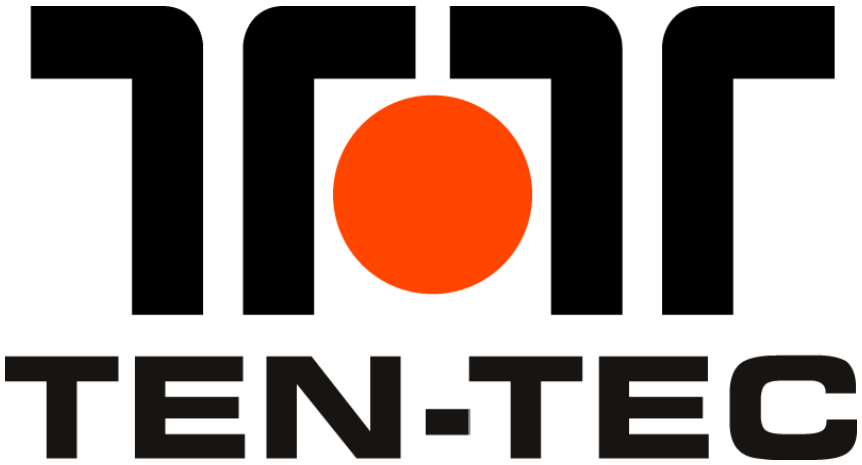

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Service department direct line: (865) 428-0364
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Service department email: service@tentec.com
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We have found it is most effective for us to help you troubleshoot or repair equipment with a consultation via telephone rather than by email.

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Other inquiries – call (865) 428-0364 or email service@tentec.com

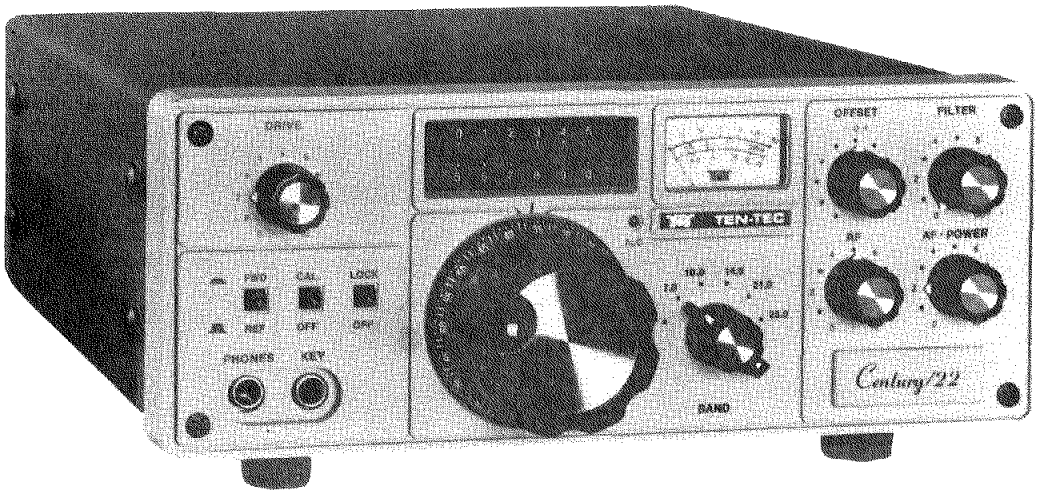
THANK YOU AND 73 FROM ALL OF US AT TEN-TEC

TEN-TEC

OWNER'S MANUAL

Century/22

CONTENTS



FRONT PANEL CONTROLS

INITIAL CONTROL SETTINGS

1.) Select desired band with BAND switch.

2.) Set DRIVE control fully counter-clockwise.

3.) Apply power by actuating push-pull AF-POWER on/off switch to 'in' position. If using TEN-TEC power supply, make sure that its power switch is in the 'on' position. Pilot lamp and red LED dial indicator should illuminate.

4.) Tune dial to desired frequency within the selected band.

5.) Push LOCK button in and advance DRIVE until power meter indicates 20 watts output power when FWD/REF push button is in the FWD (in) position.

6.) Reset LOCK button to OFF (out) position. Transceiver is now ready for operation.

SPECIFICATIONS

GENERAL

FREQUENCY COVERAGE - 3.5 to 4.0; 7.0 to 7.5; 10.0 to 10.5; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5 MHz. (VFO provides approximately 40 kHz overrun on each band edge.)

STABILITY - Less than 20 Hz change per degree F from 70 to 110 F after 30 minute warm-up.

TUNING RATE - Approximately 17 kHz per revolution.

POWER REQUIREMENTS - 12 to 14 VDC. 5 amperes maximum transmit @ 13.5 VDC, 500 mA receive.

FREQUENCY TOLERANCE - ± 5 kHz of dial reading. (± 2 kHz when using optional calibrator.)

ANTENNA IMPEDANCE - Unbalanced (coaxial), 50-75 ohms.

RECEIVER SENSITIVITY - 0.5 uV for 10 dB S+N/N, typical.

RECEIVER SELECTIVITY - 4 pole variable band pass audio filter. 750 Hz center frequency, 200 Hz bandwidth, variable skirt attenuation.

RECEIVER OFFSET - Adjustable ± 2 kHz, zero offset at center detent.

AUDIO OUTPUT - 1 watt, less than 2% THD.

TRANSMITTER INPUT POWER - 50 watts maximum.

RF OUTPUT - 20 watts all bands for SWR less than 2:1, ALC limited.

SEMICONDUCTORS - 28 transistors, 24 diodes, 7 integrated circuits.

CONSTRUCTION - Rigid metal chassis. Molded front panel. Aluminum back, top and bottom. Stainless steel tilt-up bail.

DIMENSIONS HWD - 4"x10"x10.5" (10.2 x 25.4 x 26.7 cm).

WEIGHT - 6 lbs (2.7 kg).

FRONT PANEL CONTROLS

Receiver RF gain; receiver AF-POWER; OFFSET; receiver audio FILTER; BAND switch; main tuning; transmitter DRIVE; FWD/REF power push button switch; CAL./OFF push button switch for optional calibrator; LOCK/OFF push button switch; PHONES jack; KEY jack; ALC LED indicator.

REAR PANEL CONNECTIONS

ANTENNA jack; POWER INPUT socket; KEY jack; two AUX 12 VDC jacks; 7.5 A FUSE; GND post.

SECTION II

DETAILED OPERATING INSTRUCTIONS

INSTALLATION

GENERAL

Choose an operating location that is cool and dry. Allow adequate ventilation around the transceiver chassis and power supply heat sink. Natural convection cooling is all that is required. During mobile operation, free access to cool air should be available to the chassis also. Do not direct the outlet vent of the automobile's heater directly at the Century/22.

STATION INTERCONNECTIONS

POWER REQUIREMENTS

A supply of 12 to 14 volts dc, capable of supplying 5 amperes, negative ground, is required. Voltage regulation of 10% or better between no load and full load is required for distortion-free and properly keyed transmissions. (e.g. A 13 volt no load supply should not go below 11.7 volts at 5 amperes.) Century/22 may be operated directly from an automobile type storage battery in fixed or mobile locations, provided that voltage under full load does not go below 11 volts. It is permissible to connect a slow charger across the battery to maintain full charge. However if the charger is connected across a discharged battery during transceiver operation, some unfiltered ac ripple from the charger may cause amplitude modulation of the transmitted note at line frequency. It is recommended that the charger be disconnected under these conditions, or that the battery be given time to charge somewhat before operation. In all cases of battery operation or from a supply that does not limit output current to approximately 5 amperes, Model 1179 Circuit Breaker should be used in series with the +12 volt input lead to provide over-current protection.

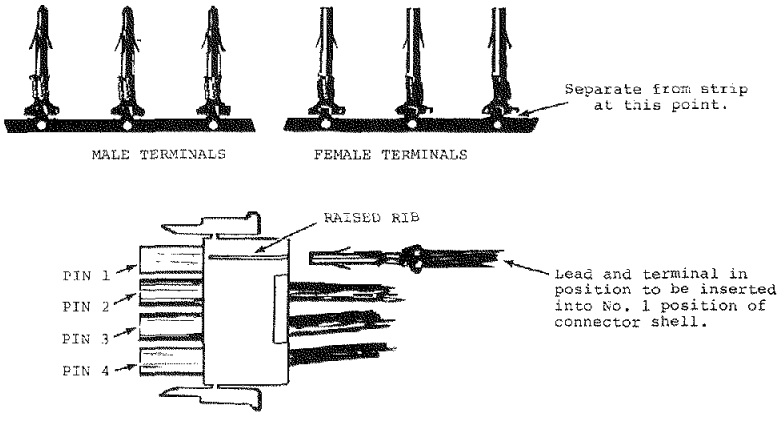
For 115 or 230 volt ac operation, a well regulated supply is required. TEN-TEC Model 979 supply is especially designed for Century/22 operation, although other TEN-TEC supplies may be used if Model 1179 is also used.

POWER CONNECTIONS

Power is supplied to the transceiver by means of the four pin AMP MATE-N-LOC connector. The chassis connector is of the male type and mates directly with the cable connector supplied and attached to all TEN-TEC supplies. It is only necessary to insert cable connector into the chassis receptacle when using Model 979.

When used with TEN-TEC supplies, the front panel POWER switch on the supply must be in the 'on' position. Transceiver power will then be controlled by the AF-POWER switch on the Century/22 front panel.

When using a dc source other than a TEN-TEC supply, it will be necessary to construct a power cable using the accessory AMP connector supplied with the transceiver. Wires for this cable should be at least #16, and #14 if the power lead is more than a few feet long. Pin connections (see AMP MATE-N-LOC detail drawing) are as follows: Pin 1 = GND; Pin 4 = + Voltage. Pins 2 and 3 need not be connected. They are shorted together in the Century/22 so that TEN-TEC power supplies will be controllable from their power switches.



AMP MATE-N-LOC Connector Detail

AMP Universal MATE-N-LOC Connector - This connector is intended for high production with automatic staking of the wire to the pin terminals. However, it can be assembled in the field without staking machinery by crimping and soldering the leads to the terminals and then inserting the terminals into the plastic shell. To do this, refer to the detail drawing below and proceed as follows:

1. The terminals are supplied connected to a strip of flat metal. Break the individual connectors from the strip by bending back and forth at the point of narrow attachment, or by clipping them off with diagonals.

2. Wire sizes that can be accomodated range between 12 and 18 gauge. Strip insulation 1/4" back from end.

3. Insert stripped end into barrel far enough so that insulation just starts between large thin and small wide tabs.

4. With long nose pliers, roll over small wide tabs so that they hold bare wire.

5. Solder leads to rolled tabs by applying iron tip to top of rolled tabs while feeding rosin core solder between wire and tabs. Do not allow solder to run down into hollow tube.

6. After terminals are well soldered, roll large thin tabs down over insulation and crimp with pliers.

7. Insert terminals into plastic shell from solid plastic end so that they finally locate in individual tubes. The terminals will automatically lock into place when inserted to the proper depth. MAKE ABSOLUTELY CERTAIN THAT TERMINALS ARE INSERTED INTO CORRECT HOLES SINCE REMOVAL IS DIFFICULT.

To remove terminals, an extractor is necessary to collapse the lanced holding tabs on the sides of each barrel. The extractor can be a metal tube, at least one half inch long, with an outside diameter between 0.125" and 0.135" and an inside diameter of 0.100". Insert the extractor tube into the pin end of the shell, over the terminal to be removed, to a depth of about 1/2". Pull on the wire and extract terminal.

Additional connector kits are available from TEN-TEC at $1.00 each, with a minimum order of $2.00. When ordering, ask for AMP 4 pin MATE-N-LOC cable connector and specify male or female terminals.

ANTENNA CONNECTIONS

Any unbalanced antenna presenting 33 to 75 ohms impedance to the unit will work satisfactorily. This represents a SWR of 1.5 to 1 or less. When using random length antennas or open wire feed systems, a matching network such as the TEN-TEC Model 227 or 228 Antenna Tuners, should be used to obtain an equivalent impedance. If an antenna tuner is used, locate it as far as is practical from the immediate transceiver location. Do not place tuner on top of transceiver or close to key or other cables going to the transceiver or associated accessories.

A type PL-259 coaxial connector is required to connect the antenna to the Century/22. The center conductor is connected to the pin and the shield braid to the shell of the connector.

An unbalanced antenna is one which has a feed point with one of the two terminals at ground potential. The transmission cable in this case is usually of the coaxial type, with the outer shield connected to the ground potential terminal or shell of the connector. Balanced antennas have both feed terminals above ground potential. These can be converted into an unbalanced feed configuration by either inserting a balun between the feed point and the transceiver (at antenna, transceiver or anywhere in transmission line), or with an antenna tuner designed to accept balanced loads and unbalanced inputs. Further information on this subject is available from the many antenna handbooks.

GROUND CONNECTIONS

To reduce possibility of stray pickup on interconnecting cables, and provide a measure of safety to the operator from possible shock in ac powered systems, all station equipment chassis should be strapped together and grounded to earth. This is especially important when using high impedance antennas and matching networks, where rf voltage levels are necessarily high. It is also important to strap all equipment chassis together with short heavy leads, preferably with braid. This procedure brings all metal components that are accessible to touching to the same potential, removing the possibility of shock when touching more than one piece of equipment. In mobile installations, connect a ground strap between the rear panel GND post and the automobile chassis (dash board if metal). Earth ground leads should be of heavy wire or braid and as short and direct as possible. (A ground lead that is one quarter wavelength long at the operating frequency will not bring the chassis to ground potential at this frequency, even though it will to dc and other frequencies.)

KEY

The key activates a series of circuits that supply operating voltages to various transmitter and receiver circuits. When the key is closed, the receiver is disabled and operating bias is applied to the transmitter. At the same time the antenna is electrically isolated from the receiver input. There is a short time delay in the audio muting circuit to eliminate clicks in the speaker when keying. It is not long enough to interfere with the full break-in feature of the unit.

For proper operation, the key line requires a very low resistance path to chassis, with no appreciable voltage across it. Hence, electronic keyers with reed relays or transistor switched circuits incorporating low saturation NPN transistors are recommended. Series diodes in the key line will inhibit proper keying. Improper key line conditions may cause lower than rated output power, improper keying envelope and/or key clicks. TEN-TEC Models 645 and 670 Keyers are designed for use with the Century/22.

A parallel KEY jack is located on the front panel.

The sidetone oscillator is also controlled by the key line. Its pitch and volume can be adjusted through the two small access holes in the left side of the bottom cover. The controls are printed circuit potentiometers that require a small bladed screw driver for adjustment. Volume is independent of the AF control setting.

AUX 12 VDC

These two jacks may be used to power external equipment such as an electronic keyer. They are connected to the +12 volt supply line in the unit and are switched and fused by the Century/22. Any appreciable power drawn from these jacks may cause the fuse to blow or the Model 1179 to trip before full power is realized from the transmitter. Therefore, these jacks should not be be used to power equipment that draws more than about two amperes. TEN-TEC keyers only require a fraction of an ampere.

OPERATION

FRONT PANEL CONTROLS AND THEIR FUNCTIONS

Power On/Off Switch

The power switch is located on the AF-POWER control. It is a pushbutton type that controls the +12 volts applied to the Century/22 and the two AUX 12 VDC jacks on the rear panel. Voltage is applied when the switch knob is pushed 'in'. If a TEN-TEC power supply is used, this switch cannot be used to recycle the automatic shutdown feature of the supply when overloaded. The switch on the power supply must be recycled in this instance.

Frequency Determining Controls

BAND Switch - The six position BAND switch selects the desired 500 kHz segment of the Amateur bands starting at 3.5, 7.0, 10.0, 14.0, 21.0 or 28.0 MHz. There is an overrun of the VFO range resulting in an extension on each end of the 500 kHz range of approximately 40 kHz. Operation in these guard bands is possible with the Century/22 (MARS stations for example).

Main Tuning and Slide Rule Dial - The main tuning knob simultaneously adjusts both receiver and transmitter frequency. The dial skirt is marked in 1 kHz increments up to 100 kHz. This scale is used in determining the frequency of operation within the 100 kHz segment noted on the slide rule LED dial. The lower scale is used when operating on the 3.5 to 4.0 MHz band and the upper scale for all other bands.

Dial Pointer Zero Set - When calibrating at any 100 kHz point or by receiving WWV at 10.0 MHz, the slide rule LED pointer may be set accurately to the scale marking with the aid of the serrated disc knob protruding from the bottom of the case. It is located between the main tuning knob and the BAND switch, on the bottom front edge of the front panel. This adjustment need be made only occasionally as the string ages, since the pointer is not intended for exact indications of frequency, but rather as a segment indicator telling which 100 kHz segment you are tuned to. Accurate frequency determination is made by use of the 0-100 kHz dial skirt.

The skirt can be calibrated to a known frequency such as WWV by tuning the station or calibrator in and while holding the main knob securely, rotating the skirt to the correct kHz mark.

Receiver Controls

AF-POWER Control - Adjusts level of received audio from speaker or headphones. This control does not affect the level of the sidetone oscillator. The power function of this control was explained above.

OFFSET Control - This control permits moving the receiver frequency up to approximately 2 kHz above or below the transmitter frequency. The two frequencies are the same at the detent position. This control provides the beat note necessary to copy cw transmissions when the transmitter frequency is adjusted exactly to the frequency of the incoming signal (received signal is zero beat at detent position). Either the higher or lower setting of the OFFSET control is used when copying code. When the OFFSET control is set to the + half of its range (clockwise from center detent), an incoming signal should be tuned to the beat note that is above the zero beat dial frequency and when the control is in the - range, the signal beat should be the one lower in frequency than the zero beat position. This assures that your transmitted carrier is close to the received frequency. Another method of checking to see if the corrct beat is being used is to rotate the OFFSET control toward the center position. No matter what side of center you are on, the beat note should decrease toward zero beat. If it increases in pitch, you are receiving on the incorrect side and the main tuning knob should be readjusted to the opposite beat. In some instances, when an interferring station is present in one position of the OFFSET control, readjustment of the OFFSET to the opposite side of the detent will eliminate or greatly reduce the interferrence.

RF Gain Control - This control activates a PIN diode attenuator in the receiver's antenna line which reduces the susceptabiiity to overload in the presence of extremely strong signals. Attenuation increases as the control is rotated counterclockwise. The correct setting of the RF control is that which produces meter readings between S8 and full scale, or fully clockwise if the received signal is not above S8. When the meter is pinned to full scale, you may be in the range where overload becomes a problem and spurious signals appear with the desired one. Reduce the RF control to eliminate this possibility.

Audio Bandpass Filter - The FILTER control sets the skirt attenuation of the bandpass filter in the audio channel. It is a four pole filter (attenuation slope of 24 dB per octave) which has a center frequency of 750 Hz and a bandwidth of 200 Hz. In general, reduce the FILTER control to approximately mid-rotation while tuning signals in and when the desired station is adjusted to a beat note of 750 Hz, its strength will be loudest and in the center of the filter passband. Rotation of the control fully CCW will then reduce all interfering stations to the maximum capability of the filter. Full clockwise rotation effectively removes the filter from the circuit since the skirts are not attenuated at all.

Calibrate On/Off Switch - The push button switch marked CAL./OFF energizes the optional Model 226 Crystal Calibrator when it is installed in the Century/22. The calibrator is operating when the push button is 'in'.

S-Meter - The S-Meter is operational whenever the unit is in the receive mode. For most accurate readings, the RF control should be fully clockwise. When transmitting, the meter switches to a rf power meter.

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PHONES Jack - This jack is the external headphones or speaker connection. When employed, the internal speaker is automatically disabled. Although the amplifier is designed for an 8 ohm load, external speakers between 4 and 16 ohms will work satisfactorily.

Headphones of any impedance will also work directly from this jack. However, since the amount of power required to drive headphones to a satisfactory level is much less than for a speaker, it is recommended that high impedance headphones be used, which will automatically reduce the power level, or that an attenuator be used with low impedance phones. The attenuator will greatly reduce residual noise because the amplifier will be working at a more favorable signal to noise setting of the AF control. A simple resistor network consisting of approximately 15 ohms in series with the phones and a shunt resistor of 2.7 or 3.3 ohms across the phones should suffice. Both resistors can be 1/4 watt types and be soldered to the phones connector terminals and concealed in the shell of the connector.

Transmitter Controls

LOCK Pushbutton - This switch is in parallel with the key line. It is used while adjusting the DRIVE control and when measuring or adjusting antenna systems. The transceiver is in the key-down transmitting mode when the LOCK switch is pushed in.

DRIVE Control - This control sets the level of rf applied to the final amplifier. For full rated power it is set (with LOCK switch 'in') just to the point where the ALC LED on the front panel lights. Increasing DRIVE beyond this setting will not increase output power but will degrade keying characteristics and produce key clicks if advanced to extremes.

KEY Jack- The front panel KEY jack parallels the phono connector on the rear panel and may be used alternately with it. An instance where both would be used is in installations where a keyboard is connected to one jack and a straight key or keyer to the other. The connector accepts a standard one circuit, 1/4" phone plug.

FWD/REF Switch - This pushbutton panel switch selects either the relative power output scale (0 to 1) when in the FWD position or SWR when in the REF position. The meter automatically switches to the chosen meter scale whenever the transmitter is in the key-down or LOCK position. The meter reverts to an S-Meter when receiving.

OPERATING HINTS

1.) The speaker is most effective when the unit is placed on a hard surface and the bail is lowered. Adequate sound quality is still produced with the bail up if the unit rests on a hard surface.

2.) The unit may be operated as a QRPp station simply by reducing the DRIVE.

3.) Sidetone level and pitch are adjustable through the two access holes in the left bottom cover. Use a small bladed screwdriver.

4.) The VFO oscillator in the Century/22, like any LC tuned circuit, is adversely affected by ac magnetic fields cutting the coil turns. The oscillator output is frequency modulated at the line frequency causing a 'dirty' cw note in both transmit and receive modes. When installing the unit, locate any ac operated equipment which may generate magnetic fields, such as power supplies, electric clocks, rotator controls, etc. as far as possible from the transceiver. Do not place these accessories directly on top of the transceiver or the transceiver on them, since the VFO is located front and center. A check of the purity of the received signal should be made at the time of installation.

5.) Due to the possibility of high voltage transients being generated in the output rf amplifier during band switching, changing bands should not be done while transmitting power to the load. Either turn the DRIVE control fully counterclockwise or be certain of a key-up condition. YOU RISK THE POSSIBILITY OF DESTROYING THE OUTPUT TRANSISTORS IF THIS PRECAUTION IS NOT OBSERVED.

6.) Although improperly matched antennas will not damage the unit, we suggest an SWR below 2 to 1 be achieved for maximum performance. In cases where the antenna cannot be matched to a suitable SWR, the unit can still be operated at a reduced output level by reducing the DRIVE to where the power supply or circuit breaker does not trip out.

7.) To determine SWR, place the unit in the LOCK mode and advance DRIVE to where ALC LED just lights. Place FWD/REF switch in REF position ('out' position) and read SWR on meter scale.

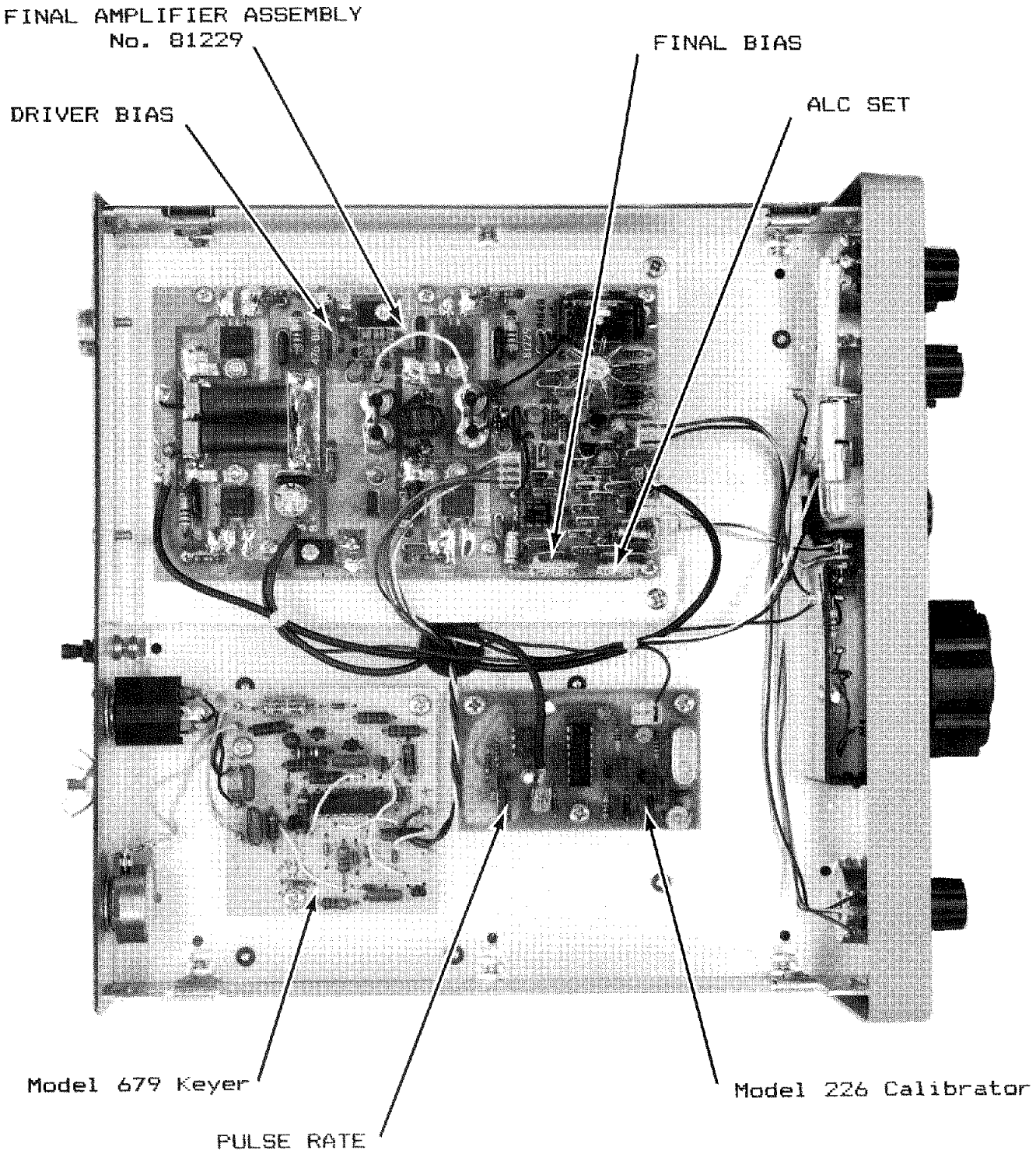
8.) When operating mobile, always turn the Century/22 off when starting or stopping the engine. High voltage transients from the generator may appear on the supply line before the vehicle's regulator contacts close.

9.) Failure of a called station to return your call may be due to your transmitter being as much as four kHz off of the desired frequency, caused by your listening to the incorrect beat note. To set your transmitter to the same frequency as the incoming signal, set OFFSET to detent center position and tune main tuning for a zero beat note. Zero beat is when no audio note is heard, with audio pitch increasing either side of this position. To copy the station, reset OFFSET to either side of the detent position for a comfortable tone. (Refer to OFFSET paragraph above for further information and methods of setting frequency.)

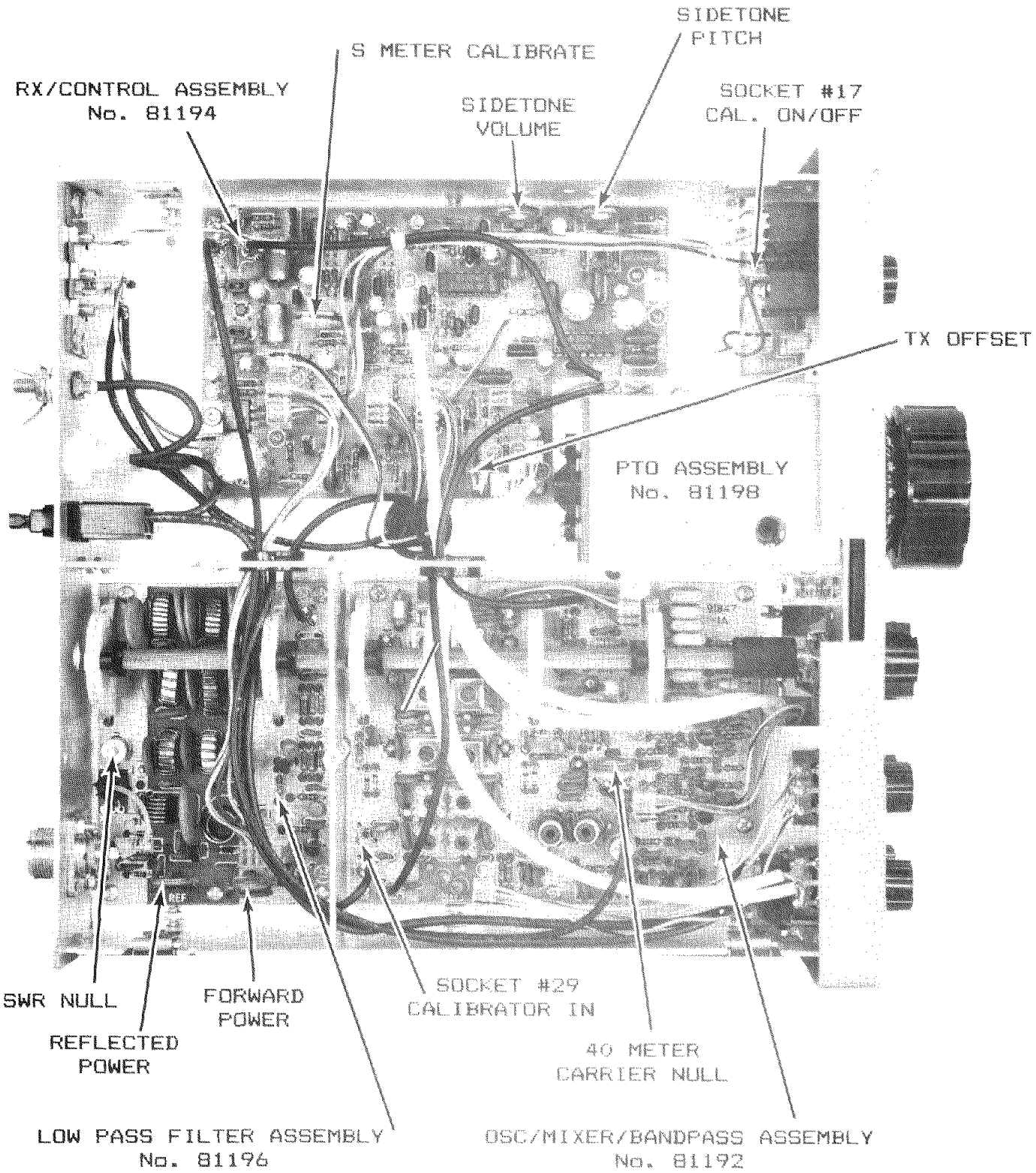
10.) WWV at 10.0 MHz or CHU at 7.335 MHz can be used to calibrate the dial skirt accurately near these frequencies. For accurate calibration throughout the operating range of the transceiver, Model 226 Calibrator will provide markers every 25 kHz.

11.) RF control should be used to prevent pinning the meter on strong signals. This insures operation well below the overload point.

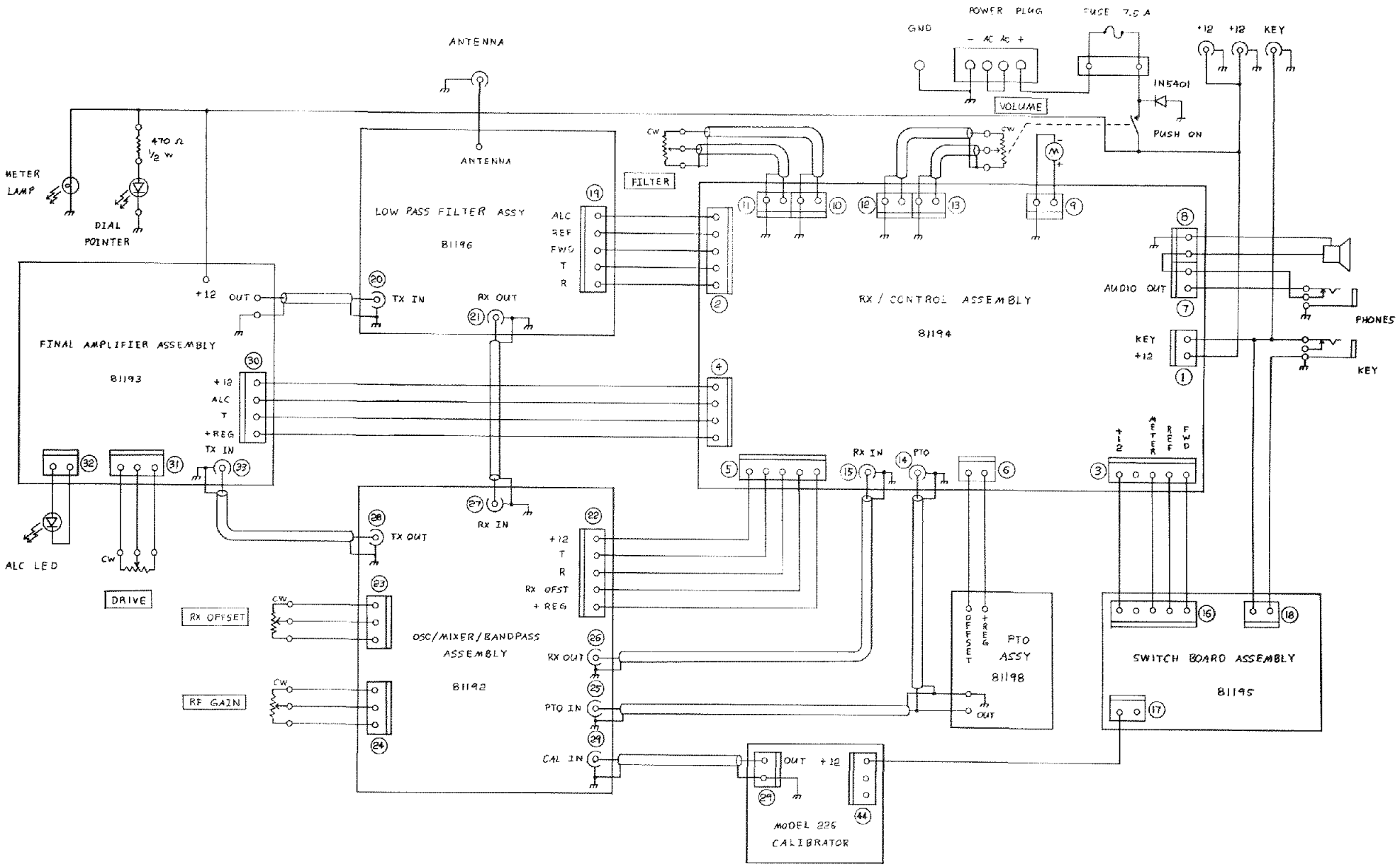
12.) When calling CQ or before initial contact is made with a specific station, use the widest position (full CW) of the FILTER control so that the incoming station may still be heard if he is a bit off your frequency. After contact is established, you can adjust the OFFSET control for the desired 750 Hz beat note without changing your transmitting frequency, and then make best use of the filter by turning the control CCW. Because of the narrow passband when fully CCW, you may miss hearing your contact altogether.



MODEL 579 - TOP VIEW

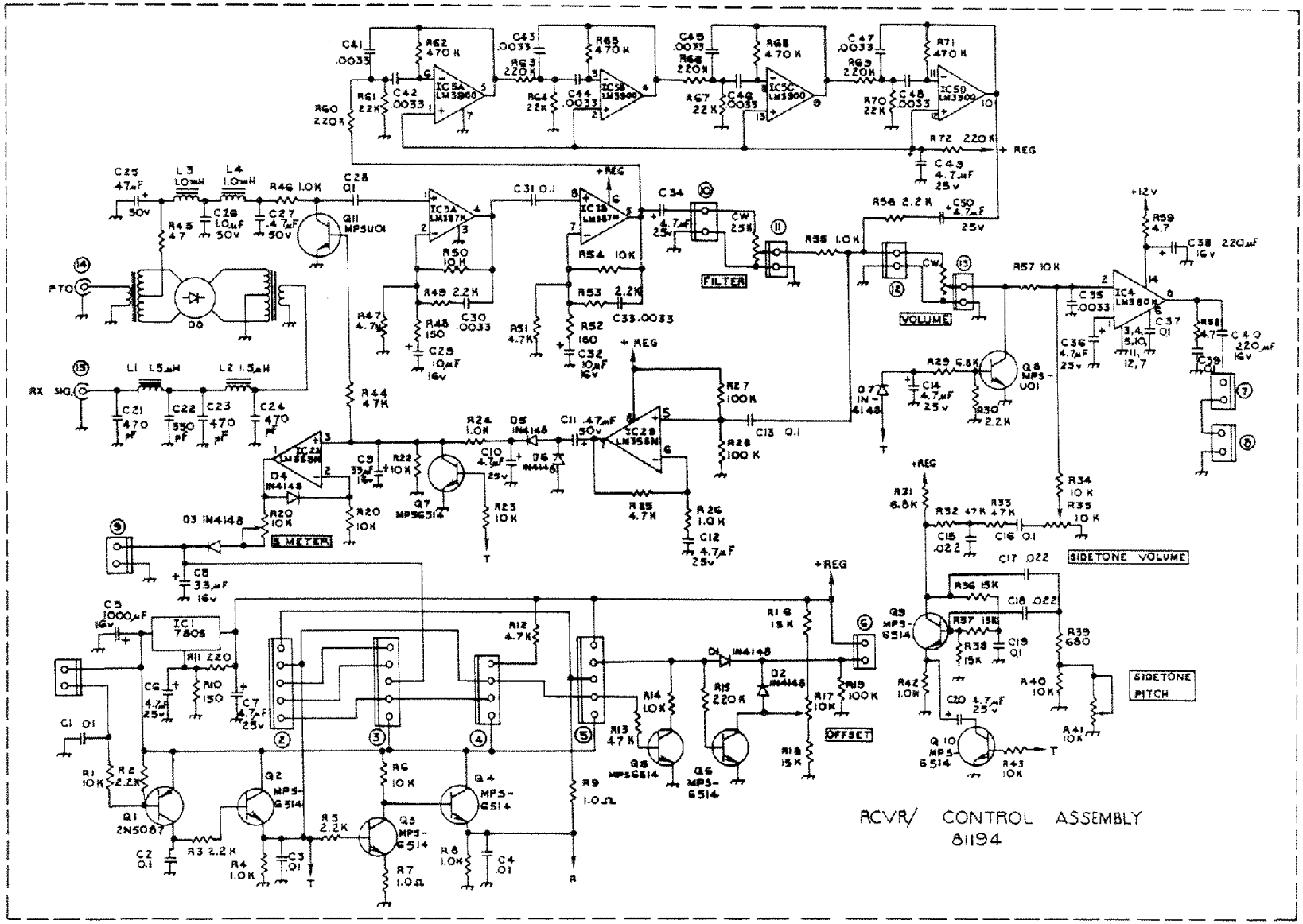


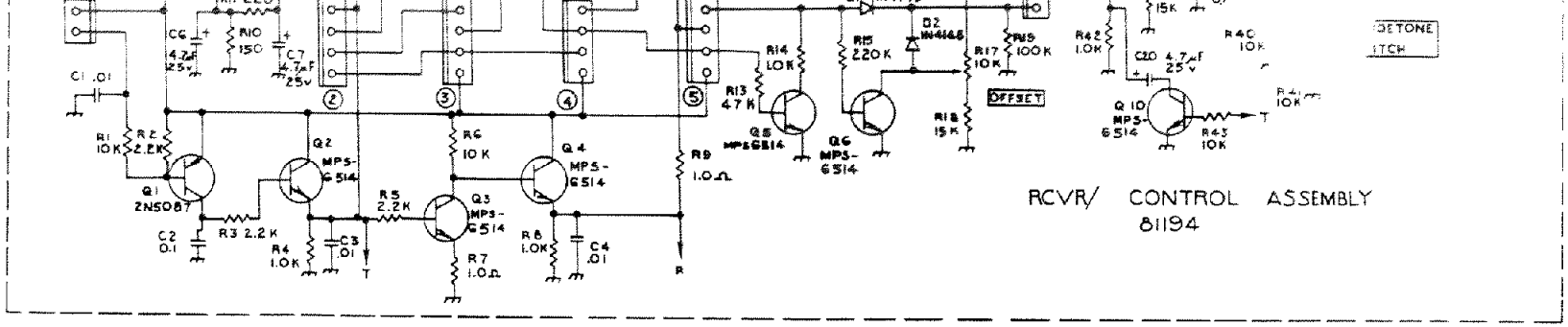
MODEL 579 - BOTTOM VIEW

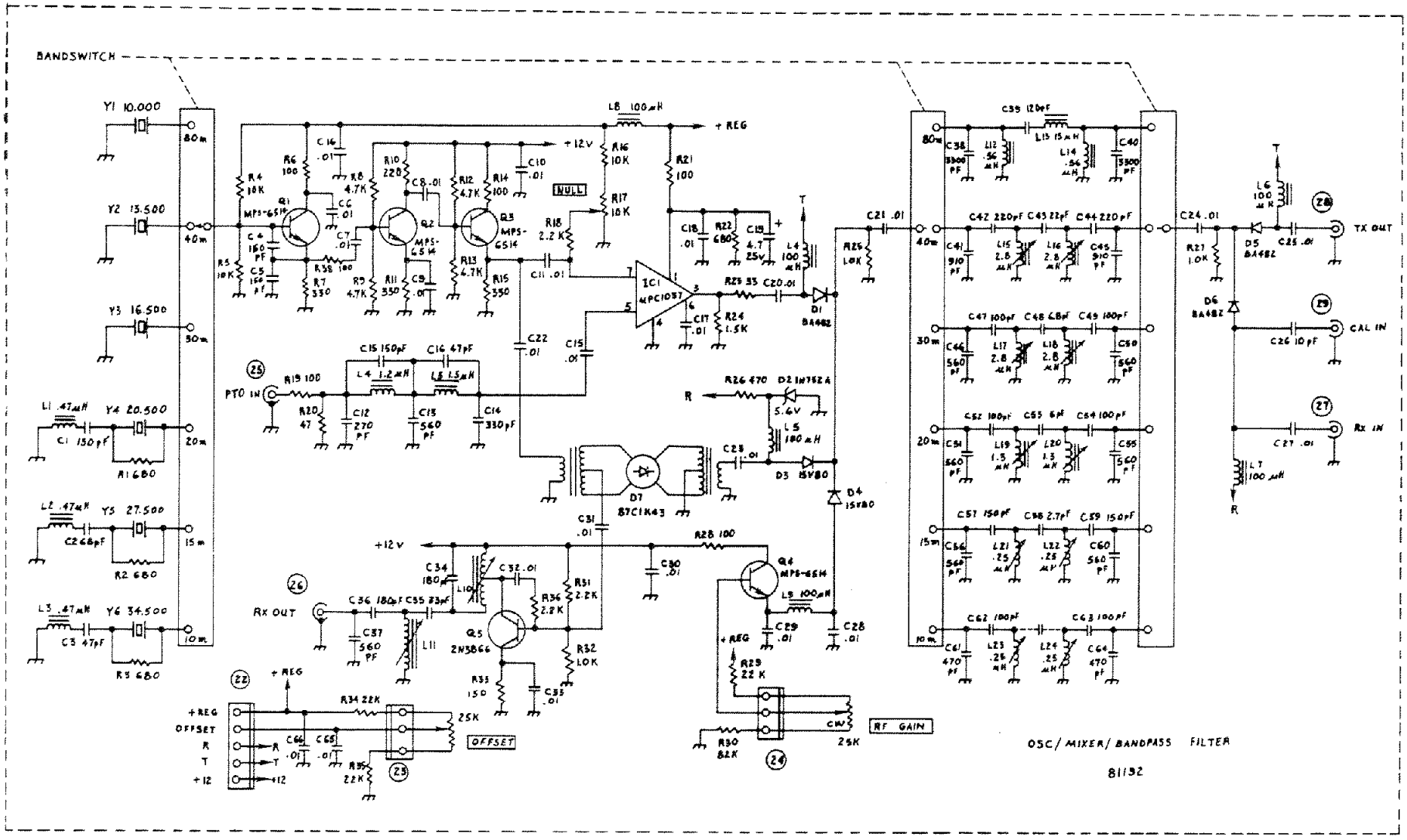


CHASSIS WIRING DIAGRAM

MODEL 579 SCHEMATICS




RCVR/ CONTROL ASSEMBLY
81194


BANDSWITCH
OSC/ MIXER/ BANDPASS FILTER
81192

"Great sounding rig! Must be a Ten-Tec."

All the Ten-Tec rigs that I've owned have excelled in audio. I owned a pair of (other brand) transceivers but Ten-Tec beats them in transmit audio - K4NTY

Great audio! Full, rich, natural! - K4TEN

Good audio quality and it sounds like my natural voice - K6WLM

Excellent audio. I was working a station in Puerto Rico and he stopped the calling stations and asked me what I was running. I told him the Jupiter and he said "I should have known it was a Ten-Tec." - WD4PG

I'm confident that I will have the best signal I can possibly produce! – W1RGO

TEN-TEC

I am amazed how clean and clear I sound – W4WUQ

Very well balanced audio; natural sounding, pleasing to listen to. One of the best sounding rigs on the band. Well rounded with clarity. – KA4ICK

I get great unsolicited audio reports with the Ten-Tec Orion – WA8VSJ

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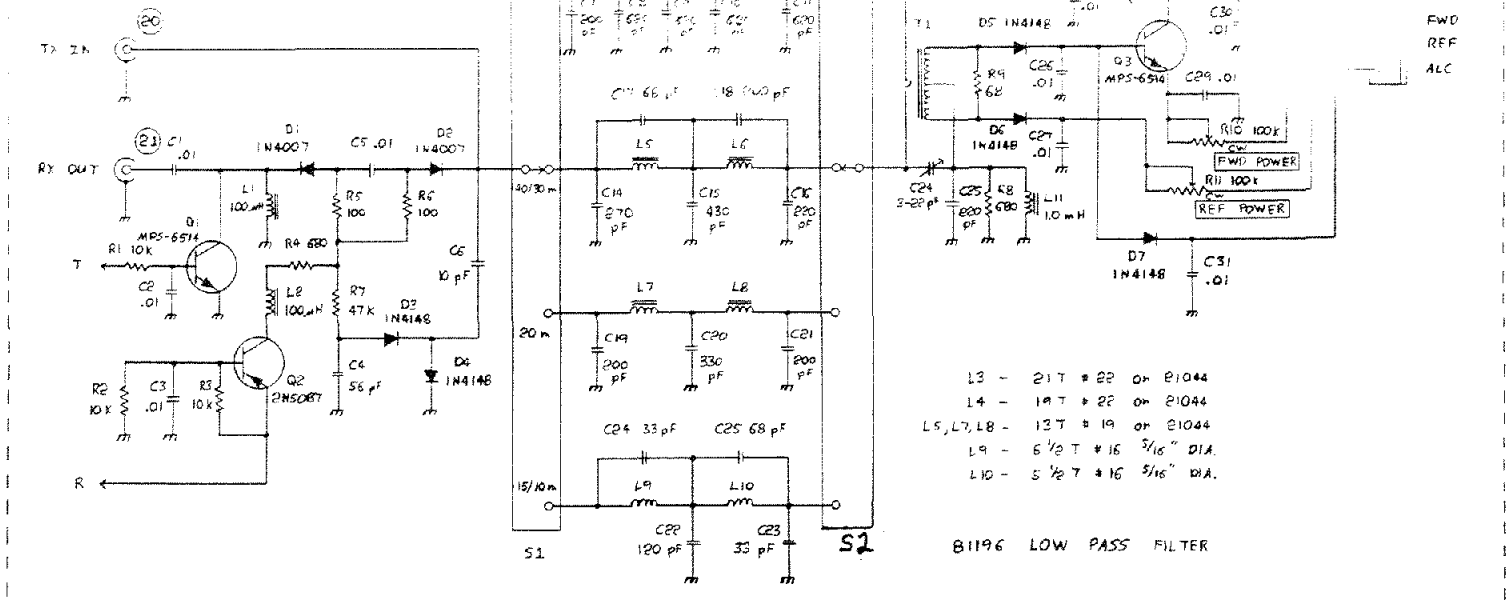
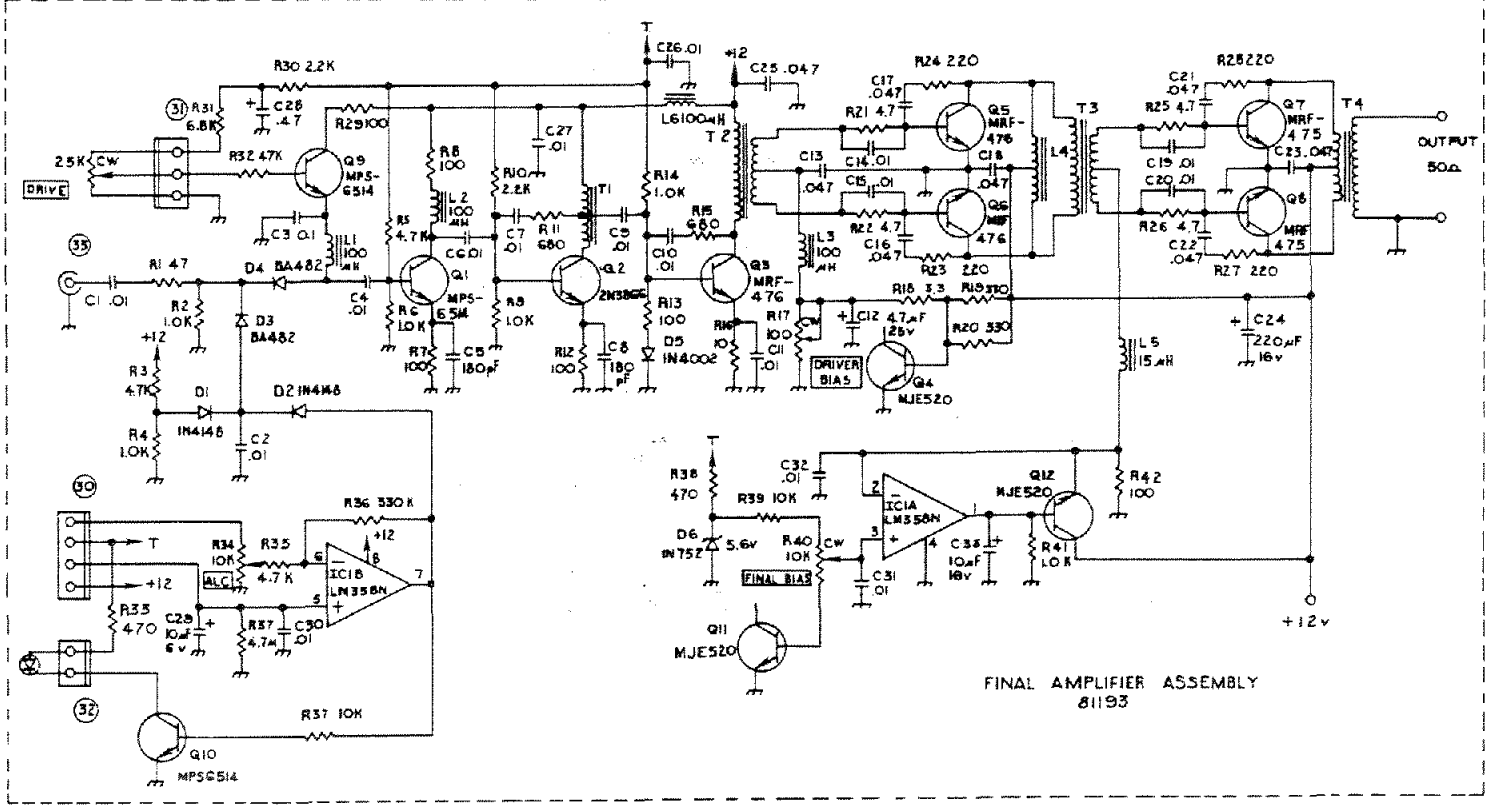
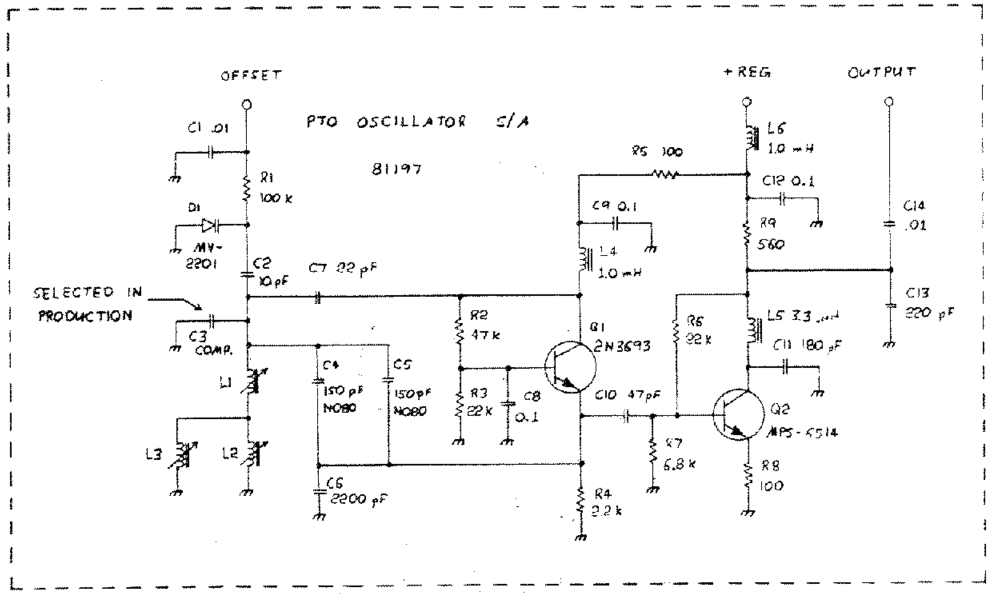


B1196 LOW PASS FILTER



FINAL AMPLIFIER ASSEMBLY
81193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81197
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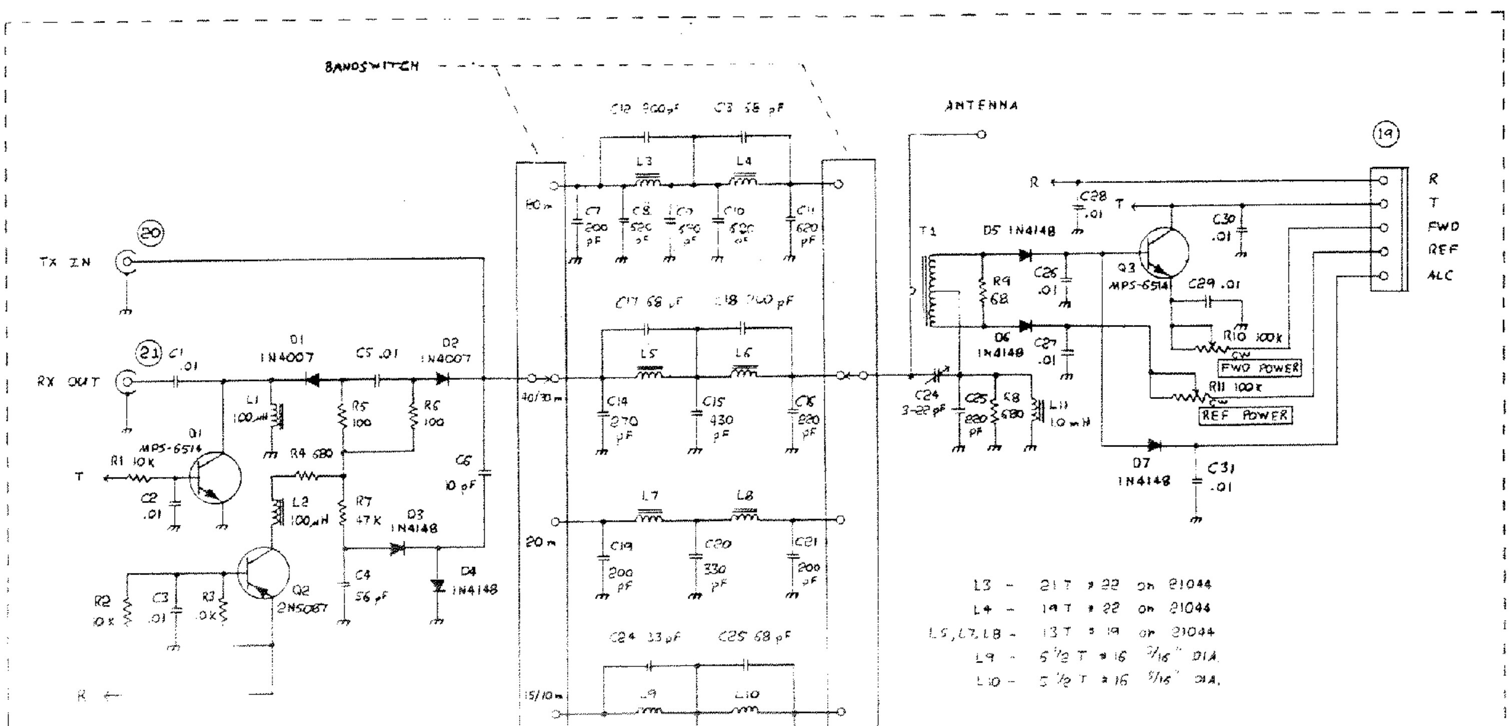
+REG
OUTPUT
SELECTED IN PRODUCTION
C1 .01
R1 100 k
D1 MV-2201
C2 10 pF
C3 COMP.
C7 22 pF
C4 150 pF N080
C5 150 pF N080
C6 2200 pF
L1
L2
L3
R2 47 k
R3 22 k
C8 0.1
Q1 2N3693
R4 2.2 k
C9 0.1
L4 1.0 mH
R5 100
C10 47 pF
R6 22 k
R7 6.8 k
L6 1.0 mH
C12 0.1
R9 560
L5 3.3
C11 180 pF
Q2 MPS-6514
R8 100
C14 .01
C13 220 pF


BANDSWITCH
ANTENNA
TX IN
RX OUT
T
R
C1 .01
D1 1N4007
C5 .01
D2 1N4007
L1 100 μH
R5 100
R6 100
R4 680
Q1 MPS-6514
R1 10 K
C2 .01
L2 100 μH
R7 47 K
C6 10 pF
D3 1N4148
D4 1N4148
C4 56 pF
Q2 2N5087
R2 10 K
C3 .01
R3 10 K
80 m
40/30 m
20 m
15/10 m
C12 200 pF
C3 68 pF
L3
L4
C7 200 pF
C11 620 pF
C17 68 pF
C18 200 pF
L5
L6
C14 270 pF
C15 430 pF
C16 220 pF
L7
L8
C19 200 pF
C20 330 pF
C21 200 pF
C24 33 pF
C25 68 pF
L9
L10
T1
D5 1N4148
R9 68
C26 .01
D6 1N4148
C27 .01
C28 .01
C24 3-22 pF
C25 220 pF
R8 680
L11 1.0 mH
Q3 MPS-6514
C30 .01
C29 .01
R10 100 k
FWD POWER
R11 100 k
REF POWER
D7 1N4148
C31 .01
R
T
FWD
REF
ALC
L3 - 21 T # 22 on 21044
L4 - 19 T # 22 on 21044
L5, L7, L8 - 13 T # 19 on 21044
L9 - 5 1/2 T # 16 5/16" DIA.
L10 - 5 1/2 T # 16 5/16" DIA.

TEN-TEC, INC.
SEVIERVILLE, TN 37862

REPAIR DEPARTMENT TELEPHONE
615/428-0364

LIMITED WARRANTY AND SERVICE POLICY

GENERAL

TEN-TEC, Inc. warrants all products to be free from defects in material and workmanship for a period of one year after date of purchase, under these conditions:

1. REGISTRATION: The warranty card must be returned promptly to establish the warranty period unless otherwise stated on the card. Our card file also serves as a check on stolen equipment which may be sent in for repair. Please notify us immediately if your TEN-TEC equipment is stolen.

2. ORIGINAL PURCHASER: This warranty applies only to the original purchaser. Your warranty card listing from whom purchased establishes you as the original purchaser.

3. COMMUNICATION WITH THE FACTORY: If trouble develops, contact the TEN-TEC dealer from whom you purchased the unit. He is obligated to try to correct the malfunction or return the unit to us. If he is unable to correct the fault, you or the dealer should contact the factory by mail or by telephone (615-428-0364), giving serial number if assigned, symptoms of fault and conditions under which they appear. You will be advised whether to return the unit to us or to try a repiacement plug-in assembly that will be sent to you. To facilitate service calls, please use our direct Repair Department telephone number, 615-428-0364. (NO COLLECT CALLS, PLEASE.)

4. IN-WARRANTY FIELD REPAIRS: To expedite repairs TEN-TEC will send replacement assemblies prior to receiving the suspected defective one from you. The replacement will be billed on a 30 day memo, and credit will be issued when the defective unit is returned to us. No remittance or deposit is required. If the defective assembly is not returned within 30 days, you will be billed. Unit will be shipped to you, transportation paid by TEN-TEC. Shipping charges to the factory are to be borne by you.

5. RETURN TO NON-SELLING DEALER: If you return the in-warranty unit to an authorized TEN-TEC dealer who did not sell the unit to you, he may, at his option, repair the unit or handle the return to the factory. Under these conditions TEN-TEC will repair or replace all defective components without charge, but reasonable labor charges may be levied by the servicing dealer. TEN-TEC is not liable for labor charges under these conditions.

6. PROPER DELIVERY: If the unit is returned to the factory, it must be adequately packed. A note should be included outlining the problem, conditions under which it appears, and attempted remedies. The more specific you are, the better the possibility of a complete fix. Shipping charges to the factory are to be borne by you. Unit will be returned transportation paid by TEN-TEC.

7. EXCLUSIONS: This warranty does not apply to damage caused by mishandling, lightning, voltages in excess of rating, reverse polarity of DC supply, or changes in circuits. Claims for damage in transit should be filed with the carrier. This warranty, however, is NOT voided for attempted repairs of defective units or for incorporation of additional components such as switches, etc. when there is no change in the basic circuit. Under no circumstances is TEN-TEC liable for consequantial damage to person or property by use of this unit.

8. TEN-TEC reserves the right to make any improvements to its products which it may deem desirable without obligating itself to install such improvement in its previously manufactured products.

9. This warranty is given in lieu of any other warranty, expressed or implied.

SERVICE OUTSIDE OF U.S.A.

1. SERVICE CENTERS: The policies listed in this warranty do not necessarily apply outside the U.S.A. Many overseas TEN-TEC dealers are qualified service centers. Contact the dealer nearest you for warranty service information.

2. TRANSPORTATION: In the event that you deal directly with TEN-TEC, Inc., all shipping charges to and from the factory are to be borne by you.

TRANSCEIVERS

1. EXTENDED PRO-RATA WARRANTY ON MODELS 546/560/561 OUTPUT TRANSISTORS: The output transistors on these models are unconditionally guaranteed against damage for a period of one year after date of purchase, under any load condition or mode of operation, except for static discharge on the antenna or direct lightning strike. If they fail after the warranty period, the following replacement schedule will apply, provided that our service department makes the repair. (Prices listed are maximum and subject to reduction, depending on current transistor prices at time of repair.)

1 to 2 Years	2 to 3 Years	3 to 5 Years
$12.00 each	$15.00 each	$18.00 each

(Two transistors per transceiver. Labor not included.)

2. WARRANTY ON MODEL 525D OUTPUT TRANSISTORS: The output transistors on this model are unconditionally guaranteed against damage for a period of one year after date of purchase, under any load condition or mode of operation, except for static discharge on the antenna or direct lightning strike.

LINEAR AMPLIFIERS

1. MODEL 444 WARRANTY EXCEPTIONS: The Amplifier and Power Supply units are both covered under the GENERAL conditions stated above, with the following exceptions:
(A) The warranty is void if the amplifier is powered by any source other than an approved TEN-TEC power supply.
(B) The warranty is void if any of the factory sealed internal adjustments are altered.
(C) The warranty is void if any of the protective circuits are disabled.
(D) If used with other than a TEN-TEC transceiver the warranty may not apply. A list of approved transceivers is included with the amplifier. If your transceiver is not listed, contact the factory.

2. EXTENDED PRO-RATA WARRANTY ON MODEL 444 OUTPUT TRANSISTORS: The output transistors on this model are unconditionally guaranteed against damage for a period of one year after date of purchase, under any load condition or mode of operation, except for static discharge on the antenna or direct lightning strike. If they fail after the warranty period, the following replacement schedule will apply, provided that our service department makes the repair. (prices listed are maximum and subject to reduction, depending on current transistor prices at time of repair.)

1 to 2 Years	2 to 3 Years	3 to 5 Years
$30.00 each	$35.00 each	$40.00 each

(Four transistors per amplifier. Labor not included.)

3. PROPER DELIVERY: If the unit is returned to the factory it must be adequately packed. If the power supply section is to be returned, remove the power transformer. The transformer may be retained or returned separately as indicated.

4. MODEL 425: A different warranty sheet for Model 425 Titan is attached to the manual for that product.

OUT-OF-WARRANTY REPAIRS

1. FIELD REPAIRS: New circuit boards or discrete components can often be supplied to eliminate the cost and bother of shipping the complete unit to us. A nominal charge will be made for the material sent. Certain assemblies integral with the main chassis, such as VFO assemblies and rack tuning mechanisms, are not field replaceable.

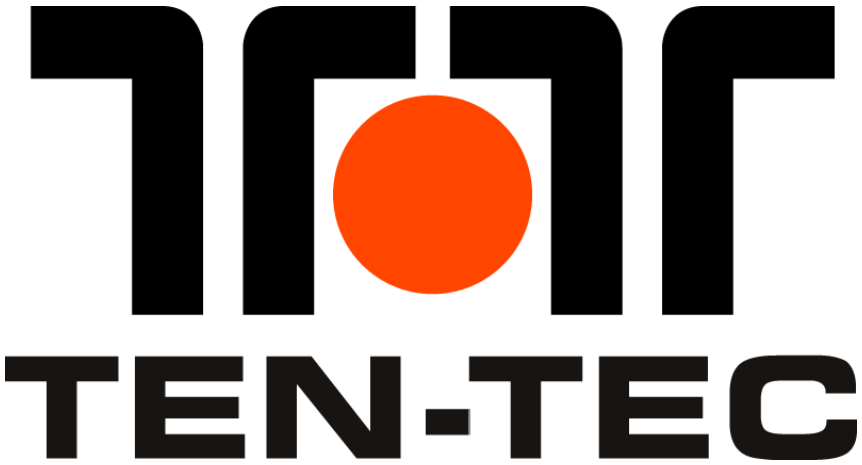
2. RETURNED UNITS: Along with the unit, please submit a complete report on the nature of the malfunction and the conditions under which it occurs. This will enable our service department to pay special attention to your problem area and reduce overall labor costs. No matter what the malfunction is, every unit will be given a complete alignment and operational check before being returned.

3. QUOTATIONS: Quotations on repair work will be given on request, after examination of the unit. The amount quoted will be firm for the specific work outlined in the quotation. Should additional material or labor requirements come to light after the repair is initiated, you will be contacted for approval before this phase of the repair is started.

4. REPAIR CHARGE PAYMENT: Charges below the $25.00 level will be billed to you after completion of the work and at the time of re-shipment. A report of all work done and parts used will accompany the bill. For charges greater than $25.00, prepayment will be required before the unit is returned. One of three methods of payment may be selected. 1.) Upon completion of the work the billing will be made but the unit will be held here. Upon receipt of the payment, the unit will be shipped. 2.) The unit will be returned to you on a COD basis, with COD charges borne by you. 3.) The repair charges may be paid by either MasterCard or VISA.

Approval for COD or charge card options can be given either at the time the unit is submitted to us (in the accompanying letter) or when contacted upon completion of the repair. Please submit all raised information on your charge card when paying by this means.

5. TRANSPORTATION CHARGES: Units should be returned, transportation and insurance charges prepaid. Return transportation and insurance charges will be billed to you with other costs.



This obsolete manual file is provided as a courtesy to you by Ten-Tec, Inc.

Ten-Tec's service department can repair and service virtually everything we have built going back to our first transceivers in the late 1960's. It is our ability to continue offering service on these rigs that has led to their re-sale value remaining high and has made a major contribution to our legendary service reputation.

Printed and bound copies of all manuals are available for purchase through our service department if you would prefer not to use this copy as your transceiver manual.

We can repair or service your Ten-Tec equipment at our facility in Sevierville, TN. We also offer support via telephone for all products via during usual business hours of 8 a.m. to 5 p.m. USA Eastern time, Monday through Friday. We have a large supply of parts for obsolete products. Repairing a transceiver or amplifier yourself? Contact us for parts pricing information.

Service department direct line: (865) 428-0364
Ten-Tec office line: (865) 453-7172
Service department email: service@tentec.com
Address: 1185 Dolly Parton Parkway, Sevierville, TN 37862 USA

We have found it is most effective for us to help you troubleshoot or repair equipment with a consultation via telephone rather than by email.

Suggested contact methods are:

Troubleshooting or repairing equipment – call (865) 428-0364
Other inquiries – call (865) 428-0364 or email service@tentec.com

THANK YOU AND 73 FROM ALL OF US AT TEN-TEC