT] button.

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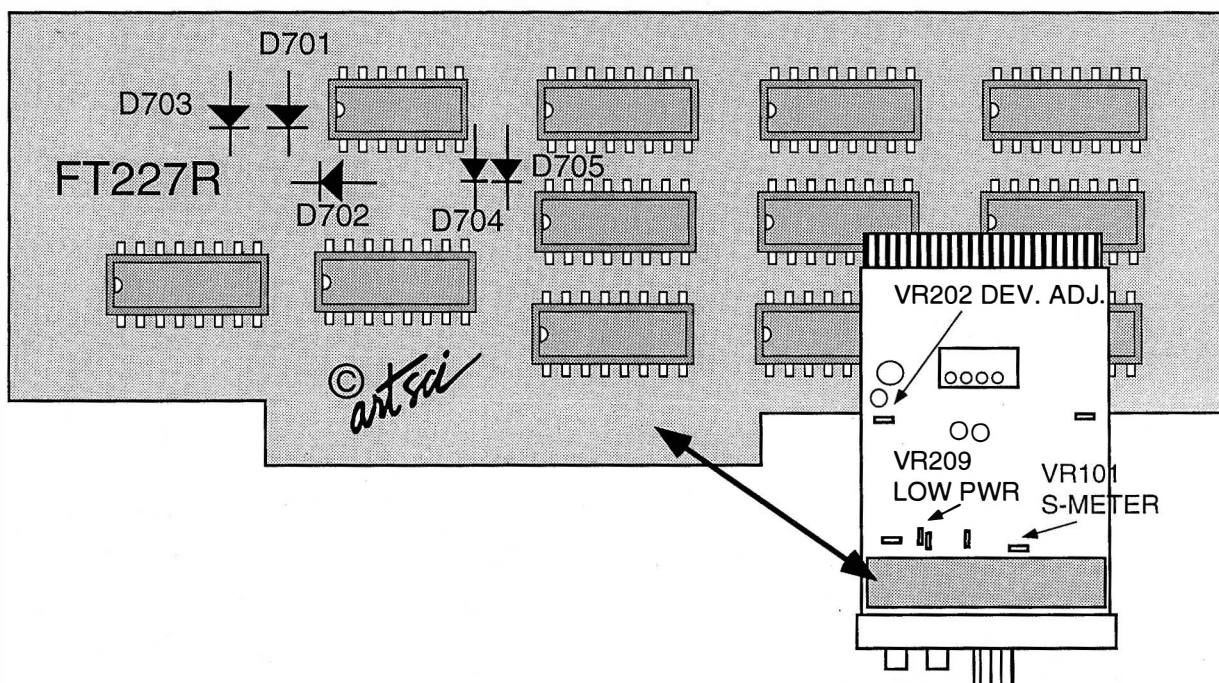
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## Expansion Range

143.990 MHz - 149.000 MHz

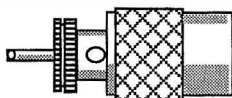
Automatic repeater offset is lost.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Unplug the power from the radio.
2. Open radio and locate the PLL CONT. UNIT.
3. **Remove D701 and D702.** Do not place in a jumper.
4. **Locate Q712 (MC14028B), and break the connection to Pin 6. (Blue wire)**
5. **Connect pin 1 of Q711 (red wire ) to ground.**
6. Reassemble radio



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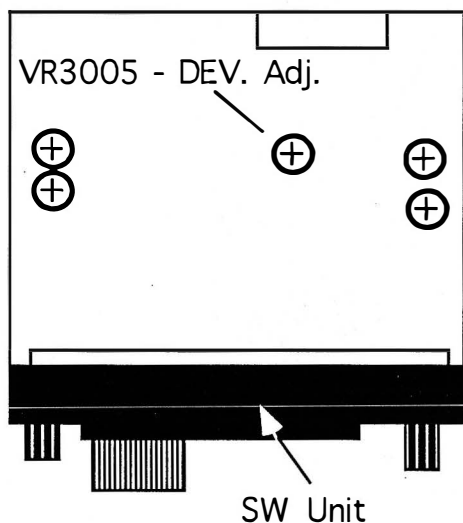
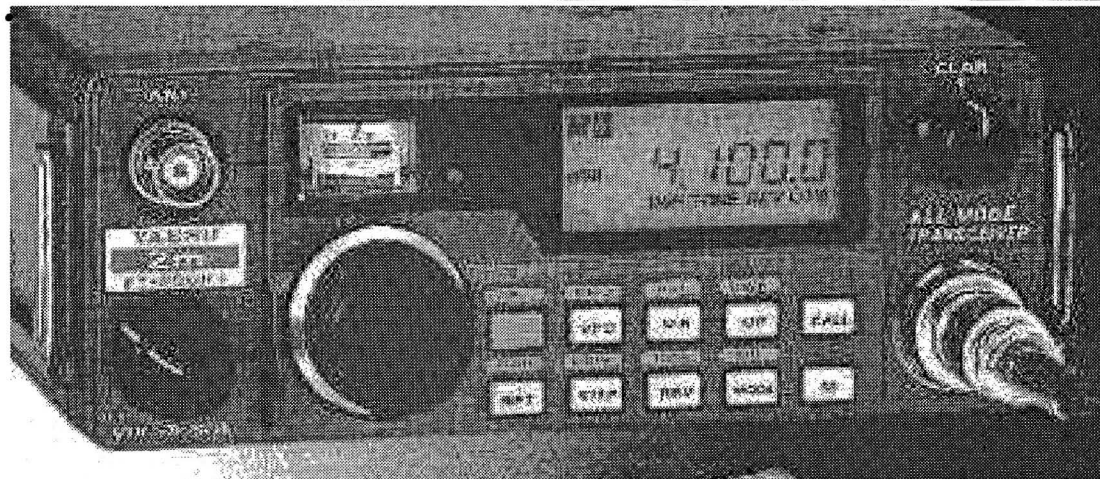




## Expansion Range

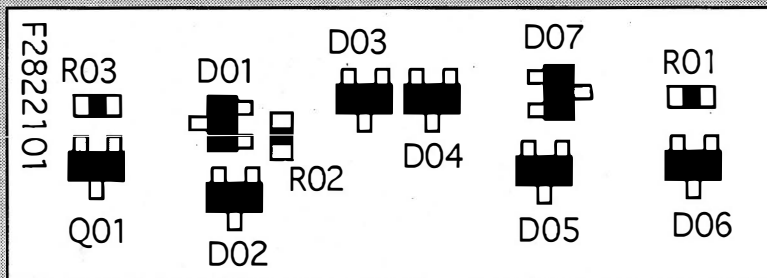
The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



D01	D03	R02	R03	
●	●	○	●	144 - 148 MHz
●	●	○	○	140 - 150 MHz
●	●	●	○	144 - 146 MHz
●	○	●	○	144 - 154 MHz

● Installed  
 ○ Removed



## Expanded RF Modification

1. Unplug the power from the radio.
2. Open radio and located SW Unit. The SW unit is located on the front panel, behind the display.
3. Locate components D01, D03, R02 & R03 See drawing.
4. **Remove or Install the components per table 1.**
5. Reassemble the radio.

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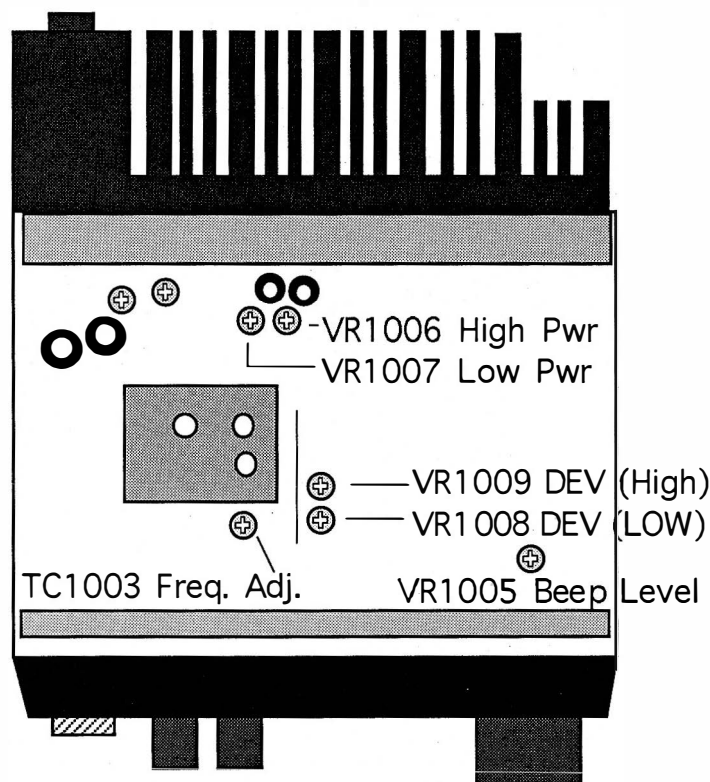
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### Expansion Range

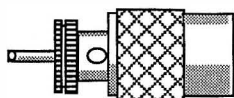
The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. **Short the reset pins together for one second.**
9. Reassemble the radio.



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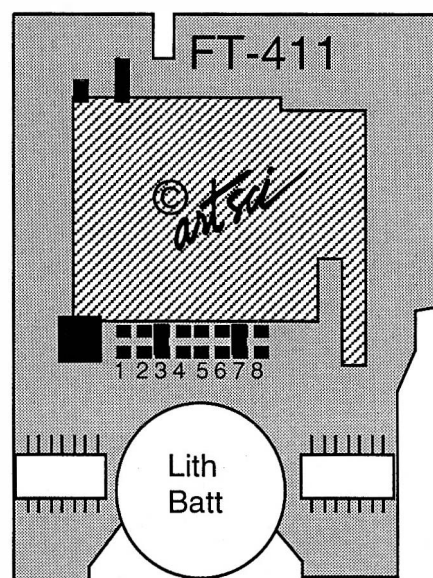
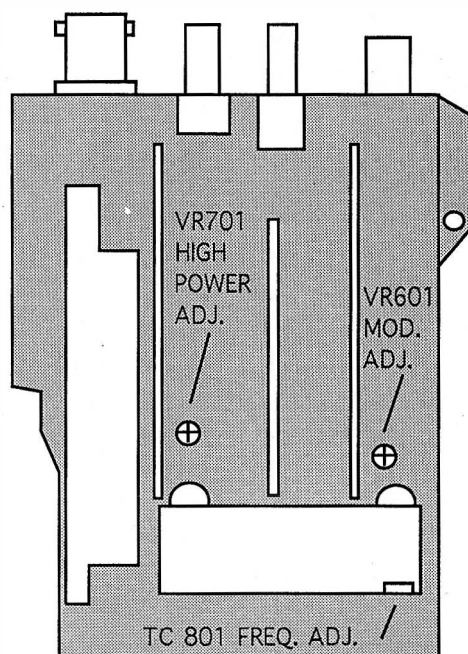
### Expansion Range

RX 120 MHz - 174 MHz

TX 140 MHz - 174 MHz

Disables automatic repeater shift

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel & body screws and open Radio
3. **Remove solder bridge from Pad # 2**
4. **Place solder Bridge on Pad # 3**
5. Reassemble Radio
6. **Reset Microprocessor.**  
 (Press and hold [MR], [2] & [VFO] and turn radio on then off)  
 (Press and hold both up and down keys and turn power on)
7. Enter the following: 1200 [VFO] 1740 [VFO] 1400 [VFO] 1740 [VFO]
8. Press [Function] & [7] to change channel step.



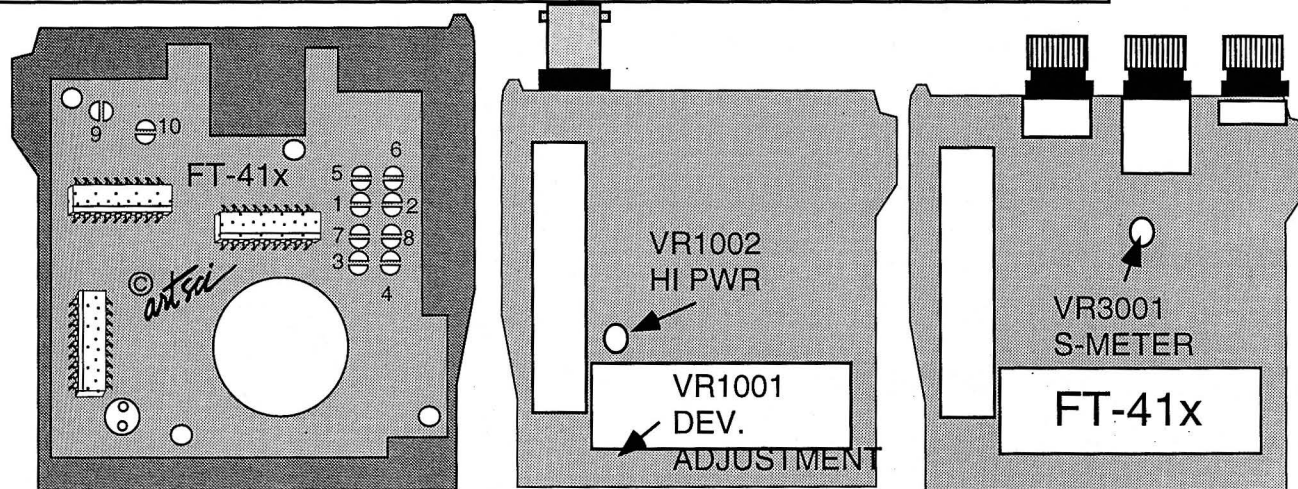
## Expansion Range

RX: 120 - 174 MHz

TX: 135 - 174 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

FT-415  
FT-416



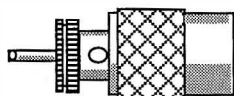
## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the four screws holding the battery track in place.
3. Remove the two black screws holding the rear case in place.
4. Carefully open the front cover from the radio.
5. Locate and **solder jumper pads 5 & 7**. Pads 3 and 9 are already jumpered.  
(Jumper pads 1 & 10 for 1750 Hz Tone Burst operation)
6. Carefully replace the front cover and replace the two black screws.
7. Replace the battery track and the four screws.
8. **Reset the microprocessor.**  
Press and hold [MR], [2] and [VFO] and turn the radio on.
9. The radio display will cycle orderly through the memory channels.  
Enter the following band limits:
10. Press [F] [7] and select 5 kHz channel spacing in each VFO.

### Master Reset Command:

Press and hold [MR] & [2] & [VFO] and turn power on, then enter new limits

- |       |   |
|-------|---|
| Ch. 1 | Enter 120.00 and then press [VFO] (Rx low limit)  |
| Ch. 2 | Enter 174.00 and then press [VFO] (Rx high limit) |
| Ch.3  | Enter 135.00 and then press [VFO] (Tx low limit)  |
| Ch.4  | Enter 174.00 and then press [VFO] (Tx high limit) |



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# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

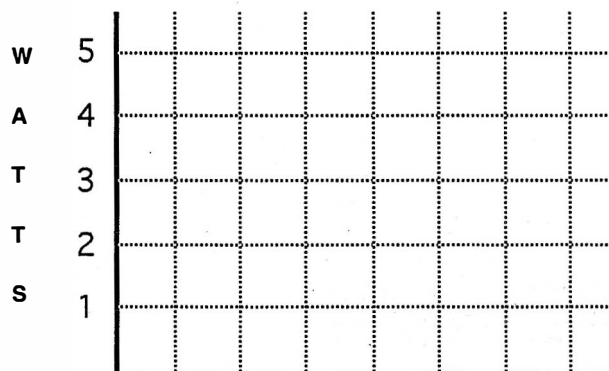
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

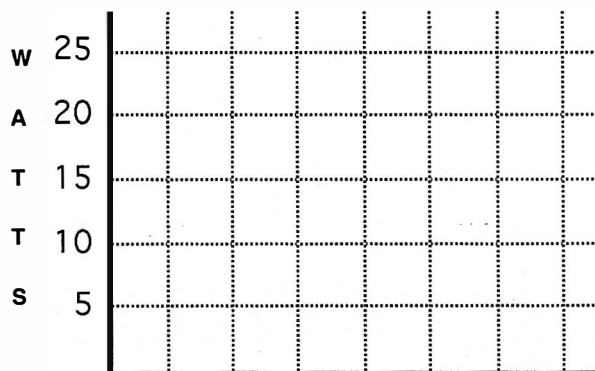
City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



Frequency



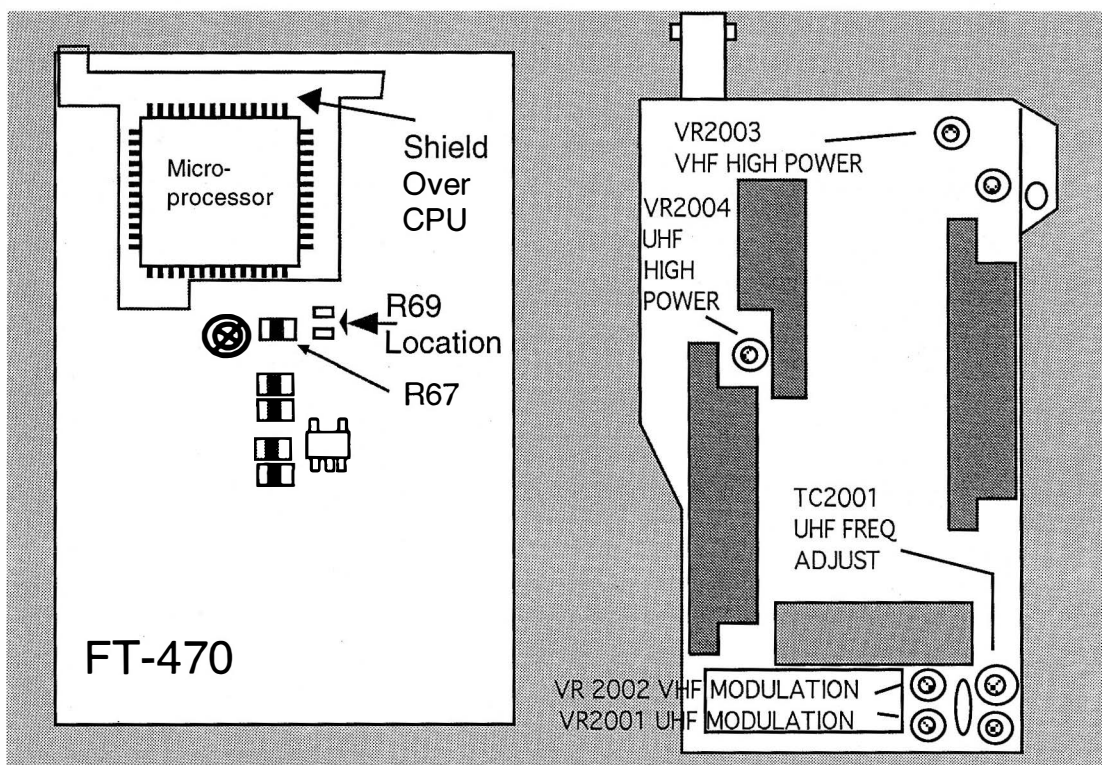
Frequency

THERE IS NO MODIFICATION FOR TRANSMIT EXPANSION ABOVE 449.995 MHz

## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 140 Mhz - 174Mhz & 420 - 449 Mhz.

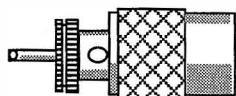
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel & body screws and open Radio
3. Carefully unsolder the lithium battery and lift it to expose resistor position .
4. **Solder a Jumper or 0 ohm resistor(or jumper)** in the empty R69 position.
5. OPTIONAL- Crossband Half Duplex mod. Place a jumper wire from pin 4 & 14 of the flat cable wire connecting the front and back panels. This will use the ON AIR signal to mute the AUDIO CNTL line, muting the other band while transmitting.
6. Solder the lithium battery back in place.
7. Reassemble the radio.

More on Next Page



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### Expanded RF (430 - 500 MHz RX)

The following procedure utilizes the "U" memory location to store the upper limit for the UHF reception. A high UHF frequency (ie 470 MHz) must always be stored in the "U" memory for the expanded UHF reception to work.

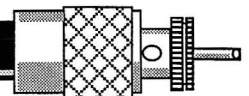
1. Program 450.00 MHz simplex.
2. Press [F/M] and then [RPT].
3. Enter 0000 into the keypad.
4. Turn the radio off and turn back on.
5. Press [RPT] twice for a + (plus) offset.
6. Press the [REV] button. (The display should now be 1450 MHz)
7. Press [Function] and then [Down Arrow] to drop the frequency down 1 MHz at a time until the display reads 500 MHz.
8. Press and hold the [F/M] key until your hear two beeps.
9. Rotate the dial knob until the "U" memory channel is displayed.
10. Press the [Function] key to store the frequency in memory.
11. Press [Function] and then [Down Arrow] to drop the frequency down 1 MHz at a time until the display reads 450 MHz.
12. Press and hold the [F/M] key until your hear two beeps.
13. Rotate the dial knob until the "L" memory channel is displayed.
14. Press the [Function] key to store the frequency in memory.
- \*\*\* Stop here for 440 - 470 Coverage.
15. Turn radio off and on and select the "U" memory channel.
16. Press [MR] and then [RPT]
17. Press the PTT button 3 times. The display should read 070.00 MHz
18. Press [Function] and then [Up Arrow] to increase the frequency up 1 MHz at a time until the display reads 400 MHz.
19. Press and hold the [Function] key until your hear two beeps.
20. Rotate the dial knob until the "L" memory channel is displayed.
21. Press the [Function] key to store the frequency in memory.

To receive a desired UHF frequency, you must use the following steps:

1. Select the "U" memory channel.
2. Press the [MR] key to enter the "MEMORY TUNE" mode.
3. Use the [arrow] keys or Dial Knob to select the desired frequency.
4. Store the selected in any memory channel, except memory channel "U" & L

#### Hyperscan Modification:

1. Select the "ALT mode by pressing [F] and [ALT]
2. Press the [UP] or [DOWN] arrow.
3. When the scan stops, Press [F] and then [VFO].
4. Press the [UP] or [DOWN] arrow. (HYPERSCAN MODE)
5. Press [F] and [ALT] to stop scan mode.



### Expansion Range

RX: 110-180 MHz, 300-500 MHz

TX: 130-177 MHz, 400-470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### tone BURST -

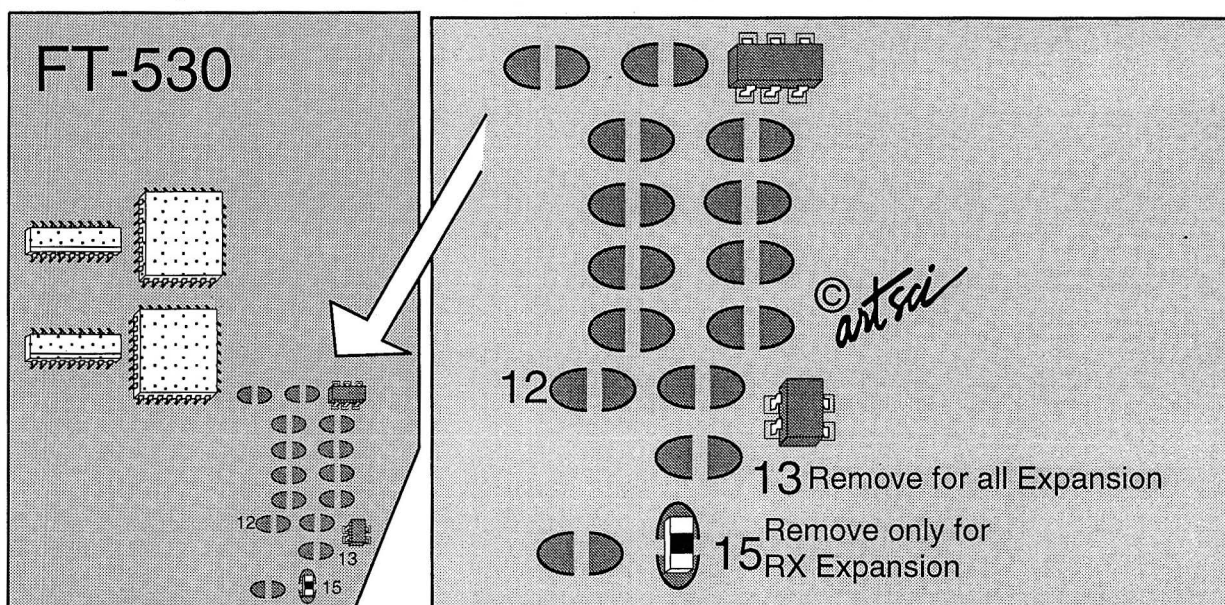
Jumper Pad # 12.

Stock Pads Soldered: 1, 3, 6, 8, 11, 13, 15

### RX ABOVE 500 MHz:

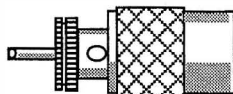
Put 300 in lower limit & 950 in upper limit.

Press [MR] [MR]. (a line will appear on the display below "L")  
Enter in desired FREQ.



### Expanded RF Modification

1. Remove battery and antenna.
2. Locate and remove the 4 screws on the bottom battery track.
3. Locate and remove the 4 black screws on the rear case.
4. Carefully open the front cover and open the radio.
5. Note location of white paper insulator and remove it. (Don't throw away)
6. **Locate jumpers location J13 and remove solder jumper.**  
**DO NOT DO BOTH JUMPER pads 13 & 15.**
7. Replace the paper insulator making sure the ground tabs slide through insulator
8. Close radio being careful not to pinch any wires.
9. Replace all screws.
10. Replace battery and antenna.
11. Press and hold both [MR] & [VFO] arrow buttons and turn power on..



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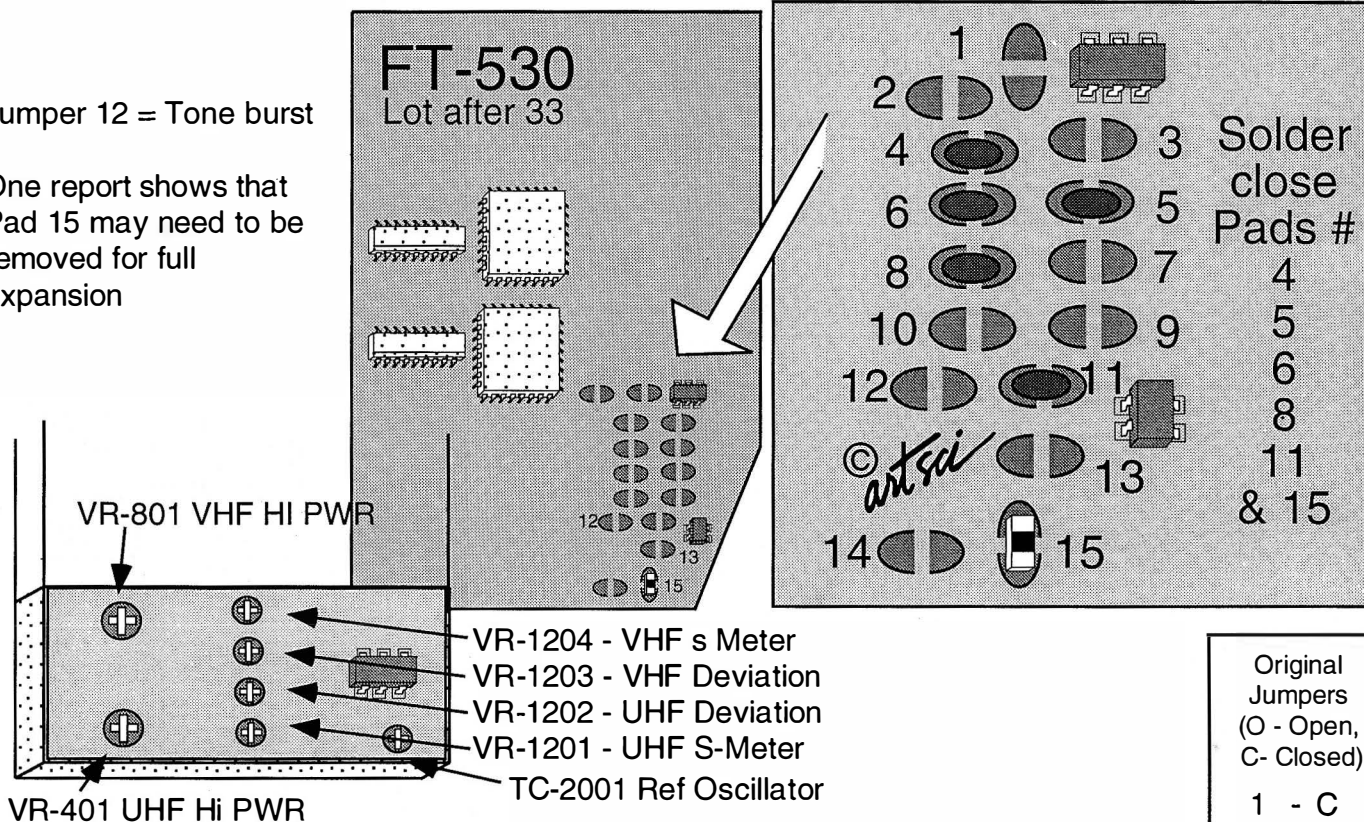
## Expansion Range

RX: 110-177 MHz, 300-500 MHz & TX: 130-177 MHz, 400-470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

Jumper 12 = Tone burst

One report shows that Pad 15 may need to be removed for full expansion



## Expanded RF Modification

1. Remove battery and antenna.
2. Locate and remove the 4 screws on the bottom battery track.
3. Locate and remove the 4 black screws on the rear case.
4. Carefully open the front cover and open the radio.
5. Note location of white paper insulator and remove it. (Don't throw away)
6. **Locate jumpers and remove solder jumpers #1, 3 & 13(green wire).**
7. **Solder Jump Pads #4 & 5.**  
(Pads #4, 5, 6, 8, 11 & 15 are now soldered.)
8. Replace the paper insulator making sure the ground tabs slide through insulator
9. Close radio being careful not to pinch any wires.
10. Replace all screws.
11. Replace battery and antenna.
12. **Press and hold both [MR] & [VFO] arrow buttons and turn power on.**

Original  
Jumpers  
(O - Open,  
C - Closed)

- 1 - C
- 2 - O
- 3 - C
- 4 - O
- 5 - O
- 6 - C
- 7 - O
- 8 - C
- 9 - O
- 10 - O
- 11 - C
- 12 - O
- 13 - C
- 14 - O
- 15 - C

# #	Frequency	Offset	PL	Label	Description
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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49					

## Expansion Range

24- 56 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

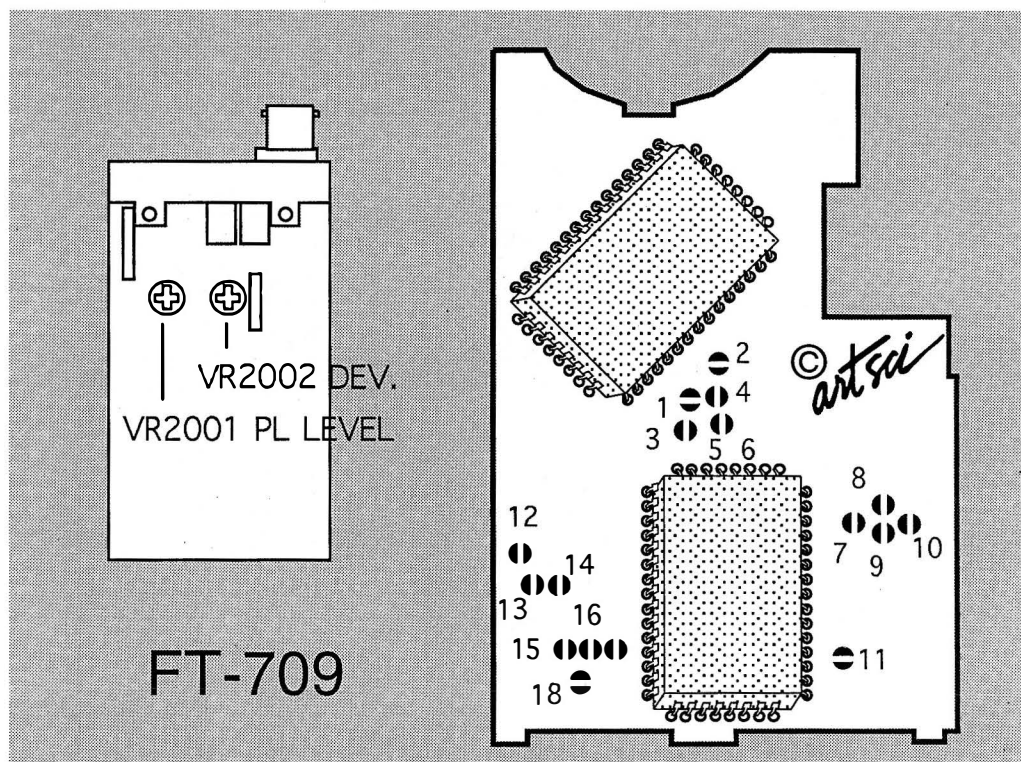
1. Turn the radio off.
2. Press and hold [VFO] & [MR] and turn on the radio.

Repeat the step above to return to Normal settings

YAESU

## Expansion Range

The Exact range of this radio is not known as of press time.



FT-709

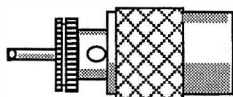
## Expanded RF Modification

1. Remove battery and antenna.
2. Remove battery screws, belt clip screws and side strap screws.
3. Remove black trim on sides of the radio.
4. Remove the two side screws and slide the u-shaped back cover off.
5. Remove the four tiny Phillips screws holding the front panel on.
6. The ground jumper on the left side needs to be unsoldered.
7. Fold panel to the right to open the radio

Untested out of band mod #1: **Jumper pads 1,7,9,10, 13 & 16.**

Untested out of band mod #2: **Jumper pads 7,9,10,1, 13 & 16.**

8. Locate alignment pots. Make adjustments.
9. Reassemble the radio.
10. Reset the microprocessor. (If desired)
11. On FT-709 enter 4400 [D], 4490 [D], 4400 [D], 4490 [D]. 5000 [SHIFT]  
Note: RX range of 440.0 - 449.0 MHz and TX range of 440.0 - 449.0 MHz



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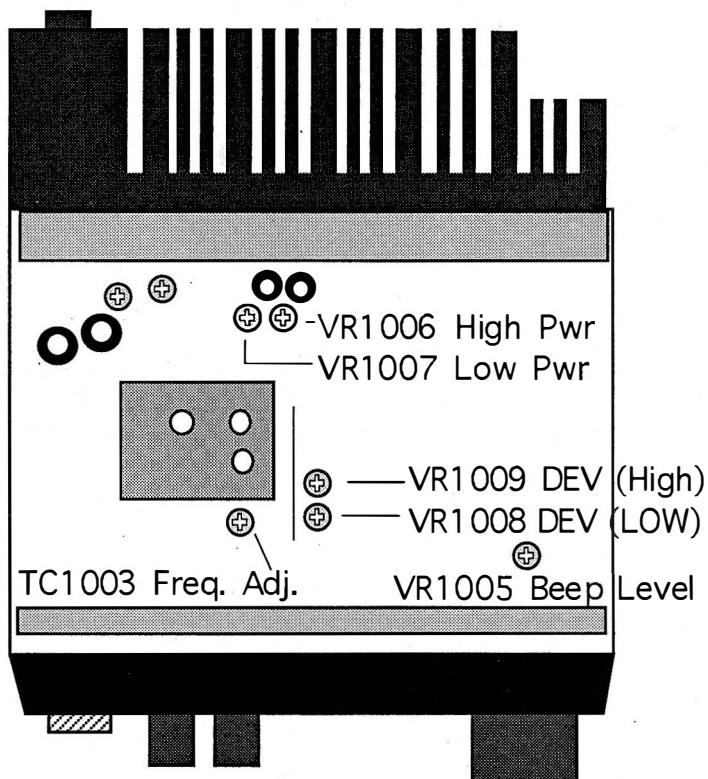
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### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



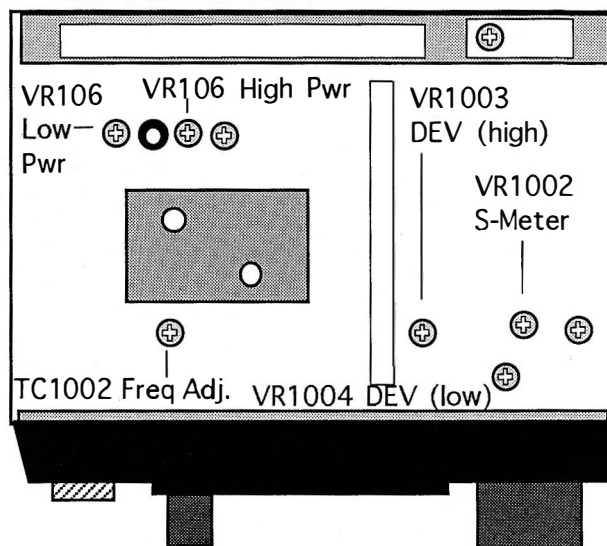
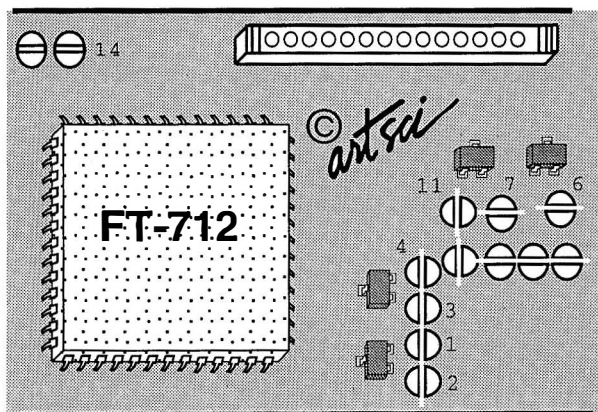
### Expanded RF Modification

1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. Short the reset pins together for one second.
9. Reassemble the radio.

## Expansion Range

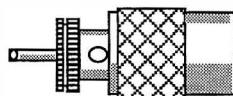
430 MHz - 465 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove the top and bottom covers.
3. Remove the speaker.
4. Remove the knobs and nuts from the front panel.
5. Remove the three screws from the control unit.
6. Remove the Control unit from the front panel.
7. **Remove solder from pad #1 and Pad #2 on control unit.**
8. **Solder jumper Pads 4 and 14.** Pads 3,4,5,7,11 and 14 will be bridged
9. Replace the control unit on the front panel.
10. **Reset the microprocessor.** (using a jumper short D09 on the control unit to ground on the radio. Do not apply power).
11. Apply DC power and turn radio on.
12. Press [MR] & use the control knob to enter 430 and press [D/MR]. (lower limit)
13. Press [MR] and use knob to enter 501 and press [D/MR]. (upper limit)
14. Press [F] and then [RPT] button. use the control knob to enter 5.000. Press the [RPT] button.



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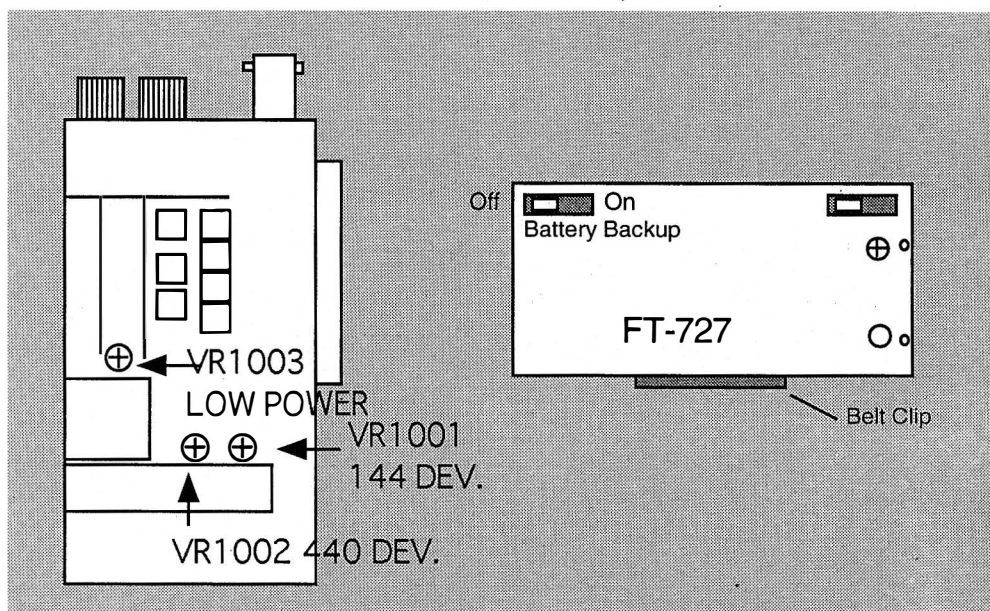
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### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

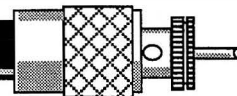


### Expanded RF Modification

1. Remove Battery
2. Turn off the Battery backup switch. (located on the bottom of the radio)
3. Wait 10 Seconds and Turn the switch back on
4. Replace battery
5. Turn Radio ON. (Display should go blank, if not redo steps 1-4)
6. Enter the following: 001111 (note: factory setting is 443300)
7. Reset the VHF & UHF offsets.  
Select VHF then Press [F] then the [Shift] button.  
Enter 0600 then [D]  
Select UHF then Press [F] then the [Shift] button.  
Enter 5000 then [D]

### PLL Alignment

1. Remove battery, and belt clip
2. Remove battery track screws
3. Remove rear cover
4. Install the battery track.
5. Turn radio on & enter desired frequency
6. Adjust L01 (black slug) in VCO unit until the on air lamp is lit (red light) (L01 core, turn counter-clock wise)
7. Reassemble the radio.





## Expanded RF Modification

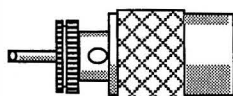
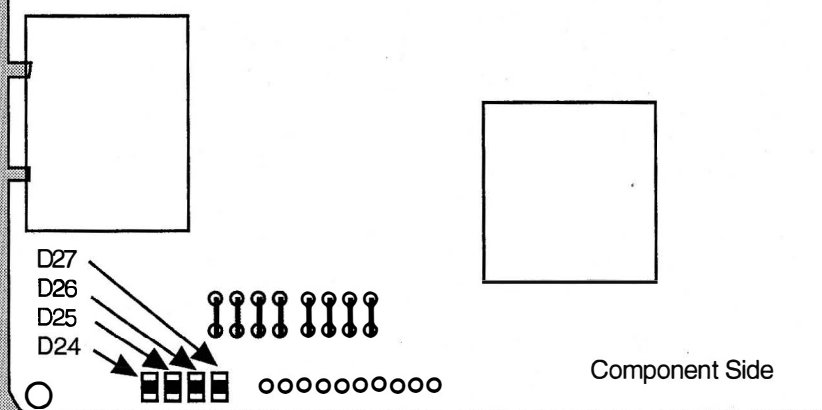
1. Unplug the power from the radio.
2. Open the radio and locate the 144 MHz main unit.
3. Locate diodes D24, D25, D26 and D27 See drawing.
4. **Remove or Install the diodes per table 1.**
5. Reassemble radio.

D24	D25	D26	D27	
○	●	●	○	144.0 - 148.0 MHz
○	●	●	●	141.0 - 154.0 MHz
○	○	●	●	144.0 - 146.0 MHz

● Installed  
○ Removed

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FT-736R - 144 MHz main unit



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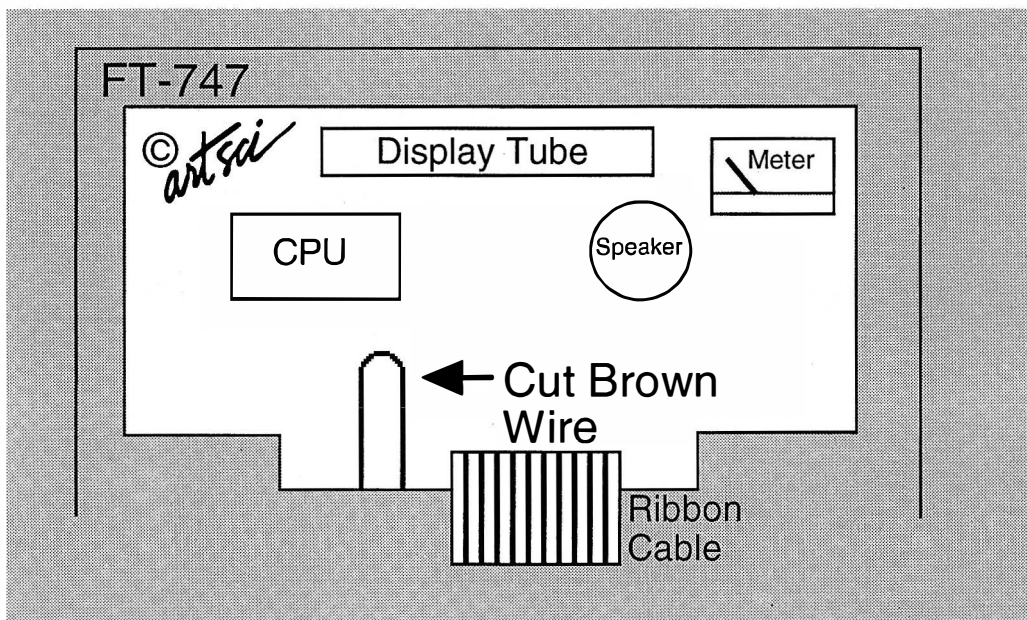
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### Expansion Range

**.5 MHz - 30 Mhz.**

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### Expanded RF Modification

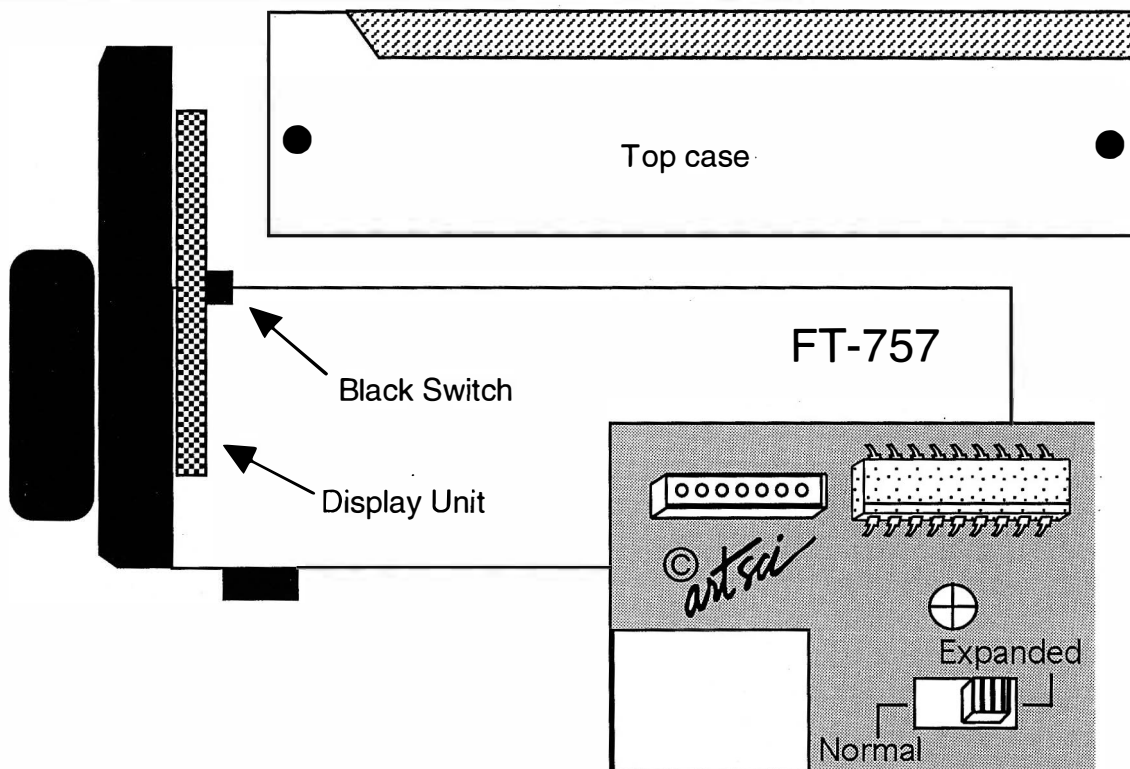
1. Unplug the DC power cable from the radio
2. Remove the top cover (see instruction manual page 23)
3. **Remove or cut the BROWN jumper wire** on the display unit. See Drawing
4. Reconnect the power cable and turn the radio on
5. Set the VFO dial to 12.3456 MHz
6. Turn power off and then back on again.
7. Turn power off and reassemble radio. (don't pinch any wires)

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### Expansion Range

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Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

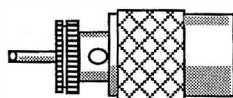


### Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove the top cover. You may need to remove the speaker wire to remove the top cover. (see service manual for cover removal)
3. Locate the Black slide switch on the display panel. (to the right of center and halfway down the backside).
4. Use a screwdriver to **set the switch to the left most position.**
5. Reassemble the radio.

**Some models outside the USA may need the following modification -**

1. Isolate pin 19 of IC-67(MC68HC05C) on both side of circuit board.
2. Link pin 19 to pin 16 of IC-66(MC14510) with a 10 resistor.  
Be sure to use resistor leads are insulated to prevent shorts.



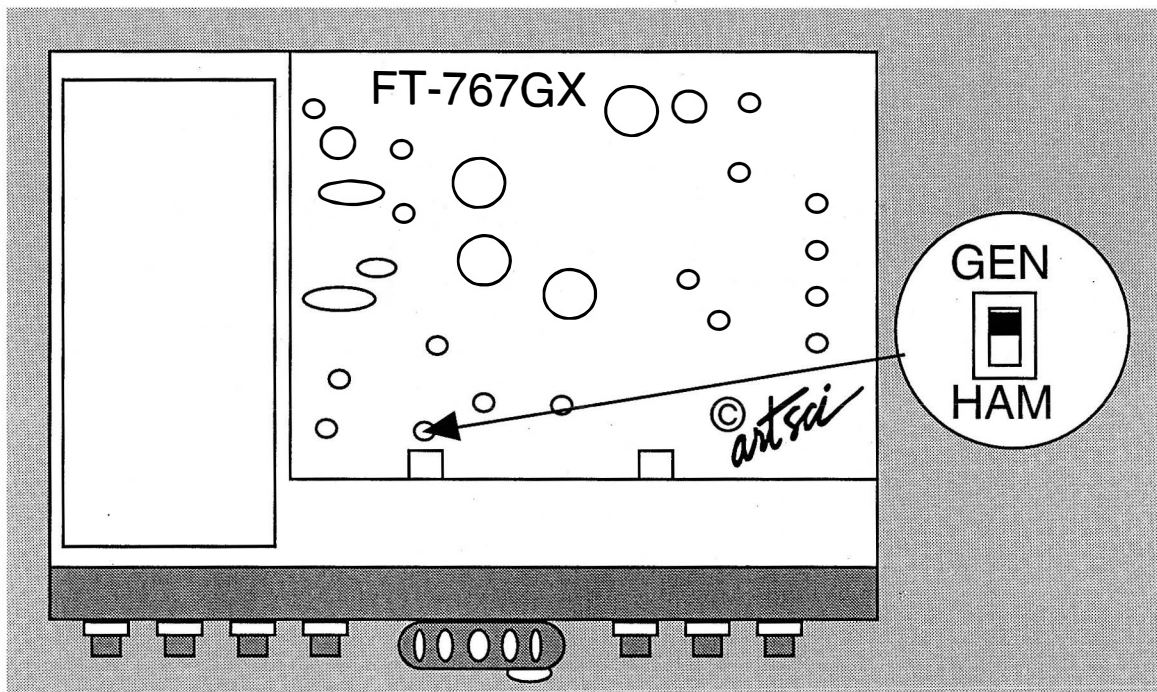
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## Expansion Range

The Exact range of this radio is not know as of press time.  
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Unplug the DC power cable from the radio.
2. Remove any VHF or UHF Band modules.
3. Remove two screws at the front of the top cover and remove the top cover .
4. Locate the GEN/HAM switch inside the shield cover.
5. **Use a screwdriver to set the switch to the GEN position.**
6. Reassemble the radio.

## Expansion Range

RX 410 MHz - 475 MHz

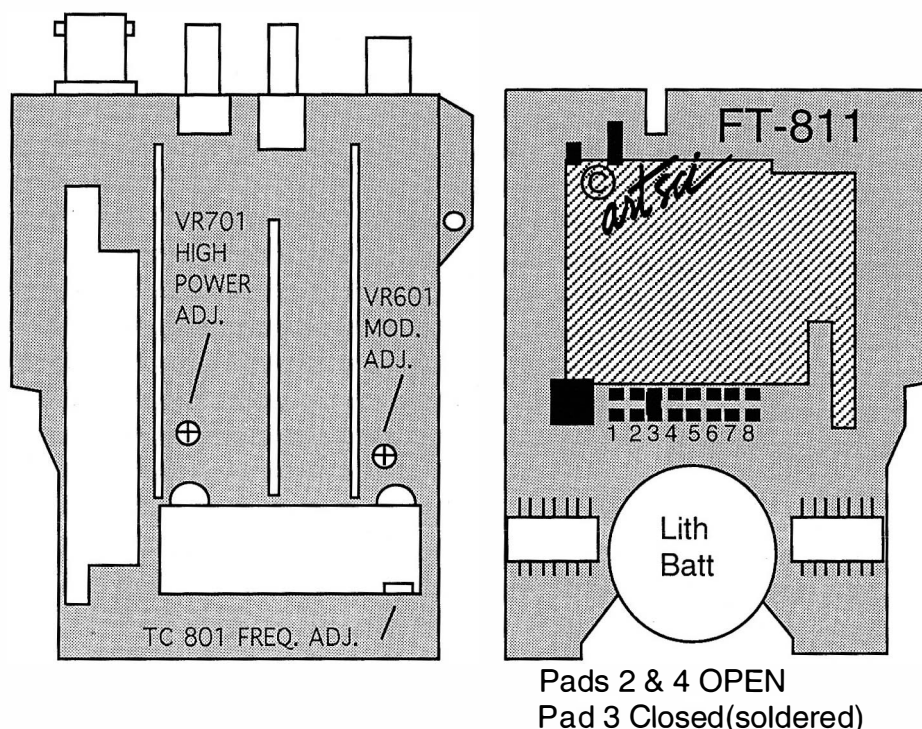
TX 410 MHz - 475 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

(disables automatic repeater shift)

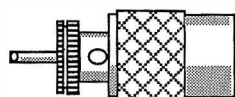
For Serial # 9D, 9F and 9J series only.

Serial Numbers above 2F & 9N can not be modified



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove control knobs, screws, top panel & body screws and open Radio
3. **Remove solder bridge from Pad # 2**
4. **Remove solder bridge from Pad # 4**
4. **Place solder Bridge on Pad # 3**
5. Reassemble the radio
6. **Reset microprocessor.** (Press and hold [MR] & [VFO] and turn radio on then off)  
(Press and hold both up and down keys and turn power on)
7. Enter the following: 4100 [VFO] 4750 [VFO] 4100 [VFO] 4750 [VFO]
8. Press [Function] & [7] to change channel step.
9. Press [F] & [RPT] and enter offset in both VFO. (5.00 MHz is standard)



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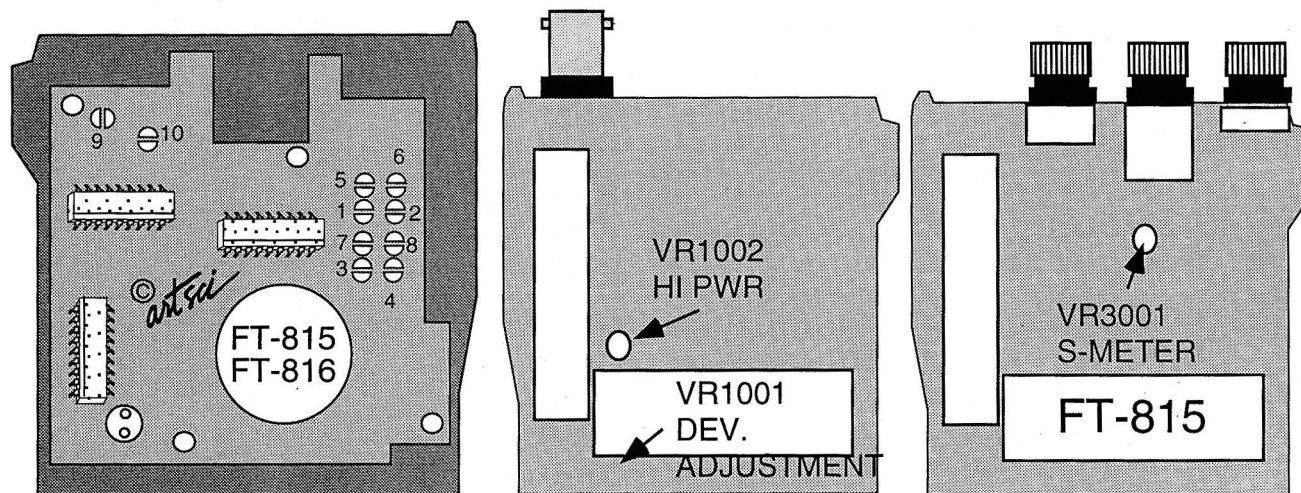
FT-815  
FT-816

## Expansion Range

410 - 475 MHz RX

415 - 470 MHz TX

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Battery and Antenna.
2. Remove the four screws holding the battery track in place.
3. Remove the two black screws holding the rear case in place.
4. Carefully open the front cover from the radio.
5. Locate and **remove the solder from jumper pad #8.**
6. **Locate and solder jumper pads 5 & 7.** Pad 9 is already jumpered.
7. Carefully replace the front cover and replace the two black screws.
8. Replace the battery track and the four screws.
9. Reset the microprocessor.
10. **Press and hold [MR], [2] and [VFO] and turn the radio on.**
11. The radio display will cycle orderly through the memory channels.

Enter the following band limits:

- |       |   |
|-------|---|
| Ch. 1 | Enter 410.00 and then press [VFO] (Rx low limit)  |
| Ch. 2 | Enter 475.00 and then press [VFO] (Rx high limit) |
| Ch. 3 | Enter 415.00 and then press [VFO] (Tx low limit)  |
| Ch. 4 | Enter 470.00 and then press [VFO] (Tx high limit) |

16. Press [F] [0] & [6] and select 5.000 MHz channel spacing in each VFO.

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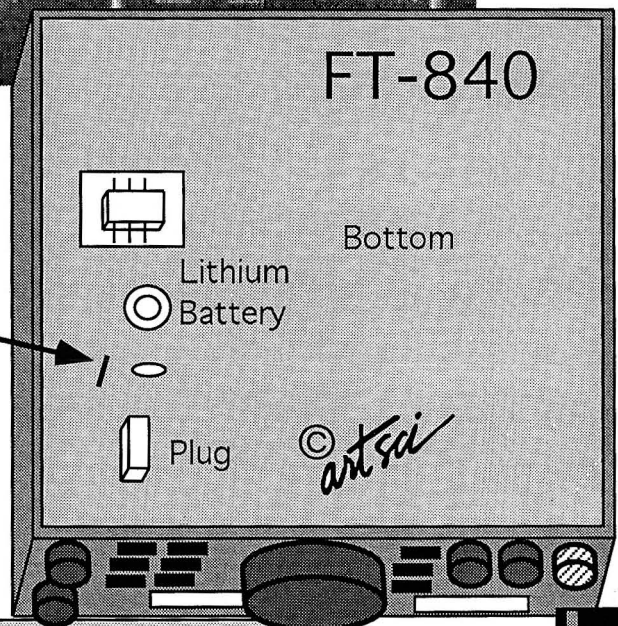


## Expansion Range

1.8 MHz - 30 Mhz.

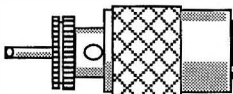
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

TP-2003



## Expanded RF Modification

1. Remove antenna from the radio.
2. Remove top and bottom covers.
3. On Local Unit, **TEMPORARILY jump TP-2003 to ground.**  
(Take a wire clip lead and attach it to the metal case)
4. Press and Hold [SSB] & [AM] & turn power on. (display will show 02-OFF)
5. Rotate main control knob to show 02-ON.
6. Press [AM]. The display should show (7.000.00 LSB)
7. Turn the radio off.
8. Press and hold the memory [DOWN] & [UP] buttons and turn the radio on.
9. Turn the radio off.
10. Remove the Jumper to ground on TP-2003
11. Reassemble the radio.



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# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

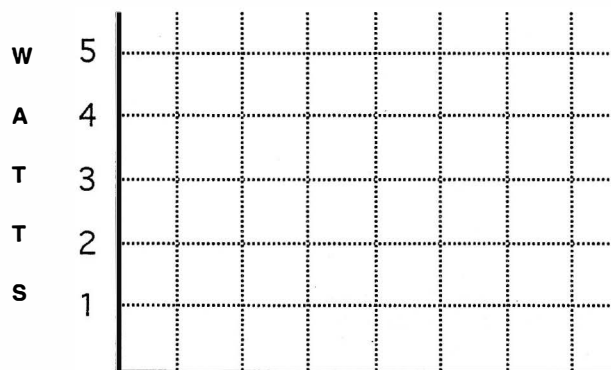
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

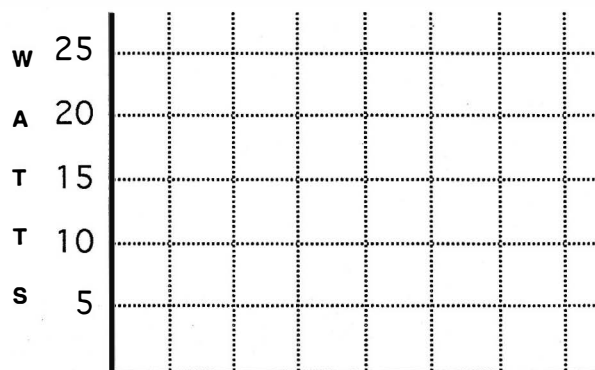
City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____ MHz)	_____ uv	_____ uv
Receive Sensitivity (____ MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



Frequency



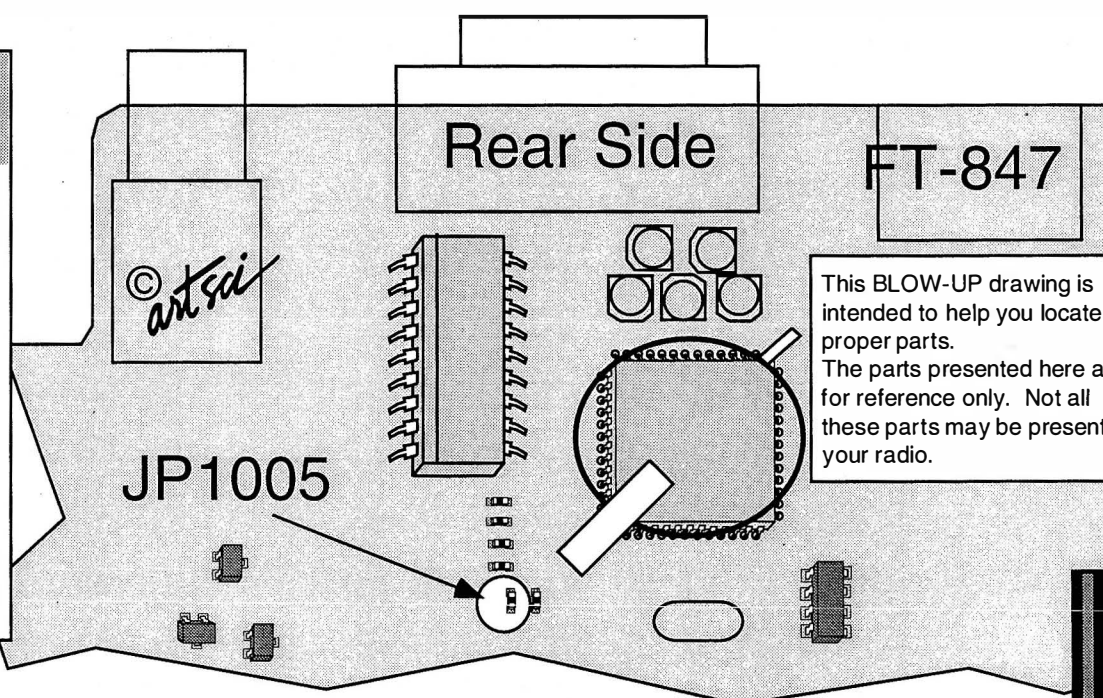
Frequency





### Expansion Range

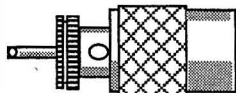
1.8 - 1.99 MHz  
3.5 - 3.99 MHz  
7.0 - 7.49 MHz  
10.0 - 10.49 MHz  
14.0 - 14.49 MHz  
18.0 - 18.49 MHz  
21.0 - 21.49 MHz  
24.5 - 24.9 MHz  
28.0 - 29.99 MHz  
50.0 - 53.99 MHz  
140.0 - 153.99 MHz  
420.0 - 459.99 MHz



This BLOW-UP drawing is intended to help you locate the proper parts. The parts presented here are for reference only. Not all these parts may be present in your radio.

### Expanded RF Modification

1. Remove power and antenna from the radio.
2. Remove top and bottom covers.
3. Locate and remove Resistor from JP1005 on AF-CNTL unit (it is located near Q1105, X1004 and Q1100.)
4. Press and hold [LOCK] & [FAST] button and turn the radio on.
5. Release the buttons and turn the radio off.
6. Reassemble the radio.



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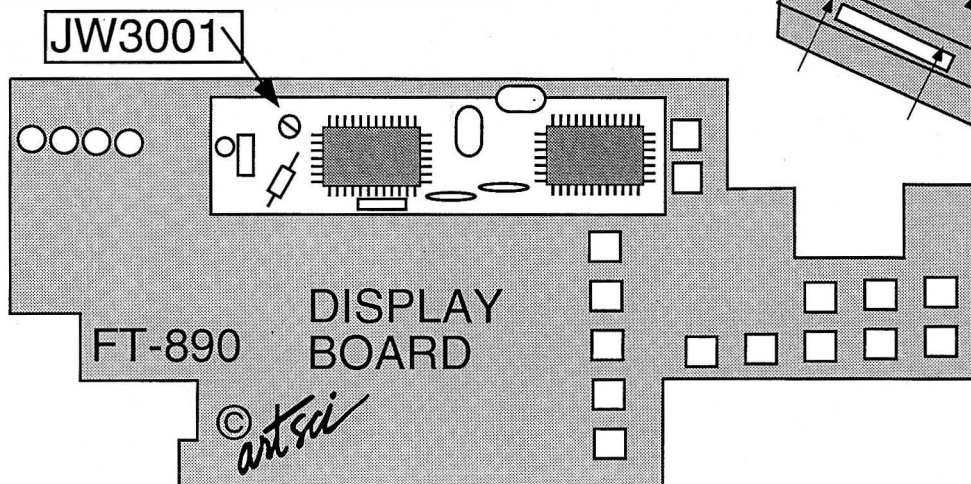
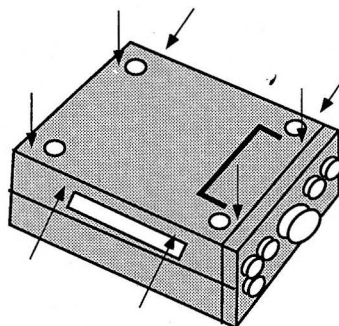
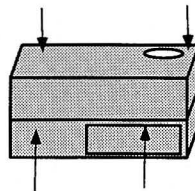


## FT-890

### Expansion Range

**1.8 MHz - 29.99Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

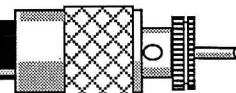
1. Remove power from the radio.
2. Remove covers.

The next step is done TEMPORARILY.

3. **Locate jumper location JW3001 on the DISPLAY UNIT and solder bridge the pads.**
4. Reconnect the power cable.
5. **Press and hold [PROC], [AGC-F], [IPO] & [ATT] and turn the power on.**
6. **Rotate the main dial until the display shows 02-ON .**
7. **Press [PROC].** This will confirm and write the data to EEPROM memory.
8. Turn the power off and remove the power cords.
9. Remove the jumper placed in step 3 above.
10. Replace the covers.

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### Expansion Range

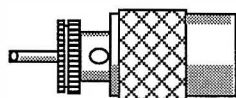
**1.8 MHz - 29.99 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove power from the radio.
2. Remove the two screws on the top cover and the two on the top rear area of the rear panel.
3. Slide the top cover/heat sink towards the rear, to expose the CNTL-1 unit.  
(The CNTL unit is the inside part of the front panel.)
4. Locate test points TP3001 & TP3002 on the CNTL unit.  
(They are located on the top/center of the CNTL board)
5. **Connect a jumper between TP3001 & TP3002.** An alligator clip will work.
6. **Reconnect power and press and hold [PROC] & [ATT] & [IPO] & [NB] and turn power on.**
7. Release the four keys.
8. The display will show "OFF". **Turn the VFO dial until the display reads "ON".**
9. **Press [PROC] to store the new RF/TX Range.**
10. Remove the Jumper from step 5 above.
11. Reassemble the radio.

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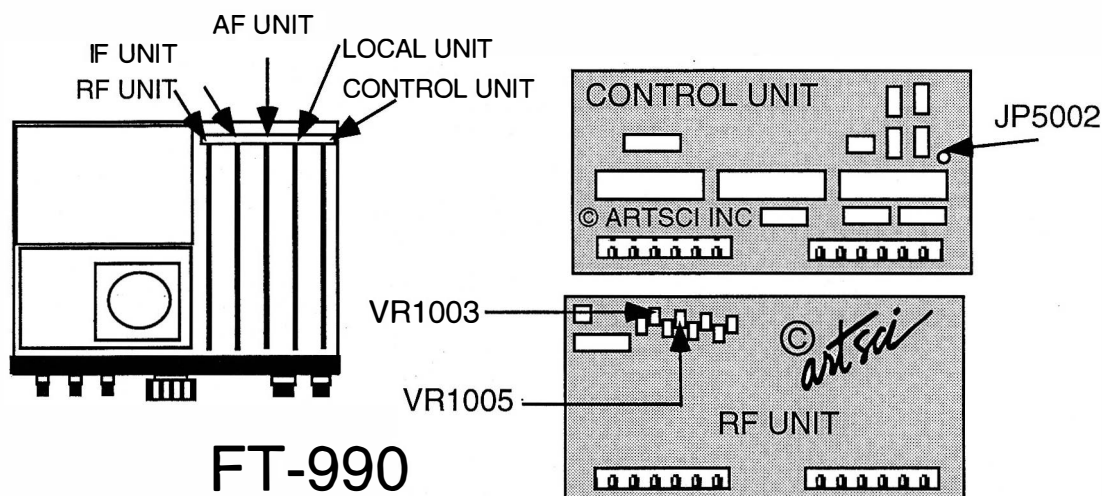


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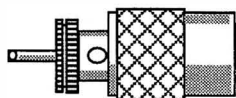
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# #	Frequency	Offset	PL	Label	Description
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					



## Expanded RF Modification

1. Remove power from the radio.
2. Remove the top cover of the transceiver.
3. Locate the Control unit. It is the rightmost of the vertically-mounted circuits boards.
4. Remove the two mounting screws on the boards restraining brackets.
5. Remove the control unit.
6. Locate Jumper pad JP5002. It is located in the next to IC Q5016. IC Q5016 is the rightmost IC of the three large IC in the center of the board.
7. Solder bridge Pad JP5002.
8. Reinstall the Control unit.
9. Locate VR1003 & VR1005 on the RF unit.
10. Connect a 50 Ohm dummy load and a key to the key jack.
11. Set CW mode and the METER to the ALC setting.
12. Dial Frequency 5.000 MHz.
13. Set the RF Power switch fully clockwise.
14. Close PTT and the key. (TRANSMITTING)
15. Adjust VR1003 so that the ALC meter reads to the right edge of the scale.
16. Check frequency range 4.0 - 6.5 MHz to make sure ALC meter reads at least slightly across the entire range.
17. Dial Frequency 8.000 MHz.
18. Adjust VR1005 so that the ALC meter reads to the right edge of the scale.
19. Check frequency range 8.0 - 10.0 MHz to make sure ALC meter reads at least slightly across the entire range.
20. Replace the top cover.



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## Expansion Range

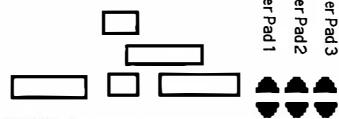
**.1 - 30 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### FT-1000 FRONT PANEL

FT-1000  
Control Unit

Remove Solder  
Bridge from  
Pad #3



## Expanded RF Modification

1. Remove power from the radio.
2. Open the case top and bottom.
3. Locate four screws attaching front panel and remove the top screws. Loosen the bottom screws.
4. Tilt front panel forward.
5. On the left side of the radio, remove the plug from the power supply to the front panel. (gray and white wires)
6. Locate jumper position 3 on Control board.
7. **Unsolder the jumper in position 3**
8. Reassemble the radio.
9. **Reset the microprocessor.**  
(Turn off the Backup Switch, located inside the panel window)

## Expanded RF Modification FT-1000MP

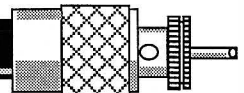
1. Press [LOCK] & [FAST] and turn the radio on.
2. Press [FAST] & [ENT] keys.
3. Select [ 9 - 9 ] on the memory channel block by turning [MEM/VFO) knob COUNTERCLOCKWISE.
4. Select [ GEn ] by turning the main dial.
5. Press and release the [ENT] key.

Before **15** **000** **9 - 9** CH

After **GEn** **000** **9 - 9** CH

To restore amateur bands only:

1. Press [FAST] & [ENT] keys.
2. Select [ 15 ] by turning the main dial then press [ENT] key.

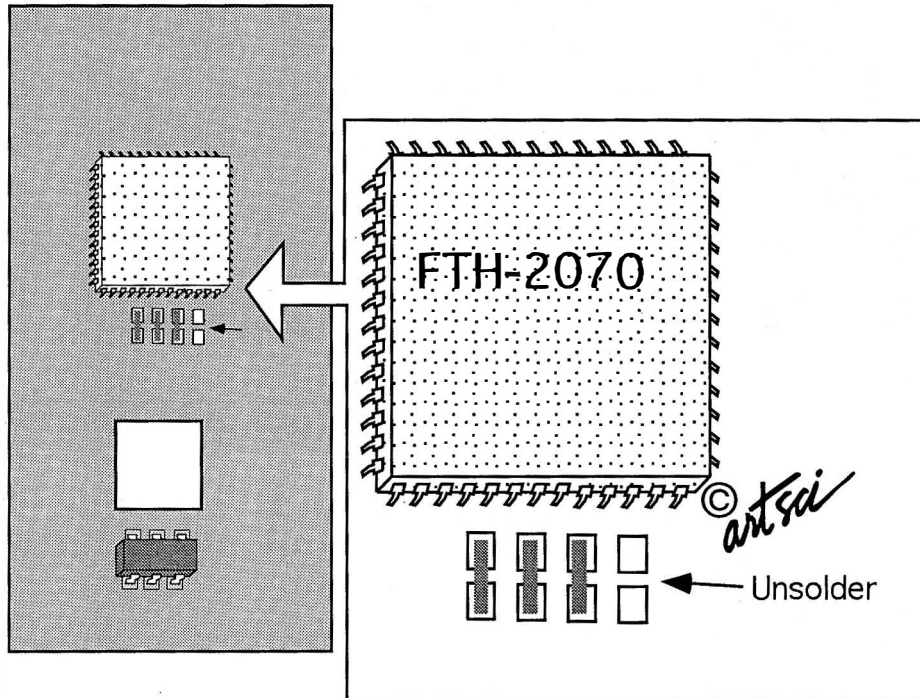


### Expansion Range

134 - 174 MHz

400 - 499 Mhz.

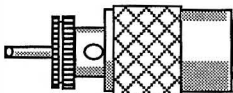
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove battery and Antenna from the radio.
2. Remove screws and open case
3. **Locate and unsolder jumper pad as shown above**  
(Pad connected to Microprocessor pin 11)
4. Reassemble the radio.
5. Reset the Microprocessor  
(Press [PRI] and turn the radio on.)

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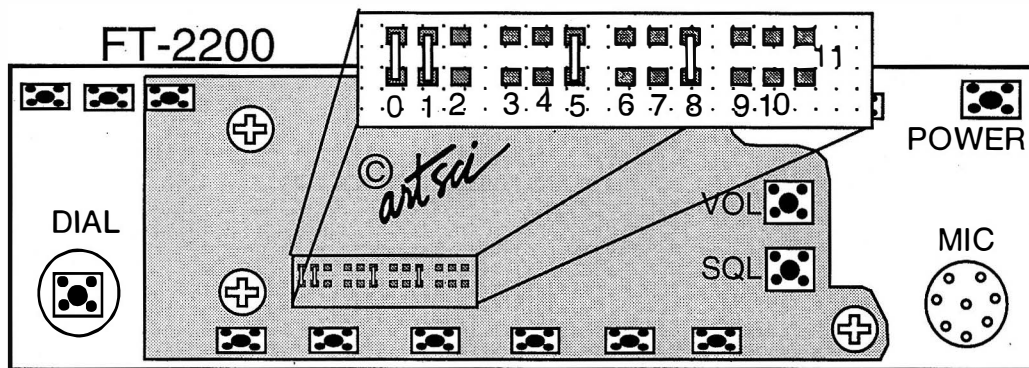
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## FT-2200

### Expansion Range

110 - 139.995 AM RX Note: A "" will appear when frequency is below 140 MHz.  
 110 - 180 MHz RX The AM mode will store in memory channels.  
 140- 174 MHz TX

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove power and antenna
2. Remove top and bottom covers. (the speaker may fall out)
3. Remove the Volume, Squelch and Main tuning knobs from the front of the radio.
4. Remove the front panel (push on all four tabs)
5. Remove the tuning knob retainer nut.
6. Lift off the LCD display assembly.
7. Locate jumper Pads #1,2 & 5.
8. **Remove resistor from pads #1 & 2.**
9. **Remove resistor from pads #5.** (AIRCRAFT Rec Mod)  
 (One report suggests the Pad #8 should be jumped in place of pad #5)
10. Reassemble the radio.
11. Reset the microprocessor.  
 (Press and hold [MHz] and [CALL] buttons and turn the radio on.

The radio will power up and display 10.000 MHz.

Press [MHz] and dial <b>110.00</b> and press [D/MR]	VHF RX low Limit
Press [MHz] and dial <b>174.00</b> and press [D/MR]	VHF RX High Limit
Press [MHz] and dial <b>136.00</b> and press [D/MR]	VHF TX low Limit
Press [MHz] and dial <b>174.00</b> and press [D/MR]	VHF TX High Limit
Press [F/W] and then [RPT] and dial <b>0.600</b> and press [RPT]	Offset

**You will need to cut the Green Wire for 110 - 180 RX**  
 (it is located near the speaker towards the front panel. It is very obvious)

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### Expansion Range

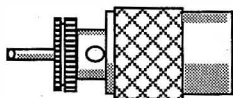
1240.00 MHz - 1300.00 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove five screws from the top cover and remove the cover.
2. Remove five screws from the bottom cover and remove the cover.
3. Unplug the speaker.
4. Remove the four screws holding the front panel.
5. Locate jumper pad number 7.
6. **Solder bridge pad number 7.**
7. Locate the reset pins (Located on the front panel and clearly marked).
8. Short the reset pins together for one second.
9. Reassemble the radio.

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## Expansion Range

118-174 MHz Rx, 140-174 MHz Tx .

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Power and Antenna.
2. Locate and remove the two Allen screws from the front panel.
3. Locate and unsolder jumper pad 2. (or follow option below)
4. Locate and solder jump pads 1 & 3.
5. Reassemble the radio.

### Option #2

1. Follow steps above, except leave solder pad 2 jumpered.
2. Turn radio on and set the upper and lower limits:

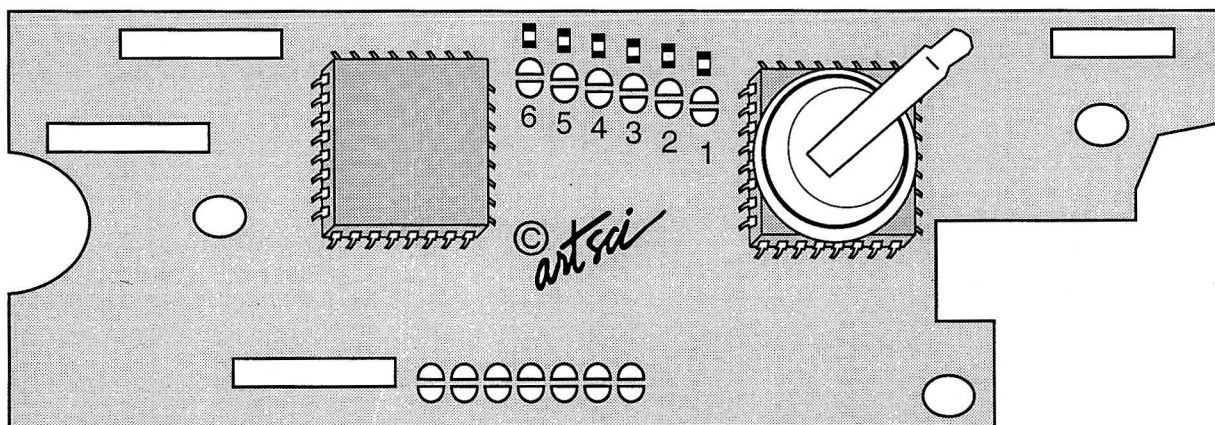
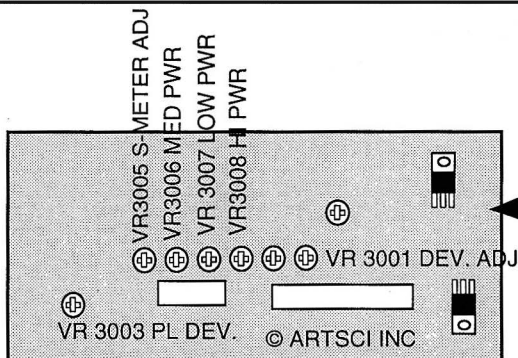
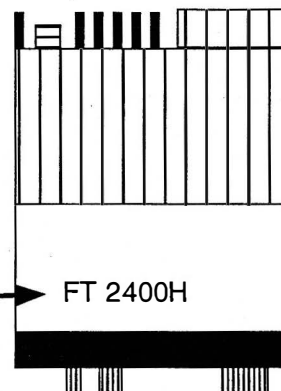
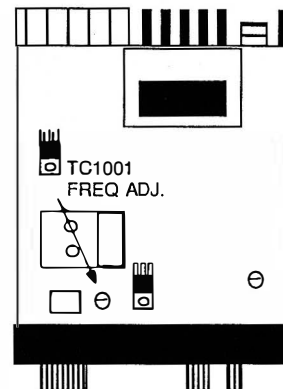
Select 138.00 MHz and Press [D/MR] button (lower RX limit)

Select 174.00 MHz and Press [D/MR] button (High RX limit)

Select 138.00 MHz and Press [D/MR] button (lower TX limit)

Select 174.00 MHz and Press [D/MR] button (High TX limit)

- TONE BURST - Solder Pad # 6
- Auto-offset is disabled
- One report states that removing Jumper 2 will restore auto-offset



## Radio/Tech Modifications Volume B

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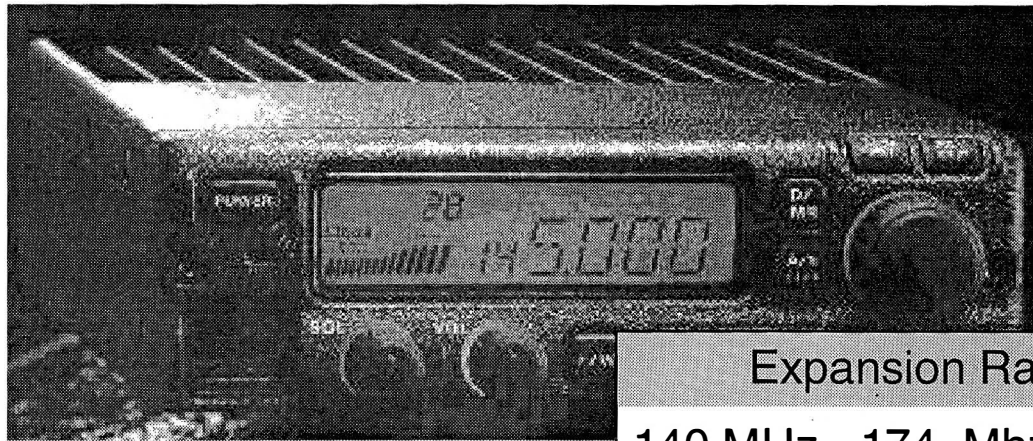
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# Receive and Transmit Expansion

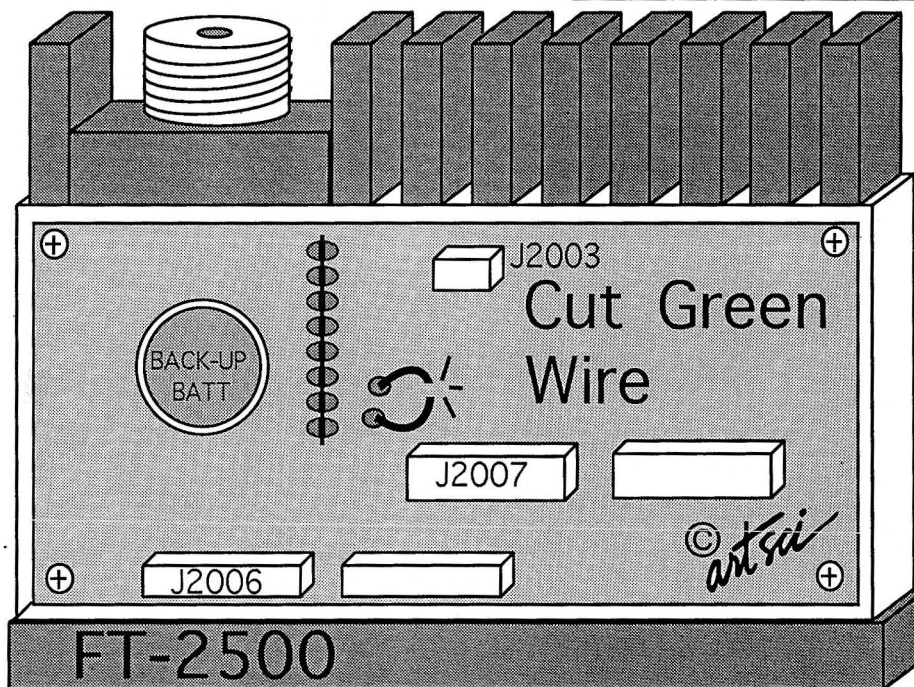
YAESU  
FT-2500



## Expansion Range

**140 MHz - 174 Mhz.**

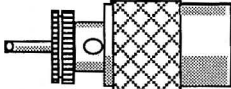
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove five (5) screws holding the top cover.
3. Locate and **cut GREEN COLOR WIRE.**  
(The Green wire is located between jumper pad #8 & Ground.)
4. Reassemble the radio.

NOTE: One report instructs that Jumper #3 may need to be solder jumped.



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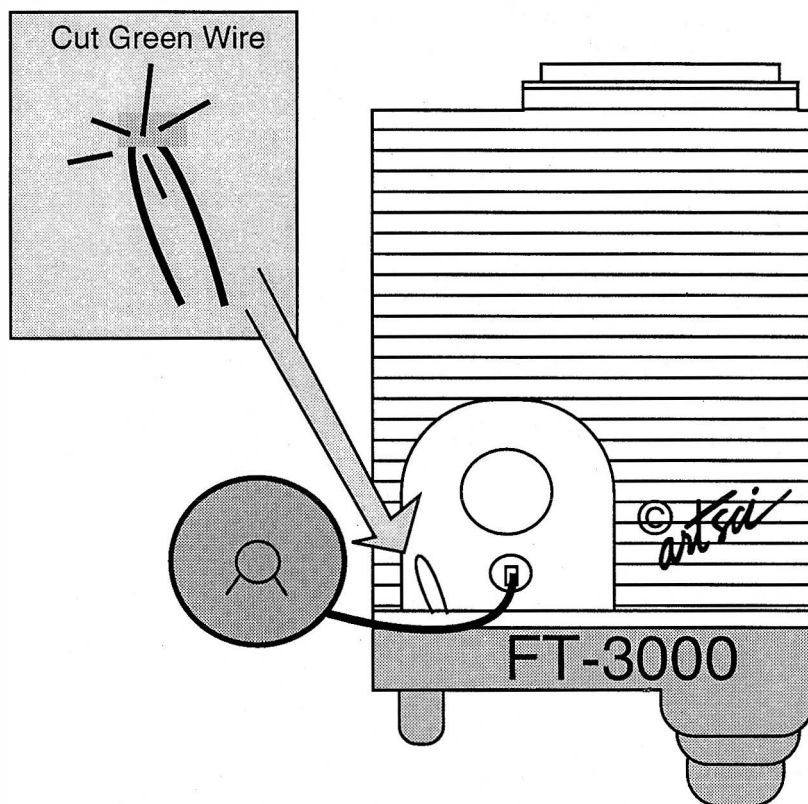
YAESU - 53



## Expansion Range

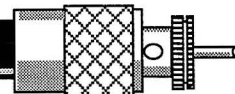
**140 MHz - 174 MHz TX, 110-180 MHz, 300-520 MHz, 800-999 MHz (cellular blocked) RX**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Power and Antenna .
2. Remove seven screws from the top cover.
3. Remove the top cover
4. Locate and lift the speaker away from the heatsink.
5. **Locate and cut green wire loop.** (tape end to prevent shorting)
6. Reassemble the radio
7. Replace tPower and antenna.
8. Press and hold the [VFO/MR] and [F1] buttons and turn the radio on.



# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

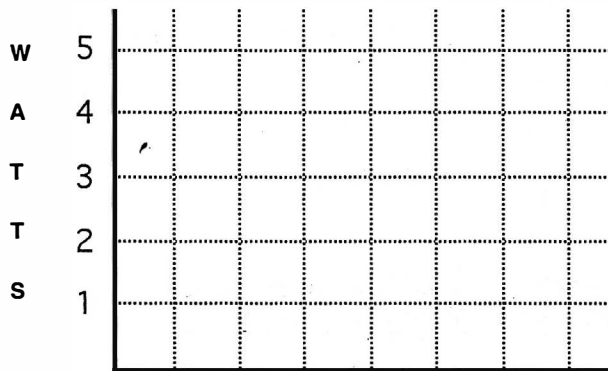
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

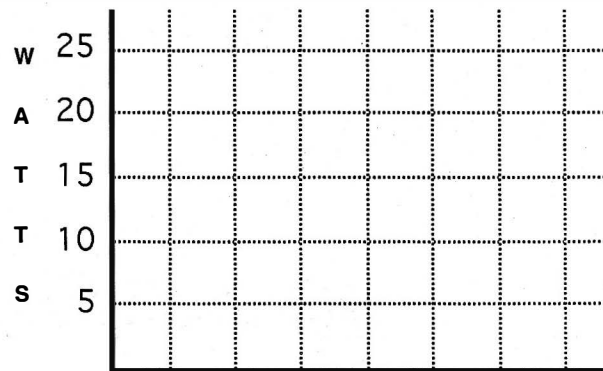
City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



Frequency



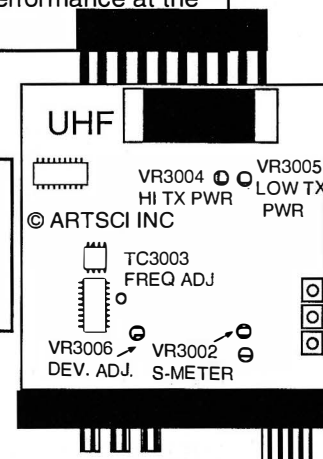
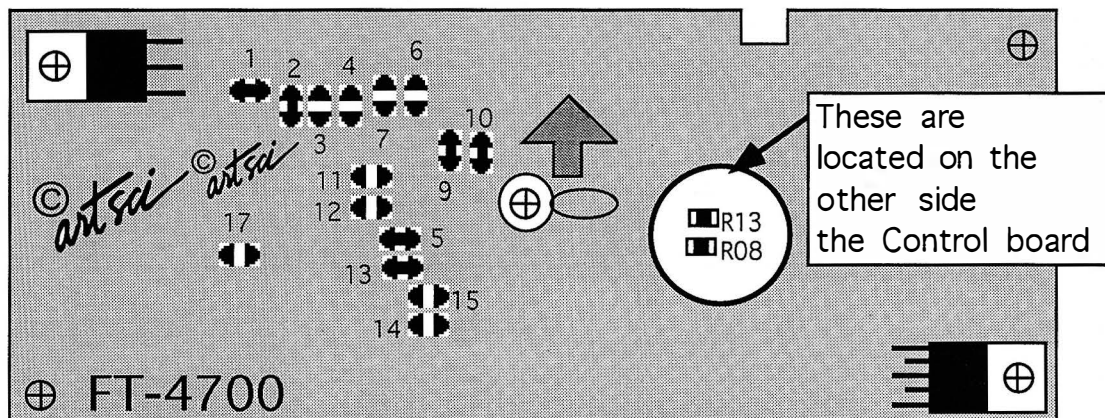
Frequency



## Expansion Range

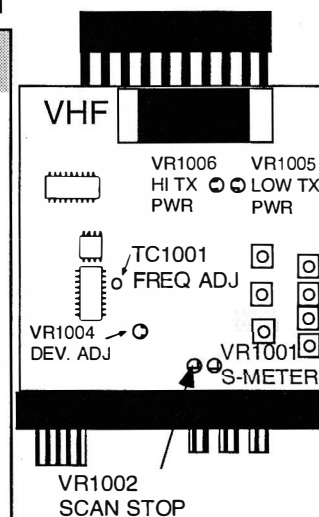
RX Range 138 MHz - 174 MHz 410 MHz - 475 MHz  
TX Range 138 MHz - 174 MHz 410 MHz - 475 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



## Expanded RF Modification

1. Remove Front Panel.
2. Locate and **jump pads 1,2,5,9,10 & 13**. Solder short them carefully. (The other jumper pads must remain undisturbed)
3. Reassemble radio.
4. Turn power on. (The microprocessor has been reset)
5. Use the [UP] & [DOWN] buttons and dial to set the UHF range as follows :  
410.000 MHz Press [D/MR] button  
475.000 MHz Press [D/MR] button
6. The display will show 47.75 (IF freq. for UHF). Press [D/MR]
7. Use the up/down buttons and dial to set the VHF range as follows :  
138.000 MHz Press [D/MR] button  
174.000 MHz Press [D/MR] button
8. The display will show 17.3 (IF freq. for VHF). Press [D/MR]
9. The repeater shifts for both bands are reset to 000. They must be set using the [F] and [PRT] buttons. Refer to page 27 in the user manual.



## Beep Level Reduction

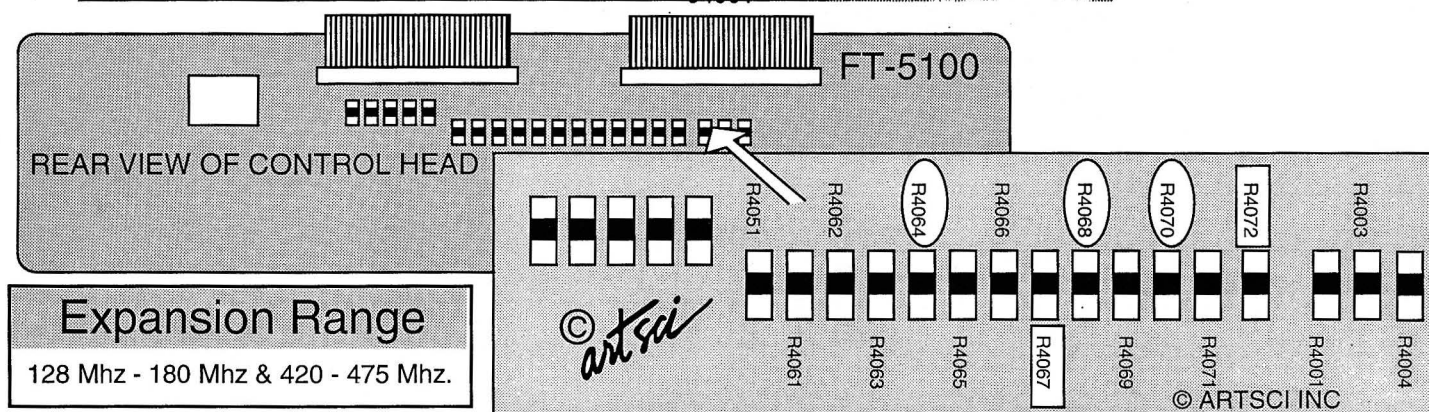
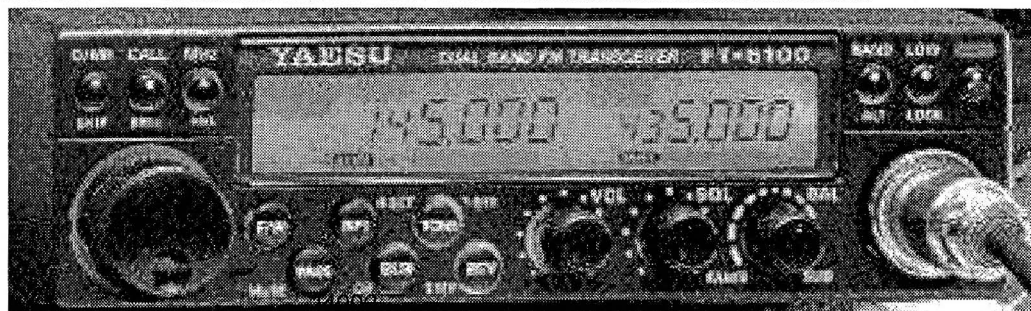
1. Remove Front Panel
2. Remove the five screws holding Control unit in place.
3. Remove P10 from J04
4. Remove P09 from J03
5. Carefully flip the Control board to access the back side.
6. Locate R08 and R13.
7. Replace R08 and R13 with 560 ohm chip resistors (YAESU # J24205561)
8. Reconnect the two Plugs P10 & P09
9. Reassemble the radio.

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# Receive and Transmit Expansion Cross Band & Mic Band Change

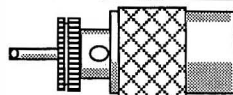
YAESU  
FT-5100



## Expanded RF Modification

1. Remove power and antenna from the radio.
2. Remove 6 screws from top and bottom covers, remove the covers (watch speaker).
3. Remove the 2 silver screws from each side of the radio securing the control head.
4. Carefully pull the Control Head from the radio. DO NOT REMOVE RIBBON CABLES
5. Locate and **remove chip resistor R4072.** (RX mod)
6. Locate and **remove chip resistor R4067.** (Mic/Band mod)
7. Locate and **install jumpers in positions R4070, R4068 & R4064.** (RX mod)  
STOCK US JUMPERS: 4001, 4003, 4004, 4051, 4061, 4062, 4067, 4072  
POST MOD JUMPERS 4001, 4003, 4004, 4051, 4061, 4062, 4064, 4068, 4070
8. Reassemble the radio.
9. Turn the radio on  
(The display will show 300.000 & 20.000 )
10. Press [MHz] and dial 420.00 and press [D/MR] - UHF RX low limit
11. Press [MHz] and dial 475.00 and press [D/MR] - UHF RX high limit
12. Press [MHz] and dial 420.00 and press [D/MR] - UHF TX low limit
13. Press [MHz] and dial 475.00 and press [D/MR] - UHF TX high limit
14. Press [MHz] and dial 128.00 and press [D/MR] - VHF RX low limit
15. Press [MHz] and dial 180.00 and press [D/MR] - VHF RX high limit
16. Press [MHz] and dial 128.00 and press [D/MR] - VHF TX low limit
17. Press [MHz] and dial 180.00 and press [D/MR] - VHF TX high limit
18. Press [F/W] then [RPT] and dial 5.000 and press [RPT] - UHF offset
19. Press [F/W] then [REV] and dial 25.0 and press [RPT]. - Channel Step
20. Press [BAND] then [F/W] then [RPT] and dial 0.600 and press [RPT] - VHF offset.

**SOFT RESET** (Memory clear) - Press and hold [D/MR] & [REV] and turn radio on.



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MORE ON  
NEXT PAGE

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YAESU - 57

## Cross Band Operation

1. Select the desired VHF & UHF frequencies
2. Select low power transmit on both bands (To protect your radio)
3. If desired, adjust the TX time out timer value. (The default is 15 minutes)

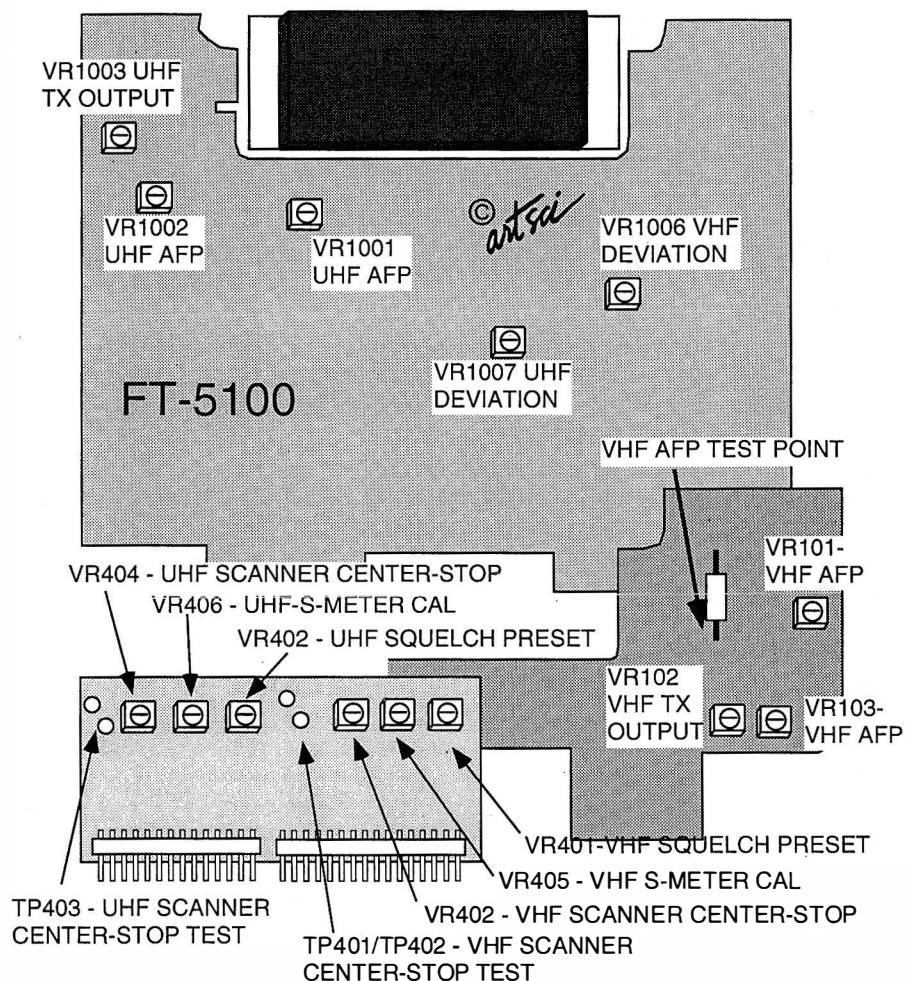
To adjust: Press and hold [LOW] & turn power on.  
Dial desired time out value (0-60 minutes)  
Turn radio off.

**TURN ON** - Press and hold [RPT] and turn radio on.

**TURN OFF** - Press and hold [RPT] and turn radio off.

## Microphone Modification

Remove solder from Jumper R4067 to make  
Microphone [D/MR] button switch band on the radio.

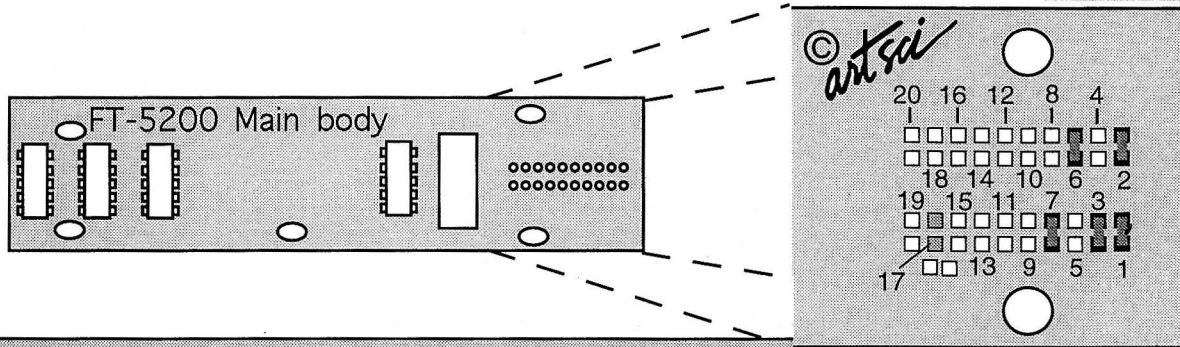


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## Expanded RF Modification

1. Remove power from the radio.
2. Release and remove the front panel.
3. Remove the six screws from the top cover of the radio.
4. Remove the six screws from the bottom of the radio.
5. Remove the top and bottom covers.  
(CAUTION: the speaker might fall out.)
6. Remove the two screws & front control head mounting plate from the radio.
7. Locate solder pads 1 - 7.  
(Standard jumpered pads are 2 and 7 only)
8. **Solder jump pads 1,3 and 6**  
(Pads 1,2,3,6 & 7 are now jumpered)
9. **Unsolder jump pad 17.** (X-Band repeater mod) May be done at the factory!  
Caution: Be sure to work on PAD 17. see drawing below
10. Install front panel mounting plate.
11. Reassemble the radio.
12. Reconnect the power to the radio.
13. **Press and hold [D/MR], [F/W] & [REV] keys and turn radio on.**  
(Display will show 000.000 & 300.000 on the display)
14. **Set the VHF Receive and Transmit limits:**

Enter 118.00 MHz and press [D/MR]	(VHF RX Low)
Enter 174.00 MHz and press [D/MR]	(VHF RX High)
Enter 140.00 MHz and press [D/MR]	(VHF TX Low)
Enter 174.00 MHz and press [D/MR]	(VHF TX High)

### 15 Set the UHF Receive and Transmit limits:

Enter 420.00 MHz and press [D/MR]	(UHF RX Low)
Enter 475.00 MHz and press [D/MR]	(UHF RX High)
Enter 420.00 MHz and press [D/MR]	(UHF TX Low)
Enter 475.00 MHz and press [D/MR]	(UHF TX High)

16. Press [Function] then [RPT] and select 5 MHz Repeater offset for UHF band.
17. Press [Function] then [RPT] and select 600 kHz Repeater offset for VHF band.

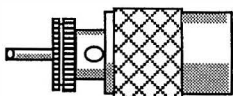
## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



More on Next Page



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## Cross Band Repeater

### To activate X-Band repeater function:

Press and hold [RPT] and turn power on.

It is recommended that you unplug the microphone during X-Band operation.  
( The Mic is live )

- Adjust the volume control to adjust repeat audio level.

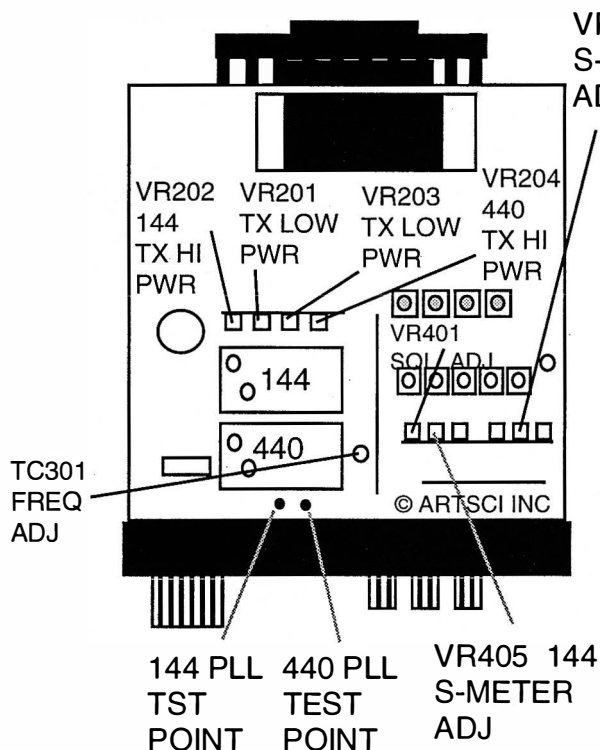
## Other Options

### Override automatic display dimmer:

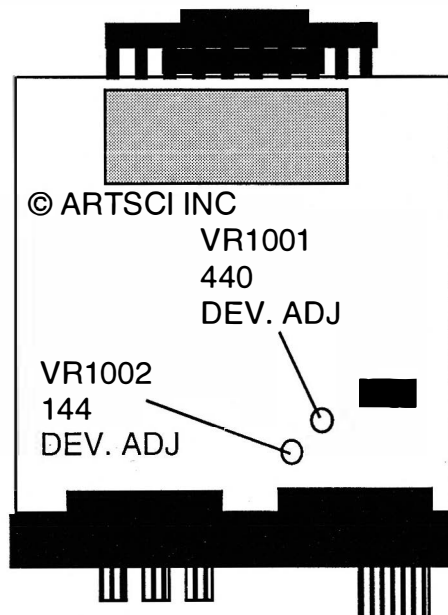
Press and hold [MHz] and turn radio on: Use Channel knob to select brightness.

### Keyboard VHF Expanded Receive:

Press and hold [DVS] & [MHz] keys and turn radio on.



FT-5200



## Expansion Range

**420 - 475 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove power from the radio.
2. Release and remove the Control head.
3. Remove the top and bottom covers. Six screws hold the top and bottom covers on.
4. Remove the two silver screws holding the control head mounting bracket.
5. Remove the mounting bracket.
6. **Locate and solder jumper pad #6.**  
Pads 2, 4, 6, 7, 8, 15, 17 & 18 will now be jumpered.
7. **Locate and remove solder jumper pad #17.** (X-Band repeater mod)  
Caution: Make sure you jumper the proper pad. see drawing below.
8. Reassemble the radio.
9. Reconnect the power.
10. **Press and hold [D/MR], [F/W] & [REV] and turn the power on.**  
The radio will now show 300.000
11. **Enter the following band limits:**

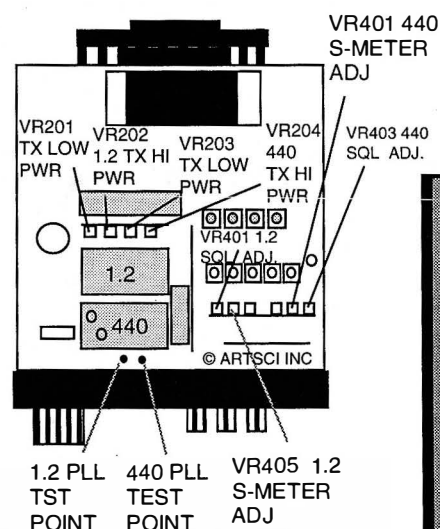
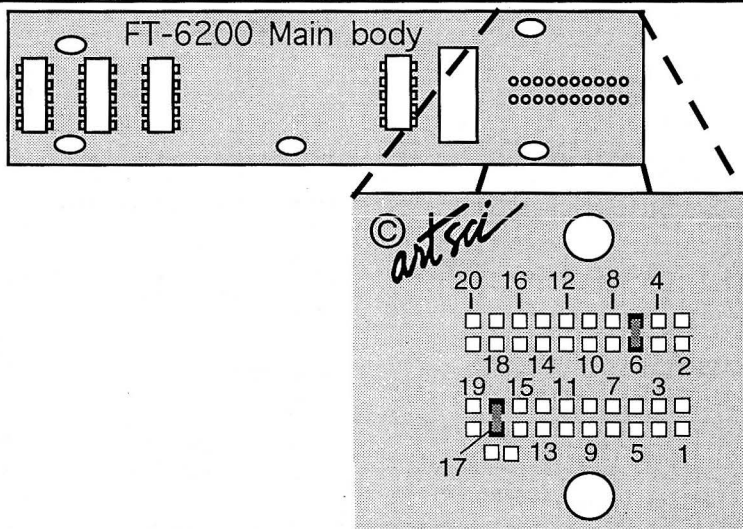
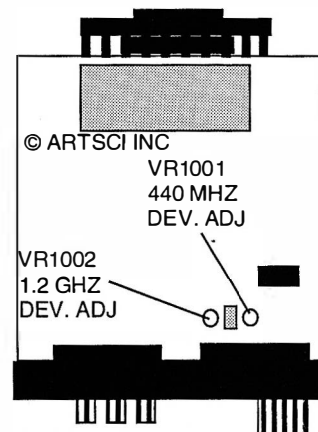
420.00 and then press [D/MR] (UHF Rx low limit)

475.00 and then press [D/MR] (UHF Rx high limit)

420.00 and then press [D/MR] (UHF Tx low limit)

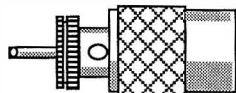
475.00 and then press [D/MR] (UHF Tx high limit)

12. Press [FUNCTION] and then [RPT] and select 5.000 MHz repeater offset.



**To activate X-Band repeater function:**  
**To override automatic display dimmer:**

Press and hold [RPT] and turn power on.  
Press and hold [MR] and turn power on and select the desired brightness level)



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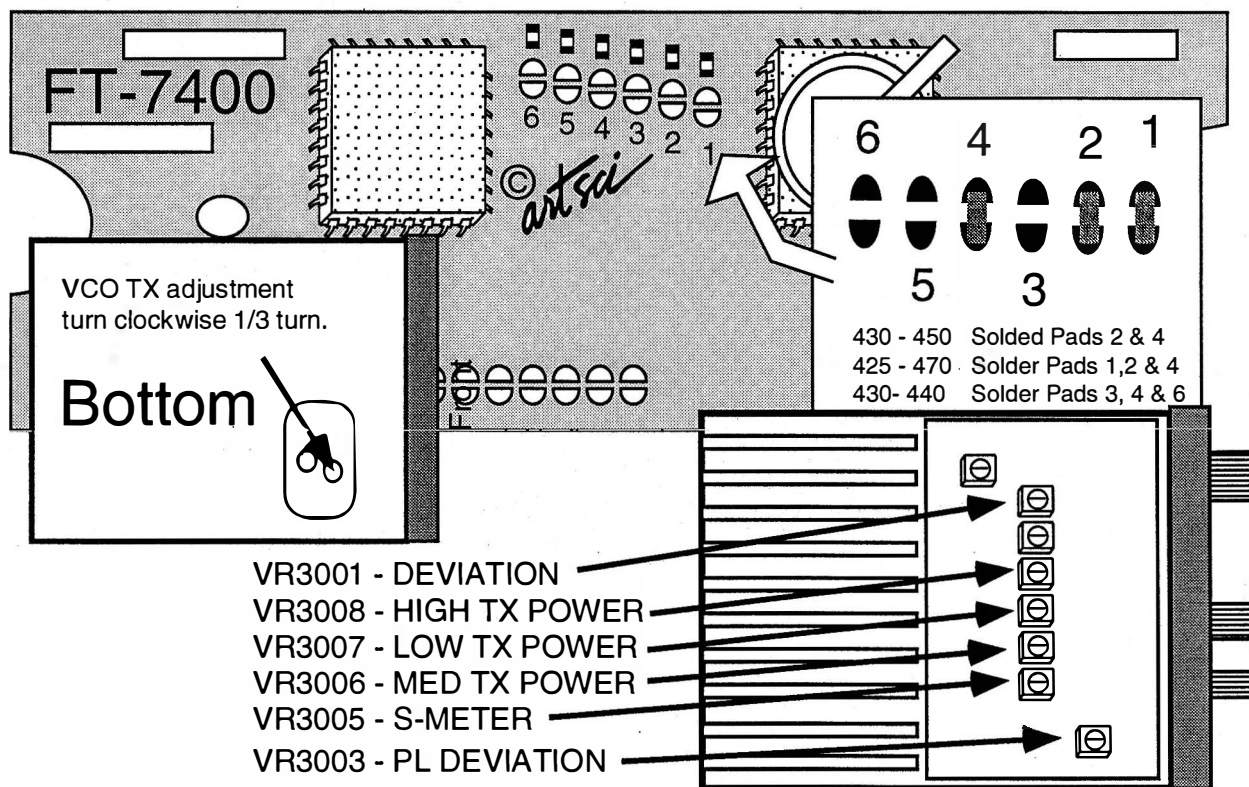
### Expansion Range

**420 - 470 Mhz.**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove power from the radio.
2. Remove Front Panel.
3. Locate solder pad #1. (Behind front control panel)
4. **Solder jump pad # 1**
5. Reassemble the radio.





# Receive and Transmit Expansion

YAESU  
FT-8000

## Expansion Range

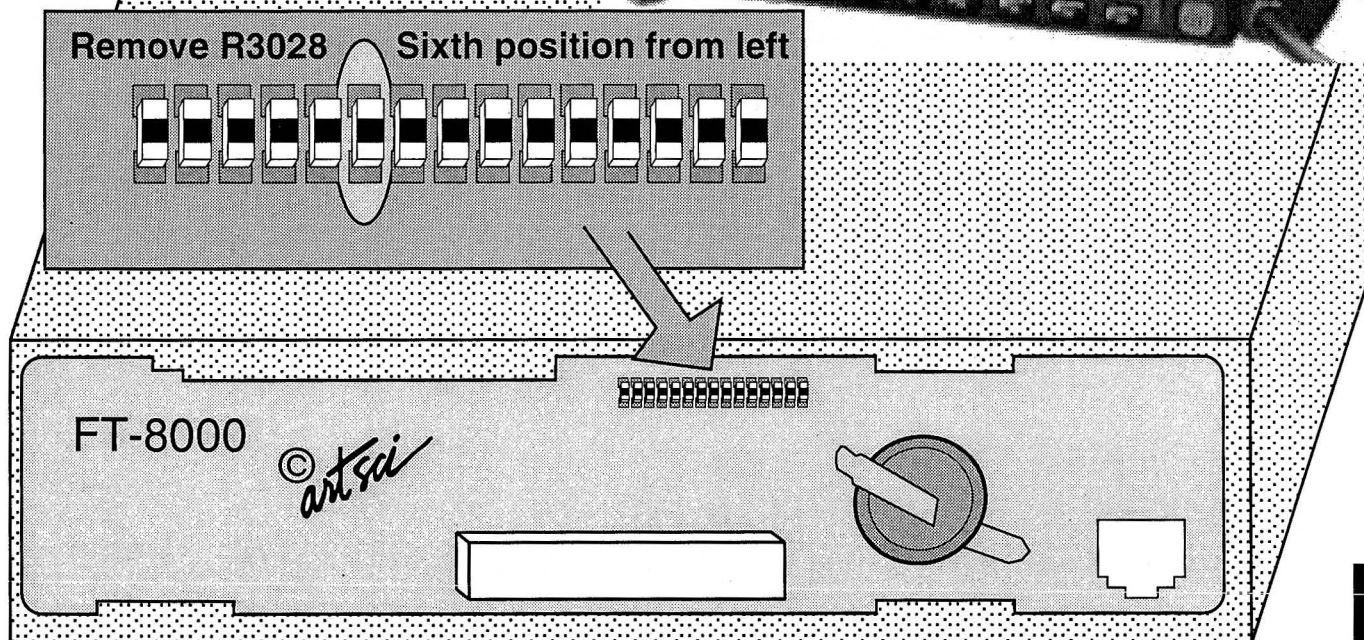
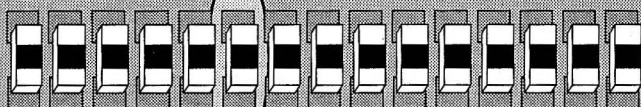
RX: 110 - 550 MHz / 750-1300 MHz

TX 110-174 MHz / 410 - 480 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.


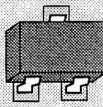


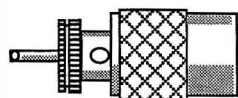
Remove R3028 Sixth position from left



## Expanded RF Modification

1. Disconnect power and antenna.
2. Remove screws from top and bottom covers and remove panels.
3. Remove the front panel by gently lifting the plastic housing in all 6 places where it connects to the chassis. (DO NOT REMOVE ANY SCREWS)
4. Locate the Control unit, mounted vertically to the front of the chassis.
5. Locate and remove R-3028
6. Reassemble the radio.
7. **Reset the microprocessor**  
(Press and hold [VFO/M] & [REV] & turn power on.

   
**CAUTION:**  
This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



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YAESU - 63

YAESU




## FT-8100

### Expansion Range

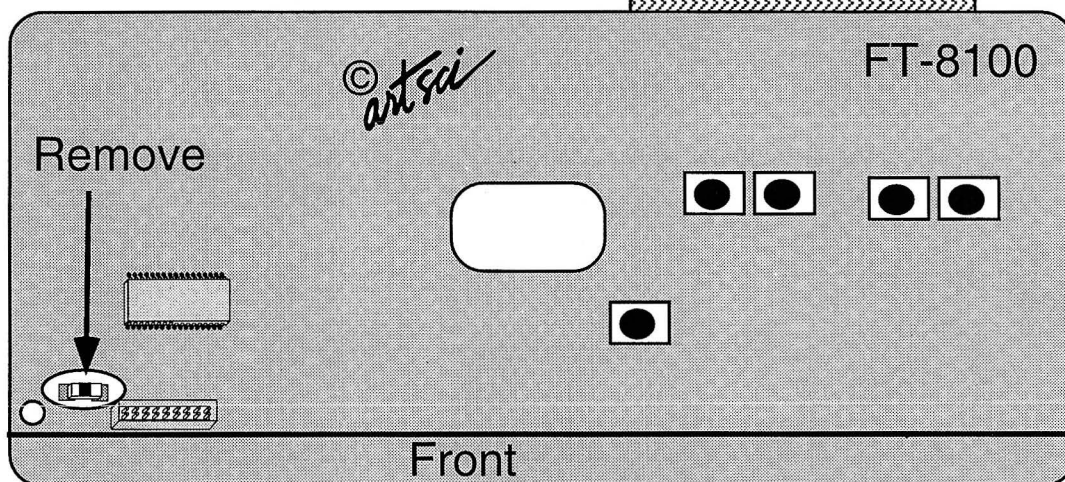
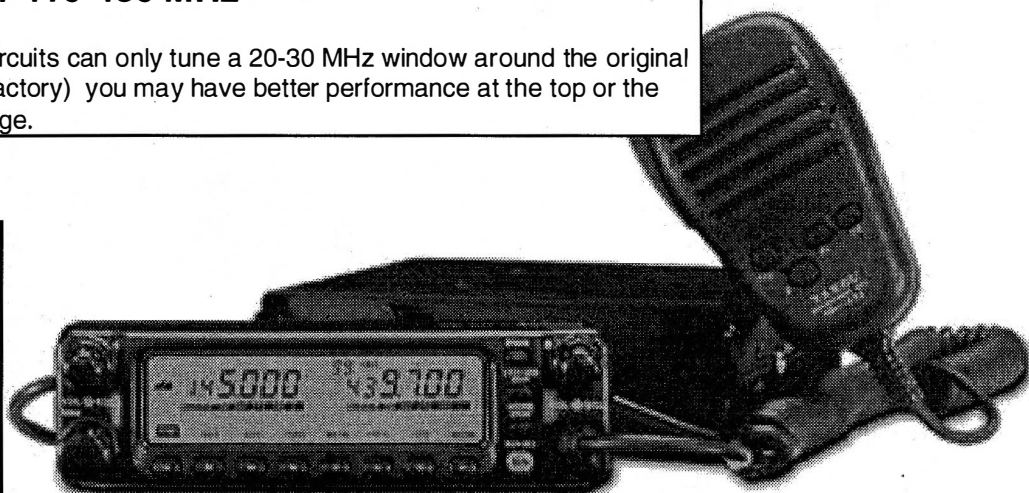
**Rx/Tx: 137 - 174 MHz / 410-480 MHz**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



**CAUTION:**

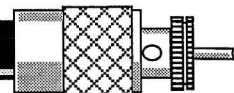
This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.



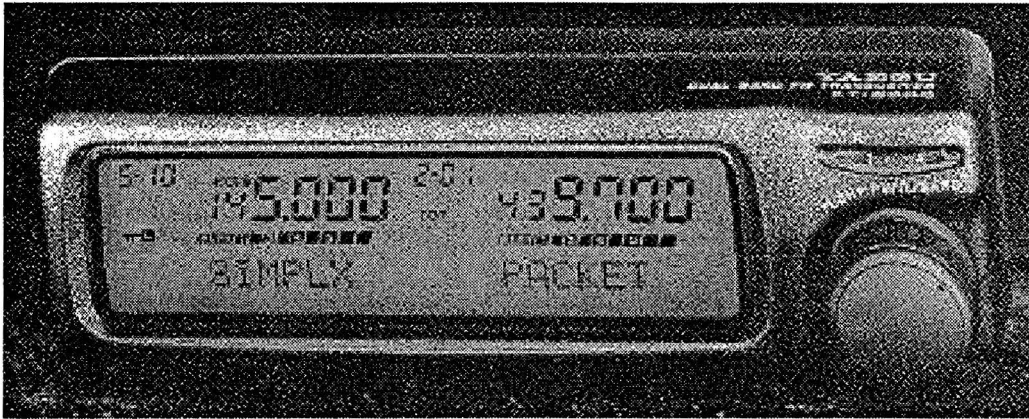
### Expanded RF Modification

1. Disconnect power and antenna.
2. Remove screws from the top cover (with speaker) and remove cover.
3. Looking down inside the top of the radio, locate and **remove the chip resistor** as shown in the diagram.
4. Reassemble the radio.
5. **Reset the microprocessor**  
(Press and hold [ MR ] & [ REV ] & turn power on.)

## Radio/Tech Modifications Volume B



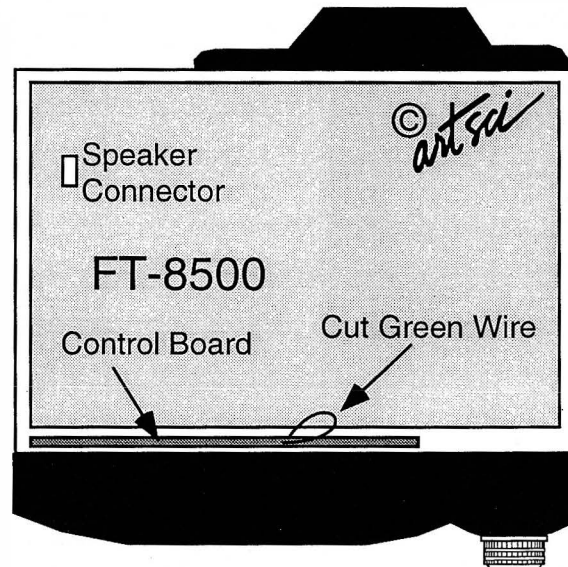
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### Expansion Range

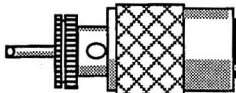
137 MHz - 174 MHz  
410 MHz - 470 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Disconnect power and antenna.
2. Remove screws from covers.
3. Gently tilt up the top cover and unplug the speaker.
4. Locate and **cut the Green wire** on the control board (it is a vertical board)  
You may need to remove the four screws holding the front assembly.
5. Reassemble the radio.
6. **Reset the microprocessor**  
(Press and hold [D/M] & [REV] & [D] & turn power on.  
(Turn off again)  
(Press and hold [SCAN] & [HOME] & turn on. - Exp RX mod)



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## FT-VX-1R

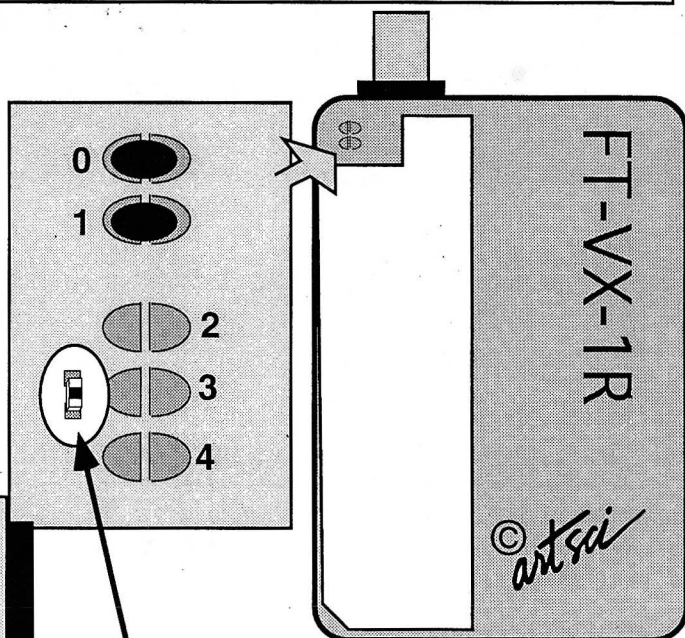
### Expansion Range

**137 MHz - 170 MHz , 420 - 469 Mhz TX**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



Solder  
Jump  
both pads



Remove Resistor

### CAUTION:

This modification requires soldering or desoldering CMOS components. It requires special CMOS rated equipment and familiarity with surface mount soldering techniques.

### Expanded RF Modification

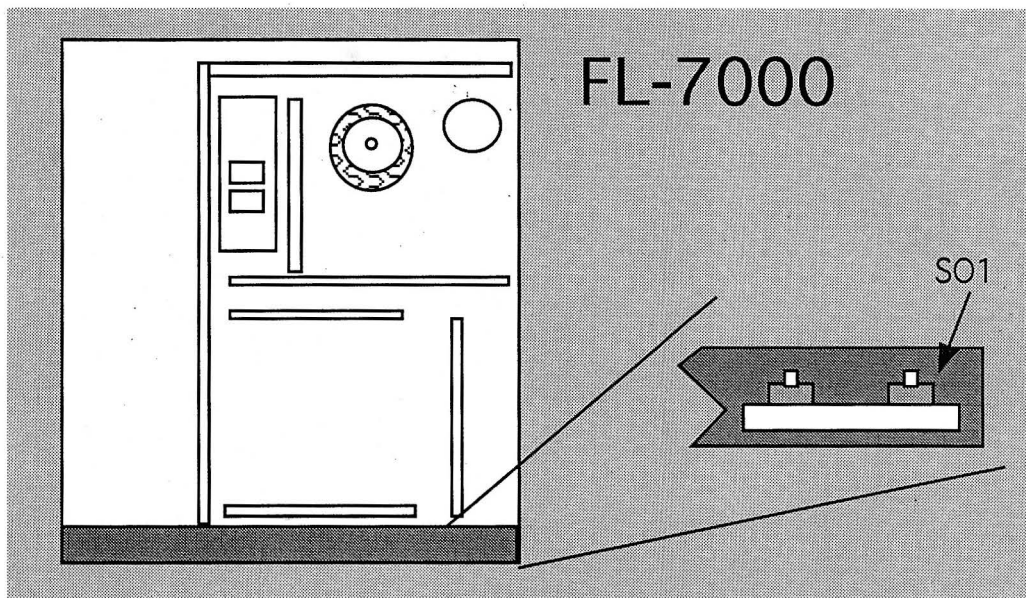
1. Remove Battery and Antenna .
2. Remove the three black screws on the rear cover.
3. Carefully remove the back cover. **CAUTION:** the left side of the back cover is attached to the front cover using a compression clip. If you force the two covers apart, you may break the clip and the covers will not properly reconnect after the mod. Some users report a small spade screwdriver inserted from the bottom of the radio will help open the clip.
4. **Solder jump the two jumper pads # 0 & 1** located at the top left. (They are the only pads visible)
5. Locate and **remove Chip resistor** next to pad # 3
6. Reassemble the radio. **CAUTION:** you may need to position the compression clip under the plastic cover protecting the circuit board.
7. **Reset the microprocessor.** (Press and hold [ M/V ] & [ AR ] and turn on the radio.)

## Radio/Tech Modifications Volume B

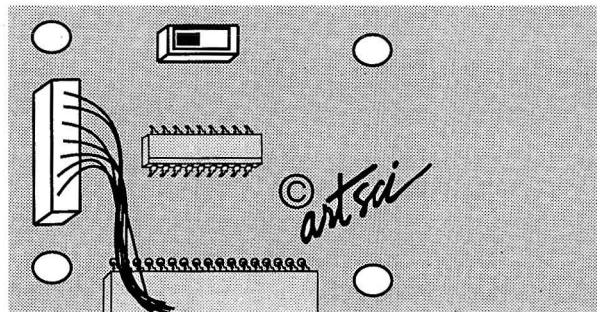
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Expansion Range  
24.5 HMz & 28 MHz

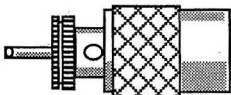


S01



### Expanded RF Modification

1. Remove Power cable and all other cables.
2. Remove 4 screws from the top cover.
3. Remove the top cover and the right and left panels.
4. Remove 4 screws from the power combiner unit and remove screen plate.
5. **Locate Switch S01 on the CPU unit and set it to the off position.** ( A small screwdriver can be used to reach the switch.)
6. Reassemble the unit.

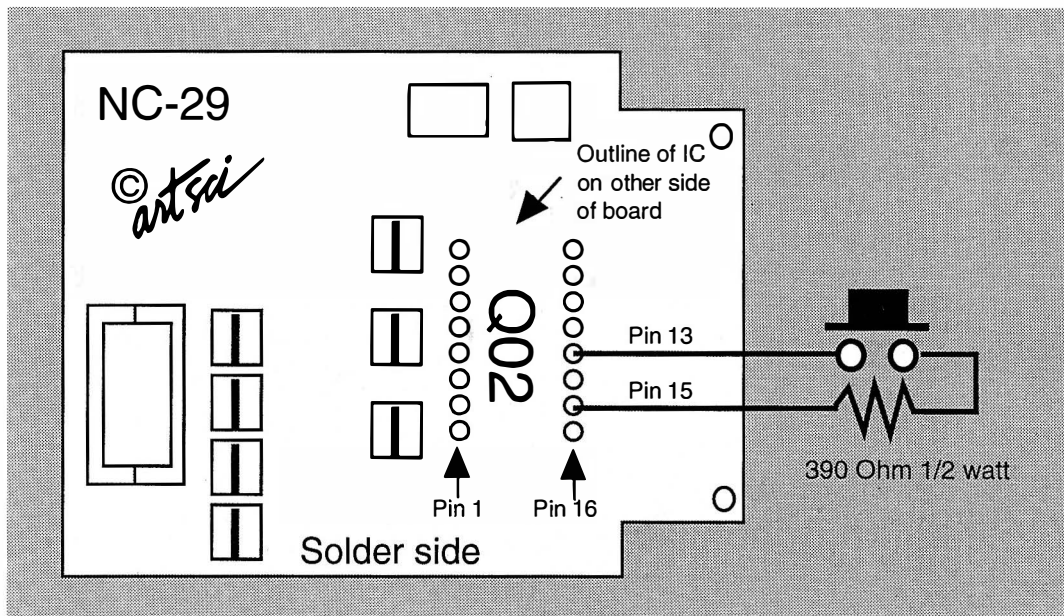


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## Modification

This modification will allow you to select the amount of time used to fast charge your battery pack. The standard NC-29 will fast charge a battery for five hours and then switch to trickle charge every time a battery is inserted, even if the battery is fully charged.

This modification will provide a push button to speed up the Internal clock. By pressing the button, you can watch the time remaining LEDs on the panel and select the amount of full charging time.

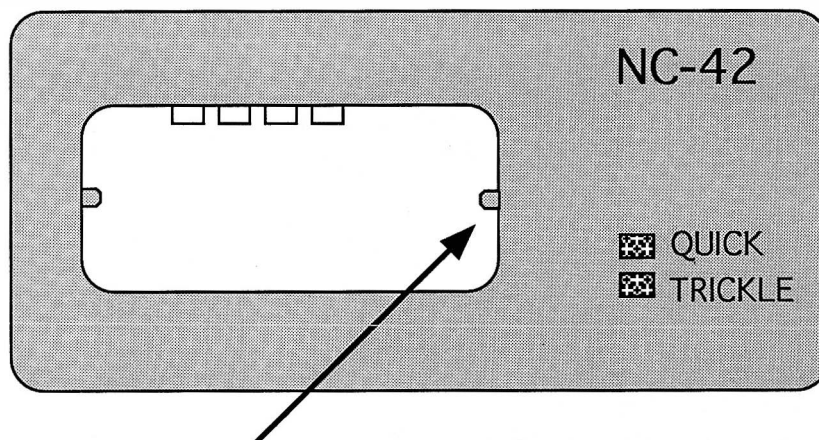
1. Unplug the charger for the AC power
2. Locate IC Q02. see drawing
3. Solder tack a 390 Ohm 1/2 watt resistor and a normally open push button to Pins 13 & 15
4. Position the push button switch in a handy position on the plastic case.

### Modification

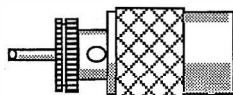
This modification will allow you to charge FNB-12S, FNB-14, FNB-17, FNB-25, FNB-26 and FNB-27 batteries.

1. Remove the ridge on the inside of the battery charging cup. (right side only)

Charging time for all batteries should be about 1 hour or less.



Remove this ridge. Use a file or similar tool



### Radio/Tech Modifications Volume B

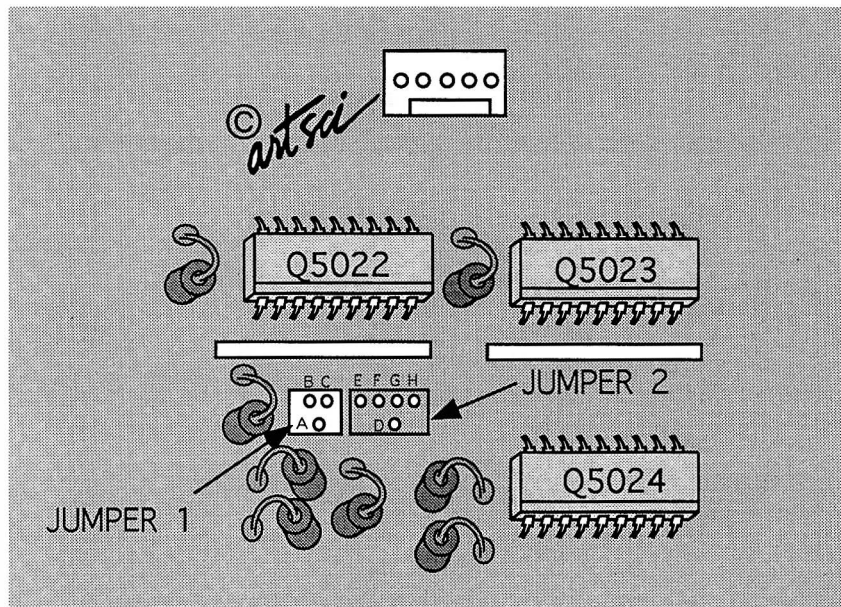
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Expansion Range

RX: 150 kHz - 30 MHz

TX: 1.8 MHz - 30 MHz

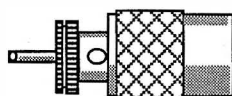


Expanded RF Modification

1. Unplug the power from the radio.
2. Open radio and locate the CONTROL UNIT.
3. **Locate and install a Jumper between Point A and point B.**  
No Jumper to point C.
4. **Remove any jumper to point D.** (Transmit range point)
5. Reassemble radio.

## Reset Commands

Radio	Function	Command
FT-1000	Hard Reset	Flip off BACKUP switch. (Inside the top panel window)
	Memory Reset	Press & hold [SUB] & [ENTER] & turn power on
	Soft Reset	Press & hold [1.5] & [3.5] & turn power on. (For checking Display and ROM version)
FT-990	Hard Reset	Flip off BACKUP switch. (Inside the top panel window)
	Memory Reset	Press & hold [GEN] & [ENT] & turn power on
	Soft Reset	Press & hold [1.5] & [3.5] & turn power on. (For checking Display and ROM version)
FT-890	Hard Reset	Press & hold [HAM/GEN] & [CLAR] & turn power on.
	Soft Reset	Press & Hold [A/B] & [A=B] & turn power on (For checking Display and ROM version)
FT-767GX	Hard Reset	Switch [B.U.] off & turn radio on.
	Freq. Range Reset	Press and hold [OFFSET] & turn power on. (140.00 - 148.99 MHz) Press and hold [CLAR] & turn power on. (140.00 - 145.99 MHz) Press and hold [MCK] & turn power on. (140.00 - 1487.99 MHz)
	430/440 toggle	Press and hold [0] & turn power on.
FT-757GX	Hard Reset	Press & hold [MARKER] & [LINEAR] & turn power on.
FT-747GX	Hard Reset	Slide Backup switch towards tuning dial. (Located on bottom of panel)
FRG-8800	Hard Reset	Remove backup batteries
FRG-100	Hard Reset	Turn off backup switch on rear of radio for 5 seconds.



## Radio/Tech Modifications Volume B

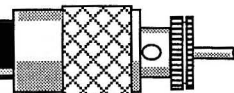
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## Reset Commands

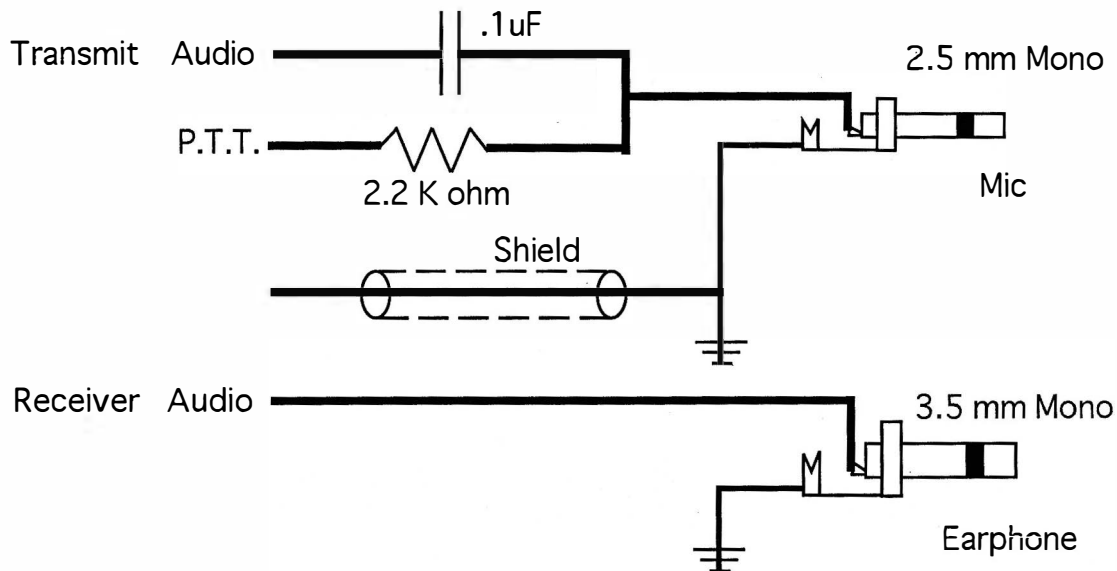
Radio	Function	Command
FT-11		
FT-41	Master Reset	Press and hold [UP] & [DOWN] & turn on.
FT-26		
FT-76	Ham/Extended RX	Press and hold [UP] & [DOWN] & turn on.
	Factory Defaults	
	Soft Reset (memory clear)	Press and hold [T] & [REV] & turn on.
	Master Reset	Press and hold [D/MR] & [T] & [REV] & turn on. (must enter new band limits)
FT-411E		
FT-811		
FT-911		
FT-415		
FT-416		
FT-470		
FT-815		
FT-530	Ham/Extended RX	Press and hold [UP] & [DOWN] & turn on.
	Factory Defaults	Press and hold [T] & [REV] & turn on.
FT-2400H	Ham/Extended RX	Press and hold [UP] & [DOWN] & turn on
	Memory Reset	Press [D/MR] & [F/w] & turn on.
	Factory Defaults	Press [D/MR] & [REV/SKIP] & turn on & turn off & Press & hold [D/MR] & turn on.
FT-5100	Factory Defaults	Press and hold [D/MR] & [REV] & turn on.
FT-5200	Ham/Extended RX	Press and hold [MHz] & [DVS/HOLD] & turn on.
	Factory Defaults	Press and hold [D/MR] & [REV] & turn power on.
FT-212		
FT-712		
FT-912	Ham/Extended RX	Press and hold [MHz] & [VOICE] & turn power on.
FT-290		
FT-690		
FT-790II	Hard Reset	Switch internal backup switch off of 30 seconds.
FT-736R	Hard Reset	Switch internal backup switch off of 30 seconds.



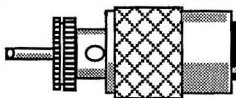
FT-23,33,73,109,209,709,727,470,411,811,911

## Parts Required

- 1 - 0.1  $\mu$ F, 50V Disk Ceramic Cap
- 2 - 2.2k Ohms, 1/4 Watt Resistor
- 1 - 2.5 mm audio plug
- 1 - 3.5 mm audio plug



YAESU



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# #	Frequency	Offset	PL	Label	Description
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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49					

# OTHER MANUFACTURES

ADI	AR-146	Expanded RF.....	Other - 2
	AT-18	Expanded RF.....	Other - 3
	AT-200	Expanded RF.....	Other - 3
	AT-201	Expanded RF.....	Other - 4
	AT-400	Expanded RF.....	Other - 5
	AT-600	Expanded RF.....	Other - 6
AZDEN	AZ-21	Expanded RF.....	Other - 7
	AZ-61	Expanded RF.....	Other - 7
	PSC-6000	Expanded RF.....	Other - 8
	PSC-7000	Expanded RF.....	Other - 8
	PSC-7500	Expanded RF.....	Other - 8
KDK	KDK-240	Expanded RF.....	Other - 9
	KDK-2033	Expanded RF.....	Other - 9
MIDLAND	73-030	Expanded RF.....	Other - 10
TANDY	HTX-100	Expanded RF.....	Other - 11
RANGER	AR-3300	Expanded RF.....	Other - 12
	AR-3500	Expanded RF.....	Other - 12
RCI	RCI-2950	Expanded RF.....	Other - 13
	RCI-2970	Expanded RF.....	Other - 13
SENDER	TR-450	Expanded RF.....	Other - 14
TEN TEC	PARAGON	Expanded RF.....	Other - 15
UNIDEN	HR-2500	Expanded RF.....	Other - 17
	HR-2520	Expanded RF.....	Other - 18
	HR-2600	Expanded RF.....	Other - 19
HEATH	H-2 Mini HT	Expanded RF.....	Other - 21
	H4-HT	Expanded RF.....	Other - 22
	HW-24	Expanded RF.....	Other - 23
	HW24HT	Expanded RF.....	Other - 24
	SB-1400	Expanded RF.....	Other - 25
AMERITRON	AL-80/A/B	Expanded RF.....	Other - 26
	AL-82	Expanded RF.....	Other - 26
	AL-572	Expanded RF.....	Other - 26
	AL-800/H	Expanded RF.....	Other - 26
	AL-811/H	Expanded RF.....	Other - 26
	AL-1200	Expanded RF.....	Other - 26
	AL-1500	Expanded RF.....	Other - 26

OTHERS



ADI

# Receive and Transmit Expansion

AR-146  
AR-446

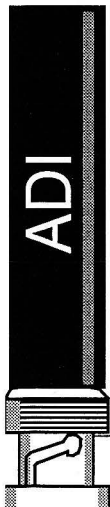
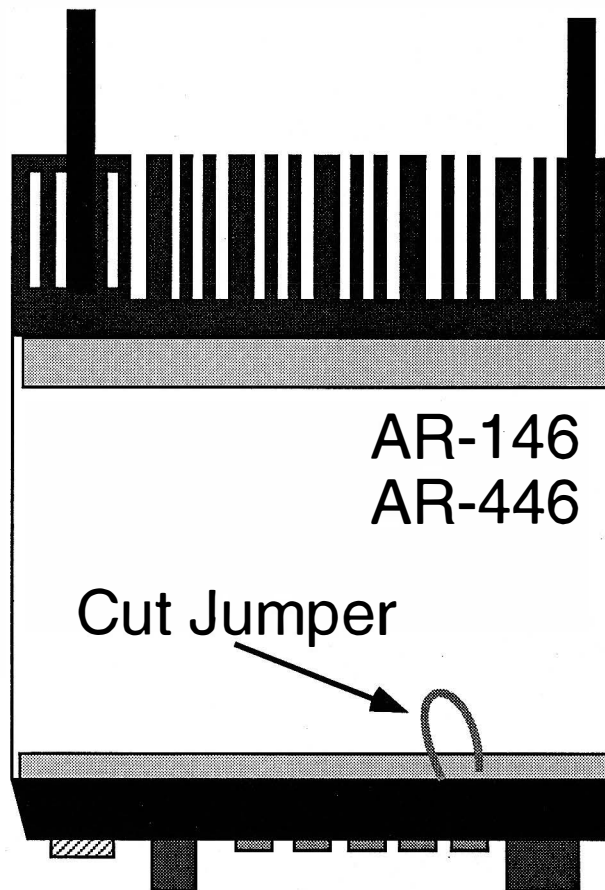
## Expansion Range

125 - 174 MHz AR-146  
430 - 169 MHz AR 446

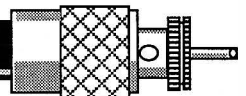
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Bottom Cover
2. Locate and cut Wire jumper
3. Reassemble the radio.



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## Expansion Range

**130 - 163.995 MHz**

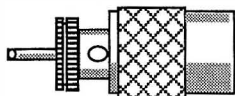
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

**AT-18  
AT-200**

## Expanded RF Modification

1. Press and Hold [F] and turn power on. (display will read 145.00)  
(This will reset all memories!!)
2. Turn Power off
3. Press and hold [3] and turn power on. (display will read 145.00)
4. Press [F] & [3]. (Display will read 10)
5. Change step to 05 by turning dial one step.
6. Press [F] & [9]. (Display will read 00.60)
7. Press and hold [F] and turn dial until display reads 30.60 [50].
8. Release [F] key and rotate dial until the display reads 30.63 [50].
9. Press [F] & [3] and change step back to 10.
10. Press [F] & [0]. (display should read 145.00)
11. Press [7]. (display should read ".")
12. Press [3] [0] [6] [3] transmit & receive expansion  
or  
Press [3] [0] [7] [3] receive expansion only.
13. Press [\*] (display should read 130.00)
14. Press [F] & [9] (display should read 30.63 [50])
15. Press and hold [F] and turn dial until display reads 00.63 [50].
16. Release [F] and turn dial until it reads 00.60.
17. Press [\*]. (display should read 130.00)
18. Turn radio off and back on.

**Note : Use [F] and [MHz] key to change frequency stepping.**



## Expansion Range

130 - 163.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

## --- Receive expansion ---

1. Press and Hold [F] and [CALL] and turn power on.
2. Press and Hold [F] and [CALL]. The display will read 145.00
3. Turn Power off
4. Press and hold [3] and [CALL] and turn power on.  
(display will show a 3)
5. Turn radio off and back on. The display will go from 100-179 RX and lock between 130-170 MHz. TX is limited to 144-148 MHz

## --- Transmit expansion ---

6. Press [F] & [3]. (Display will read 10) This is the freq step rate.
7. Change step to 05 by turning dial one step.
8. Press [F] & [9]. (Display will read 00.60)
9. Release [F] key and rotate dial until the display reads 30.63 [50].
10. Press [F] & [3] and change step back to 10.
11. Press [F] & [0].
12. Press [7]. (display should read ".")
13. Press [3] [0] [6] [3] transmit & receive expansion.
14. Press [\*] (display should read 130.00)

## --- IF YOU WANT TO CHANGE THE BAND LIMITS ---

15. Press [F] & [0]
16. Press [7]
17. Press [4] [8] [6] [9]  
(the first two digirs are the lower limit the last two are the upper limit)
18. Press [\*]. (range is now 148-169.995)

## Expansion Range

430 - 463.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

AT-48  
AT-400

## Expanded RF Modification

1. Press and Hold [F] and turn power on. (display will read 440.00 or 433.00) (This will reset all memories!!)
2. Turn Power off
3. Press and hold [3] and turn power on. (display will read 440.00)
4. Press [F] & [3]. (Display will read 10)
5. Change step to 05 by turning dial one step.
6. Press [F] & [9]. (Display will read 05.00)
7. Press and hold [F] and turn dial until display reads 30.60 [50].
8. Release [F] key and rotate dial until the display reads 30.63 [50].
9. Press [F] & [3] and change step back to 10.
10. Press [F] & [0]. (display should read 440.00)
11. Press [7]. (display should read ".")
12. Press [3] [0] [6] [3] transmit & receive expansion
13. Press [\*] (display should read 130.00)
14. Press [F] & [9] (display should read 30.63 [50])
15. Press and hold [F] and turn dial until display reads 05.63 [50].
16. Release [F] and turn dial until it reads 05.00.
17. Press [\*]. (display should read 430.00)
18. Turn radio off and back on.

### To change frequency coverage:

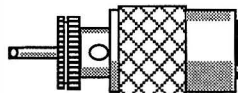
Press [F] & [0]

Press [7]. (display should read ".")

Press [0] [0] [7] [9] for 400 - 479.995 MHz coverage!!

Press [\*]

**Note : Use [F] and [MHz] key to change frequency stepping.**



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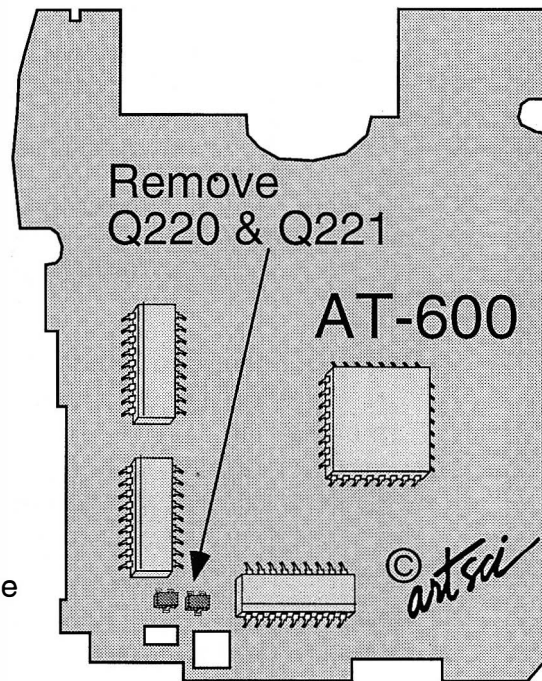


## Expansion Range

100 - 199.995 MHz  
 350 - 499.995 MHz  
 850 - 999.995 MHz Cellular blocked

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

There are several different versions of the AT-600 firmware. Early versions (firmware 1.10) require only keyboard modifications to expand. Later versions (firmware 1.2 and above) require hardware modification or a combination of both.



## Expanded RF Modification

**Keyboard modification**

1. Press [F] & [0 SET/SB] and the same time.
2. Enter [1] [4] [5] [2] & [3].
3. Turn the radio off and back on.
4. Press [F] & [0 SET/SB] and the same time.
5. Enter [1] [4] [6] [2] [3] [1] [1] [2] [8] & [9].
6. THE VERSION # of your firmware should be displayed
7. Turn the radio off and back on.

**Hardware modification**

8. Remove power and antenna
9. Remove the screws and open the radio.
10. Locate and **remove Q220 and Q221**
11. Reassemble the radio
12. Press and hold [F] [LAMP] [5] and turn the radio on.

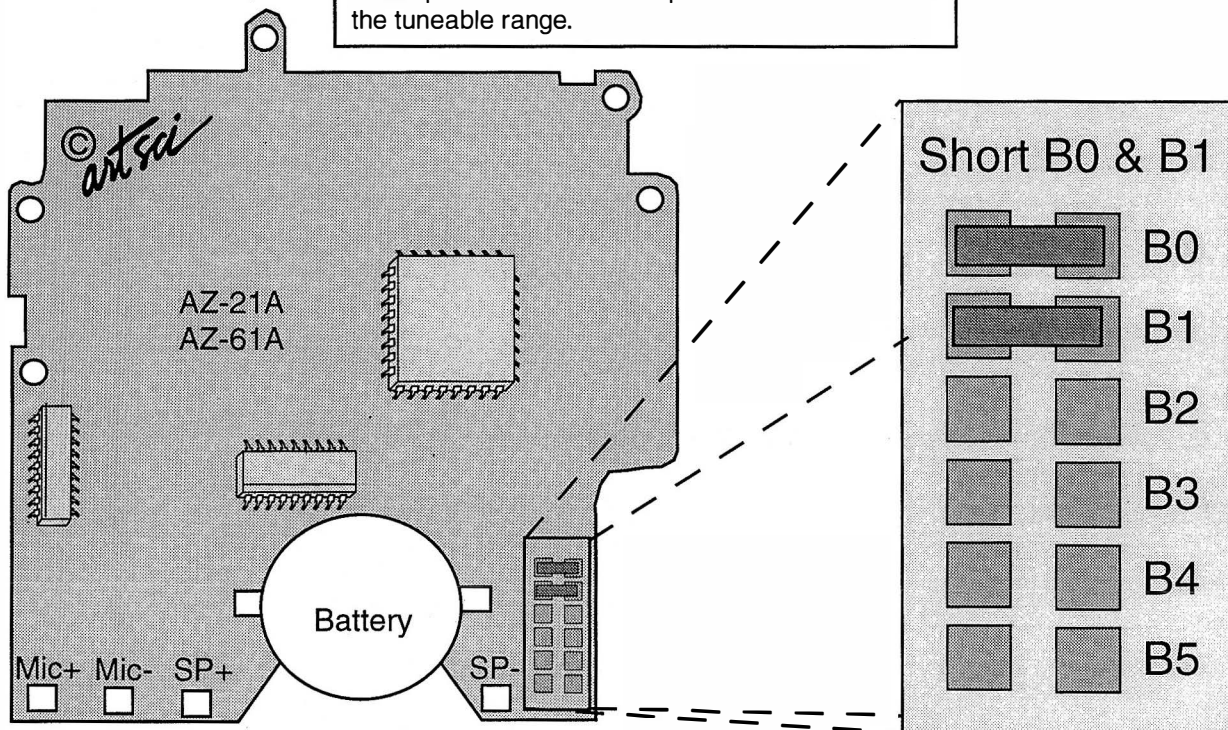
AZ-21  
AZ-61

## Expansion Range

TX & RX - 136 Mhz - 164 Mhz.

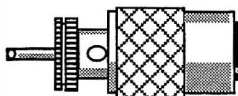
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

USA versions (A)  
can not be modified.



## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove Speaker & Squelch knobs
3. Remove battery rail screws
4. Remove three back cover screws.
5. Remove top cover and rubber gasket
6. Separate radio. (open like a book)
7. Remove three screws from the right hand board and move aside
8. Locate lower board and the solder pads B0 through B5
9. Locate and **solder bridge pads B0 & B1.**
10. Reassemble the radio.
11. **Reset the microprocessor**  
(Hold down the [CLR] key and turn the radio on)



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PCS-6000H  
PCS-7000H  
PCS-7500H

### Expansion Range

138MHz - 160 Mhz. (6000 & 7000)  
46.5 MHz - 54 MHz (7500)

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove Power and Antenna.
2. Remove the Top and Bottom covers.
3. Locate and remove the four flat Phillips screws that secure the front panel to the chassis.
4. Locate and remove the four small Phillips screws securing the display PC Board to the chassis.
5. Locate and remove the one Phillips screw above the Microphone connector.
6. Carefully remove the PC board. CAUTION: Do not bend the PIN connectors.
7. **Locate and remove Diode D-207.** (Unsolder or Cut the diode away)
8. Reassemble the radio.

### PCS-7xxx CPU RESET

1. Locate and remove four screws and remove the bottom cover.
2. Place the radio with the front of the radio away from you.
3. Locate the board behind the front panel and the 1/2 inch square outlined in WHITE in the upper left hand corner of the board. (the word "RESET" is marked inside the quare.
4. Locate the two 1/8" copper pads.
5. With the power on, short the two copper pads together. (A beep will sound)
6. Reassemble the radio.

## Expansion Range

140 Mhz - 156 Mhz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

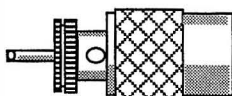
1. Remove Power and Antenna.
2. Remove the cover.
3. **Press the RESET Button.**
4. Enter the new limits on the front panel switch.
5. Reassemble the radio.

## Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.  
Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. **Connect diode D-21 (ECG-519) to Module INT-2033.**
4. Reassemble the radio.



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# #	Frequency	Offset	PL	Label	Description
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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49					

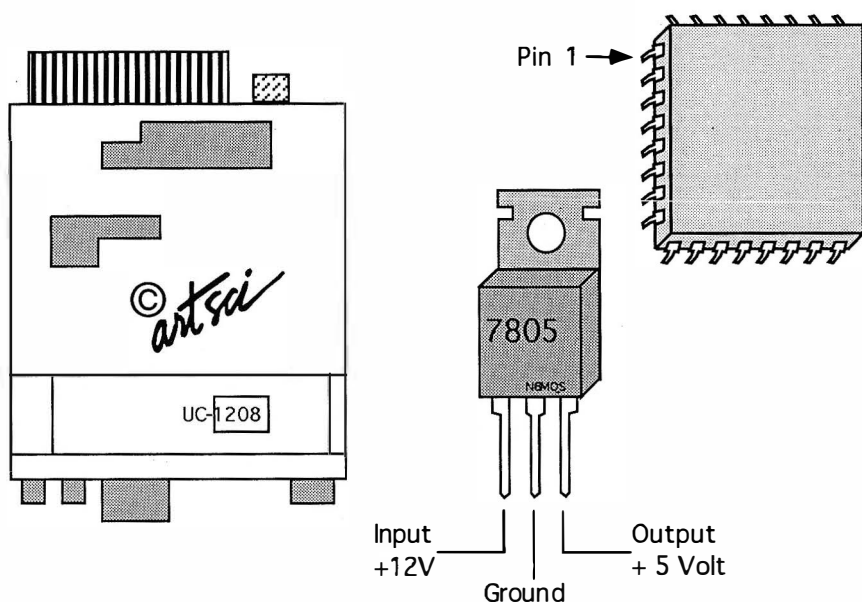
## Expansion Range

**26 MHz - 29.99 MHz**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate synthesizer board on the bottom of the radio.
4. If your radio has microprocessor # UC-1208  
 Unsolder and lift pins 28 & 29 of the microprocessor.  
 You may wish to leave the pin soldered and etch the ground trace  
 Go to instruction #6
5. If your radio's microprocessor is NOT a UC-1208  
 Unsolder and lift pins 20 & 21 of the microprocessor.  
 You may wish to leave the pin soldered and etch the ground trace  
 Go to instruction #6
6. Connect the lifted pins together and jumper these pins to +5 volts with a 10K resistor  
 +5 volts can be found on the 7805 voltage regulator  
 or  
 from the Cap. right next to pins 28 & 29.
7. Reassemble the radio.



OTHERS

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AR-3300  
AR-3500

## Expanded RF Modification

1. Turn radio on and enter the following:

[ ENTER ] [ 1 CH ] [ ENTER ] [ MANUAL ] [ ENTER ] [ 100 HZ DOWN ]  
 [ ENTER ] [ MEMORY ] [ MANUAL ] [ SCAN ] [ PROGRAM ]  
 [ 100 HZ UP ] [ ENTER ] [ ENTER ]  
 PUSH [ 1 MHZ UP ] UNTIL 29.933.0 APPEARS  
 [ ENTER ] [ SCAN DOWN ] [ ENTER ] [ 2 CH ] [ ENTER ]  
 [ SCAN DOWN ]  
 OPEN THE SQUELCH

The radio will now scan down in 10kHz steps. Store desired Frequencies into memory channels for later use.

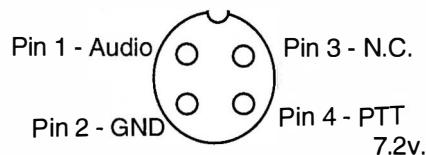
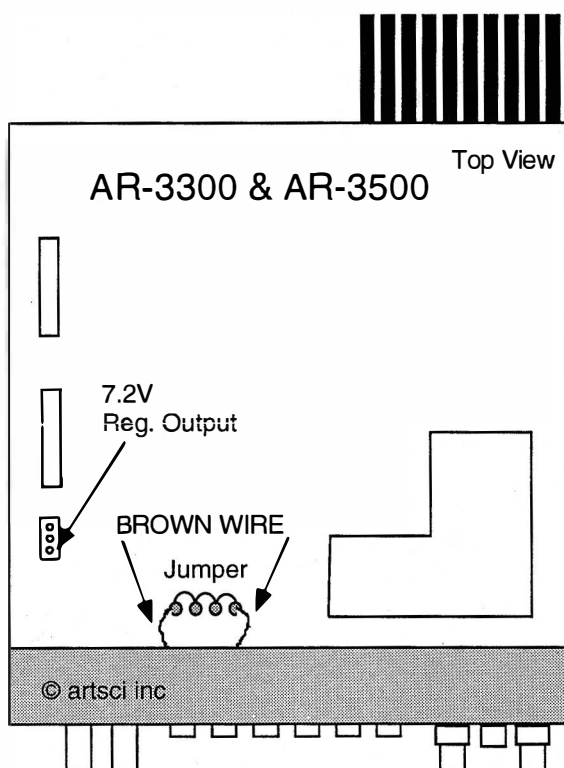
**OR**

Solder jump the 3 pins located on the back side of the circuit board near the front center.

## Expansion Range

The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



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# Receive and Transmit Expansion

RCI

Clarifier Fine Tune (Tracks both TX & RX)  
Expanded Range  
CB "Style" operation  
Instant Channel 9

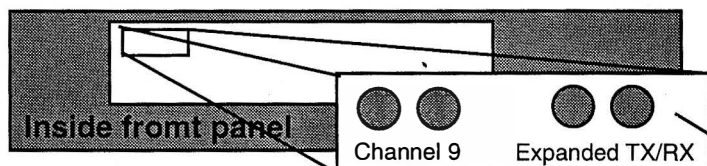
RCI-2950  
RCI-2970

## Expanded RF Modification

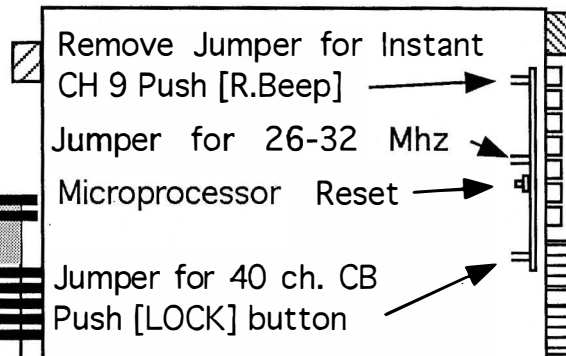
1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate Jumper J1 & J2.
4. **Move Jumper from J1 and place it on Jumper J2**
5. Reassemble the radio.

## Alignment Procedure (not required)

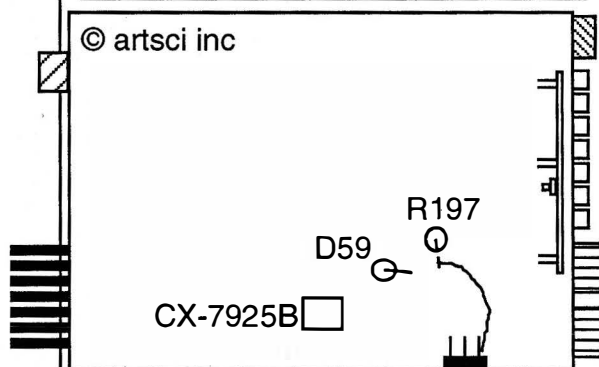
1. Set the frequency to 26.000 MHz (any mode)
2. Connect a DC voltmeter between J13 and ground.  
(The chassis is not grounded. You can find ground on the main circuit board)
- Adjust L17 to obtain a 1.0 V reading.
3. Set the service monitor to 10.240 MHz, SSB mode.  
Sniff at X2 and zero beat using VC2.
4. Remove the shorting bar located near the final amplifier transistors and key the radio.  
Sniff X2 and adjust VR21 to zero beat.
5. Repeat step 4 for receive at X1.
6. Set the service monitor to 10.695 MHz.  
Key the transmitter and sniff X3 in either AM or FM.  
Adjust L27 and zero beat.
7. Un-key the radio.  
Set the service monitor to 10.6925 MHz, USB mode.  
Key the transmitter and adjust L29 to zero beat.  
Un-key.
8. Un-key the radio.  
Set the service monitor to 10.6975 MHz, LSB mode.  
Key the transmitter and adjust L28 to zero beat.  
Un-key.
9. Replace shorting bar and set the radio to 28.0500 MHz FM mode.
10. Inject an on-frequency FM signal into the radio and tune for best SINAD by adjusting L8, L9, L11, L12, L14, L4, L3, L5, L6 and L7.  
Repeat this step until SINAD reading of 12db or better with a .2 uV input.
11. Key the radio in UBS with a 1 KHz tone at 30 mV at the mic input.  
Adjust VR12 for maximum, approximately 30 W.
12. Adjust VC3, L34, L43, L46, L47, L48 and L19 for peak power out.  
Adjust VR12 to set max power to 25 watts.
13. Set mode to FM and key the radio.  
Set the output power to 10 watts using VR13.
14. Set the mode to AM and adjust VR14 for 90% modulation.



See below for new model information

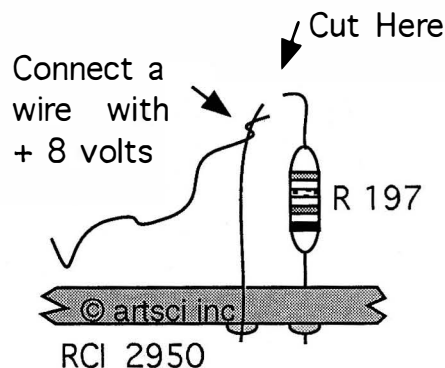


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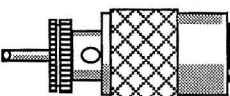
## Fine Tune

1. **Remove Diode D59.**
2. **Cut lead on Resistor R197.**  
(see Drawing)
3. **Apply +8 volts from regulator to Resistor R 197.** (see Drawing)



Move jumper for expanded range

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OTHERS



SENDER

TR-145

TR-450

## Receive and Transmit Expansion

### Expansion Range

130 - 163.995 Mhz.

### Expanded RF Modification

1. Press and Hold [F] and turn power on. (display will read 145.00)  
(This will reset all memories!!)
2. Turn Power off
3. Press and hold [3] and turn power on. (display will read 145.00)
4. Press [F] & [3]. (Display will read 10)
5. Change step to 05 by turning dial one step.
6. Press [F] & [9]. (Display will read 00.60)
7. Press and hold [F] and turn dial until display reads 30.60 [50].
8. Release [F] key and rotate dial until the display reads 30.63 [50].
9. Press [F] & [3] and change step back to 10.
10. Press [F] & [0]. (display should read 145.00)
11. Press [7]. (display should read ".")
12. Press [3] [0] [6] [3] transmit & receive expansion  
or  
Press [3] [0] [7] [3] receive expansion only.
13. Press [\*] (display should read 130.00)
14. Press [F] & [9] (display should read 30.63 [50])
15. Press and hold [F] and turn dial until display reads 00.63 [50].
16. Release [F] and turn dial until it reads 00.60.
17. Press [\*]. (display should read 130.00)
18. Turn radio off and back on.

### Expansion Range

400 - 469.995 Mhz.

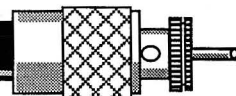
### Expanded RF Modification

1. Press [F] and turn power on, then off (RESET Radio)
2. Press [3] and turn power on. (400 - 469 MHz RX)
3. Press [F] & [0] then set CTCSS to 88.5 MHz (use rotary knob)
4. Press [F] & # then set page code to (memory 0 = C000)
5. Press [F] & [3] then set channel step to 5 KHz
6. Press [F] & [9] then keyin 6.1 MHz
7. Press [F] & [0] then [8]
8. Press the [\*/ENT] key

Note: during testing, these steps needed to be performed multiple times

SENDER

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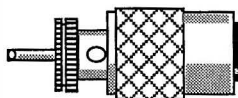
## Expansion Range

1.7 MHz - 30 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove the Top cover.
3. **Locate and clip small jumper labeled "HAM".**
8. Reassemble the radio.



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OTHERS



# Performance Report

Radio \_\_\_\_\_

Date \_\_\_\_\_

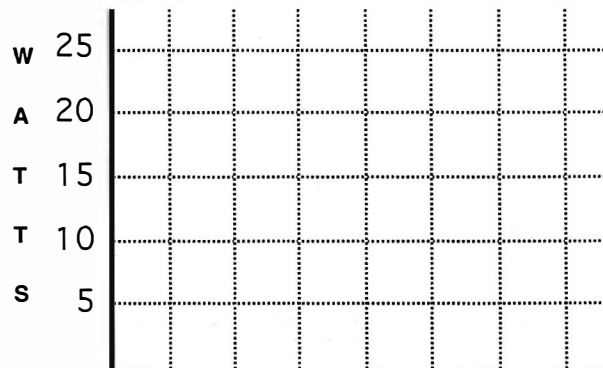
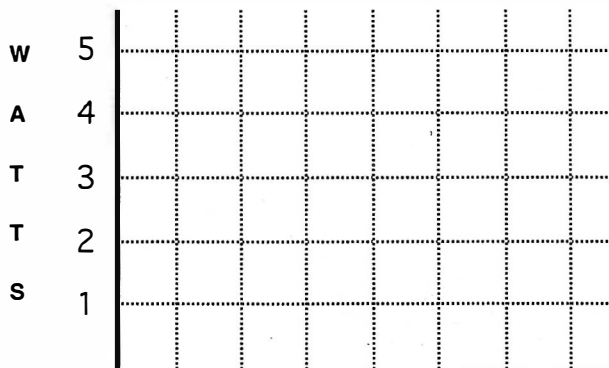
Owner :Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ St. \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) - \_\_\_\_\_

Description	Before	After
Power out (Low)	_____ Watts	_____ Watts
Power out (High)	_____ Watts	_____ Watts
Frequency Error (Simplex)	_____ Hz	_____ Hz
Frequency Error (Offset)	_____ Hz	_____ Hz
Receive Sensitivity (Mid-band)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
Receive Sensitivity (____MHz)	_____ uv	_____ uv
PL Deviation	_____ Hz	_____ Hz
DTMF Deviation	_____ KHz	_____ KHz
Audio Deviation	_____ KHz	_____ KHz
Lowest usable Freq @ .5 Pwr	_____ MHz	_____ MHz
Highest usable Freq @ .5 Pwr	_____ MHz	_____ MHz



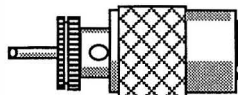
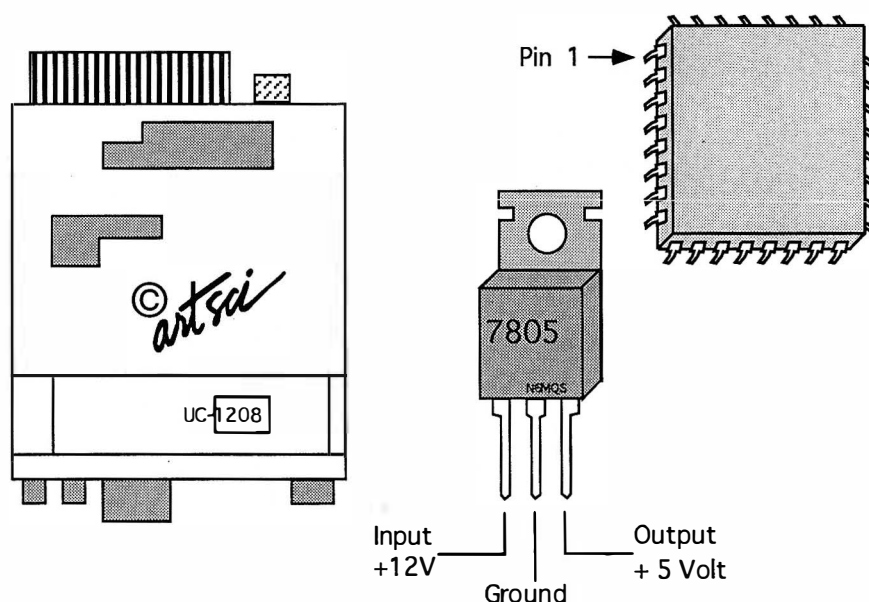
### Expansion Range

The Exact range of this radio is not known as of press time.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate synthesizer board on the bottom of the radio.
4. If your radio has microprocessor # UC-1208  
    Unsolder and lift pins 28 & 29 of the microprocessor.  
    You may wish to leave the pin soldered and etch the ground trace  
    Go to instruction #6
5. If your radio's microprocessor is NOT a UC-1208  
    Unsolder and lift pins 20 & 21 of the microprocessor.  
    You may wish to leave the pin soldered and etch the ground trace  
    Go to instruction #6
6. Connect the lifted pins together and jumper these pins to +5 volts with a 10K resistor  
    +5 volts can be found on the 7805 voltage regulator  
    or  
    from the Cap. right next to pins 28 & 29.
7. Reassemble the radio.





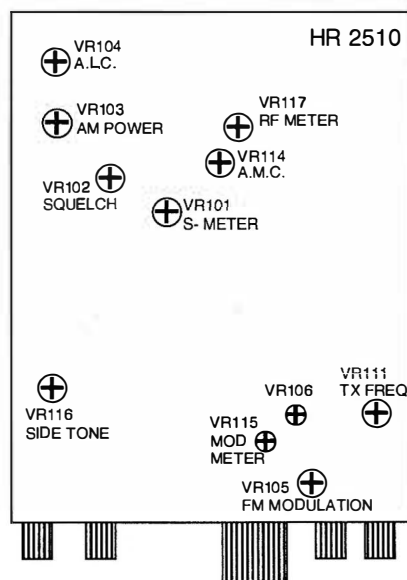
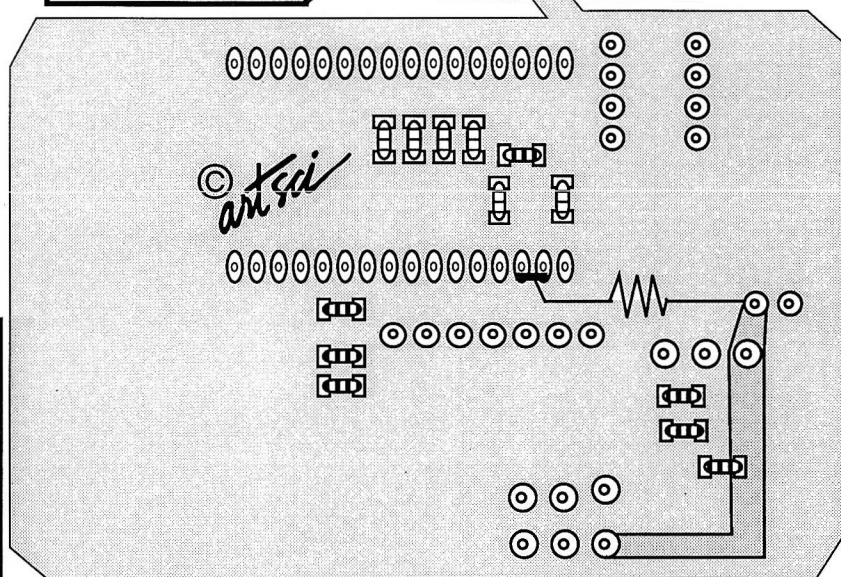
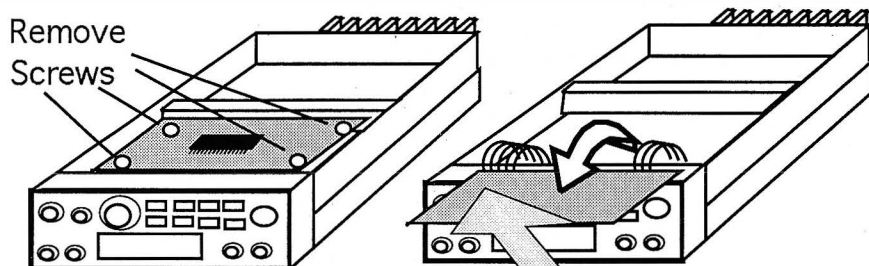
## Expansion Range

26 MHz - 29.99 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the Synthesizer board.
4. Pins 34 & 35 are grounded together on the underside of the synthesizer board. Cut the traces that connect these two pins to ground. (Cut all traces to these pins)
5. Solder one side of a 10K resistor to the connecting point of pins 34 & 35.
6. Connect the other leg of the 10 K resistor to + 5 volts. (where R181 & 187 are connected together).
7. Reassemble radio



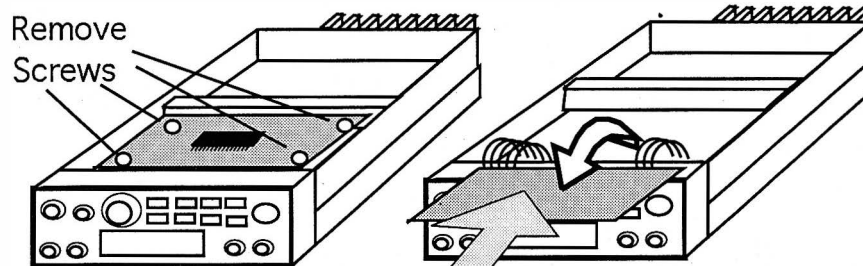
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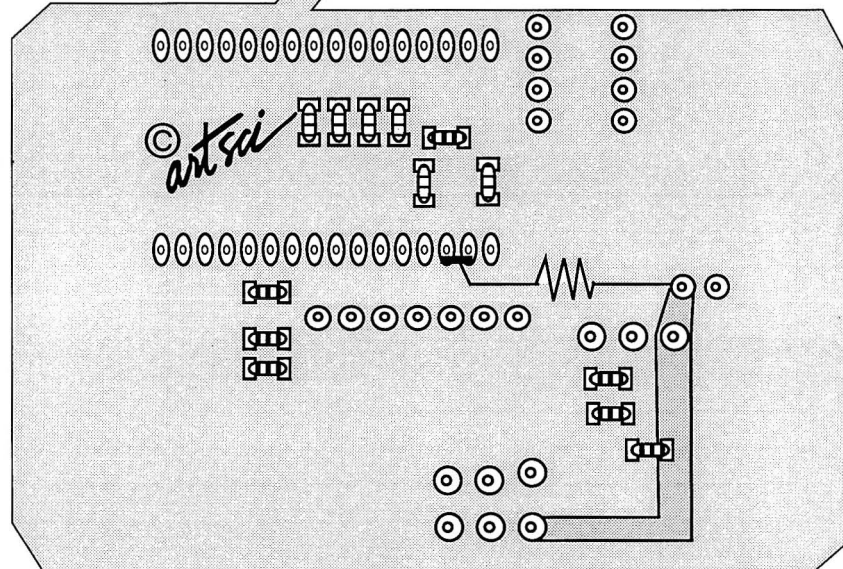
## Expansion Range

**26 MHz - 29.99 MHz**

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

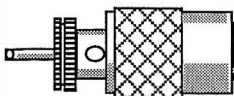


You will need to replace the microprocessor.  
Replacement part # is **UC-1250**. (NOT 1251) It may be available from Uniden. You will lose the repeater offset.



## Expanded RF Modification

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the Synthesizer board.
4. Pins 34 & 35 are grounded together on the underside of the synthesizer board. Cut the traces that connect these two pins to ground.
5. Solder one side of a 10K resistor to the connecting point of pins 34 & 35.
6. Connect the other leg of the 10 K resistor to + 5 volts. (where R181 & 187 are connected together).
7. Reassemble radio



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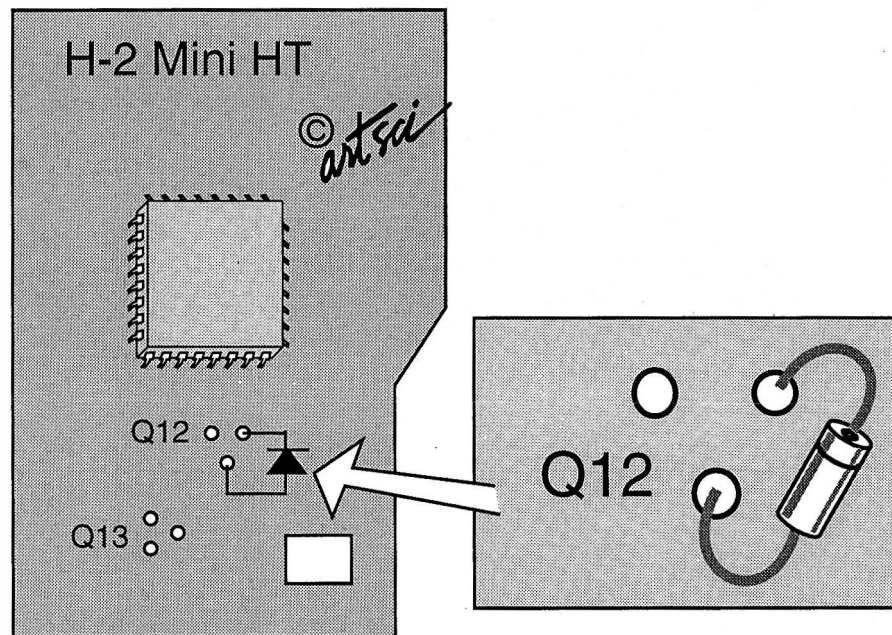


# #	Frequency	Offset	PL	Label	Description
1					
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### Expansion Range

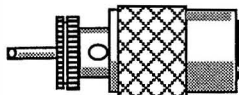
130 MHz - 169.995 MHz

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.



### Expanded RF Modification

1. Remove battery and Antenna.
2. Remove 2 lower screws from the battery plate.
3. Remove 2 screws securing the front & back cases.
4. Locate Q12 Position. (find point A and B)
5. **Solder a diode** (1N914 or eq.) from point A to point B  
Cathode to point A, Anode to Point B.
6. Reassemble the radio.
7. Reset the microprocessor.



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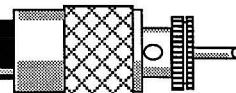
### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

### Expanded RF Modification

1. Remove battery and Antenna.
2. Remove 2 lower screws from the battery plate.
3. Remove 2 screws securing thr front & back cases.
4. Locate Q106 Position. (find point A and B)
5. **Solder a diode** (1N914 or eq.) from point A to point B  
Cathode to point A, Anode to Point B.
6. Reassemble the radio.

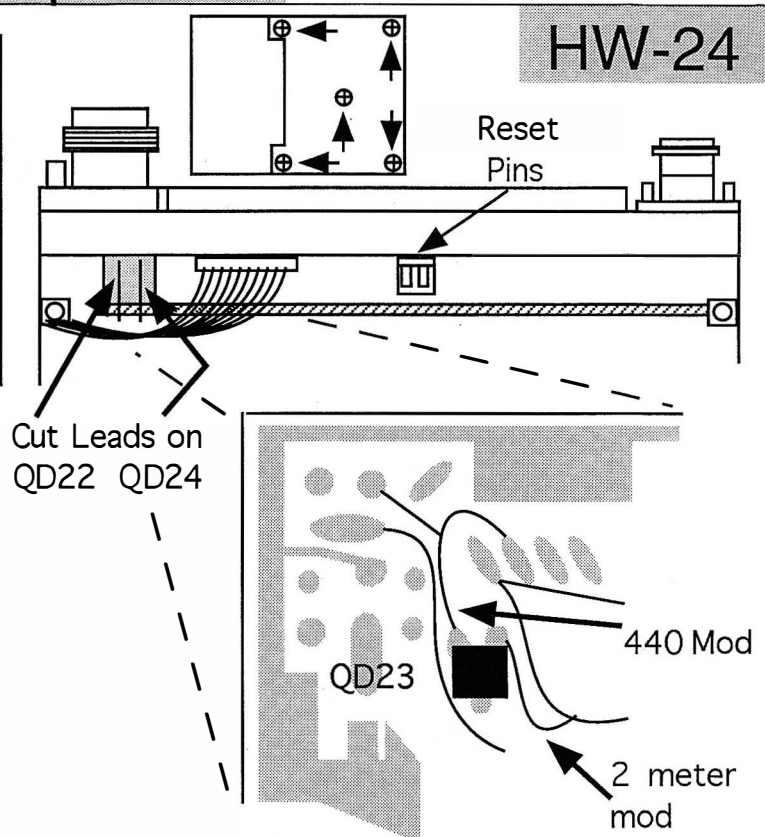


### Expansion Range

The Exact range of this radio is not known as of press time. However most radios expand from 138 Mhz - 165 Mhz & 420 - 469 Mhz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

1. Turn Power on.
2. Push RESET.
3. Press and hold [FUNCTION] then [0]
4. Press and hold [FUNCTION] then [ENT]
5. Press PTT Briefly.
6. Press [UHF]
7. Press and hold [FUNCTION] then [LAMP]
8. Press and hold [FUNCTION] then [0]
9. Press and hold [FUNCTION] then [CODE]
10. Press and hold [FUNCTION] then [LAMP]
11. Press and hold [FUNCTION] then [3]
12. Press PTT Briefly.
13. Press [VHF]
14. Press and hold [FUNCTION] then [STEP]
15. Select 12.5 KHz. (Use Selector Knob)
16. Press PTT Briefly.
17. Press and hold [FUNCTION] then [8]
18. Press and hold [FUNCTION] then [8]
19. Press and hold [FUNCTION] then [7]
20. Press and hold [FUNCTION] then [7]
21. Press and hold [FUNCTION] then [MS.M]
22. Select 144.9875 MHz (Use Selector Knob)
23. Press and hold [FUNCTION] then [0]
24. Press and hold [FUNCTION] then [ENT]
25. Press PTT Briefly.
26. Press and hold [FUNCTION] then [0]
27. Press and hold [FUNCTION] then [MS.M]

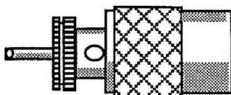


### To Receive 300 - 400 Mhz or 800 - 900 MHz

Press [UHF]  
Press and hold [FUNCTION] then [SET]  
Press and hold [FUNCTION] then [3] to Select Bands

### Expanded RF Modification

1. Remove power and Antenna.
2. Remove the wire mounting stand.
3. Remove the five screws that hold the bottom cover.
4. Remove the bottom plate being careful to unplug the speaker as you remove it.
5. Locate and cut the lead of QD22 (2 meter RX Mod)
6. Locate and cut the lead of QD24 (440 RX Mod)
7. Locate Chip Diode QD23 on front panel board.
8. **Cut leads to both bottom leads of QD23.**  
(note it may be required to remove the front panel from the body of the radio.)
9. Reassemble the radio (see next step)
10. Reset the Radio. (short the Reset pins with a wire or screw driver.)



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OTHER - 23



## Expansion Range

130 MHz - 169.995 MHz

340 MHz - 379.995 MHz

400 MHz - 469.995 MHz.

Remember that the electronic circuits can only tune a 20-30 MHz window around the original center frequency (tuned at the factory) you may have better performance at the top or the bottom ends of the tuneable range.

## Keyboard RF Modification

## Open Receiver

1. Set channel step to 12.5 kHz.
2. Select VFO A
3. Set Frequency to 147.7575 MHz.
4. Press [FUNC] then [7/RPT]
5. Press [FUNC] then [8+/-]
6. Press [FUNC] then [\*ENT]
7. Press [FUNC] then [\*ENT]

## Open Transmitter

1. Set Frequency to 147.7575 MHz.
2. While in RPT mode, hold [VCS] and push [PTT].
3. Hold [FUNC] and press [REV].

R240 - Deviation

R501 - CTCSS tone Deviation

R601 - DTMF tone deviation

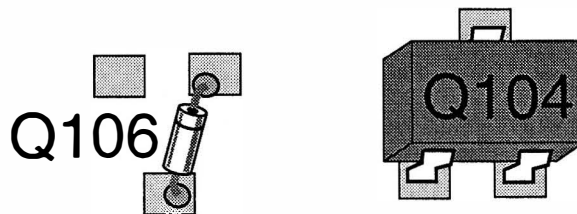
## Band Selection

Press [RCL]

Press [FUNC] then [C/BAND]

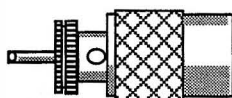
## Hardware RF Modification

1. Remove Q104 from logic board.  
(Located to the left of the microprocesor.)
2. Install a 1N4148 across Q106  
(below Q104 above)



### Expanded RF Modification

1. Remove power and Antenna.
2. Remove screws and open the case.
3. Locate the BROWN jumper wire on the display unit.
4. **Cut the BROWN jumper wire.**
5. Reassemble the radio.
6. Reset the microprocessor.  
(Set VFO at 12.3456 MHz, Turn power off and on again)



### Radio/Tech Modifications Volume B

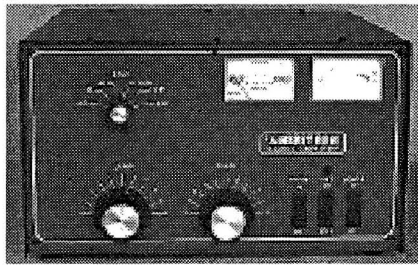
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AL-80/A/B  
AL-82  
AL-572  
AL-800/H  
AL-811/H  
AL-1200  
AL-1500

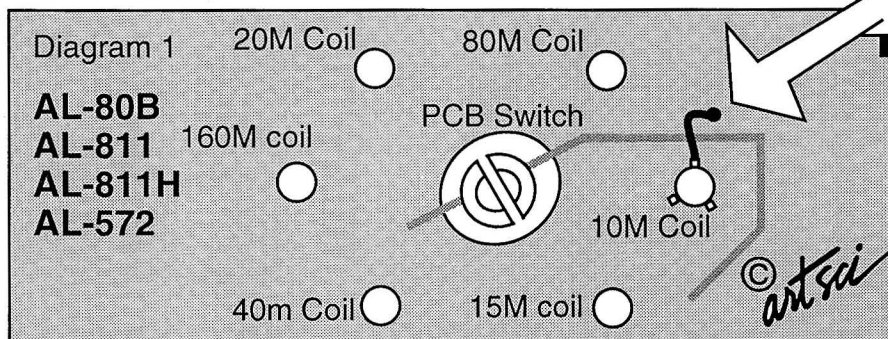


Expansion Range  
10 & 12 Meter operation

## Expanded RF Modification

<b>AL-80</b> (not A)	Needs a kit to be modified for 10/12 meters. Contact Ameritron.
<b>AL-80A</b>	Cut the green wire that exits the subshassis at the front panel end of the band switch. The wire connects ground to the plate tuning capacitor reduction drive.
<b>AL-80B</b> <b>AL-811</b> <b>AL-811H</b> <b>AL-572</b>	<ol style="list-style-type: none"> <li>1. Remove the top cover.</li> <li>2. Locate the rear panel P.C. Board</li> <li>3. Locate the green wire that is connected from the P.C. board to one of the coils (see diagram 1)</li> <li>4. Cut the Green wire</li> <li>5. Replace the top cover</li> <li>6. If high SWR occurs at the amp input, adjust the tune-input circuit with a 0.1 inch hex tuning tool. Adjust the slug for low swr when the amp is transmitting and tuned properly.</li> </ol>
<b>AL-82</b> <b>AL-1200</b> <b>AL-1500</b>	Cut the green wire at the front of the band switch
<b>AL-800</b> <b>AL-800H</b>	<ol style="list-style-type: none"> <li>1. Remove power and coax.</li> <li>2. Place the amp with the back panel accessible</li> <li>3. Locate and remove the 4 screws on the cover marked INPUT TUNING.</li> <li>4. Locate and cut the green wire that is soldered to the PC board (Make sure the wire can not short against anything.)</li> <li>5. Reassemble the amp.</li> </ol>

OTHER



Cut Jumper

This BLOW-UP drawing is intended to help you locate the proper parts. The parts presented here are for reference only. Not all these parts may be present in your radio.

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# CB Radio Modifications

## CB Models

Robyn	Remove ALC control.
Royce	Remove ALC control.
Sanyo	Remove ALC control.
SBE	Remove ALC control.
Sears	Remove ALC control.
Siltronics	Remove ALC control.
Sharp	Remove ALC control.
Superstar	Remove ALC control.
Teaberry	Remove ALC control.
Tenna Phase	Remove ALC control.
Tram	Remove ALC control.
Truetone	Remove ALC control.
Uniden	Remove ALC control.
VTAC	Remove ALC control.
Vector	Remove ALC control.
Wards	Remove ALC control.
Whistler	Remove ALC control.
Xtal	Remove ALC control.
Zexon	Remove ALC control.

1998N  
6MQS

CB RADIOS

# CB Radio Modifications

## COBRA Amateur Radio

148GTL  
Truth Table

Expanded RF

CB - 3

CB - 4

## CB Models

Cobra	Remove ALC control
Realistic	Remove ALC control
Alaron	Remove ALC control
Audiovox	Remove ALC control
Browning	Remove ALC control
Clarion	Remove ALC control
Colt	Remove ALC control
Convoy	Remove ALC control
Courier	Remove ALC control
Craig	Remove ALC control
Dak	Remove ALC control
Fannon	Remove ALC control
Fuzzbuster	Remove ALC control
GE	Remove ALC control
Gemtronics	Remove ALC control
Hy-gain	Remove ALC control
JC Penny	Remove ALC control
Johnson	Remove ALC control
Kraco	Remove ALC control
Layfayette	Remove ALC control
Midland	Remove ALC control
Mopar	Remove ALC control
Pace	Remove ALC control
Palomar	Remove ALC control
Panasonic	Remove ALC control
Pearce Sim	Remove ALC control
President	Remove ALC control
Raider	Remove ALC control
Ranger	Remove ALC control
RCA	Remove ALC control
RCI	Remove ALC control
Regency	Remove ALC control

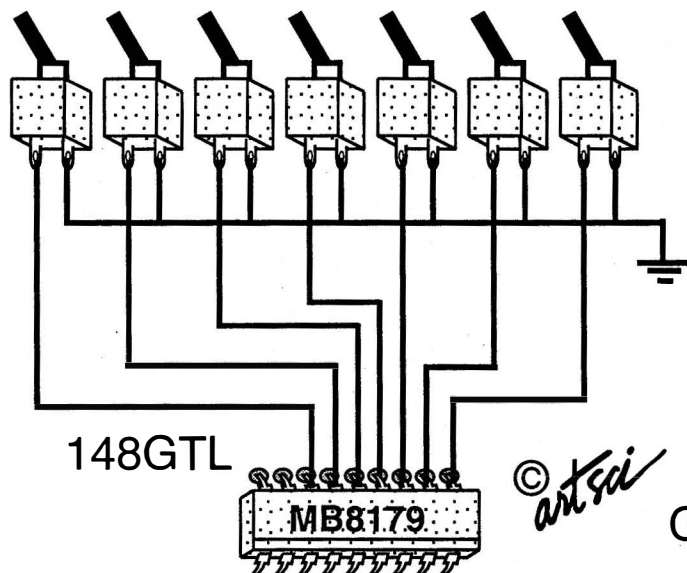
CB - 5

CB RADIOS

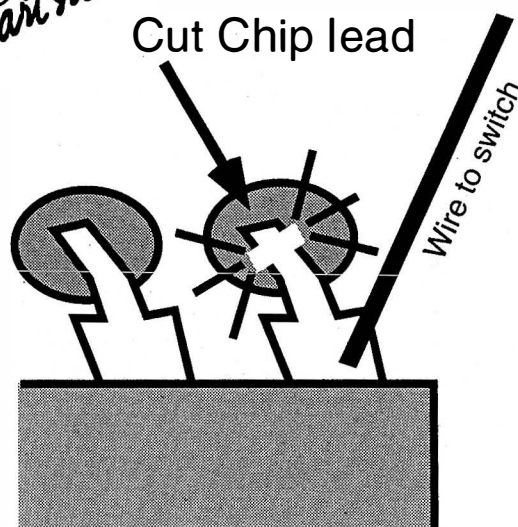
### Expanded RF Modification

Note: This mod requires seven toggle switches to control Frequency. See frequency chart on the next page.

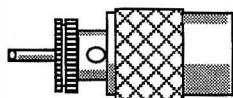
1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate Synthesizer chip labeled MB8719
4. Cut wires connecting channel switch and pins 10-16.
5. Solder an on/off switch to each pin (pin 10-16)
6. reassemble radio.



These seven switches take the place of the rotary channel knob.  
See switch setting chart on the next page



MORE ON NEXT PAGE



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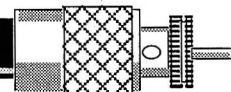


# Remove ALC Circuit (Higher TX Power)

Frequency	10	11	12	13	14	15	16	Frequency	10	11	12	13	14	15	16
26.815	=	1	0	0	0	0	0	27.455	=	0	0	0	0	0	0
26.825	=	1	0	0	0	0	0	27.465	=	0	0	0	0	0	0
26.835	=	1	0	0	0	0	1	27.475	=	0	0	0	0	0	1
26.845	=	1	0	0	0	0	1	27.485	=	0	0	0	0	0	1
26.855	=	1	0	0	0	1	0	27.495	=	0	0	0	0	1	0
26.865	=	1	0	0	0	1	0	27.505	=	0	0	0	0	1	0
26.875	=	1	0	0	0	1	1	27.515	=	0	0	0	0	1	1
26.885	=	1	0	0	0	1	1	27.525	=	0	0	0	0	1	1
26.895	=	1	0	0	1	0	0	27.535	=	0	0	0	1	0	0
26.905	=	1	0	0	1	0	0	27.545	=	0	0	0	1	0	0
26.915	=	1	0	0	1	0	1	27.555	=	0	0	0	1	0	1
26.925	=	1	0	0	1	0	1	27.565	=	0	0	0	1	0	1
26.935	=	1	0	0	1	1	0	27.575	=	0	0	0	1	1	0
26.945	=	1	0	0	1	1	0	27.585	=	0	0	0	1	1	0
26.955	=	1	0	0	1	1	1	27.595	=	0	0	0	1	1	0
26.965	=	1	0	0	1	1	1	27.605	=	0	0	0	1	1	1
26.975	=	1	0	1	0	0	0	27.615	=	0	0	1	0	0	0
26.985	=	1	0	1	0	0	0	27.625	=	0	0	1	0	0	0
26.995	=	1	0	1	0	0	1	27.635	=	0	0	1	0	0	1
27.005	=	1	0	1	0	0	1	27.645	=	0	0	1	0	0	1
27.015	=	1	0	1	0	1	0	27.655	=	0	0	1	0	1	0
27.025	=	1	0	1	0	1	0	27.665	=	0	0	1	0	1	0
27.035	=	1	0	1	0	1	1	27.675	=	0	0	1	0	1	0
27.045	=	1	0	1	0	1	1	27.685	=	0	0	1	0	1	1
27.055	=	1	0	1	1	0	0	27.695	=	0	0	1	1	0	0
27.065	=	1	0	1	1	0	0	27.705	=	0	0	1	1	0	0
27.075	=	1	0	1	1	0	1	27.715	=	0	0	1	1	0	1
27.085	=	1	0	1	1	0	1	27.725	=	0	0	1	1	0	1
27.095	=	1	0	1	1	1	0	27.735	=	0	0	1	1	1	0
27.105	=	1	0	1	1	1	0	27.745	=	0	0	1	1	1	0
27.115	=	1	0	1	1	1	1	27.755	=	0	0	1	1	1	0
27.125	=	1	0	1	1	1	1	27.765	=	0	0	1	1	1	1
27.135	=	1	1	0	0	0	0	27.775	=	0	1	0	0	0	0
27.145	=	1	1	0	0	0	0	27.785	=	0	1	0	0	0	0
27.155	=	1	1	0	0	0	1	27.795	=	0	1	0	0	0	1
27.165	=	1	1	0	0	0	1	27.805	=	0	1	0	0	0	1
27.175	=	1	1	0	0	1	0	27.815	=	0	1	0	0	1	0
27.185	=	1	1	0	0	1	0	27.825	=	0	1	0	0	1	0
27.195	=	1	1	0	0	1	1	27.835	=	0	1	0	0	1	0
27.205	=	1	1	0	0	1	1	27.845	=	0	1	0	0	1	1
27.215	=	1	1	0	1	0	0	27.855	=	0	1	0	1	0	0
27.225	=	1	1	0	1	0	0	27.865	=	0	1	0	1	0	0
27.235	=	1	1	0	1	0	1	27.875	=	0	1	0	1	0	1
27.245	=	1	1	0	1	0	1	27.885	=	0	1	0	1	0	1
27.255	=	1	1	0	1	1	0	27.895	=	0	1	0	1	1	0
27.265	=	1	1	0	1	1	0	27.905	=	0	1	0	1	1	0
27.275	=	1	1	0	1	1	1	27.915	=	0	1	0	1	1	0
27.285	=	1	1	0	1	1	1	27.925	=	0	1	0	1	1	1
27.295	=	1	1	1	0	0	0	27.935	=	0	1	1	0	0	0
27.305	=	1	1	1	0	0	0	27.945	=	0	1	1	0	0	1
27.315	=	1	1	1	0	0	1	27.955	=	0	1	1	0	0	1
27.325	=	1	1	1	0	0	1	27.965	=	0	1	1	0	0	1
27.335	=	1	1	1	0	1	0	27.975	=	0	1	1	0	1	0
27.345	=	1	1	1	0	1	0	27.985	=	0	1	1	0	1	0
27.355	=	1	1	1	0	1	1	27.995	=	0	1	1	0	1	0
27.365	=	1	1	1	0	1	1	28.005	=	0	1	1	0	1	1
27.375	=	1	1	1	1	0	0	28.015	=	0	1	1	1	0	0
27.385	=	1	1	1	1	0	0	28.025	=	0	1	1	1	0	0
27.395	=	1	1	1	1	0	1	28.035	=	0	1	1	1	0	1
27.405	=	1	1	1	1	0	1	28.045	=	0	1	1	1	0	1
27.415	=	1	1	1	1	1	0	28.055	=	0	1	1	1	1	0
27.425	=	1	1	1	1	1	0	28.065	=	0	1	1	1	1	0
27.435	=	1	1	1	1	1	1	28.075	=	0	1	1	1	1	0
27.445	=	1	1	1	1	1	1	28.085	=	0	1	1	1	1	1

TRUTH TABLE FOR MB8719 IC

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# Remove ALC Circuit (Higher TX Power)

## COBRA CB's REMOVE ALC CIRCUIT (Higher TX power)

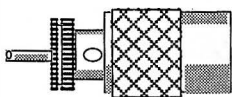
1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the indicated part and remove it.
4. Reassemble radio.

### MODEL

### REMOVE THIS PART

18-LTD  
19 PLUS  
20 PLUS  
21 PLUS  
21 GTL  
21 LTD  
21 XLR  
25 GTL  
25 PLUS  
27  
29 GTL  
29 PLUS  
31 PLUS  
32 XLR  
33 PLUS  
40 PLUS  
78 X  
85  
86 XLR  
87 GTL  
89 GTL  
89 XLR  
132 XLR  
135 XLR  
138 XLR  
139 XLR  
140 GTL  
142 GTL  
148 DX  
148 GTL  
150 GTL  
1000 GTL  
2000 GTL  
REMOTE CONTROL

R-87  
D-502  
VR-502  
D-20  
TR-14  
TR-14 OR D9  
TR-20  
TR-14  
D-20  
X8  
D-20  
R-79 OR D-20  
D-19  
TR-18  
D-17  
VR-104  
C-49  
D-9  
CD-9  
VR-6  
VR-6  
VR-5  
R-134 = AM R-130 = SSB'  
R-134 = AM R-130 = SSB'  
TR-23  
R-132  
TR-32  
TR-32  
VR-14=AM & VR-12=SSB  
TR-24  
RV-14=AM & RV-4=SSB  
VR-6  
TR-24 & C-232  
D-401



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# Remove ALC Circuit (Higher TX Power)

## REALISTIC CB's

### REMOVE ALC CIRCUIT (Higher TX power)

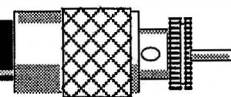
1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the indicated part and remove it.
4. Reassemble radio.

#### MODEL

#### REMOVE THIS PART

TRC-417	Q-19
TRC-421	D-16
TRC-422	Q-11
TRC-432	Q-12
TRC-440	D-107
TRC-448	VR-5=AM & VR-204=SSB
TRC-449	VR-7=AM & CT-7=SSB
TRC-452	VR-207
TRC-454	VR-702
TRC-455	R-504
TRC-457	VR-7=AM & CT-7=SSB
TRC-461	VR-2
TRC-462	D-17
TRC-467	D-109
TRC-468	R-42
TRC-469	VR-5
TRC-473	D-17
TRC-410	Q-12
TRC-413	R-85
TRC-415	Q-7
TRC-427	C-78
TRC-428	R-90
TRC-433	Q-15
TRC-451	VR-5=AM & VR-6=SSB
TRC-453	R-146
21-1537	D-17

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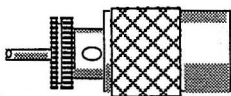
# Remove ALC Circuit (Higher TX Power)

## OTHER CB's

### REMOVE ALC CIRCUIT (Higher TX power)

1. Remove Power and Antenna.
2. Remove screws and open the case.
3. Locate the indicated part and remove it.
4. Reassemble the radio.

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
ALARON	B4900	Q-201
AUDIOVOX	WINSOR 100	D-12 D-12
	CB-930	RV-2
	CB-950	D-39
	CBH-990	RV-2
	CBR-9600	RV-105
BROWNING	BARON	R-134=AM & R-130=SSB
	BROWNIE	Q-13
	MARK III	R-38=AM & R-69=SSB
	SABRE	CD-11
	SST-2	CD-11
CLARICON	PRIVATEER	CR-107



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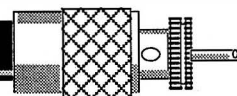


# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
COLT	190	R-71
	222	C-228
	290	RV-2
	320 DX	RV-14=AM & RV-4=SSB
	320 FM	RV-14=AM & RV-4=SSB
	350	R-121
	390	RV-2
	480	RV-12=AM & RV-11=SSB
	485	RV-12=AM & RV-11=SSB
	800	RV-2
	1000	RV-12=AM & RV-11=SSB
	1200 DX	RV-14=AM & RV-4=SSB
CONVOY	CON-400	R-129
COURIER	BLAZER 40D	VR-9
	CARAVELLE 40D	R-504
	CENTURIAN 40	D-24
	CENTURION 40D	D-46
	CHIEF 23	X-8
	CONQUEROR	R-504
	GLADIATOR	D-46
	NIGHT RIDER 40	VR-301
	RANGLER 40	VR-301
	RENEGADE 40	VR-9
CRAIG	ROGUE 40	VR-5
CRAIG	L101	R-226
	L-321	R-605=AM & R-20=SSB

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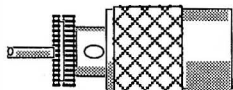


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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
DAK	IX	Q-202
	X	Q-37 & Q-38
FANNON	12SF	R-76
	190 DF	VR-301
	182F	D-12
	184DF	D-12
	185DF	VR-301
	185PLL	VR-301
	SFT 400	D-10
FUZZBUSTER	2-50	Q-8
GE	3-5801A	VR-7
	3-5804A	VR-7
	3-5804D	RV-2
	3-5810B	RV-2
	3-5811B	RV-2
	3-5812A	RV-2
	3-5813A	RV-2
	3-5813B	RV-2
	3-5814A	C-98
	3-5814B	RV-2
	3-5818A	RV-2
	3-5819A	RV-2
	3-5821A	VR-10
	3-5821B	VR-10
	3-5869A	RV-2
	3-5871A	VR-11
	3-5871B	VR-11
	3-5875A	RV-9=AM & VR-201=SSB



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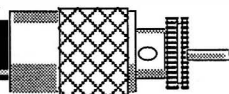
*artsci*

# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
GEMTRONICS	GTX-44	RV-2
	GTX-55	RV-2
	GTX-66	RV-2
	GTX-77	RV-2
	3000-GTX	R-93
	4040	D-481
	5000-GTX	VR-4
HY-GAIN	672 B	RV-2
	674 B	VR-7
	2679 I	RV-2
	2680 II	RV-2
	2681 II	RV-2
	2682 II	RV-2
	2683 III	RV-2
	2701 I	RV-2
	2702 II	RV-2
	2703 III	RV-2
	2795	RV-14=AM & RV-4=SSB
	2795 DX	RV-14=AM & RV-4=SSB
	V SSB	VR-7
JC PENNY	981-6221	D-501
	981-6237	D-7
	681-6241	Q-405
	6218	RV-2

## Radio/Tech Modifications Volume B



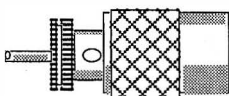
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
JOHNSON	4120	CR-12
	4125	CR-12
	4135	CR-12
	4140	R-37
	4145	R-37
	4230	R-37
KRACO	KCB-4000	VR-4
	KCB-4010	RV-2
	KCB-4020	RV-2
	KCB-4030	RV-2
	KCB-4045	RV-2
LAFAYETTE	HB-650	RV-102
	HB-750	RV-102
	HB-870	RV-14=AM & RV-4=SSB
	HB-940	RV-2
	SSB-100	RV-7=AM & RV-8=SSB
	SSB-140	RV-12=AM & RV-11=SSB
	TELSTAT 1140	RV-2
	TELSTAT 1240	VR-305



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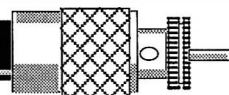


# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
MIDLAND	76-858	RV-2
	76-860	R-218
	76-863	RV-2
	77-101B	RV-201
	77-101C	RV-201
	77-116	RV-2
	77-821	RV-2
	77-824	RV-201
	77-825	D-3
	77-830	RV-2
	77-838	RV-2
	77-849	RV-2
	77-856	VR-5
	77-857	RV-2
	77-861	D-2
	77-866	TR-8
	77-867	D-14
	77-874	X-11
	77-882	Q-15
	77-883	X-11
	77-888	RV-2
	77-889	RV-2
	77-963	RV-2
	79-892	RV-12=AM & RV-11=SSB
	79-893	RT-601=AM & RV-7=SSB
MOPAR	4094177	RV-2
	4094178	RV-2

## Radio/Tech Modifications Volume B



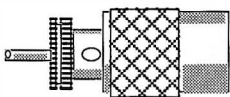
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
PACE	CB-145	CV-20
	CB-166	R-207
	1000-MS	CR-508
	2300	X-9
	CB-8008	R-218
	CB-8010	R-220
	CB-8015	R-220
	CB-8041	R-302
	CB-8046	R-302
	CB-8117	R-220
	CB-8117	R-220
PALOMAR	49	R-208
	SSB-500	RV-12=AM & RV-2=SSB
	4100	RV-2
PANASONIC	RJ-3150	R-117
	RJ-3250	R-70
PEARCE SIMPSON	JAGUAR	FVR-3
	LION	RV-2
	SUPER LYNX	D-12
	TIGER	RV-2



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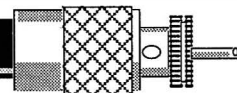
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
PRESIDENT	ADAMS (OLD)	VR-7=AM & CT-7=SSB
	ADAMS (NEW)	TR-24
	AR-7	R-54
	AX-43	Q-12
	DWIGHT D	VR-6
	GRANT (OLD)	VR-7=AM & CT-7=SSB
	GRANT (NEW)	R-128=AM & VR-11=SSB
	HONEST ABE	VR-5
	JOHN Q	RT-4
	MADISON (OLD)	VR-7=AB & CT-7=SSB
	MADISON (NEW)	R-128
	MCKINLEY	R-120
	OLD HICKORY	VR-5
	TEDDY R	VR-5
	THOMAS J	VR-4
	WASHINGTON (OLD)	VR-7=AM & CT-7=SSB
	WASHINGTON (NEW)	TR-32
	ZACHARY T	VR-6
RAIDER	404-R	D-52
RANGER	AR-3300	VR-17=AM & VR-15=SSB
	AR-3500	VR-17=AM & VR-15=SSB
RCA	14T260	RV-2
	14T270	RV-2
	14T301	RV-2
	14T302	D-301
	14T303	RV-2
	14T304	RV-2
	14T305	RV-2

## Radio/Tech Modifications Volume B



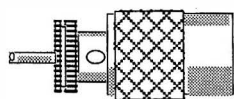
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
RCI	2900	VR-14=AM & VR-12=SSB
	2950	VR-14=AM & VR-12=SSB
REGENCY	CR-186	D-9
ROBYN	AM-500D	VR-5
	DG-130D	VR-6
	GT-410	VR-13
	LB-120	VR-6
	SX-401	RV-7
	SX-402D	VR-13
	T240D	VR-4
	WV-110	VR-6
	007-140	VR-6
	123-C	D-11
	510-D	VR-7=AM & CT-7=SSB



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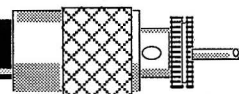


# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
ROYCE	1-602	D-6
	1-603	Q-205
	1-606	D-17
	1-607	VR-201
	1-609	Q-205
	1-610	D-202
	1-619	D-301
	1-620	D-301
	1-621	VR-3
	1-625	VR-1602
	1-630	C-79 & D-42 & D-44
	1-639	Q-16
	1-641	VR-7
	1-648	C-82 & C-35 & C-96
	1-653D	D-301
	1-655	D-301
	1-658	D-301
	1-662	D-301
	1-673	D-301
	1-675	D-301
	1-680	D-301
	1-682	D-301
SANYO	TA-2000	D-505
	TA-4000	VR-6

## Radio/Tech Modifications Volume B



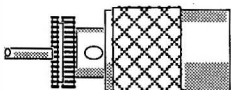
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
SBE	ASPEN-41	VR-203
	CONSOLE II	VR-7=AM & VR-1=SSB
	CONSOLE V	VR-803=AM & VR-302=SSB
	CORTEX	VR-203
	FORMULA D	VR-9
	KEYCOM 54	RV-1
	LCB-8	VR-6
	LCMS-5	VR-6
	MALIBU 44	R-226
	TAHOE 49	R-129
	TOUCH COM 174	VR-4
	TRINIDAD 45	R-226
SEARS	370.380507	R-218
	934.36710501	D-6
	934.380607	D-7
	934.380627	R-42
	934.380807	D-7
	934.380817	D-501
	934.381107	D-501
	934.381207	D-502
SILTRONICS	APACHE	D-14
	MOHAWK	D-14
SHARP	CB-750	R-112
	CB-2260	R-112



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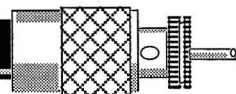
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
SUPERSTAR	1 2 0 360 FM 3 6 0 0	D-11 VR-14=AM & VR-12=SSB VR-14=AM & VR-12=SSB
TEABERRY	RACER T STALKER I STALKER II STALKER V STALKER IX T BEAR T CHARLIE T COMMAND TITAN T T CONTROL	VR-6 VR-13=AM & VR-12=SSB VR-13=AM & VR-12=SSB VR-4 R-102 VR-5 VR-7 VR-5 D-14 VR-505
TENNA PHASE	CB-22 CB-26	R-46 D-22
TRAM	D-12 D-42 D-60 D-201A D-300	R-61 CD-11 R-98=AM & R-112 SSB VR-77 TR-23
TRUETONE	CYJ4862A-87 8334	RV-2 Q-15

## Radio/Tech Modifications Volume B



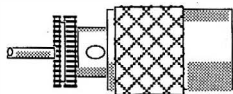
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# Remove ALC Circuit (Higher TX Power)

## OTHER CB's CONTINUED

<u>COMPANY</u>	<u>MODEL</u>	<u>REMOVE THIS PART</u>
UNIDEN	2510	VR-112=AM & VR-104=SSB
	2600	VR-112=AM & VR-104=SSB
	PC-3	TR-14
	PRO-640	RV-5=AM & VR-6=SSB
	PC-122	Q-29 (near PL connector)
UTAC	TRX-400	D-11
VECTOR	770	FVR-3
	790	FVR-3
WARDS	GEN-730A	VR-206
	GEN-775A	VR-206
	GEN-828A	VR-206
WHISTLER	700	Q-205
	900	Q-305
XTAL	CB-7	D-18
	CB-11	D-14
	SSB-10	D-2
ZEXON	49	Q-201



## Radio/Tech Modifications Volume B

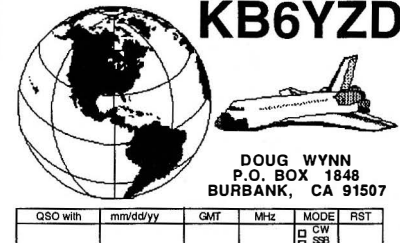
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# #	Frequency	Offset	PL	Label	Description
1					
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# QSL Card Order Form

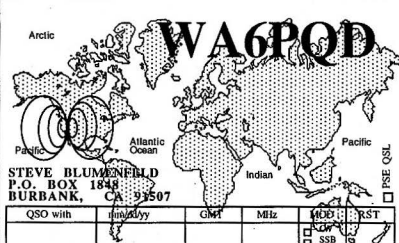


**KB6YZD**

DOUG WYNN  
P.O. BOX 1848  
BURBANK, CA 91507

QSO with	mm/dd/yy	GMT	MHz	MODE	RST
				<input type="checkbox"/> CW <input type="checkbox"/> SSB	

Globe & Shuttle

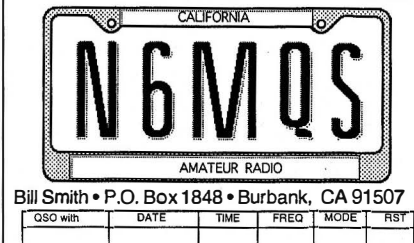


**WA6PQD**

STEVE BLUMENFELD  
P.O. BOX 1848  
BURBANK, CA 91507

QSO with	mm/dd/yy	GMT	MHz	MODE	RST
				<input type="checkbox"/> CW <input type="checkbox"/> SSB	

World Map



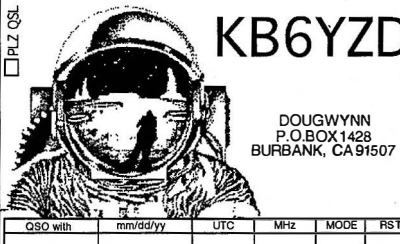
**N6MQS**

AMATEUR RADIO

Bill Smith • P.O. Box 1848 • Burbank, CA 91507

QSO with	DATE	TIME	FREQ	MODE	RST

License Plate




**KB6YZD**

DOUG WYNN  
P.O. BOX 1428  
BURBANK, CA 91507

QSO with	mm/dd/yy	UTC	MHz	MODE	RST

Astronaut

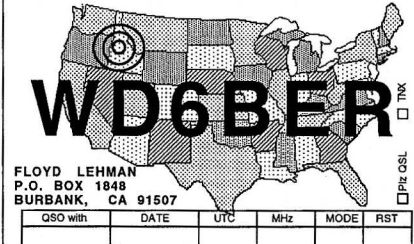


**KB6SMS**

ARNOLD BRATTON  
P.O. BOX 1848  
BURBANK, CA 91507

QSO with	DATE	TIME	FREQ	MODE	RST

U.S. Map Ham Zones

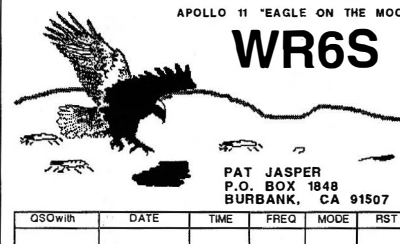


**WD6BER**

FLOYD LEHMAN  
P.O. BOX 1848  
BURBANK, CA 91507

QSO with	DATE	UTC	MHz	MODE	RST

U.S. Map Patchwork

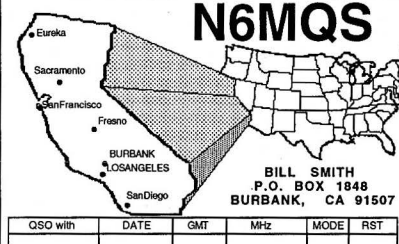


**WR6S**

PAT JASPER  
P.O. BOX 1848  
BURBANK, CA 91507

QSO with	DATE	TIME	FREQ	MODE	RST

Eagle on the moon

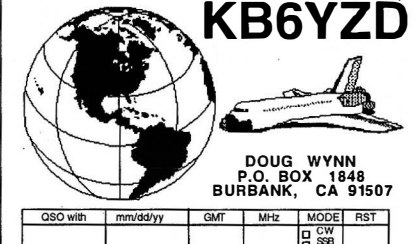


**N6MQS**

BILL SMITH  
P.O. BOX 1848  
BURBANK, CA 91507

QSO with	DATE	GMT	MHz	MODE	RST

California/U.S. (CAL ONLY)



**KB6YZD**

DOUG WYNN  
P.O. BOX 1848  
BURBANK, CA 91507

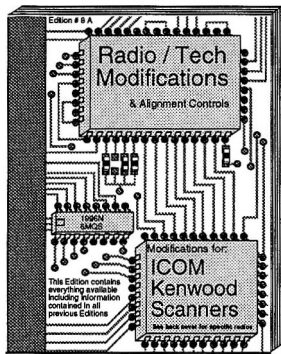
QSO with	mm/dd/yy	GMT	MHz	MODE	RST
				<input type="checkbox"/> CW <input type="checkbox"/> SSB	

Globe & Shuttle

QSL CARD ORDER FORM

Call Sign _____ or "SWL" Name _____ Address _____ City, State Zip _____ Phone # (____) _____-_____  <input type="checkbox"/> Put Phone # on QSL Card <input type="checkbox"/> Put Phone # on Eyeball (small) Card	<b>QSL ORDER FORM</b> QSL Card Style (Choose one ) <input type="checkbox"/> U.S. Map Patchwork <input type="checkbox"/> U.S. Map Ham Zones <input type="checkbox"/> World Map dots <input type="checkbox"/> World Map <input type="checkbox"/> California/U.S. <input type="checkbox"/> License Plate <input type="checkbox"/> Astronaut <input type="checkbox"/> Eagle on the moon <input type="checkbox"/> Globe & Shuttle												
• All QSL cards are printed on five colors of card stock. This gives you 20 cards in each color. • Delivery will be about 3-4 weeks. • SELECT desired QSL style. • Mail the form and Payment to the address below. 73s  ***** Order on the Internet ***** <a href="http://www.artscipub.com/kamko.html">http://www.artscipub.com/kamko.html</a>	<table border="0"> <tr> <td><input type="checkbox"/> First 100</td> <td>\$ 9.95</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Additional 100's</td> <td>\$ 6.95</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> 100 Business card size</td> <td>\$ 8.95</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Package of QSL Holders</td> <td>\$ 6.99</td> <td>_____</td> </tr> </table> Mail this form and payment to: <b>Kamko (818) 843-4080</b> <b>P.O. Box 1428</b> <b>Burbank, CA 91507</b>	<input type="checkbox"/> First 100	\$ 9.95	_____	<input type="checkbox"/> Additional 100's	\$ 6.95	_____	<input type="checkbox"/> 100 Business card size	\$ 8.95	_____	<input type="checkbox"/> Package of QSL Holders	\$ 6.99	_____
<input type="checkbox"/> First 100	\$ 9.95	_____											
<input type="checkbox"/> Additional 100's	\$ 6.95	_____											
<input type="checkbox"/> 100 Business card size	\$ 8.95	_____											
<input type="checkbox"/> Package of QSL Holders	\$ 6.99	_____											
	Total _____ TAX 8.25% _____ Shipping \$ 4.00 _____ Total Due _____												

## RADIO/TECH MODIFICATIONS



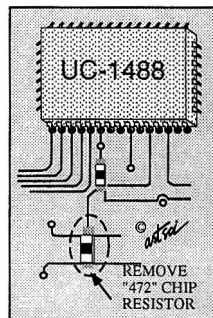
If you have even wondered how to enhance your Amateur radio, scanner or CB, then here's a book for you. Detailed picture drawings and step by step instructions will guide you through the modifications.

Modifications include extended transmit and receive frequency coverage, cross band (repeater)

operation and increased memory channels (different radios have different modification features). Alignment control drawings are presented with most modifications.

Some modifications are very simple to perform, others require experience with soldering and unsoldering. If additional parts are required, the part number and source is given.

This two volume set contains every modification known. There is no need to purchase older volumes, every new volume contains all the old modifications along with data on the new radios.



**Volume \_A** contains over 200 pages packed full of information about **KENWOOD** and **ICOM** radios and **Uniden/Bearcat**, **Radio Shack** and **AOR** Scanners.

\$ 19.95

**Volume \_B** contains over 200 pages packed full of information about **ALINCO** and **YAESU** radios and **STANDARD**, **AZDEN** and **10 METER & CB's**.

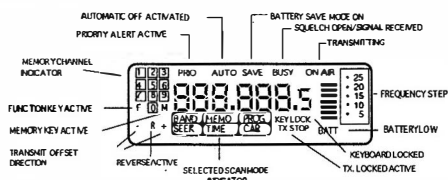
\$ 19.95

## LOST USER MANUALS

Lost the manual for your HT or Mobile rig? Did you purchase a used radio and it did not come with a manual? Do you have the manual but still can't work the radio quickly?

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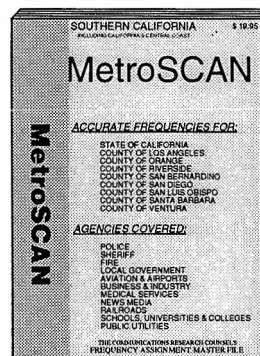
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ALR-22  
DJ-100  
DJ-120  
DJ-160  
DJ-162  
DJ-180  
DJ-190  
DJ-191  
DJ-460  
DJ-500  
DJ-560  
DJ-580  
DJ-582  
DJ-C1  
DJ-C4  
DJ-F1T  
DJ-G1T  
DJ-G5T  
DJ-S11T  
DJ-S41T  
DR-110T  
DR-112T  
DR-119T  
DR-130  
DR-140  
DR-150  
DR-430  
DR-510  
DR-570  
DR-590  
DR-592  
DR-599  
DR-600  
DR-605  
DR-610  
DR-1200  
DR-M06  
DX-70  
DX-77  
EDX-2  
PACKET

## STANDARD

C-108A  
C-156  
C-158  
C-168A  
C-168S  
C-178  
C-188  
C-228  
C-288  
C-468A  
C-468S  
C-488  
C-508  
C-510  
C-528  
C-558  
C-568  
C-628  
C-1208  
C-5608  
C-5718  
C-5900  
PACKET

## CB radios

Cobra	President
Realistic	Raider
Alaron	Ranger
Audiovox	RCA
Browning	RCI
Clarion	Regency
Colt	Robyn
Convoy	Royce
Courier	Sanyo
Craig	SBE
Dak	Sears
Fannon	Siltronics
Fuzzbuster	Sharp
G-E	Superstar
Gemtronics	Teaberry
Hy-gain	Tenna Phase
JC Penny	Tram
Johnson	Truetone
Kraco	Uniden
Lafayette	VTAC
Midland	Vector
Mopar	Wards
Pace	Whistler
Palomar	Xtal
Panasonic	Zexon
Pearce Sim	

## OTHER

### ADI

AR-146  
AT-18  
AT-200  
AT-201  
AT-400  
AT-600

### AZDEN

AZ-21  
AZ-61  
PSC-6000  
PSC-7000  
PSC-7500

### KDK

KDK-240  
KDK-2033

### MIDLAND

73-030

### TANDY

HTX-100

### RANGER

AR-3300  
AR-3500

### RCI

RCI-2950  
RCI-2970

### SENDER

TR-450

### TEN TEC

PARAGON

### UNIDEN

HR-2500  
HR-2520  
HR-2600

### HEATH

H-2 Mini HT  
H4-HT  
HW-24  
HW24HT  
SB-1400

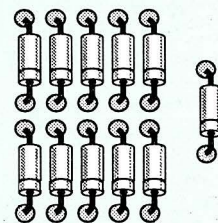
### AMERITRON

AL-80/A/B  
AL-82  
AL-572  
AL-800/H  
AL-811/H  
AL-1200  
AL-1500

## YAESU

FT-10	FT-767
FT-11	FT-811
FT-23	FT-815
FT-26	FT-816
FT-33	FT-840
FT-40	FT-847
FT-41	FT-890
FT-50	FT-900
FT-51	FT-990
FT-73	FT-1000
FT-76	FT-2070
FT-209	FT-2200
FT-211	FT-2311
FT-212	FT-2400
FT-227	FT-2500
FT-290	FT-3000
FT-311	FT-4700
FT-411	FT-5100
FT-415	FT-5200
FT-416	FT-6200
FT-470	FT-7400
FT-530	FT-8000
FT-650	FT-8100
FT-709	FT-8500
FT-711	FT-VX1
FT-712	FL-7000
FT-727	NC-29
FT-736	NC-42
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FT-757	Reset Codes
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