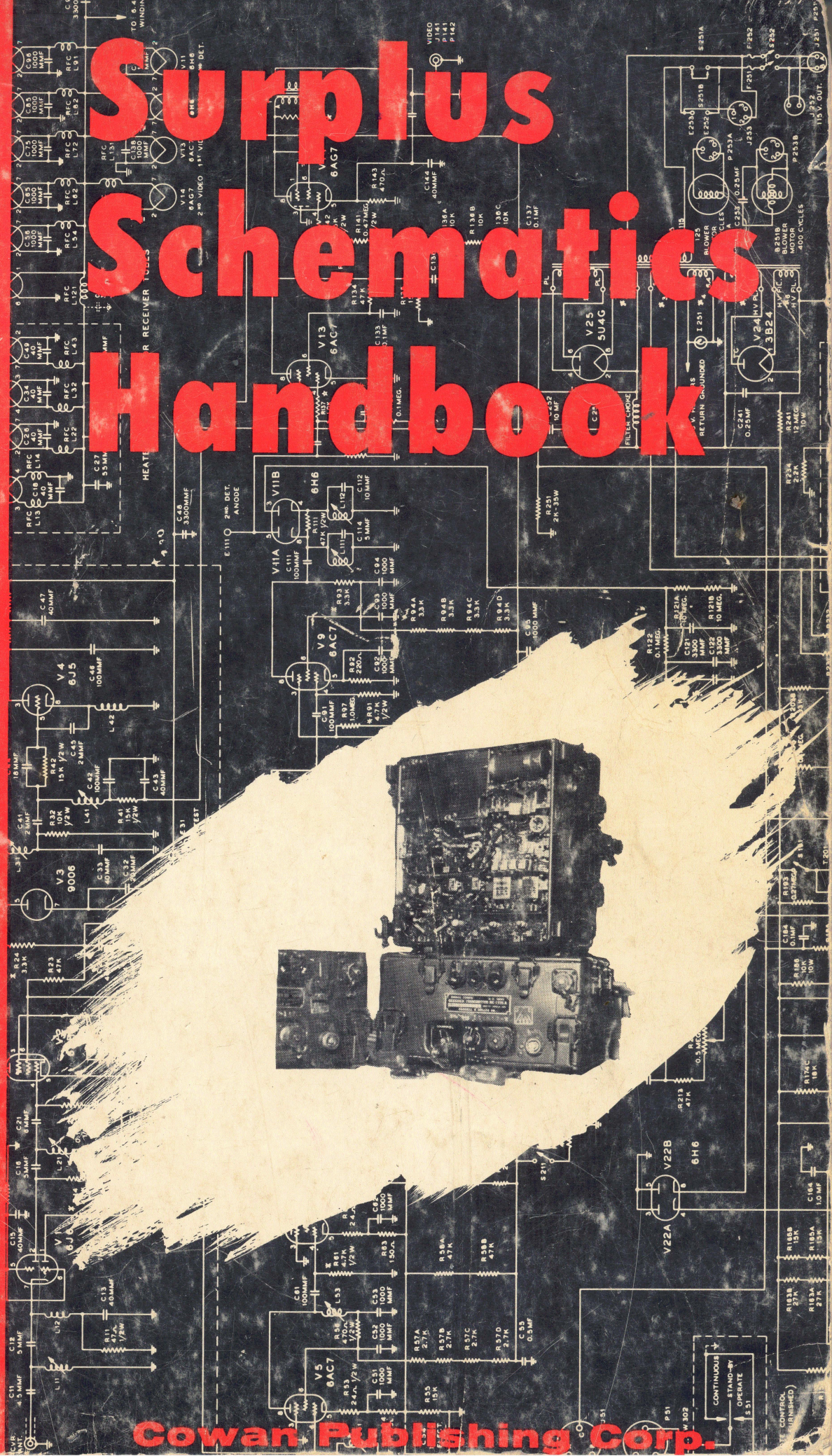


- | | |
|-------------|-----------|
| APA-38 | CRT-3 |
| APN-1 | DAE |
| APR-1 | F3 |
| APR-2 | GF-11 |
| APS-13 | GO-9 |
| ARB | GRR-5 |
| ARC-1 | I-122 |
| ARC-3 | I-177 |
| ARC-4 | I-208 |
| ARC-5 | JT 350-A |
| ARC-5 VHF | LM |
| ARJ-ARK-ATJ | MARK II |
| ARN-7 | MD-7 |
| ARR-2 | MN-26 |
| ART-13 | PRC-6 |
| ASB | PRS-3 |
| AS-81-GR | R-174 |
| ATK | RAK |
| BC-AR-231 | RAL |
| BC-189 | RAO-7 |
| BC-191 | RAS |
| BC-221 | RAX |
| BC-312 | RBH |
| BC-314 | RBL |
| BC-342 | RBM |
| BC-344 | RBS |
| BC-348 | RC-56 |
| BC-375 | RC-57 |
| BC-438 | RDC |
| BC-474A | RDR |
| BC-603 | RDZ |
| BC-610 | RU-16 |
| BC-611 | SCR-274 |
| BC-620 | SCR-284 |
| BC-640 | SCR-288 |
| BC-645 | SCR-300 |
| BC-652 | SCR-506 |
| BC-653 | SCR-522 |
| BC-659 | SCR-578 |
| BC-683 | SCR-585 |
| BC-684 | SCR-593 |
| BC-728 | SCR-608 |
| BC-733 | SCR-610 |
| BC-745 | SCR-624 |
| BC-779 | SCR-628 |
| BC-794 | SPR-1 |
| BC-906 | SPR-2 |
| BC-969 | TBS |
| BC-1000 | TBW |
| BC-1004 | TBX |
| BC-1023 | TBY |
| BC-1206 | TCK |
| BC-1335 | TCS |
| BN | TG-34 |
| BP | TS-34/AP |
| C3 | TS-251/UP |
| CRC-7 | VRC |
| CRO-208 | VVX-1 |

Surplus Schematics Handbook



TELEMARINE—FOR OUTSTANDING ELECTRONIC SURPLUS

BC-611 WALKY-TALKY COMPLETE WITH CASE

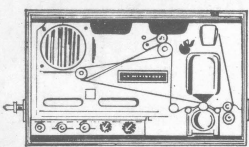


Now, for the first time, Telemarine offers the BC-611 Hand-Held Walky-Talky in complete form. Nothing extra to buy, except batteries which are readily available from most radio distributors. The BC-611 is a crystal-controlled transmitter and receiver covering the frequency range of 3.5 to 6.0 mc. Any good radio technician could easily modify this unit for operation up to 30.0 mc. or for operation in the 2.0-3.0 mc. Marine Band where it can ideally serve as an emergency transceiver (on 2182 KC) on boats too small for regular radiotelephone installation. Excellent for many other emergency applications, because of its compactness (measures 1 3/4" x 3 3/8" W. x 5 3/8" D.) and light weight, only 5 1/2 lbs., complete with batteries. Supplied Complete with coils (plug-in type, installed), crystals (one for "transmit," one for "receive") for 1 frequency in 3.5 to 6.0 mc. range (no selection of frequency permitted on "Used" sets), tubes, and "A" Battery Adaptor which permits use of 2 conventional "A" Flashlight cells in place of special "A" battery. "B" battery required is special 103 volt long rectangular unit, mfd.

by Burgess Battery as "XX-100".
BC-611 WALKY-TALKY, as described, Used-Very Good Condition (not tested), pre-set for 1 frequency within 3.5 to 6.0 mc. (no selection of frequency), **\$49.50** less batteries. Shpg. wt. 15 lbs. **EACH**.
BC-611 WALKY-TALKY, COMPLETE, NEW, as described above but **NEW, TESTED**, and preset to any one desired frequency from 3.5 to 6.0 mc. **\$74.50**

EACH.
BC-611 WALKY-TALKY CHASSIS, NEW, Excellent new, Spare Chassis for above, priced so low that in the event of trouble it would be cheaper to insert a new chassis. Also excellent for the Amateur or Technician who prefers to make his own style Walky-Talky. Supplied with less tubes (1-1R5, 1-1S5, 1-1T4, and 2-3S4 tubes required), and less plug-in Osc. and RF Ant. Coils, less crystals. Supplied with Schematic Wiring Diagram. Shpg. wt. 8 lbs. **\$6.95**
EACH, CHASSIS, as described. **\$6.95**
PAIR OF COILS, for above, RF Ant. & Osc. **\$1.25**

TG-34 CODE PRACTICE SET



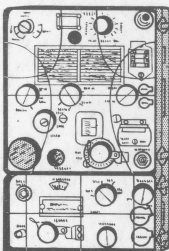
Learn to copy code, or improve your speed with this unit. For individuals, schools, etc. Complete, portable unit for reproducing audibly (built-in Loudspeaker) code signals recorded on tape on paper tape. Pre-recorded tapes, lessons 1 to 15 (on 15 reels), available from many other surplus houses. Also usable for practicing "sending" by means of "morse" key, by external hand key. Operates from 90 to 120 V., or 190 to 240 Volts, 60 Cycles AC. Units are **Used-Very Good** condition. Shpg. wt. 54 lbs. **\$14.75**
TG-34-AS ABOVE, NEW-UNUSED. **\$18.95**

ELECTRIC DEFROSTER FOR CAR OR TRUCK



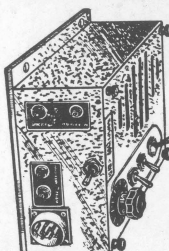
Excellent for passenger cars, commercial vehicles, in heavy weather conditions. Removed and stored away when not needed. Operates from electric 6V. DC (use two defrosters—in series—for 12V. DC systems; one can be installed on rear window) and each set is complete with switches, fuse holder, and necessary wire. Defroster has 4 resistance wires running inside glass (8" x 16") to produce heat for defrosting window. Defroster is held to window by 4 suction cups. **NEW, UNUSED** condition, each packed in metal case. Shpg. wt. 7 lbs. **EACH**. **\$7.95**

BC-1306 TRANS-RECEIVER FOR MARS, HAMS, ETC.



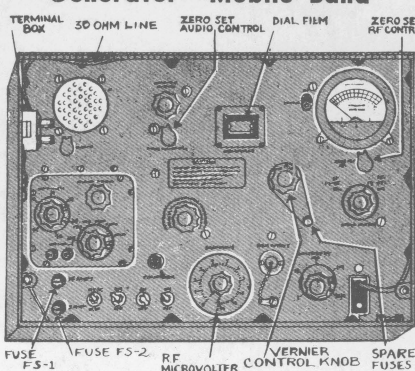
For MARS application. 3800 KC to 6500 KC range, 100% or Crystal Control. Includes Crystal Calibration and Net Controls. **NEW UNITS**, with all tubes except Final RF 2B22 tube. Shpg. wt. 50 lbs. **EACH**. **\$22.50**
PE-237 POWER SUPPLY For Above BC-1306. Supplies all necessary voltages and current for both Transmitter and receiver sections. Operates from 6, 12, or 24 Volts DC, mfd. **NEW** units. Shpg. wt. 125 lbs. **EACH**. **\$14.95**

REMOTE CONTROL FOR MOBILE OR MARINE USE



This is the popular Navy type TCS Remote Control, which includes a heavy-duty loudspeaker. Ideal for mobile (ham, taxi, truck, etc.) or Marine application either as a local or Remote Control Unit. Includes 3 toggle switches, one for turning "Trans." on or off; one for turning "Rec." on or off; and one for selection of "speaker" or "Phone" reception. Additional toggle switch permits "Radio" or Intercom usage. 2 pair of Microphone and phone jacks are provided and connections are made through a Cannon receptacle connector (complete Schematic provided). Also provided is a T-pad Volume Control, on front panel, for regulating audio volume in speaker or Dim: 6 5/8" long, 5 1/4" high, and 3 1/4" deep. **\$6.95** Shpg. wt. 10 lbs. **PRICE EACH**. **\$6.95**
CANNON PLUG CONNECTOR, to fit above, each. **\$1.65**

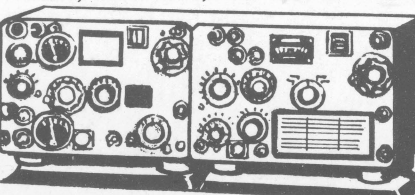
HI-PRECISION FM SIGNAL Generator—Mobile Band



Model I-208, is a precision instrument worthy of the finest lab, mobile service and installation shop, or for production testing of mobile FM equipment. Previously, it was a scarce and expensive instrument, until we made a fortunate "buy" in a limited quantity. Frequency Range in 2 bands, 1.9 to 4.5 mc (for IF alignment and tests) and 19 to 45 mc. Freq. of output of signal is maintained within .03% of dial calibration over a temperature range from 0 to 60 degrees. Other outstanding features are: *Variable Frequency Deviation, 0-5 KC on 1.9 to 4.5 mc band, 0-50 KC each side of resting frequency on 19 to 45 mc band. *Calibrated Microvoltage-Attenuator, adjustable up to 100,000 microvolts, developed at the termination of a 30-ohm line. Up to .84 volt available at high output terminals. *RF Vacuum Tube Voltmeter incorporated. 5 modulation frequencies provided by internal audio oscillator, 150, 400, 1,000, 2,500, and 5,000 cps. External modulation also provided. *Operates from either 110 volts, 60 cycles AC, or 12 volts DC which is ideal for in the field work. *Crystal Calibrator, whose output is 1 mc and harmonics for checking and maintaining accuracy of signal generator. Each I-208 is supplied complete with tubes, calibrator crystal, 12V. DC dynamometer and 110V. AC power supply are self-contained. Instruction Sheets and Schematic Diagram. Shpg. wt. is 145 lbs. (in wooden case). Available in like new (tested) or Used-Excellent (not tested) condition. Act fast, our limited supply won't last long!

USED, EXCELLENT. **EACH \$69.95**
LIKE-NEW, TESTED. **EACH \$110.00**

SENSATIONAL BARGAIN!! TCS TRANSMITTERS, RECEIVERS, AND ACCESSORIES



You've never seen TCS Transmitters and Receivers priced so low! This communications "work horse" of the Navy and Coast Guard never sold in surplus for less than \$800. per set (acc. cost over \$400.00 per set). It's ideal for mobile or fixed station use; precise, trouble-free, and consistent. Excellent for Marine-Band (2-3 mc) applications if certain front panel controls on Transmitter are removed, after pre-setting of frequencies, to meet FCC requirements. It will even meet FCC requirements regarding second harmonic radiation, since the transmitter uses a Buffer stage, plus (variable) link coupling between the final RF Tank and a pi-network which couples to the antenna, all of which reduces harmonic radiation to absolute minimum. Other features of TCS Transmitters and Receivers are: *complete coverage 1.5 to 12.0 mc. all band-switching. *4-channels crystal-control, plus one channel manual tuning (in transmitter precision VFO). *uses 1625 instant heating filament tubes (equivalent to Type 807) in RF Amp and Mod. sections of Transmitter to minimize drain. *Rated at 40 watts CW and 20 watts PEP. *When transmitter plate voltage is 425 V., but this power can be easily doubled by using 600 volts plate supply. *Transmitter or Receiver designed to operate from either 24, 110 V. DC, or 110/220 V. AC power supplies. Power Supply Diagrams furnished. *Receiver is super-sensitive superhet, with excellent sensitivity & selectivity characteristics, and includes BFO circuit for CW reception. Units priced below are complete with tubes, good clean condition but untested. **TCS-5 (to 9) TRANSMITTER**, with all tubes, schematic diagram and power supply diagrams, as outlined above. Shpg. wt. 60 lbs. **\$39.95**
PRICE EACH. **\$39.95**
TCS-9 (to 14) TRANSMITTER, same as above but has minor modifications which make these models more desirable. **EACH \$39.95**
TCS-5 (to 14) RECEIVER, complete with tubes and schematic diagram, as described above. Shpg. wt. 50 lbs. **EACH**. **\$69.95**
WRITE FOR PRICES ON OTHER TCS ACCESSORIES.

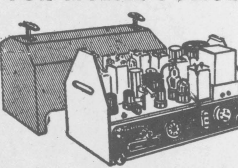


TCS ANTENNA LOADING COIL. Used with above equipment to obtain maximum performance with short whip antenna. Has 6-position tapped switch for various lengths of antenna. In metal housing 8" H. x 9 1/2" W. x 6 1/2" D. Shpg. wt. 6 lbs. **EACH**. **\$7.95**

All Above Material Subject to Prior Sale. 25% Minimum Deposit with All C.O.D.'s. Min. Order —\$5.00. All Prices F.O.B. Our Address.

—TELEMARINE—
COMMUNICATIONS CO., INC.
142 WEST B'WAY, NEW YORK 13, N. Y.
PHONE: COrHand 7-5444

30-40 MC DELUXE FM RECEIVER FOR MOBILE POLICE & FIRE CALLS

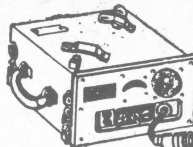


This FM receiver, the R-237 part of an AN/VRC-2 Eqp., is a single channel-crystal controlled receiver covering industrial, police, and fire dept. frequencies. It is of superior design and construction with all of the best features such as: double-conversion superhet (455 KC and 4.3 mc. I.F.'s) with both oscillators crystal-controlled, noise squelch, double limiter stages, loud-speaker output, etc. Exceptionally well built to provide constant trouble-free service. Uses a total of 13 tubes, 2 in the vibrator-power supply which is designed for 6 V. DC operation. All units are in practically like-new condition and exceptionally clean. Dimensions with removable cover, illustrated. 11 1/2" x 10" x 15". Separate loud-speaker, or phones (if desired) required. Supplied with tubes and schematic diagram, but less crystals, loud-speaker, etc. Shpg. wt. 65 lbs. **\$29.95**
PRICE, EACH, Not tested. **\$29.95**
CRYSTAL, for 2nd Conv. Osc. 4755 kc. **\$1.50**
CONTROL UNIT, contains Squelch & Vol. Controls, Pilot Lights, On-Off Switches, for both Rcv'r. & Trans. **EACH**. **\$5.95**

TRANSMITTER COMPANION for ABOVE

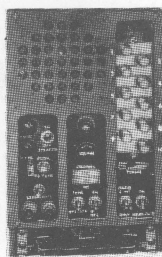
Transmitter T-193/VRC-2 complements the Receiver described above, to provide FM voice transmission in the 30 to 40 MC band. Transmitter is crystal controlled, and provides a power output of 25 watts. Transmitter is same as Galvin (Motorola) type FMTR-25-VM, and is physically the same in appearance as the receiver shown above. Designed for operation from 6V. DC, has self-contained power supply which in some instances is Dynamometer, in others Vibrator Power Pack. All units are in Used-Excellent condition, in fact almost "Like-New," but are untested at the Low Price we are quoting. Supplied with tubes, schematic diagram, but less crystal or control head. Shpg. wt. 70 lbs. **\$19.95**
PRICE, EACH Transmitter T-193/VRC-2, as described. **\$19.95**

BC-659 TRANS-RECEIVER CONVERT TO CITIZENS BAND



June-'59 issue of CQ Magazine furnishes the necessary conversion data to convert this low-priced Trans-Receiver for satisfactory operation in the new Class D Citizens Band. This Transmitter-Receiver, in its unmodified form, operates over a frequency range of 27.0 to 38.9 MC, has 2 crystal-controlled channels directly controlling the Receiver frequency and through AFC action controlling the Transmitter frequency. It is rated at 2 watts power output. Voice FM, and uses a total of 14 10kt type, low-drain filamentary tubes. Its compact dimensions, 11 7/8" x 13 3/4" x 2 1/2", with built-in loudspeaker and Meter Indicator makes it ideally suitable for under-dash installation. Power Supply is separate either dry batteries or Vibrator Power Supply PE-120 which operates from 6, 12, or 24 Volts DC. All units are with tubes, and **USED-VERY GOOD** (untested) condition. Shpg. wt. 50 lbs. **\$10.95**
BC-659, USED-GOOD as des. **EACH**. **\$10.95**

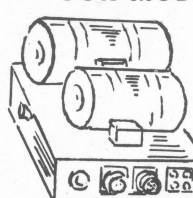
BC-683 MOBILE FM RECEIVER



Provides 10 push-button selected channels as well as continuous variable tuning over the entire range of 27.0 to 39.0 mc. Includes features such as: built-in loudspeaker, squelch circuit, A.V.C., double limiter circuits, headphone jacks, sensitivity control, accurate calibrated tuning dial, etc. Supplied complete with 12V. DC dynamometer for 12-volt operations, all tubes, and schematic diagram which is glued to bottom of housing case. Shpg. wt. 55 lbs. **\$24.95**
PRICE, EACH, Used-Excellent Condition, Not TESTED. **\$24.95**

BC-221 FREQUENCY METER. The best instrument possible for determining frequency of transmitter or receiver, alignment, testing, etc. Laboratory Precision! Range 125 KC to 20,000 Kc. Complete with Calibrating Crystal, tubes, matching Calibration Book. Tested, Used—Excellent. **\$74.50** Shpg. wt. 65 lbs. **EACH**.

TCS—12 V DC POWER SUPPLY FOR MOBILE OR MARINE



Famous TCS eqpt. dual-dynamo motor complete Power Supply, containing separate dynamometers for Transmitter and Receiver sections. Input is 12 V DC; Transmitter dynamometer output is 440 V DC at 200 ma; Receiver dynamometer output is 220 V DC at 100 ma. Complete input (RF and Hash) and output filtering, plus incorporated heavy-duty 12 V DC starting relay for transmitter dynamometer. 3 Cannon connectors on side (connector plugs extra) for connecting to Transmitter, Receiver, and Remote Control unit. Schematic Diagram furnished with each unit. Dim. of Power Supply: 12 1/2" long, 7 1/2" wide, 7 1/2" high with shock-mtg. bottom plate. **NEW, UNUSED**. Shpg. wt. 40 lbs. **\$17.95**
40 lbs. TCS-12 V DC POWER SUPPLY, EACH. **\$17.95**

Surplus Schematics Handbook

By

Kenneth B. Grayson, W2HDM



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Introduction

We have received so many hundreds of requests for circuit diagrams of surplus equipment that we are preparing this book in self defense. In it you will find, in addition to the circuit, some info which should be helpful in getting you started on a conversion. Please keep in mind that CQ is always interested in the result of your efforts. Many of these Sows' Ears make wonderful Silk Purses, and should your feet trod firmly over unfamiliar territory in the jaunt why not (once you have untangled the above metaphors) trace out a map for the following tourist. CQ Pays for Articles. With just ordinary luck you can get back many times the price of this book.

APA-38

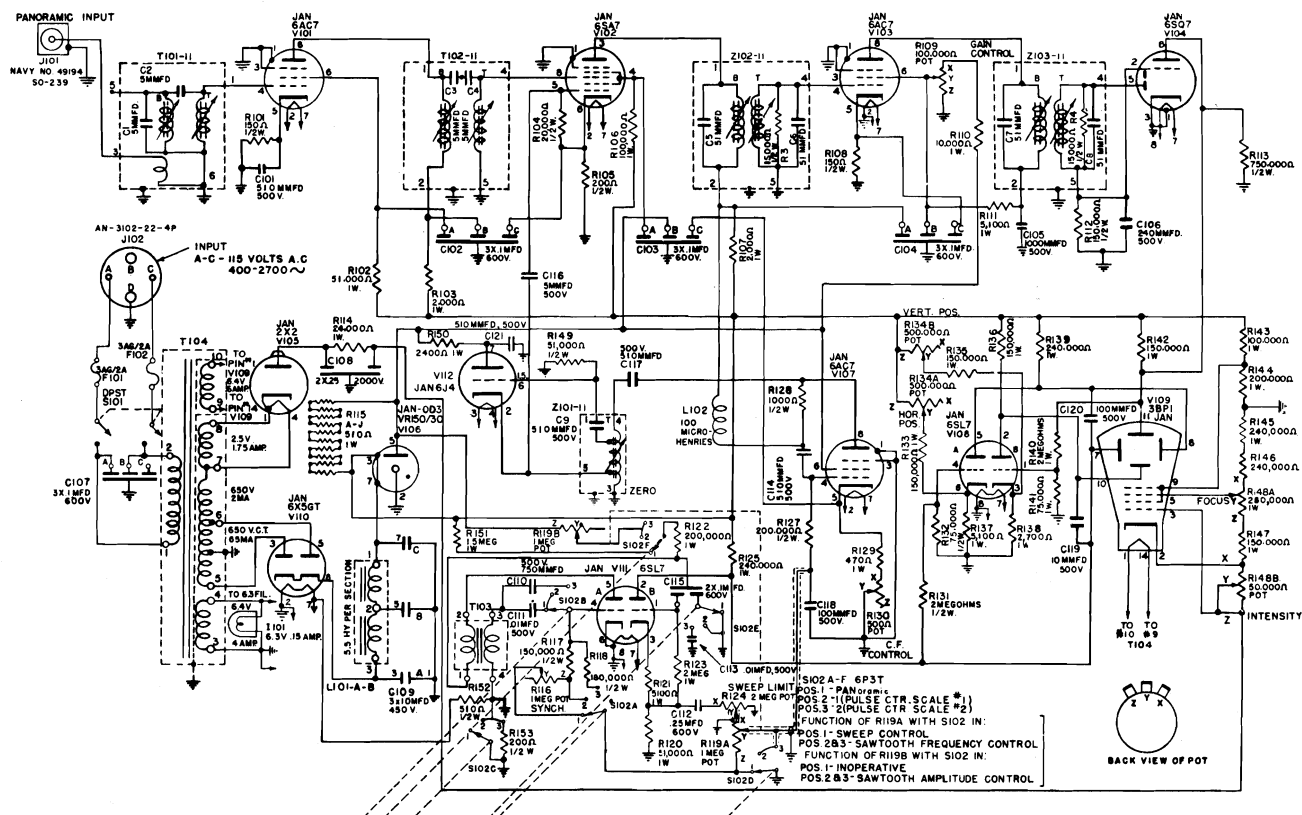
The APA-38 is a Panoramic adaptor which, when connected to your receiver will let you observe the modulation characteristics of received signals and displays visually all signals present in the passband of the receiver IF.

The APA-38 was originally used with the APR-1 and APR-4 Receivers for identification of enemy radar signals. The adaptor may be connected to any communications receiver by tapping into the plate of the first detector (mixer); don't forget to use a blocking condenser and coaxial cable such as RG-58/U.

Since the adapter input is at 30 mc, the IF of the APR-1, you will have to convert from your receiver IF to 30 mc. The APA-38 has an IF of 6.5 mc.

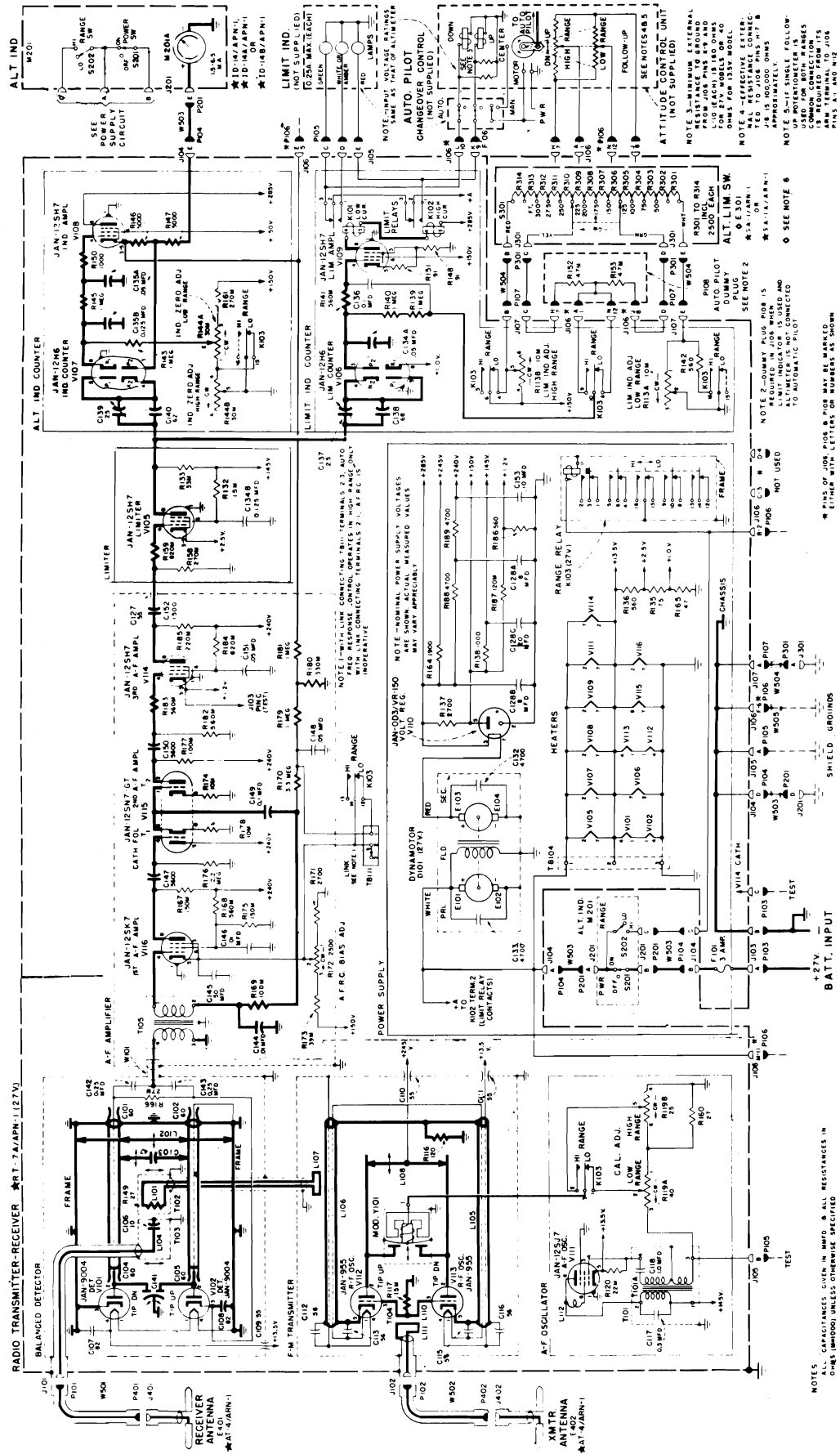
A sweeping oscillator is used to convert the incoming signal, and the sweep voltage is also applied to the scope for synchronization. Provision is made for use of the scope as an oscilloscope for the examination of pulses. The APA-38 RF circuits are stagger tuned to provide the wide response desired.

The sweep oscillator may be reduced in frequency coverage to allow a closer examination of a particular portion of the band. This effectively expands the center portion of the band under examination.



APN-1

This is a radar altimeter using an FM transmitter and receiver in the 420-460 mc band. It uses the Doppler frequency shift principle and indicates the altitude on a dual scale meter (0-400/4000 ft.) The xmtr runs about 1/10th of a watt. There are both 14 and 28 volt models.



NOTES
CAPACITANCES GIVEN IN PPM. ALL RESISTANCES IN OHMS UNLESS OTHERWISE SPECIFIED
TUBE SOCKETS ARE DESIGNATED BY "X" SYMBOL
CORRESPONDING TO TUBE "V" NUMBERS

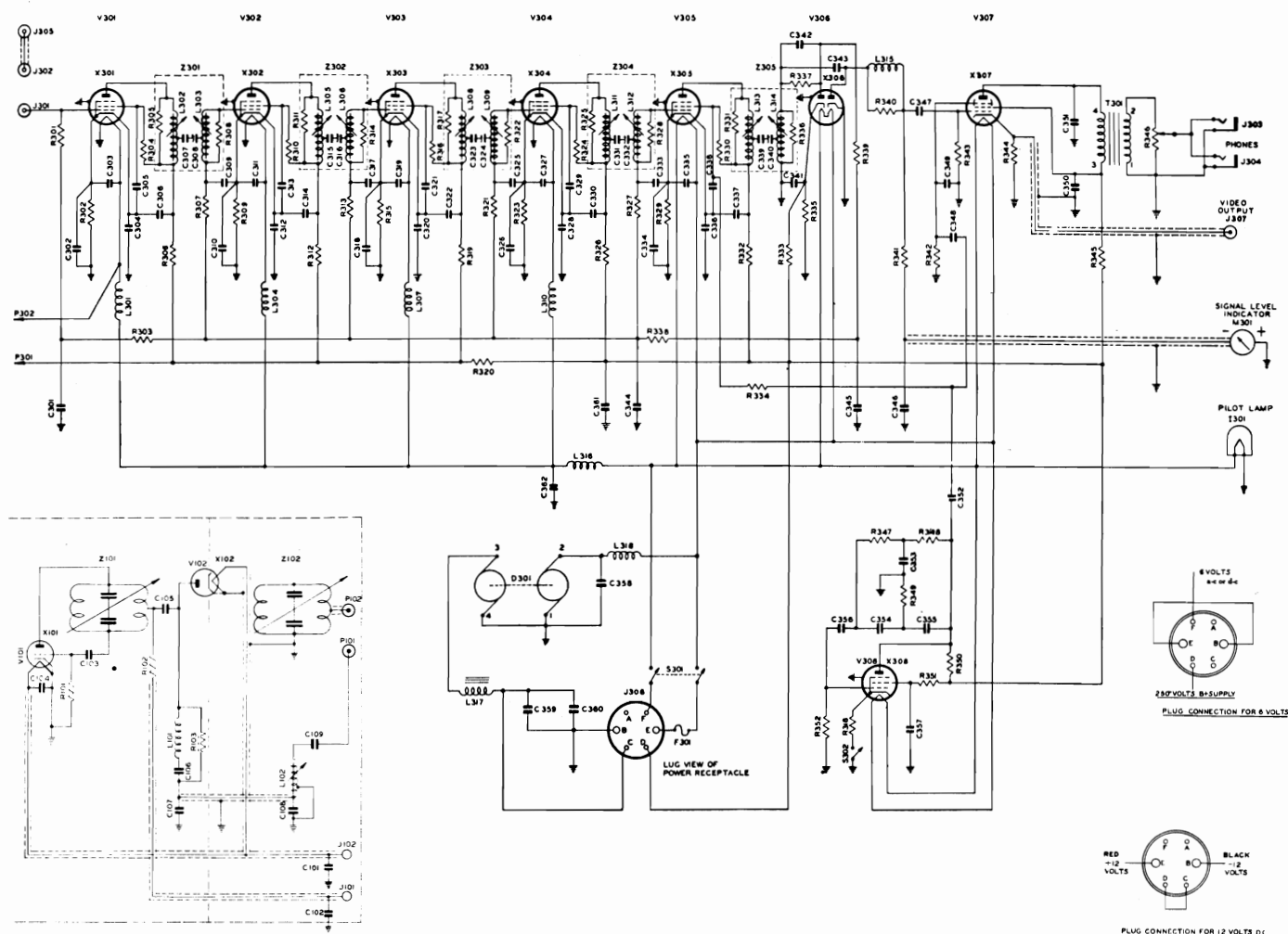
APR-1

The APR-1 is a Naval Air Force VHF-UHF radar search receiver covering the frequency range of 80 mc to 950 mc in two bands. The basic receiver, without plug-in tuning unit is the CPR-46 ABC. It is essentially an IF amplifier detector audio-video amplifier having a 30 mc input to the IF amplifier. The output impedance is 600 ohm audio and 100 ohm video. A 1000 cycle audio tone can be used as a BFO if a cw signal is being received.

The 80 to 370 mc tuning unit is designated CPR-47 AAE and the 290 to 950 mc band is covered by the CPR-47 AAF tuning unit. Signals can be picked up as high as 2850 mc using harmonics of the oscillator.

Power consumption is 6.25 amperes at 12 volts using the internal dynamotor. Provisions have been made for an external power supply to provide 6 volts ac or dc for the filaments and 250 volts for the plate supply.

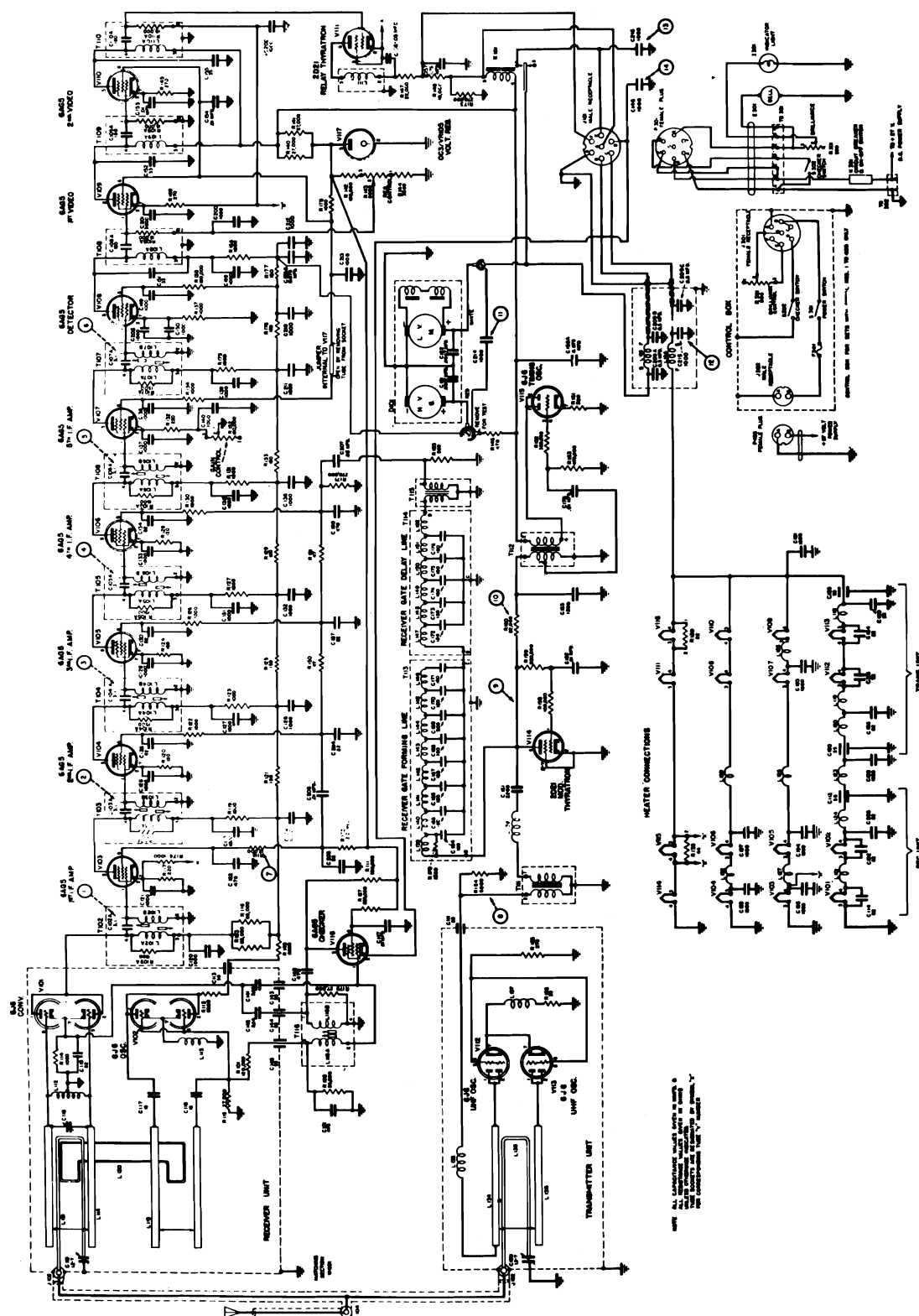
Schematic Circuit Diagram of Type CPR-46ABC Radio Receiver Model APR-1 Equipment.



Schematic Circuit Diagram of Type CPR-47 AAF Tuning Unit Range 1 Model ABC-1 Equipment

APS-13

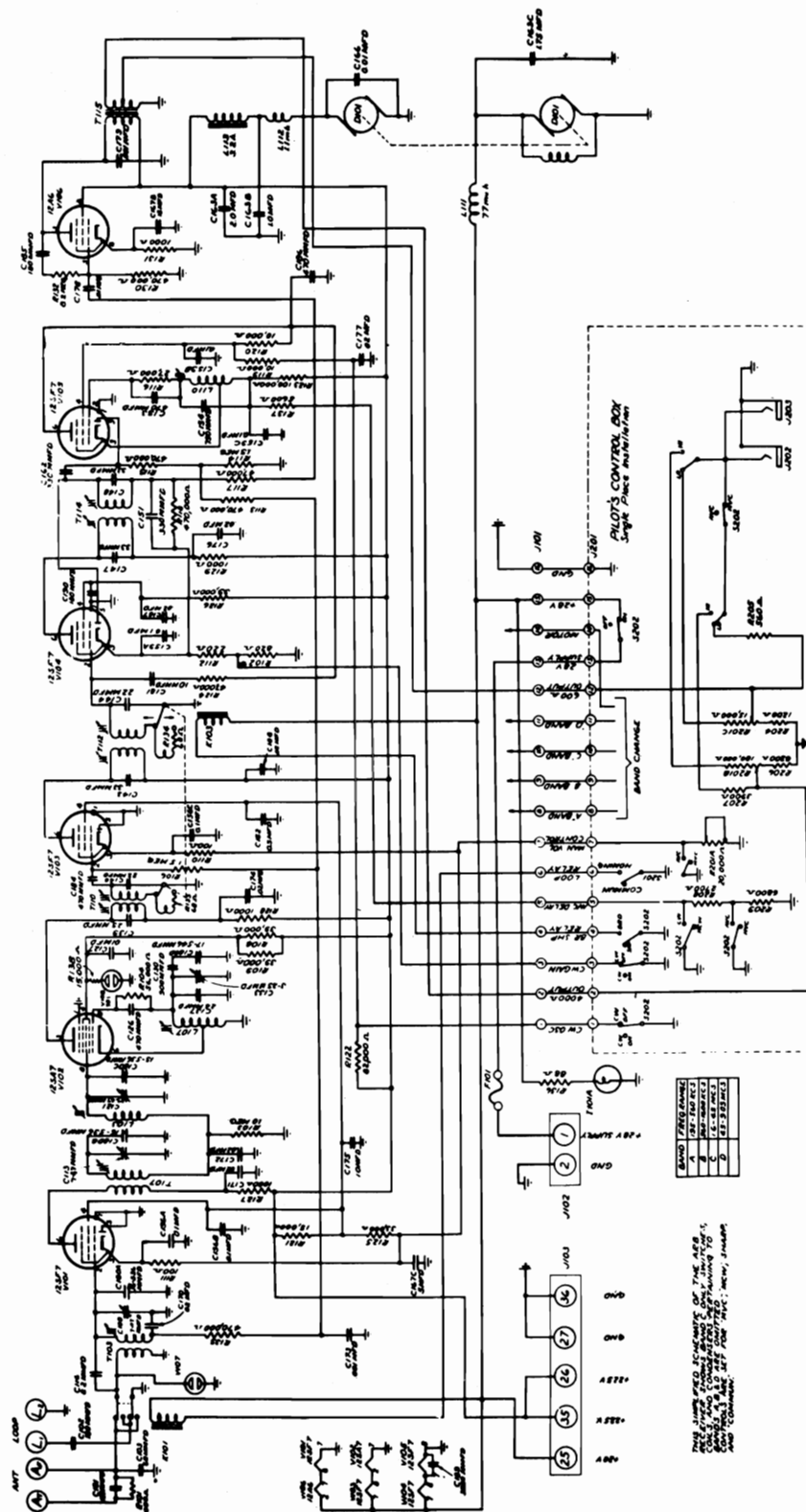
This forest of 6J6's was a 450 mc radar known as "Tail-End Charlie" and was used in the tails of bombers to detect approaching enemy aircraft. It is simple to convert for ham use, though not too effective even at best.



SCHEMATIC DIAGRAM RADIO RECEIVER AND TRANSMITTER APS-13

ARB

The ARB is a Navy aircraft receiver which tunes the range 195 kc to 9050 kc in 4 bands using a motor drive for remote tuning. For conversion data, see CQ, June 1958, P. 85.

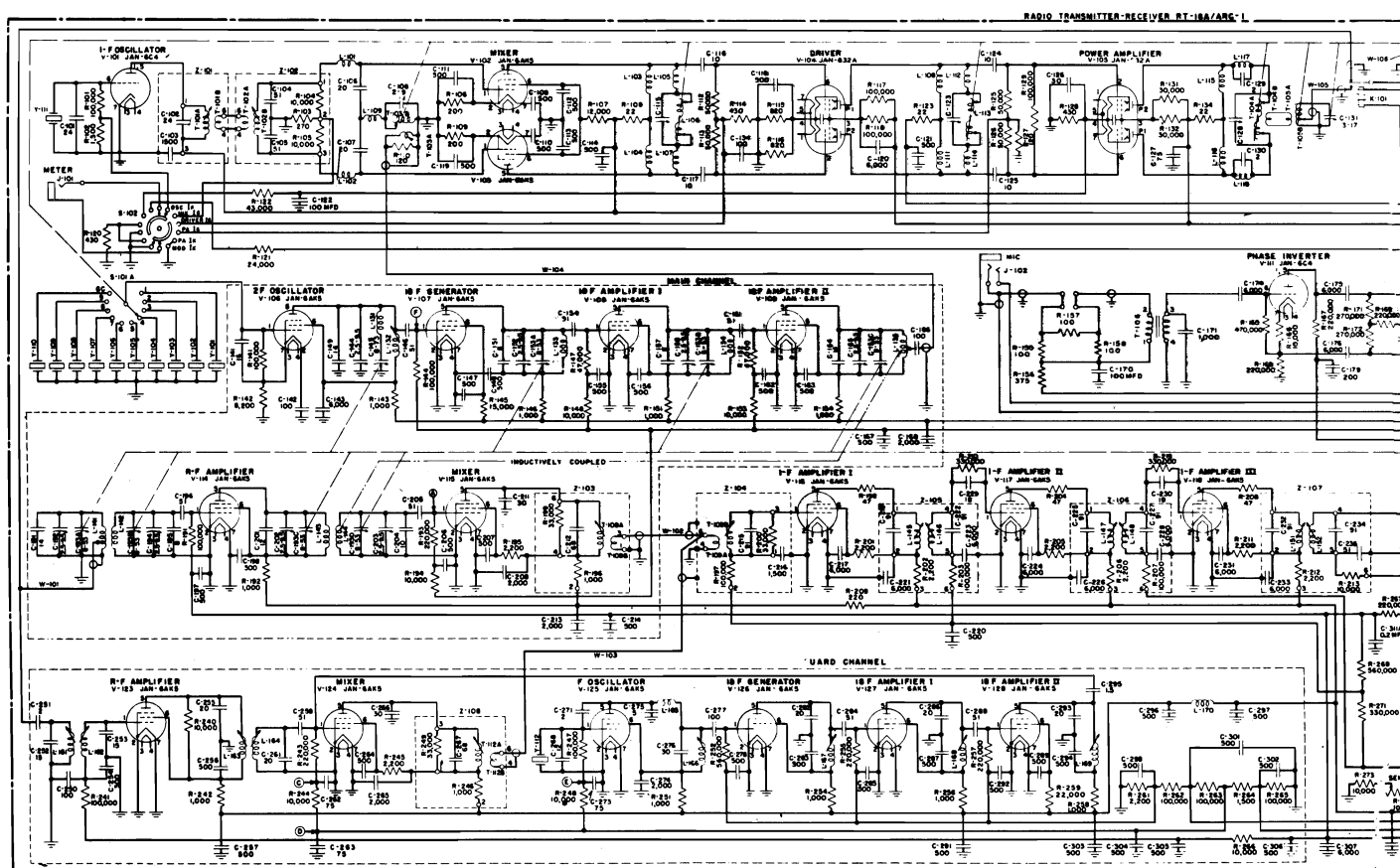


ARC-1

The ARC-1 is an airborne transmitter receiver covering a frequency range of 100 to 156 mc. It is crystal controlled and uses the same crystal for control of the transmitter and receiver. The IF is 9.75 mc. Power output is 8 watts. The equipment is amplitude modulated. A guard channel is also monitored during reception. The receiver is a conventional superhet, using a crystal multiplication of 18 to obtain the mixing frequency for the proper IF output. On transmit the heterodyne oscillator is mixed with a 9.72 mc signal to obtain the same output frequency.

AN 16-20ABC1-7

AN 14-30ARC1-7



The equipment is capable of operation on ten channels, each channel being selected with a pre-determined setting of the auto-tune dials. The equipment is designed for remote operation in a plane and requires 28 volts at 7 amperes during reception, and ten amperes on transmit. For short durations during transmission, when switching channels, as much as 15 amperes may be required.

The input is 50 ohms coaxial to a whip antenna, and the output is normally to a headset. A carbon microphone is normally employed with the equipment. Crystals used in the ARC-1 are in the range of 5000 to 8120 mc. The oscillator is below the signal.

AN 16-30ARC1-7

AN 16-30ARC1-7

Section VIII

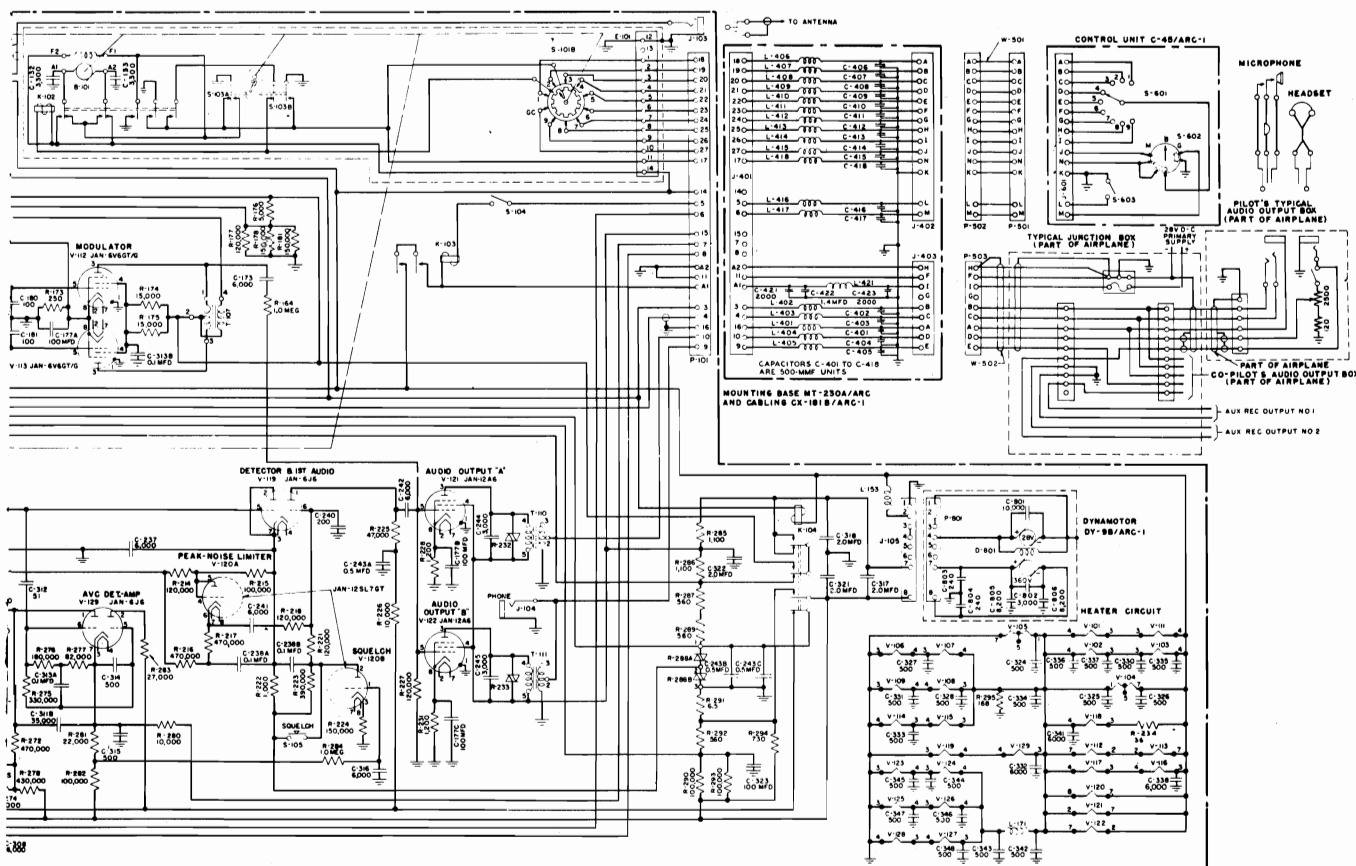


Figure 8-6. Radio Set AN/ARC-1A, Schematic Diagram

8-11/8-12

ARC-3

The ARC-3 is basically an airborne radio transmitter-receiver equipment which, with accessories, provides air to air and air to ground communications. It has also been used in some shipboard installations. It operates in the VHF region over the frequency range 100 to 156 mc on eight pre-set frequencies, each of which is crystal controlled. The ARC-3 is tone or voice modulated (AM). It operates from a nominal 28 volts dc at a current of 5.5 amperes on receive and 12 amperes on transmit. The power output is approximately 8 watts.

The transmitter uses nine tubes and is crystal controlled at a frequency 1/18th of the output. The modulator is capable of operation as an interphone amplifier when desired. This is accomplished by a positioning switch (S-103) located at the bottom of the transmitter and accessible from without. A barometric (aneroid) gain control reduces the audio by 6 db at 15,000 feet and 12 db at 25,000 feet. Also in the modulator is a sidetone amplifier which can provide 0.8 watts of audio. The transmitter voltage requirements are 2.45 amperes at 28 volts and 325 ma at 410 volts for full power output.

The receiver is known as the R-77/ARC-3 and is a superheterodyne, crystal controlled with an intermediate frequency of 12 megacycles. The oscillator is on the low side and the crystal used is multiplied from eleven to eighteen times, depending upon the desired receiver frequency. A noise limiter, carrier operated squelch, and AVC are provided to produce a fine piece of equipment. In addition, a flat response between 90 and 150 cycles is provided to allow the use of received navigational signals. The receiver power requirements are 28 volts at 3.5 amperes and 210 volts at 125 ma.

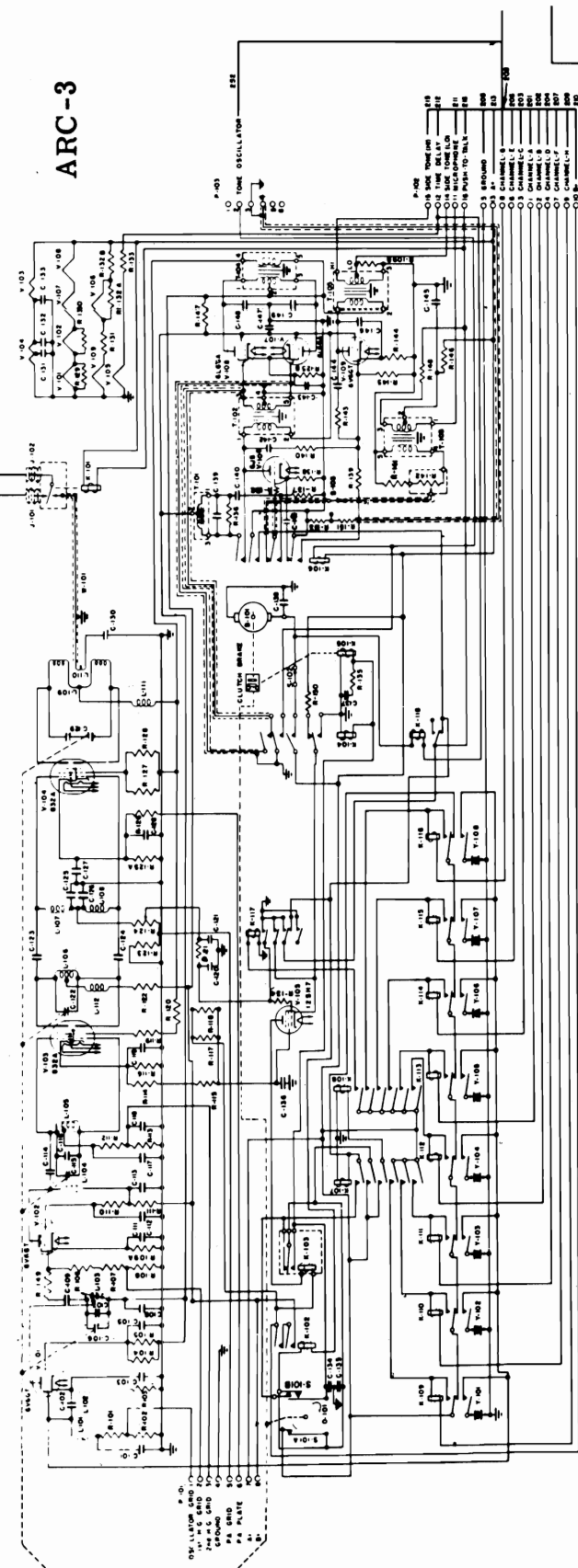


CABLE IN-50A

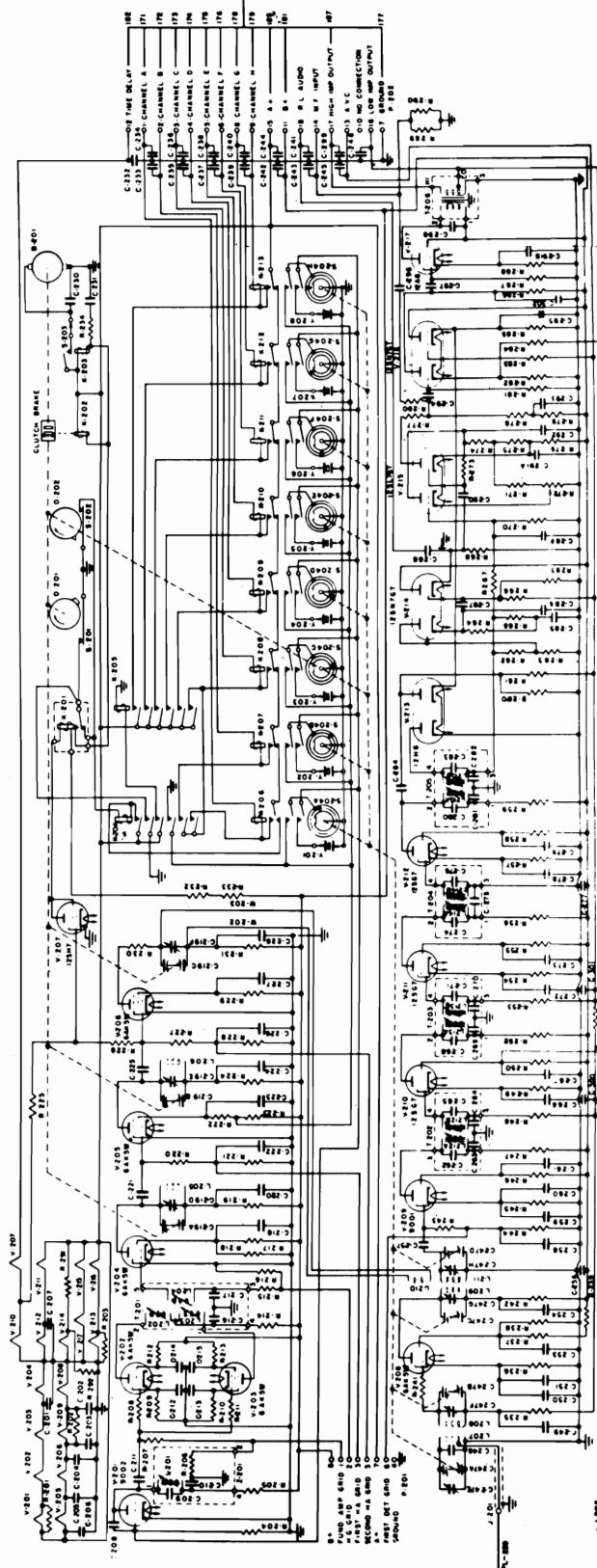
PL-125

PL-125

ARC-3



TRANSMITTER T-67B/ARC-3



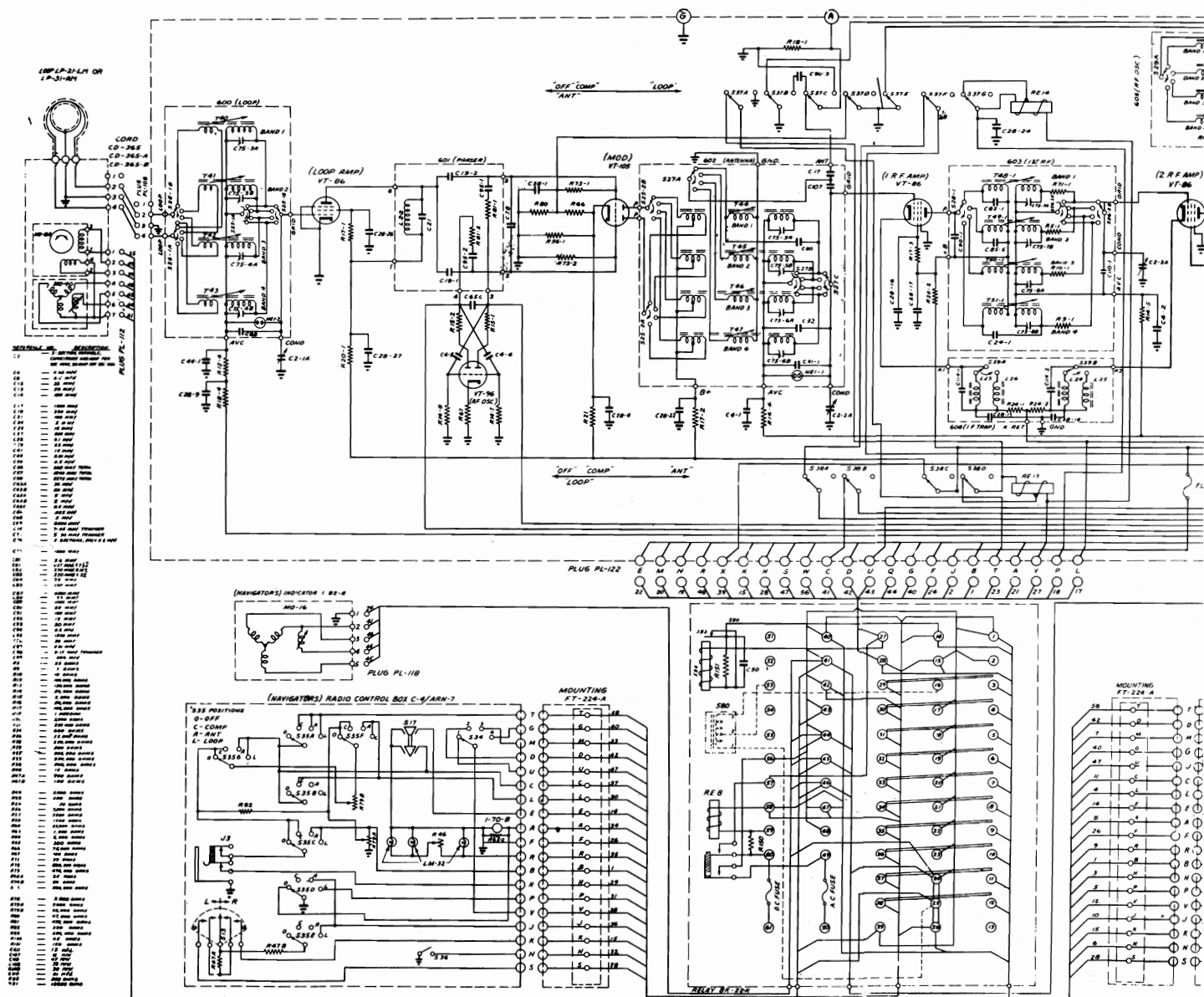
RECEIVER R-77B/ARC-3

220 mc conversion (the only practical band to use this unit on). For this conversion the RF coils can be squeezed a bit and an external oscillator fed into J-106. This oscillator may tune either 221-225 mc or 219 to 224 mc.

ARN-7

The ARN-7 is an aircraft receiver used primarily for radio direction finding by aircraft. It is a superheterodyne receiver and covers the frequency range of 100 to 1750 kc in four bands. It normally operates from a power supply of 115 volts 400 cycles and a 28 volt supply for the operation of certain relays. When a supply of 12 volts is the only d. c. available the RA-59-A is employed for relay control in addition to the 115 volt 400 cycles.

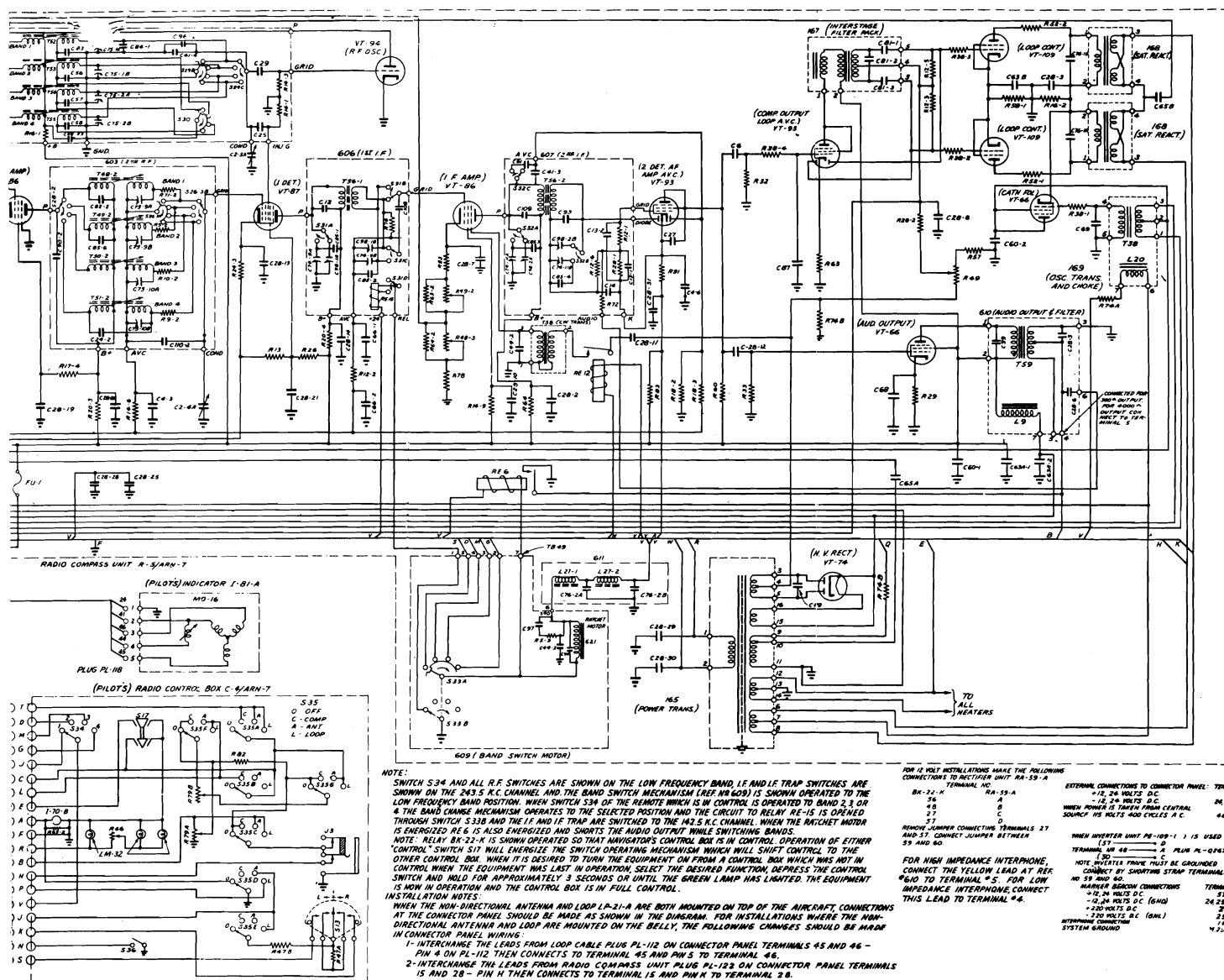
The receiver required a control box C-4/ARN-7 for tuning and operation. Several loop antennas are available such as the LP-21 and the LP-31. A sense antenna is required for proper operation of the direction finder as well. The output is to headsets as well as to indicators when the loop antenna is used. It is not necessary to make use of the loop antenna if direction finding characteristics are not required. The indicators used are the I-81-A and I-81-N panel type and the I-82-A and ID-65/ARN navigators type compass indicator. The indicators indicate the true null bearing of the direction finding loop. The nulling of the loop antenna is either manual, or automatic. When automatic direction finding is employed the loop antenna will automatically locate the station to which the receiver is tuned.



ALIGNING FREQUENCIES

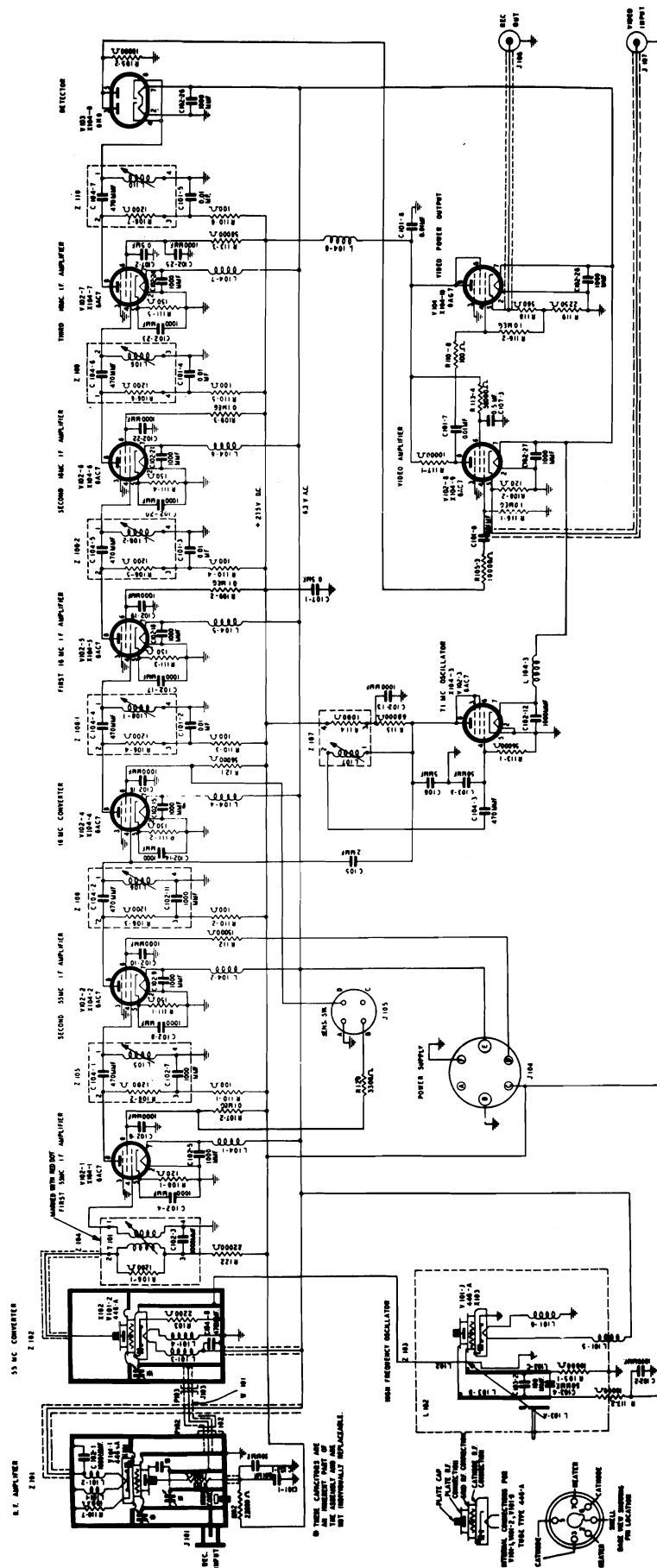
BAND	ALIGN FREQ.	LOOP	ANT	1st RF	2nd RF	Osc RF
100- 200 kc	200 kc	C-75-3A	C-75-5A	C-75-7A	C-75-9A	C-75-1A
200- 410 kc	410 kc	C-75-3B	C-75-5B	C-75-7B	C-75-9B	C-75-1B
410- 850 kc	850 kc	C-75-4A	C-75-6A	C-75-8A	C-75-10A	C-75-2A
850- 1750 kc	1750 kc	C-75-4B	C-75-6B	C-75-8B	C-75-10B	C-75-2B

The IF frequencies are 243.5 kc and 142.5 kc depending upon the band setting.



ASB-7

The ASB is a 400 mc range radar receiver with dual conversion to 1655 mc IF's. For conversion data, see CQ, October 1956, P. 19.



ATK (ARK)

The ATK (ARK) is a television camera, transmitter and receiver for VHF operation. The receiver is a superhet with a 50 mc IF. The ATJ (ARJ) is quite similar except for a 23.5 mc IF. The scanning rate is 14 kc, which can easily be modified to the present commercial standard of 15.75 kc. For conversion data, see May 1957 CQ.

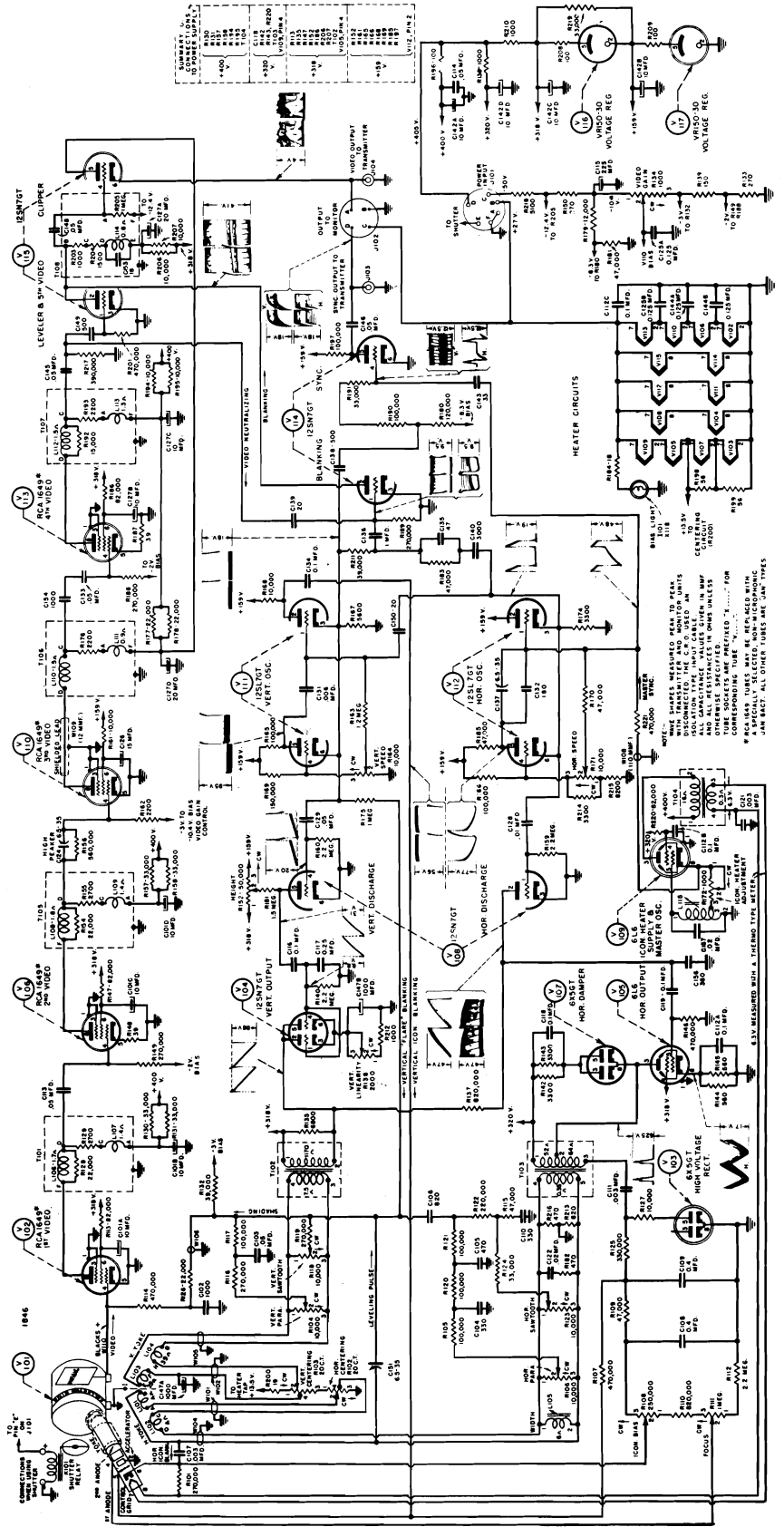
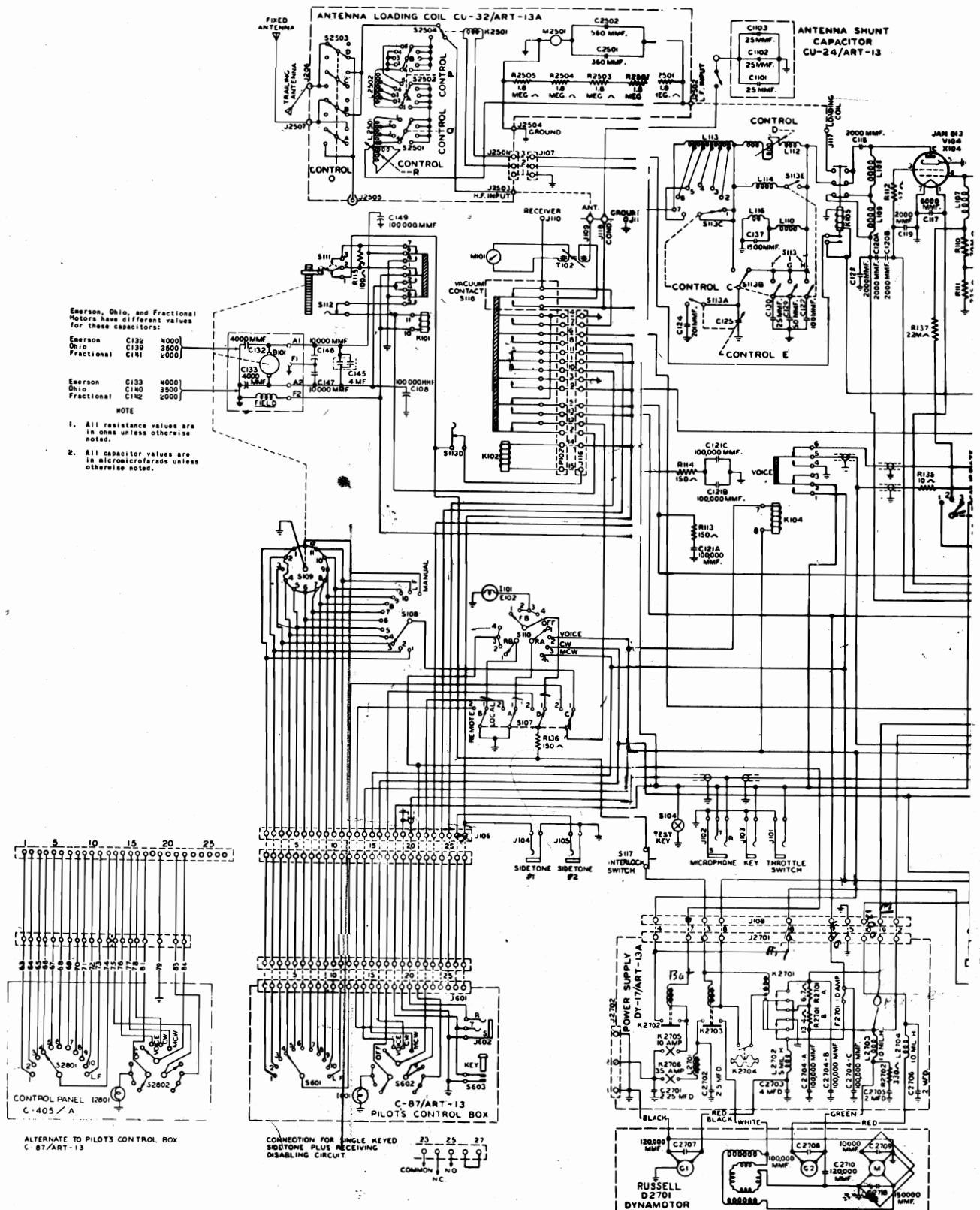


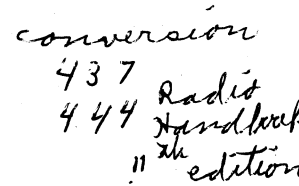
Figure 4—Conversion Unit CR1-59.4E, Schematic Diagram

ART-13

The AN/ART-13 is an airborne transmitter for use in patrol aircraft. It covers the frequency range of 2000 to 18,100 kc. Some versions have an additional low frequency band of 200 to 1500 kc. The equipment uses an external dynamotor power supply providing 400 volts dc at 225 ma and 1250 volts at 250 ma. This is in addition to the 28 volts dc for the operation of the tube filaments and motors. The equipment is preset to any frequency within the range specified and may be automat-



Output is either CW or voice, amplitude modulated and keying is accomplished by means of a keying relay.

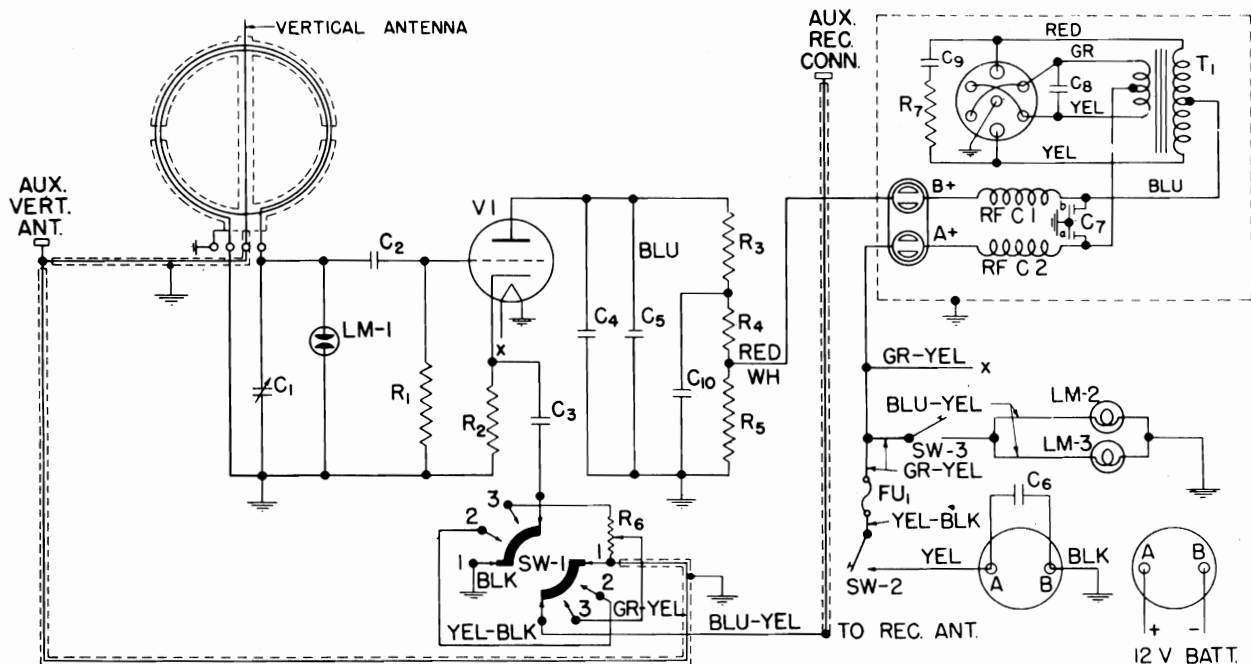


AS-81/GR

The AS-81/GR is a direction finding loop attachment for use with any communications receiver covering the frequency range desired. It uses one of four loops, depending upon the band desired, and supplies loop directivity to the receiver. A twelve volt vibrator within the set supplies all necessary high voltages.

Loop	Color Code	Freq. Range
AT-27/GR	White	1.1 to 2.1 mc
AT-28/GR	Red	2.1 to 4.2 mc
AT-29/GR	Blue	4.2 to 8.5 mc
AT-30/GR	Yellow	8.0 to 16 mc

Provision is made for loop balance and sense to determine the direction of the received signal.



REF. NO.	DESCRIPTION
R ₁	1 MEG 1/2 WATT
R ₂	300 Ω 1/2 WATT
R ₃ , R ₄	50,000 Ω 1/2 WATT
R ₅	25,000 Ω 10 WATT
R ₆	1500 Ω POT
R ₇	5000 Ω 1/4 WATT
C ₁	12-252 μ F
C ₂	600 μ F 500 V

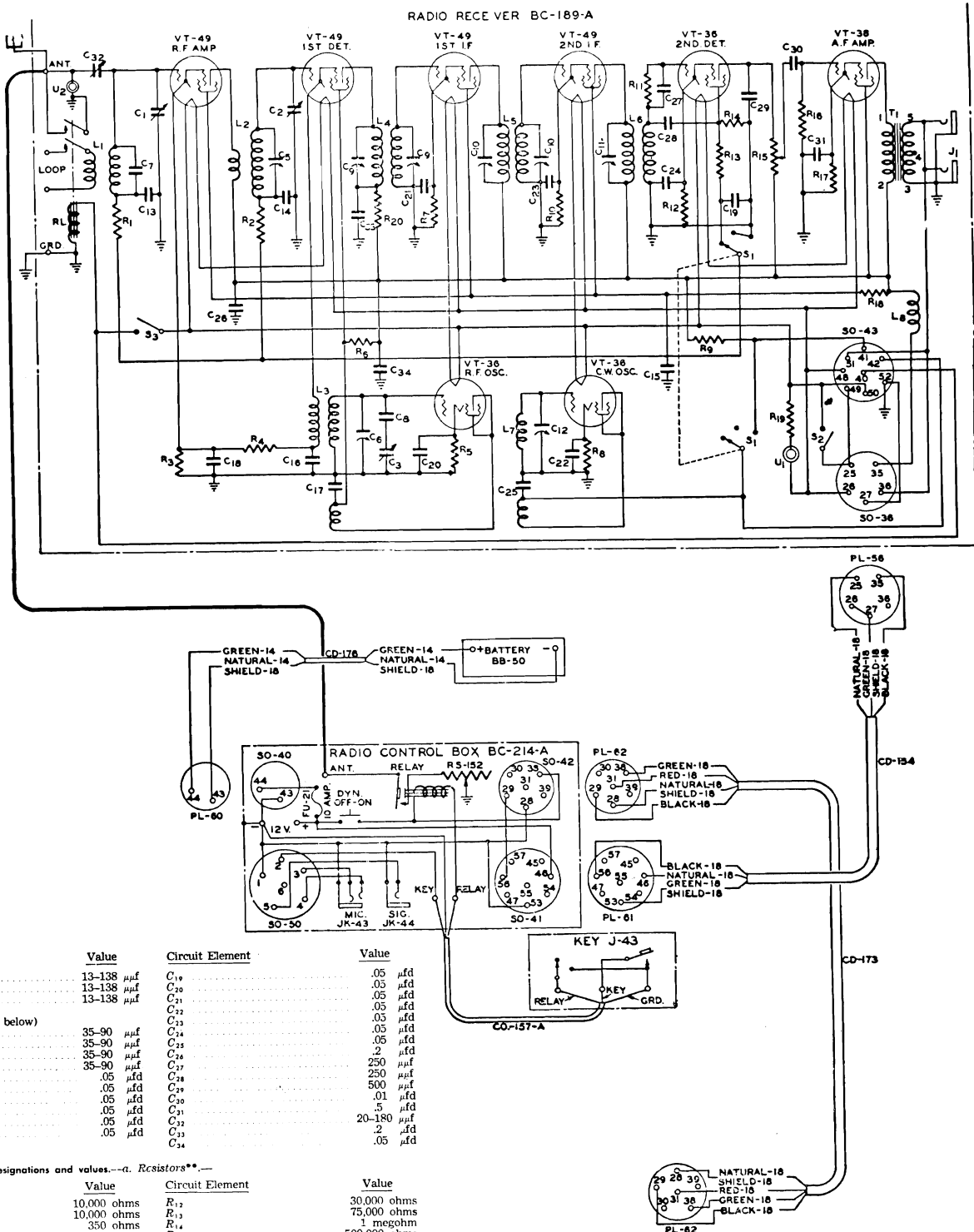
REF. NO.	DESCRIPTION
C ₃ , C ₄	.01 μ F 300 V
C ₅ , C ₆	.25 μ F 600 V
C _{7a}	.5 μ F 50 V
C _{7b}	.1 400 V
C ₈	1 μ F 50 V
C ₉	.0025 μ F 2000 V
C ₁₀	.5 μ F 400 V
V ₁	12 J5 GT, VT-135

REF. NO.	DESCRIPTION
LM-1	NEON LAMP
LM-2, LM-3	PILOT LAMP
FU ₁	2 AMP FUSE
SW ₁	SWITCH, ROTARY
SW ₂ , SW ₃	SWITCH, TOGGLE
RF C ₁	1 MH 15 Ω
RF C ₂	55 TURNS #16 ENAMELED COPPER WIRE
T ₁	TRANSFORMER, POWER

BC-189

The BC-189 is a predecessor of the BC-312. It covers the range of 150 kc to 13 mc by twelve sets of plug in coil drawers. The receiver is a superheterodyne with an IF of 470 kc. The BC-189A has an IF of 850 kc. When operating near the IF frequencies some instability will be noted.

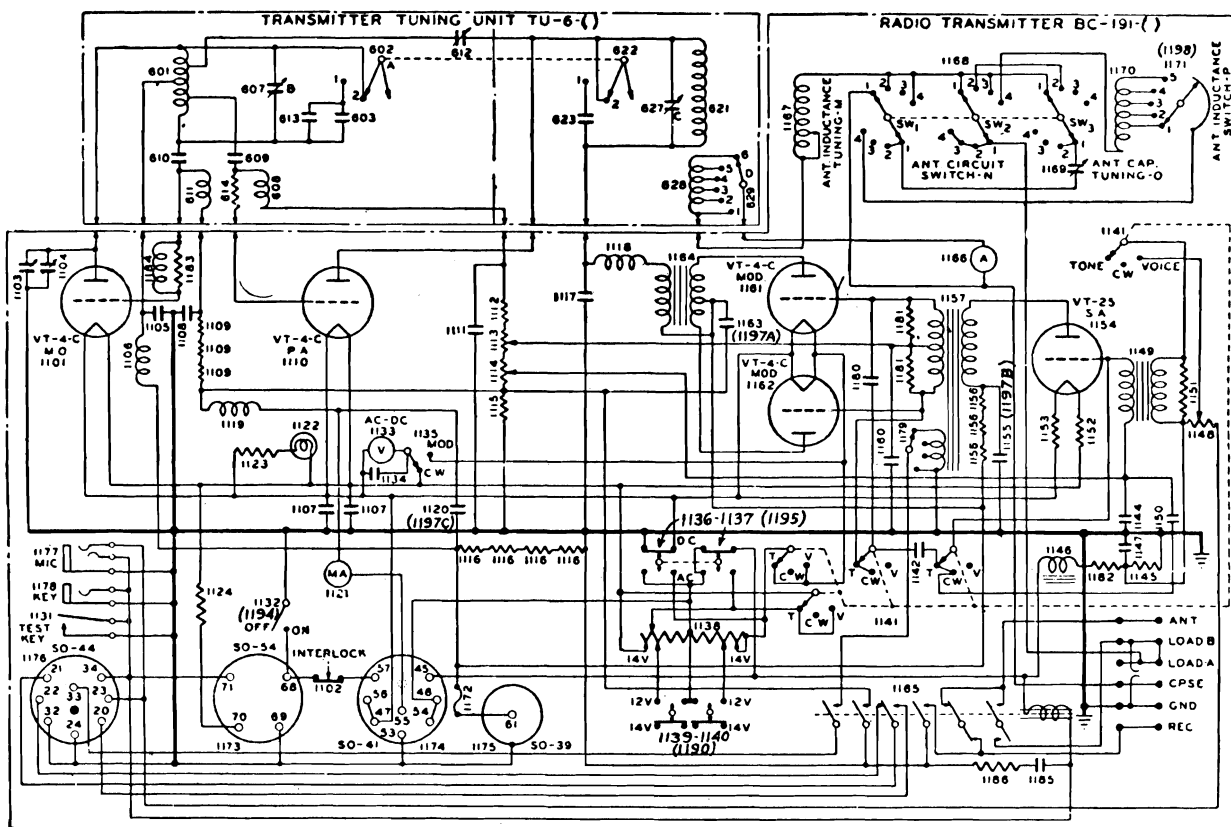
Power is supplied by a dynamotor, and the input is 12V dc. Output is to a pair of headsets.



BC-375 (BC-191)

The BC-375, built by GE, building 89, 1 River Road, Schenectady, N. Y., is an archaic behemoth whose design was finalized in 1935, and was produced in tremendous quantities for war destruction in planes and other expendable vehicles. The design engineers responsible almost had heart attacks when they received an ARC-5 for test comparison and found it to be a fraction of the size and weight, infinitely more stable and put out more power.

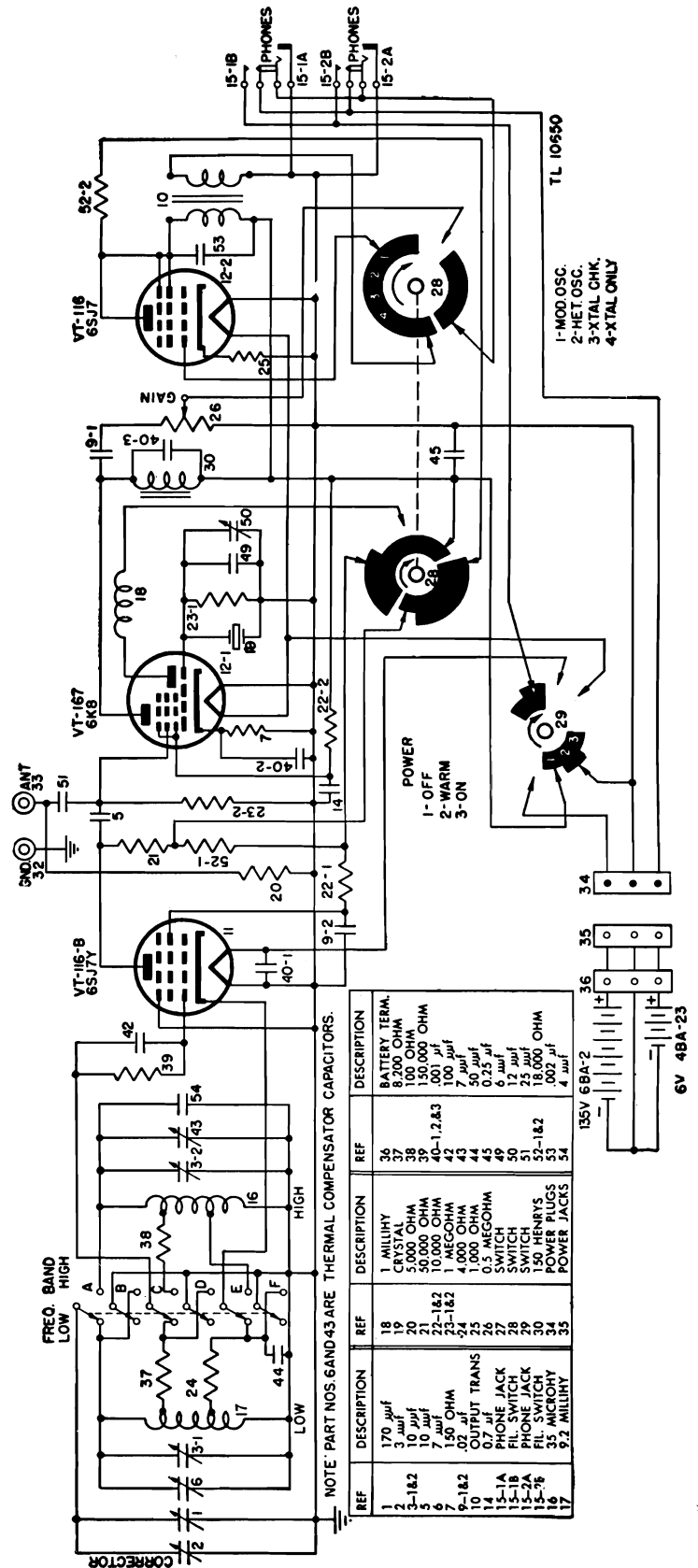
The BC-375 is designed for 28 volts; the BC-191 for 14 volts, otherwise they are almost identical. There are a few moderately usable parts in the transmitter and the tuning units make nice cabinets.



Radio transmitter BC-191-(*) with transmitter tuning unit TU-6-A or -B—schematic diagram.

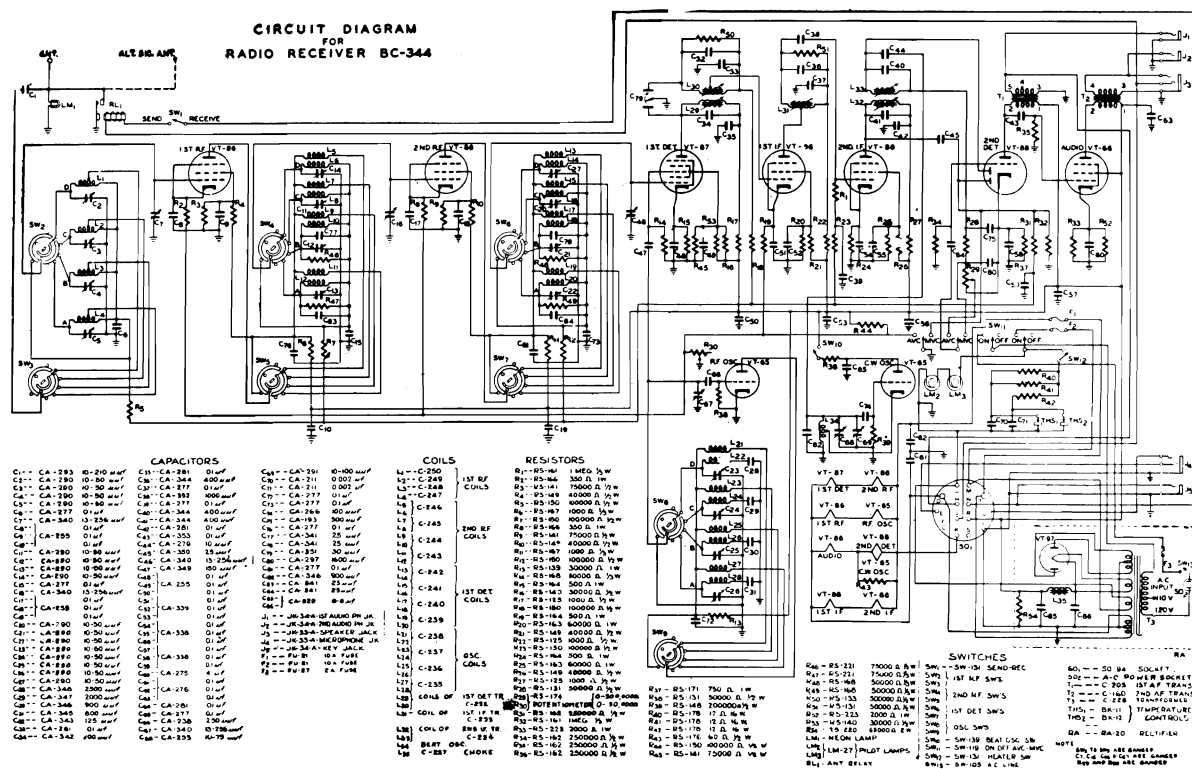
BC-221 (LM)

The BC-221 is a heterodyne frequency meter with a range from 125 kc to 20,000 kc. It uses a crystal calibrator at 100 kc. For most amateur use a small power supply is built into the battery compartment. The Navy model is designated LM, with the odd numbered models (LM-3, 5, 7) being ac powered. When buying one of these units it is a good idea to get one with the calibration booklet if possible as the dial is not directly calibrated in frequency. This is one of the handiest pieces of test equipment for the hamshack and is available at quite reasonable prices from surplus dealers. No hamshack should be without a precision frequency meter. For conversion data, see CQ, April, 1959, P. 79.

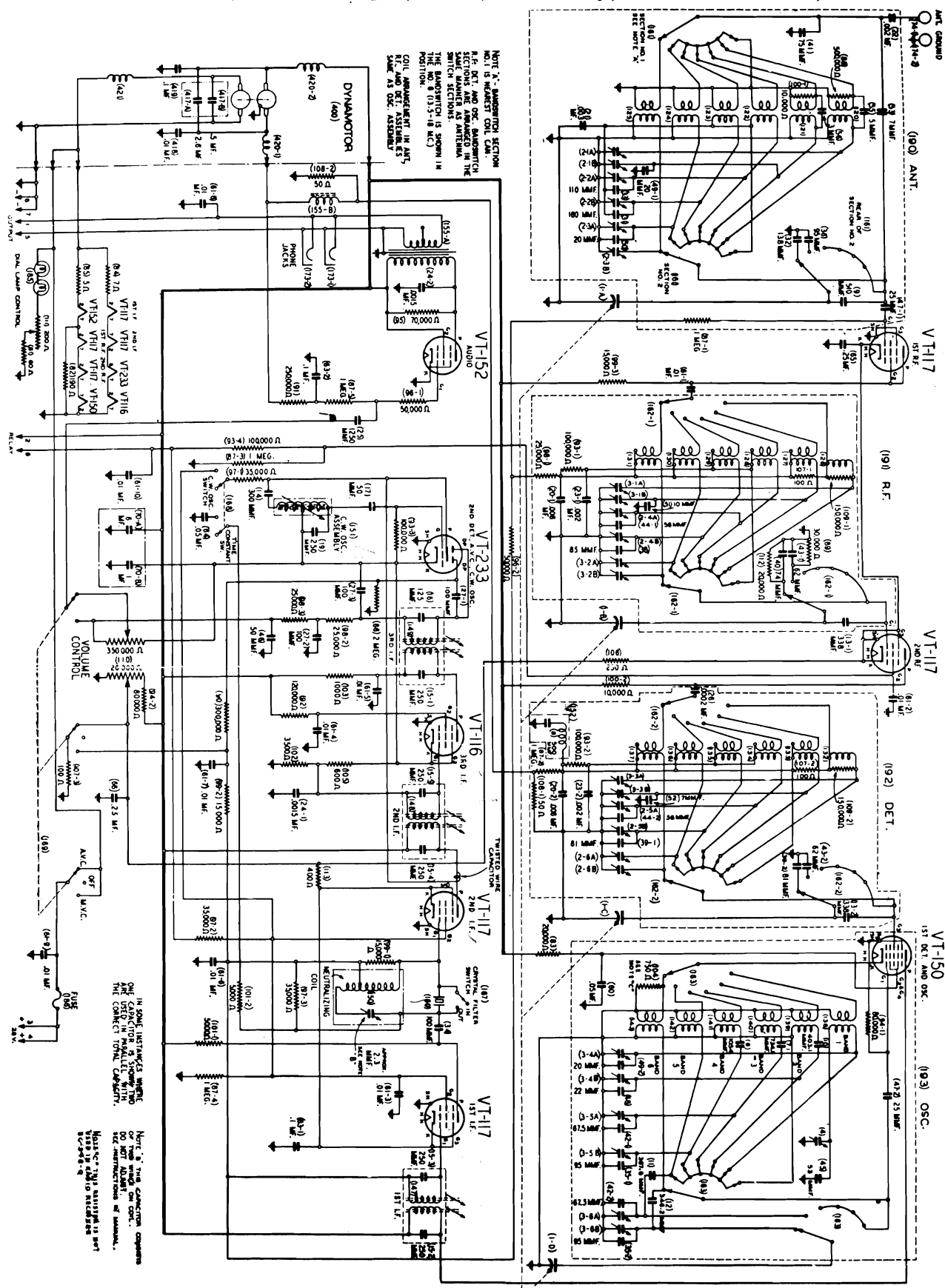


These equipments are receivers used for communications purposes. They are basically identical in appearance. The BC-312 is a superheterodyne receiver covering a frequency range of 1500 to 18,000 kc. It operates from a 12 volt source (dc) at about 7 1/2 amperes, for those models with thermostatic heaters for oscillator stability, and about 4.5 amperes for those models without such heaters. An ac model, operating at 110 volts ac is known as the BC-342. Those models using heaters consume about 100 watts, while those without use about 75 watts. The intermediate frequency is 470 kc.

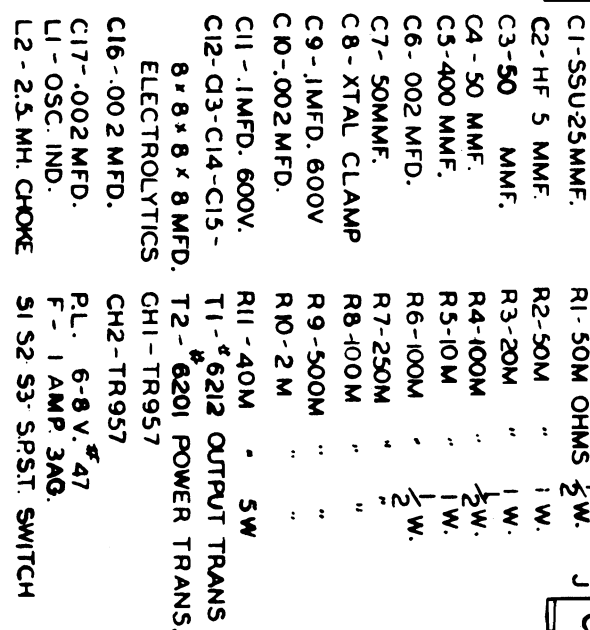
The BC-314 is the low frequency counterpart of the BC-312. It operates over a frequency range of 150 to 1500 kc. It has an IF of 92.5 kc. The BC-314 has an ac counterpart in the BC-344.



The BC-348 is essentially the same as the BC-312 series of receivers, however it is considerably broader with respect to selectivity. The BC-348 covers the range 950 kc to 18 mc with an IF of 915 kc. This is a pretty good receiver for the amateur. For conversion data, see CQ Sept., 1956, February, 1959 and March, 1959.

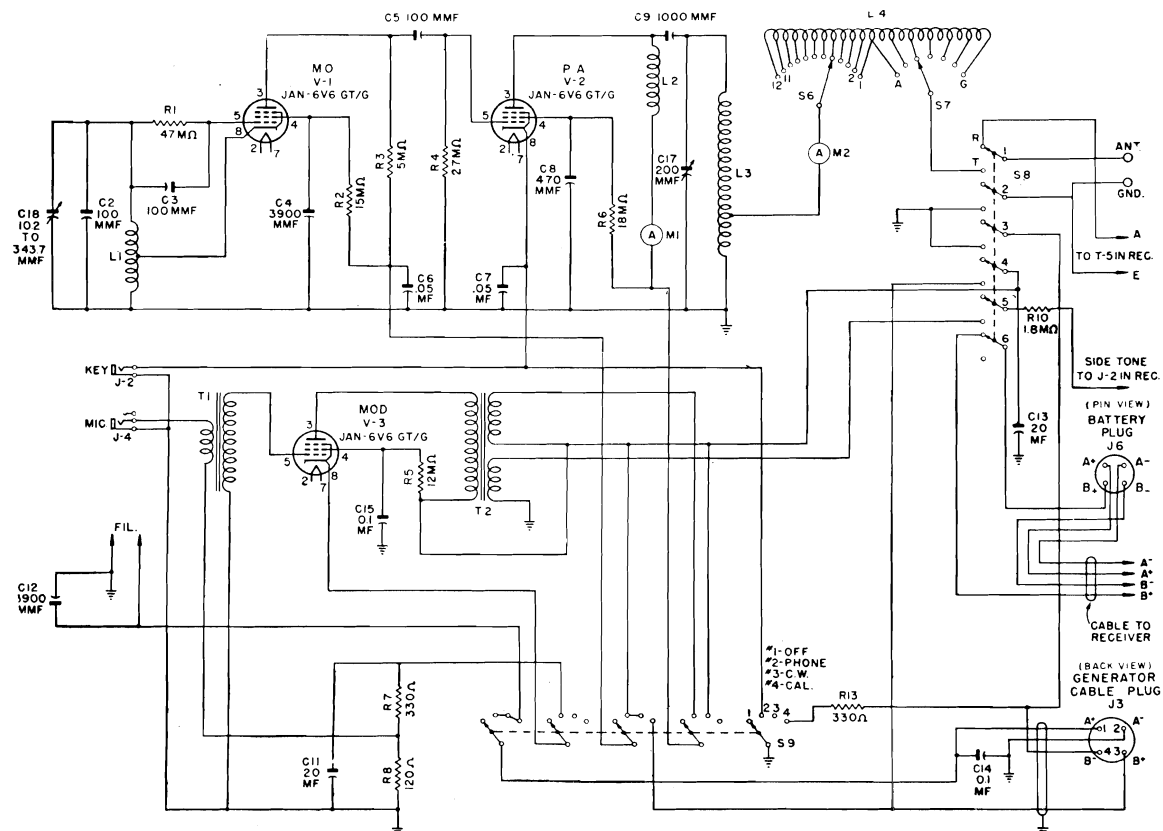
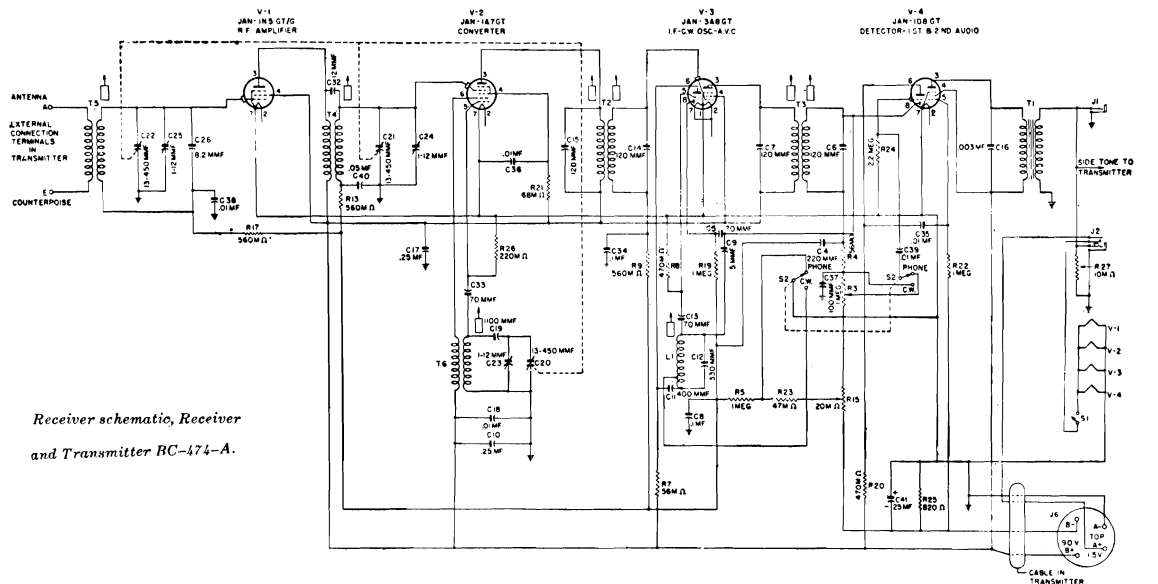


The BC-438 is a heterodyne frequency meter with a range from 195-215 mc. It uses a crystal at 4.1 mc to provide a 20.5 mc standard frequency (205 mc tenth harmonic) and a variable 19.5 - 21.5 mc oscillator to zero beat the unknown signal for measurement (again using the tenth harmonic of the oscillator) or for providing a signal for receiver adjustments.



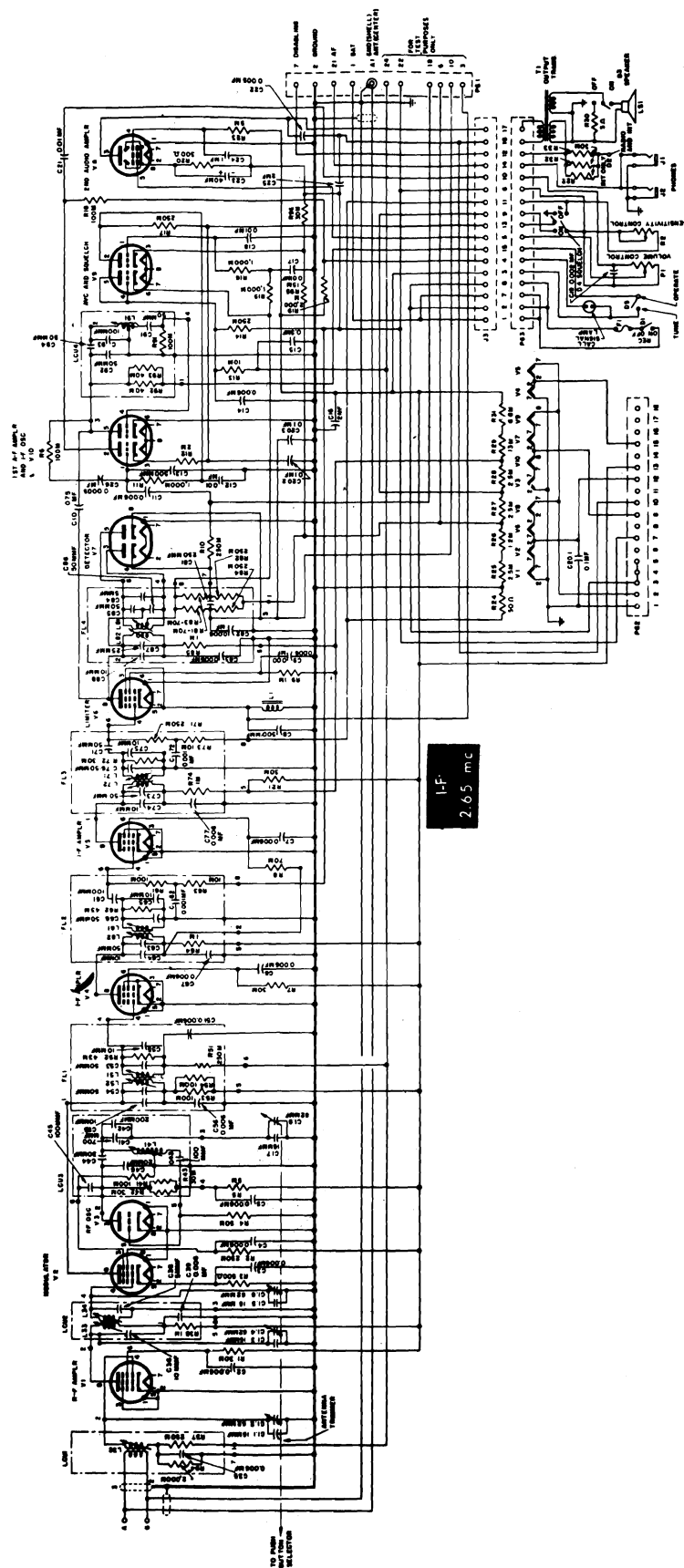
The BC-474-A is a portable AM radio transmitter-receiver covering the frequency range of 2.3 to 6.5 mc. It is capable of operation on both CW and voice. Power is supplied by a 90 volt dry cell and a 1.5 volt dry cell, or a hand generator, GN-44-A for the transmitter. Transmitter output is rated at 4 watts. A 35 foot antenna and a 35 foot counterpoise are required for proper output and operation.

The receiver is a superheterodyne with an IF of 455 kc. The input is to an RF stage and the output to one or two pairs of high impedance headsets. The transmitter is VFO'd and uses a separate power amplifier for the output stage. The power amplifier is keyed for CW operation.

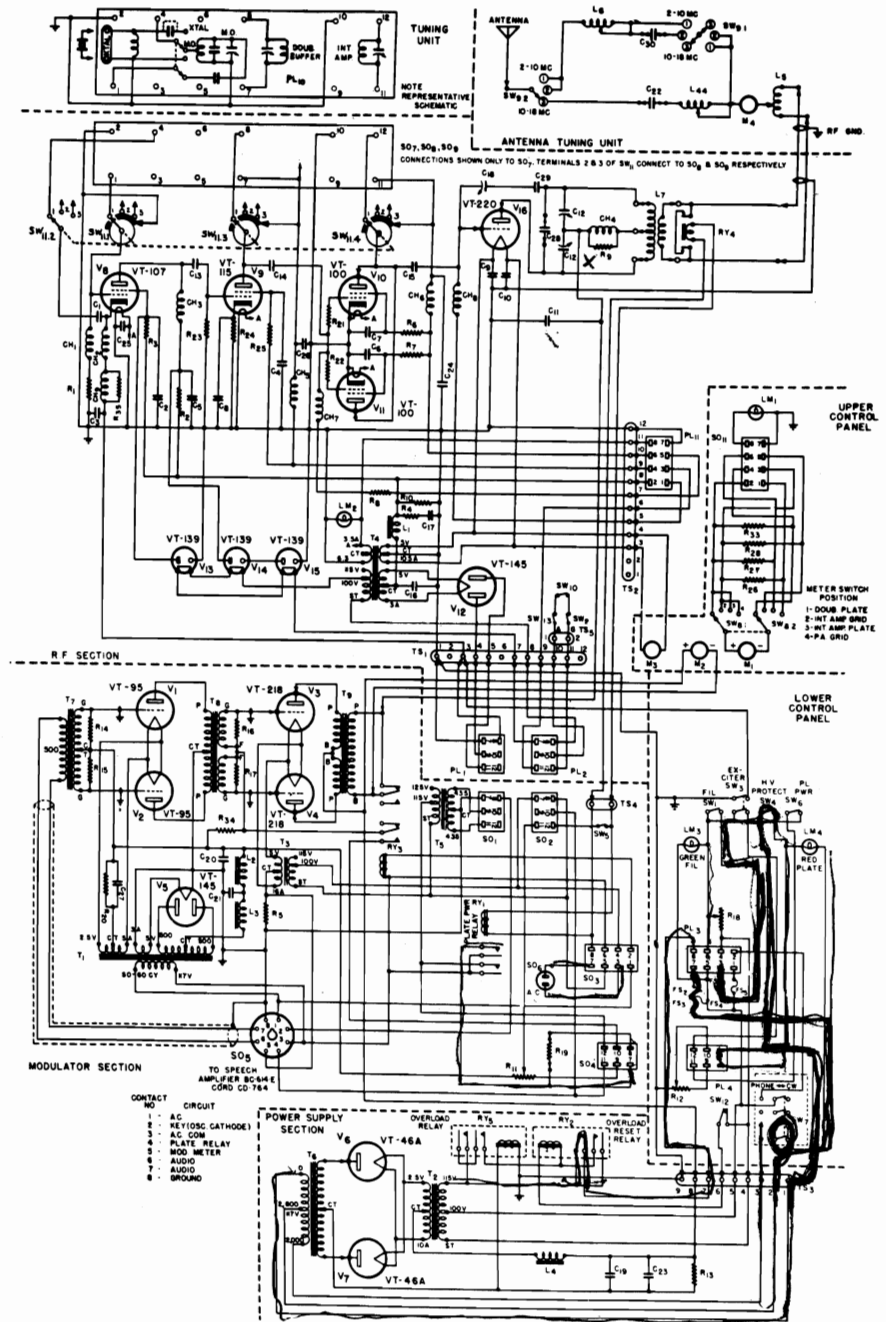


BC-603

The BC-603 receiver is an FM unit covering the range 20.0-29.7 mc. It is the companion unit to the BC-604 transmitter. This receiver is a high sensitivity unit with an IF of 2.65 mc. For complete conversion data, see CQ, September 1958, P. 74.



While it is possible to use the BC-610 with the tuning boxes, the stability resulting is not consistent with current amateur standards and will probably lead to considerable correspondence with FCC monitoring stations plus rapidly deteriorating neighbor relations due to TVI, BCI, HAI, EOI, etc. Ad Nauseum. 4 screws remove the tuning box assembly. It is a simple matter to drive the transmitter with a low power VFO by mounting a SO-239 connector on the exciter deck and driving the 807 buffer-multiplier. If a higher power exciter is available, the 250th final may be driven directly. Don't rejoice yet. The TVI is still there.

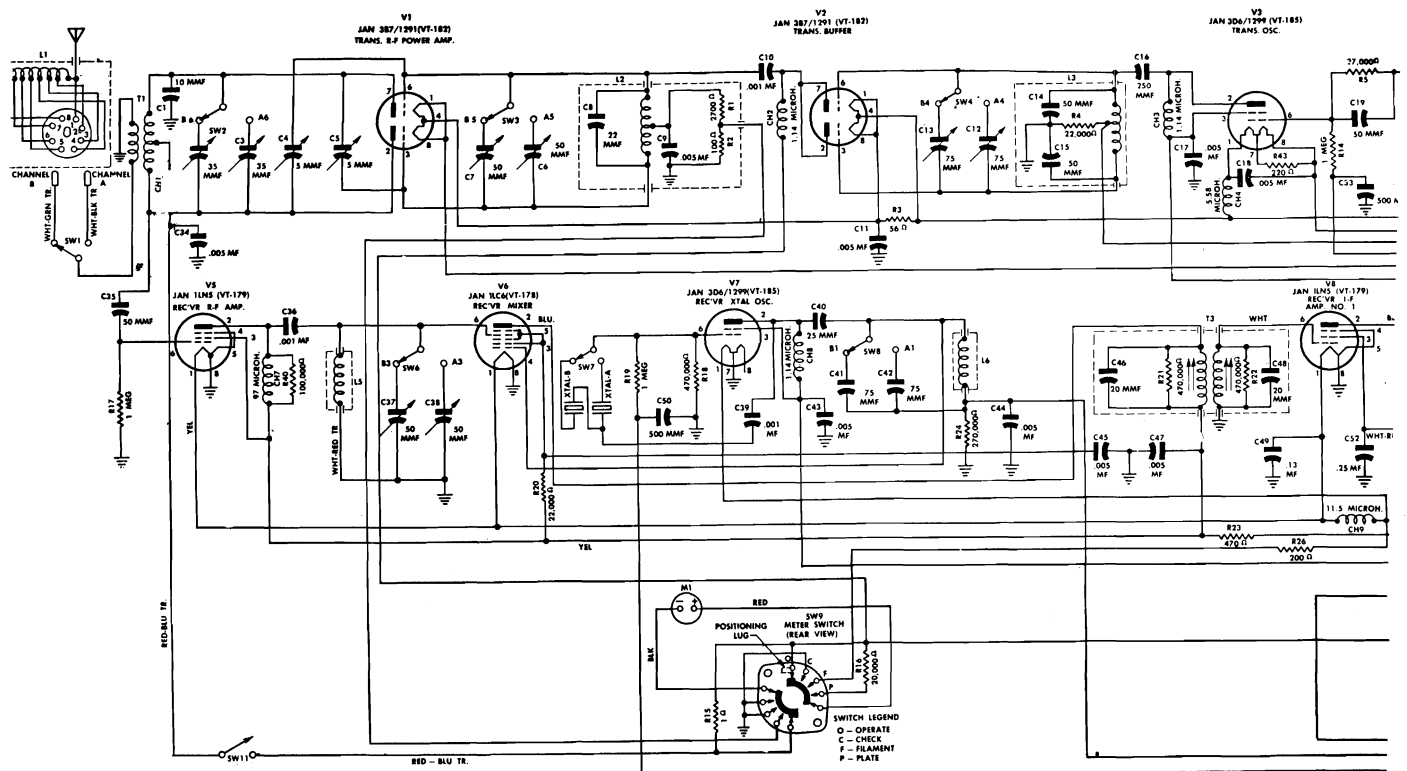


BC-620

The BC-620 is a low power, frequency modulated transmitter-receiver unit, covering the frequency range of 20 to 27.9 mc. It operates on two preset crystal controlled frequencies, which are selected by a front panel switch. It is designed to operate from batteries or a six or twelve volt power supply system. It was originally intended for mobile or portable use.

The receiver is a superheterodyne with a 2.88 mc intermediate frequency. The receiver local oscillator is crystal controlled. The transmitter operates with a VFO. The VFO is held on the proper frequency by a reactance tube which is in turn operated by receiving a small portion of the transmitted frequency, and correcting the VFO to IF.

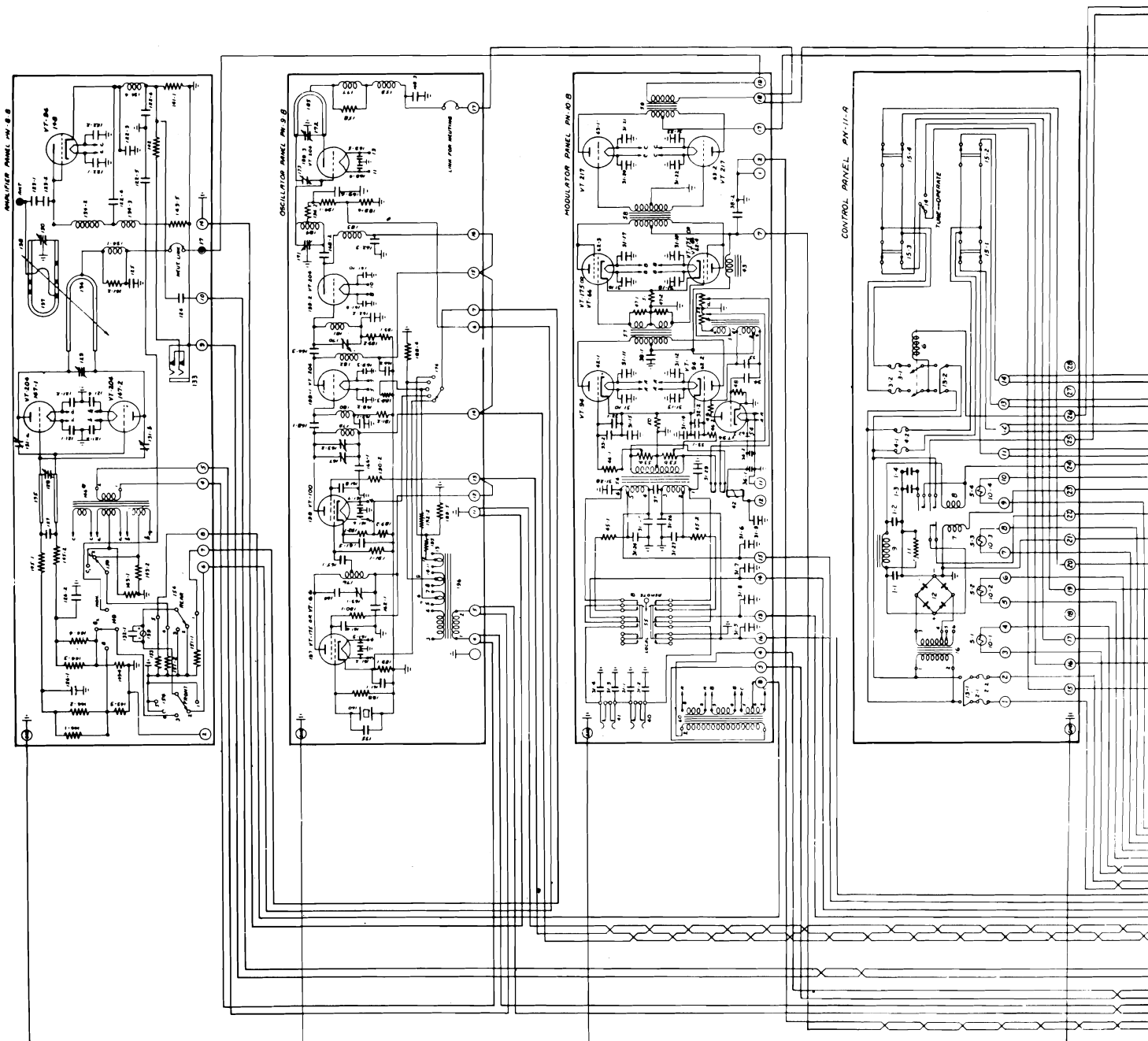
Transmitter power output is approximately one watt. The receiver uses crystals in the frequency range of 5.7067 mc to 8.340 mc. The power requirements of the BC-620 are as follows:



***BA-39 and BA-40 are multi-voltage batteries.**

BC-640

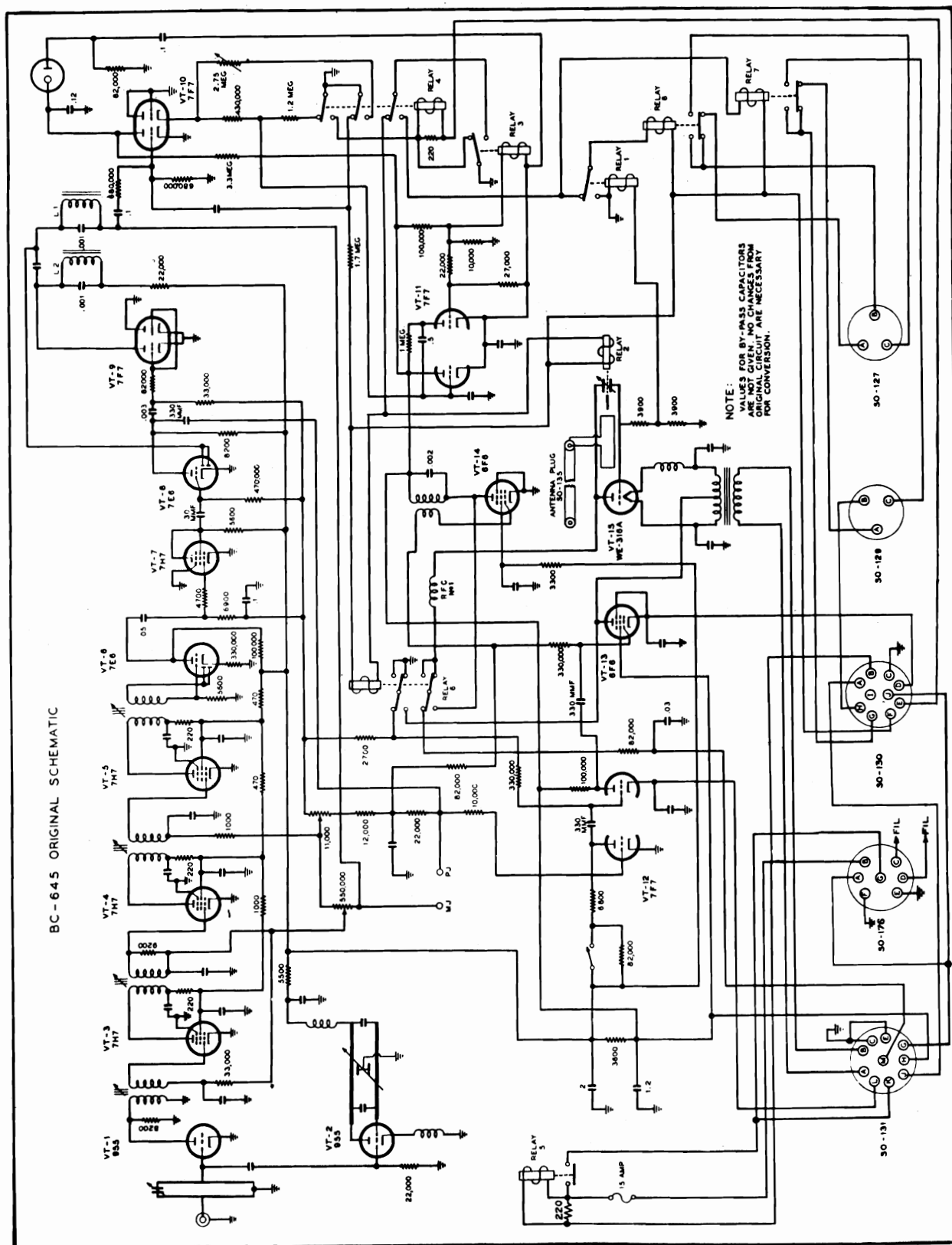
The BC-640 is a ground type, rack-mounted transmitter for the 100 to 156 mc band for general communications with aircraft. It is amplitude modulated, providing 50 watts output over the band. Provision is made for the use of tone modulation when MCW operation is necessary. Operation is crystal controlled, with frequency changing being accomplished by changing the crystal and the circuits. Crystals used are in the 5555.5 to 8666.6 mc range, for a total



This is the biggest, most powerful TVI generator ever built, and with slight modification will be able to completely blank out all vhf and uhf channels for miles around. This gives TVI even when turned off.



The BC-645 is an airborne IFF transceiver for 470-495 mc and transmitted either a pulse or modulated CW signal (30 kc). This unit can be converted for 420 mc ham use, rather easily. For conversion details, see CQ, December, 1956, P. 66.

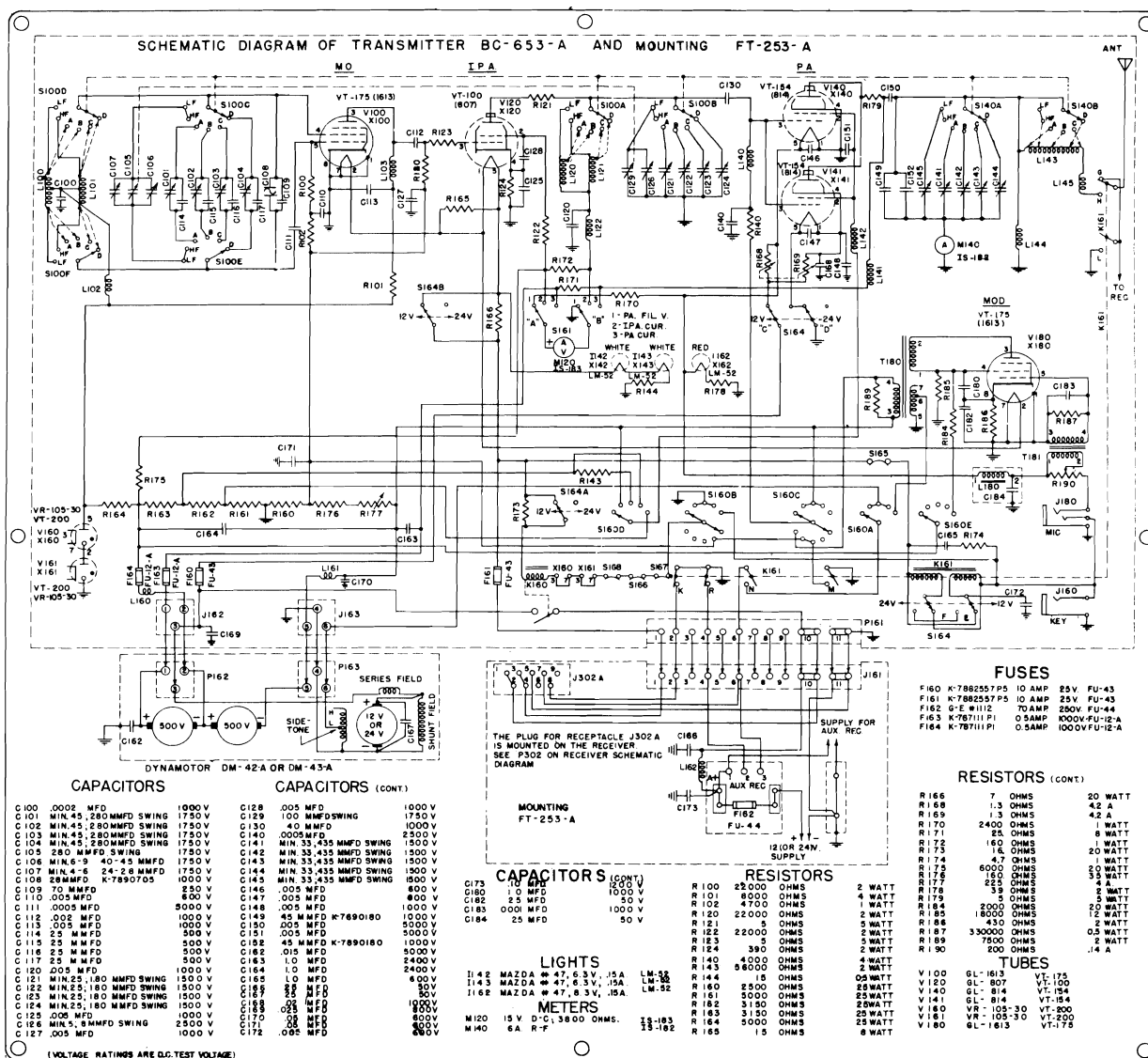


BC-653

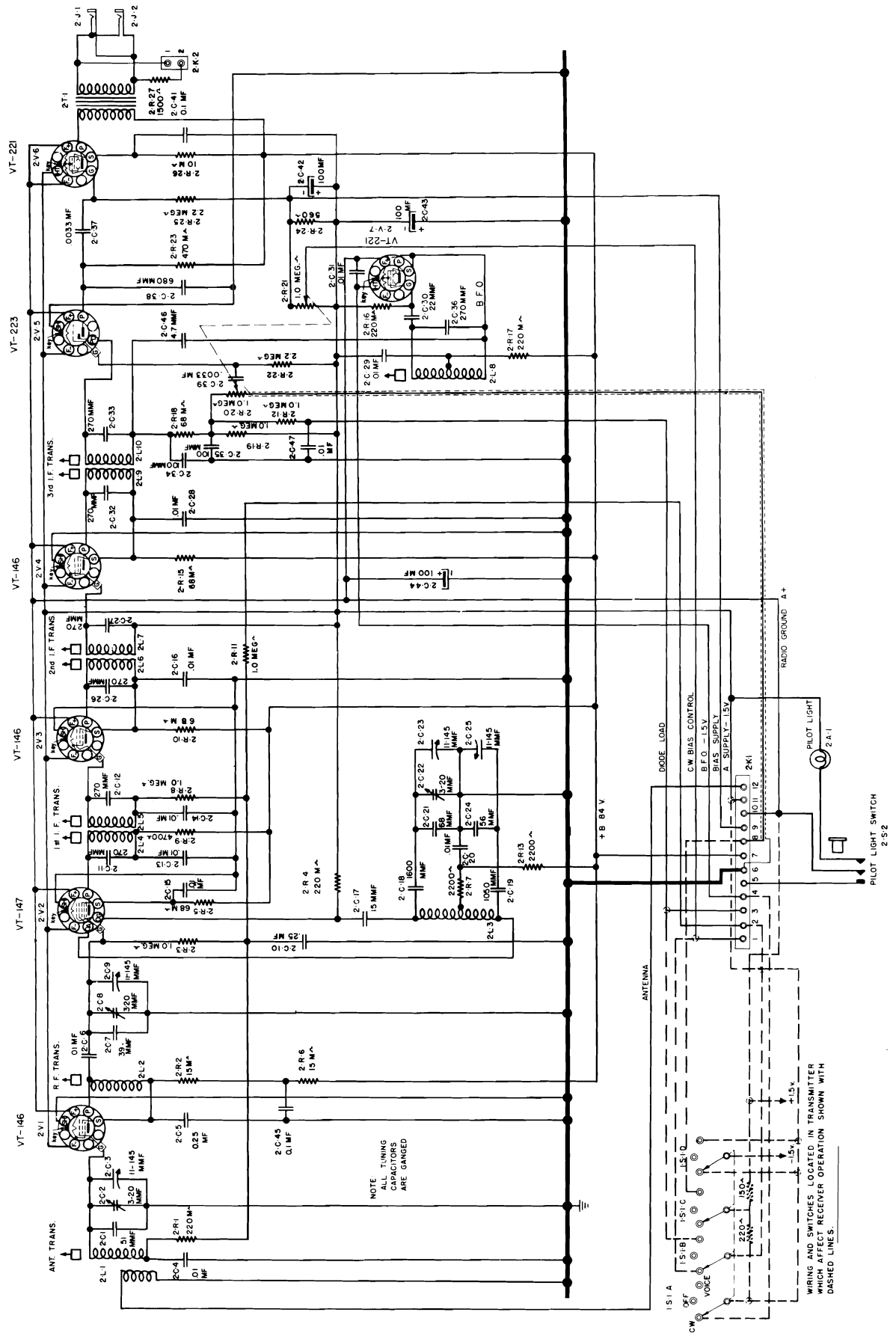
The BC-653 is a vehicular transmitter receiver operating from either 12 or 24v dc. On 12 volts the battery drain is 42 amperes while on 24 volts the drain is 30 amperes. Transmitter output is over the range of 2 to 4.5 mc at a cw power of 50 to 90 watts. Voice power output (AM) is approximately 1/4 of this.

The receiver is the BC-652A and covers the range in two bands. The transmitter is the BC-653A. The antenna uses mast sections MS-49 to MS-53 inclusive and a base MP-37. A T-17 microphone is used for voice. A 200 kc crystal oscillator is built into this equipment to calibrate the transmitter. The receiver uses a 915 kc if.

This is 400 lbs of nothing. Actually, it works pretty well but takes the patience of Job to sort out the millions of tuning units.



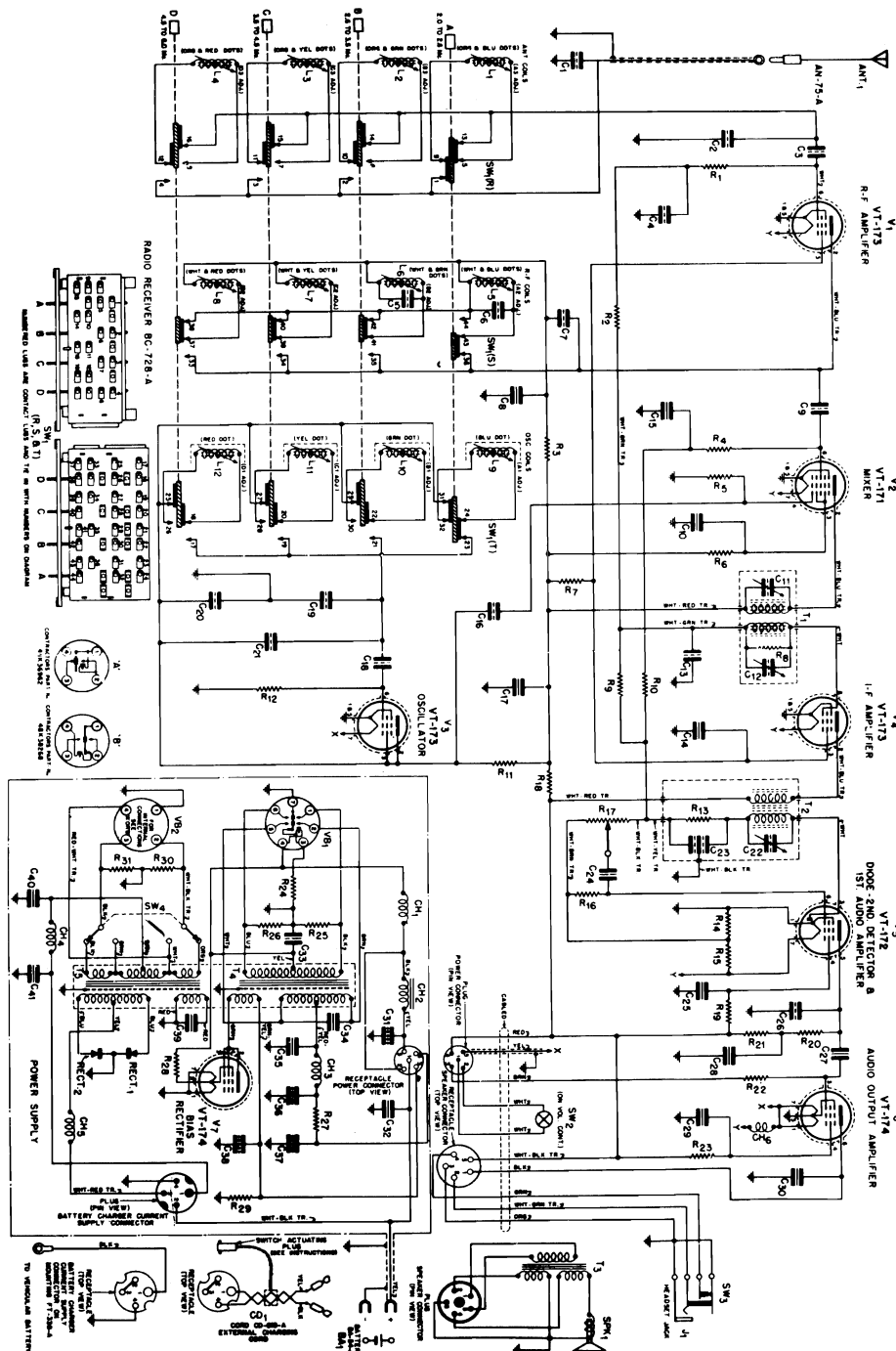
SCR-284 (BC-654A) 3800-5800 kc transmitter-receiver, CW or AM, 17 watts. 455 kc IF.
Uses PE-103A and vibrator supply for mobile use, 6 or 12 vdc.



This equipment is a six tube, push-button radio receiver designed for portable or vehicular operation. It is powered by a two volt storage battery, a BB-54-A. The power supply consists of a vibrator unit complete with a recharger for the storage cell. The BC-728-A operates over a range of 2 to 6 mc on four preset frequencies chosen by the operators selection of appropriate push buttons.

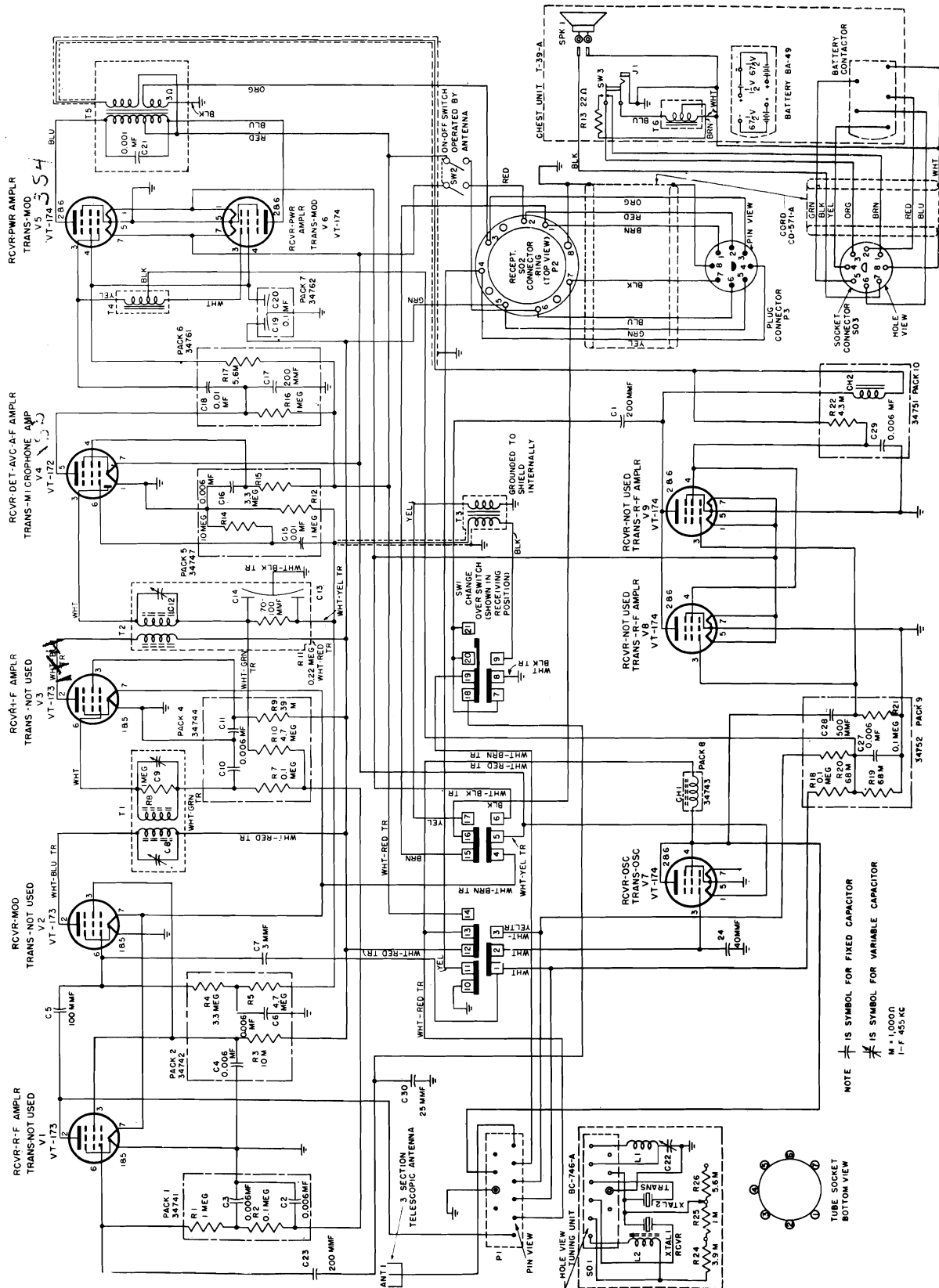
Button A has a possible range of 2.0 to 2.6 mc, button B covers 2.6 to 3.5 mc, button C covers 3.5 to 4.5 mc, and button D covers 4.5 to 6 mc. The receiver operates with AM signals and has an intermediate frequency of 455 kc.

An external whip type antenna, AN-75-A is used with the equipment and a jack is provided for earphone operation when desired. A loudspeaker is normally used with this equipment, and it is mounted within the case of the BC-728-A.



BC-745

The BC-745, a small transmitter-receiver known as the "Horse-Talky" covers 2-6 mc crystal controlled. The receiver has an IF at 455 kc, and the transmitter is grid modulated. Power under 1 watt. Power: Filament, 1.5 v, Plate, 67 volts receiver; 120 v transmitter

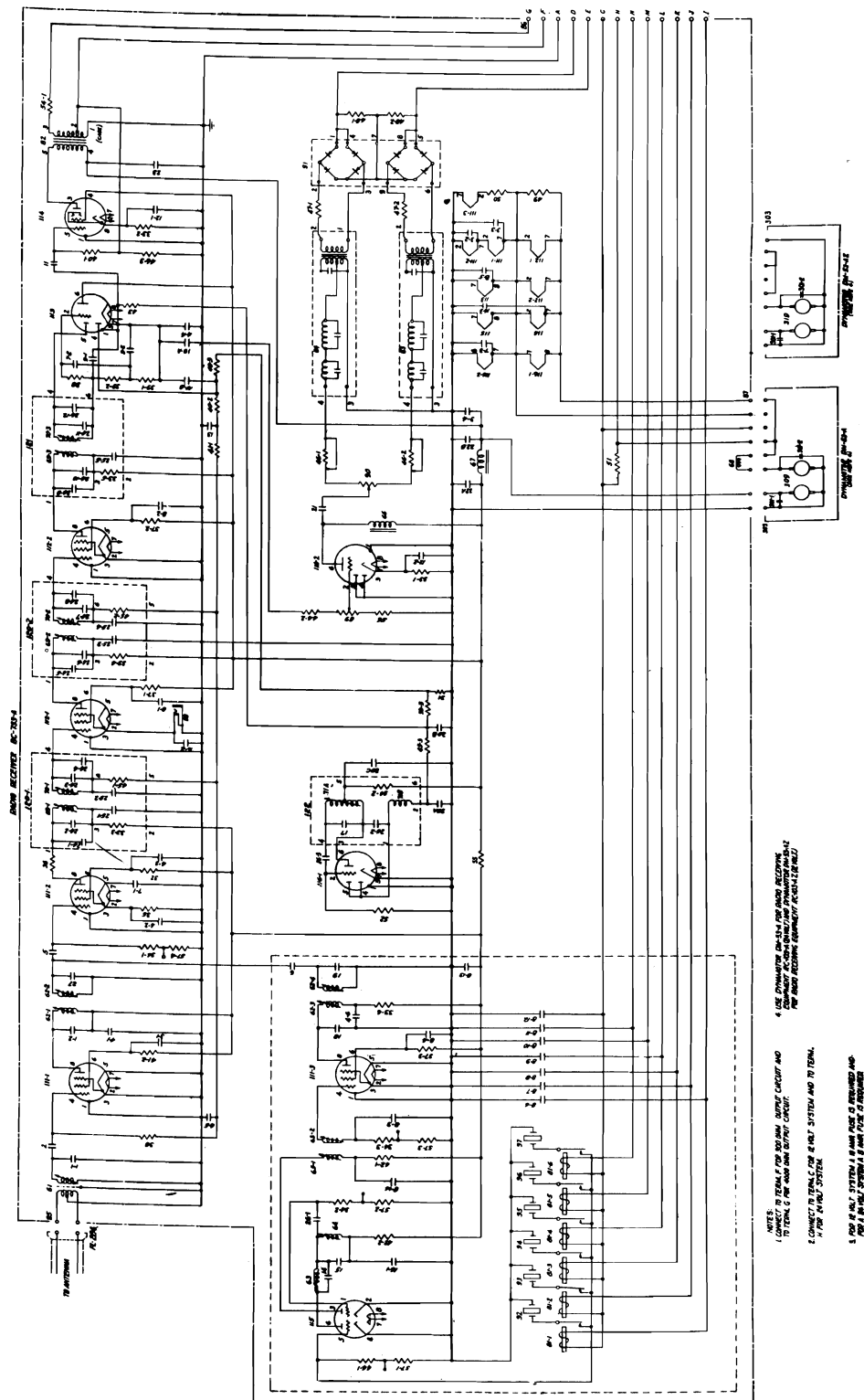


BC-733

The BC-733 is a crystal controlled receiver for aircraft navigational purposes. It operates in the 108.3 to 110.3 mc band and has a 6.9 mc I. F. The input power is 12 or 24 volts.

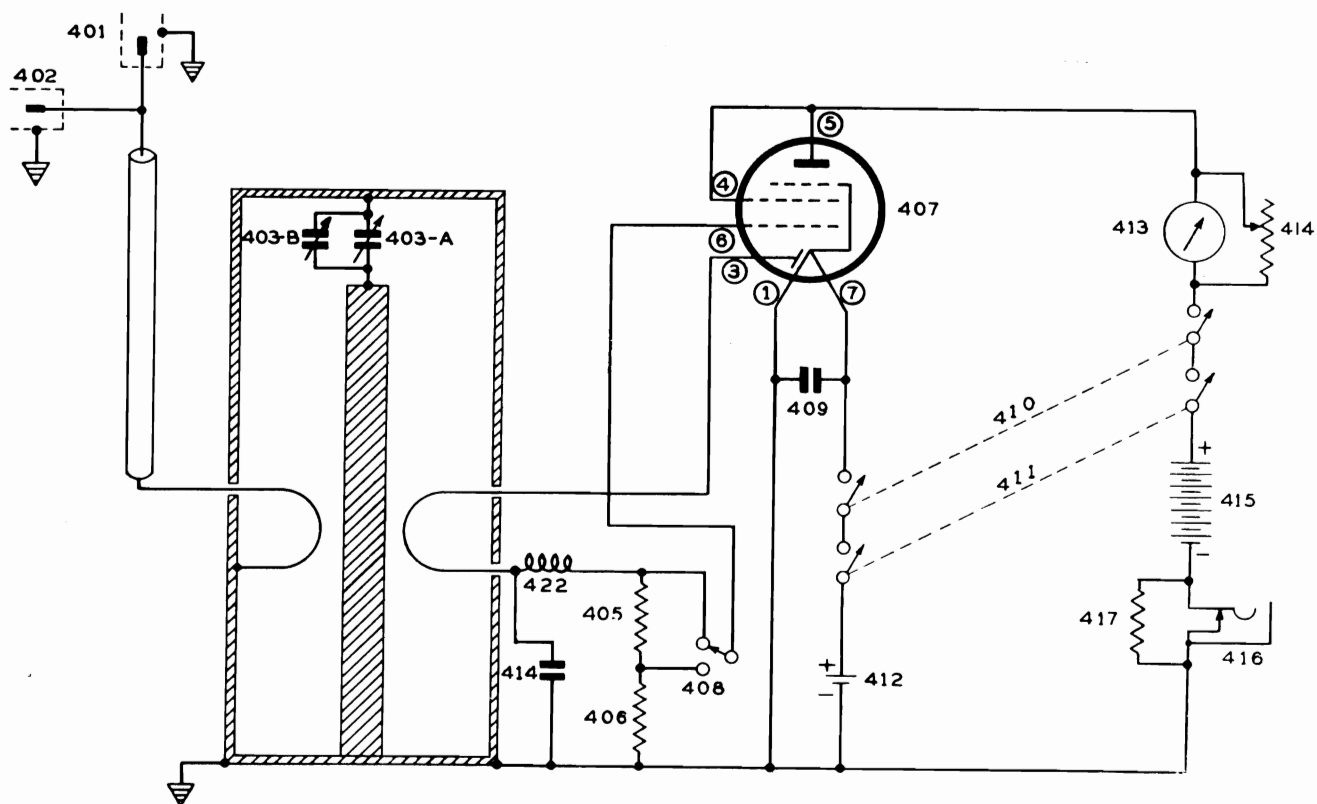
This converts easily to two meters. The 90 and 150 cycle filters can be used for many experimental purposes.

The BC-733 can also be converted to receive signals from U.S. space satellites on 108 mc.



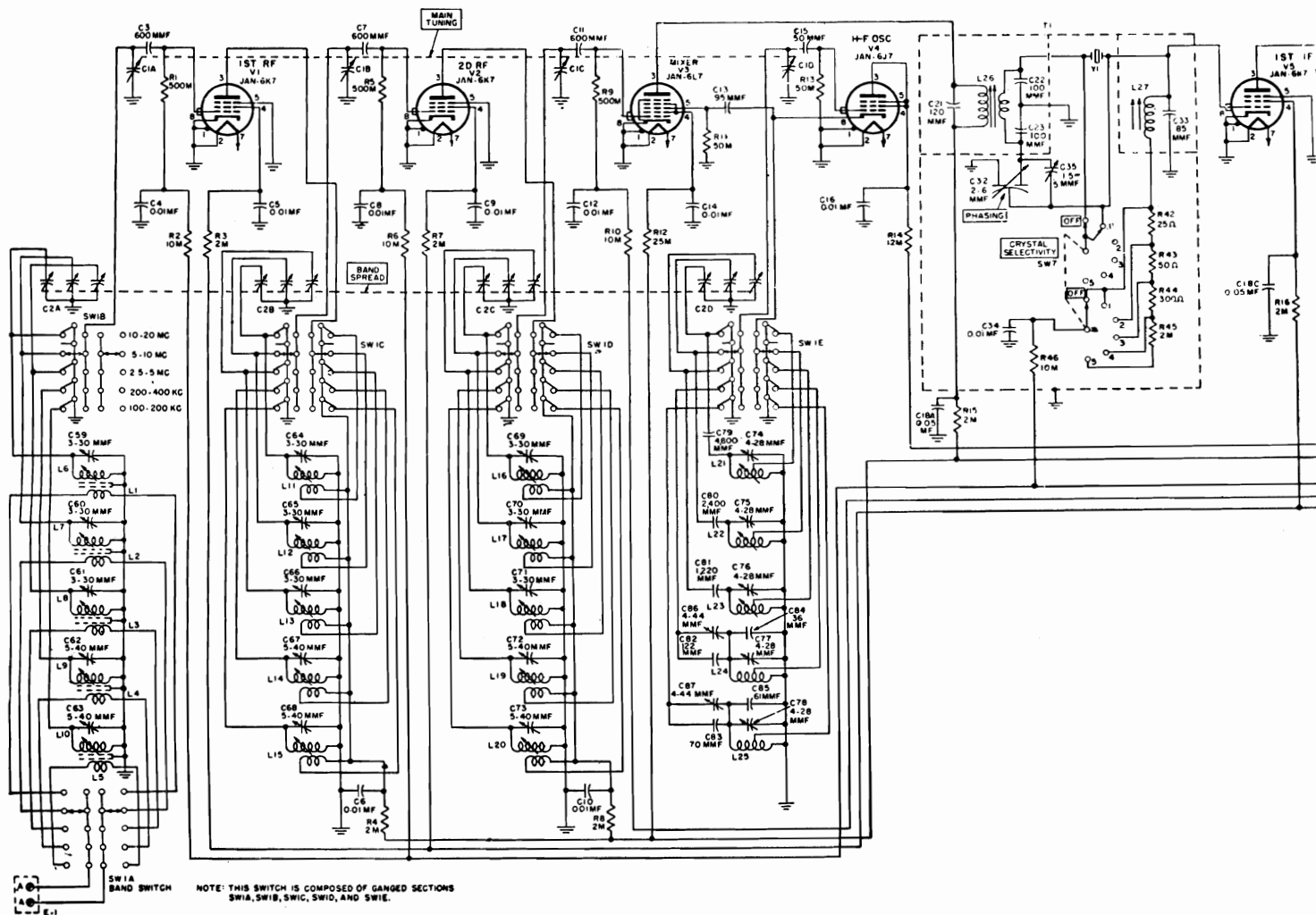
BC-906

The BC-906-C is a frequency meter of the absorption type. The BC-906 is housed in a metal case with a door to protect the dial, meter and switches, but which also serves as a housing for the calibration chart and the antenna. In use the antenna is plugged into the socket located through a hole at the top of the case. The sensitivity of the meter depends upon the length to which the antenna is extended and the antenna should be adjusted in length to maximum sensitivity. The frequency range of the BC-906 is 150 to 225 mc. The detection is accomplished by a diode section of 6AL5, the pentode section of that tube acting as a meter amplifier. The required voltages are 1.5 volts for the filament, and 45 volts for the plate supply.



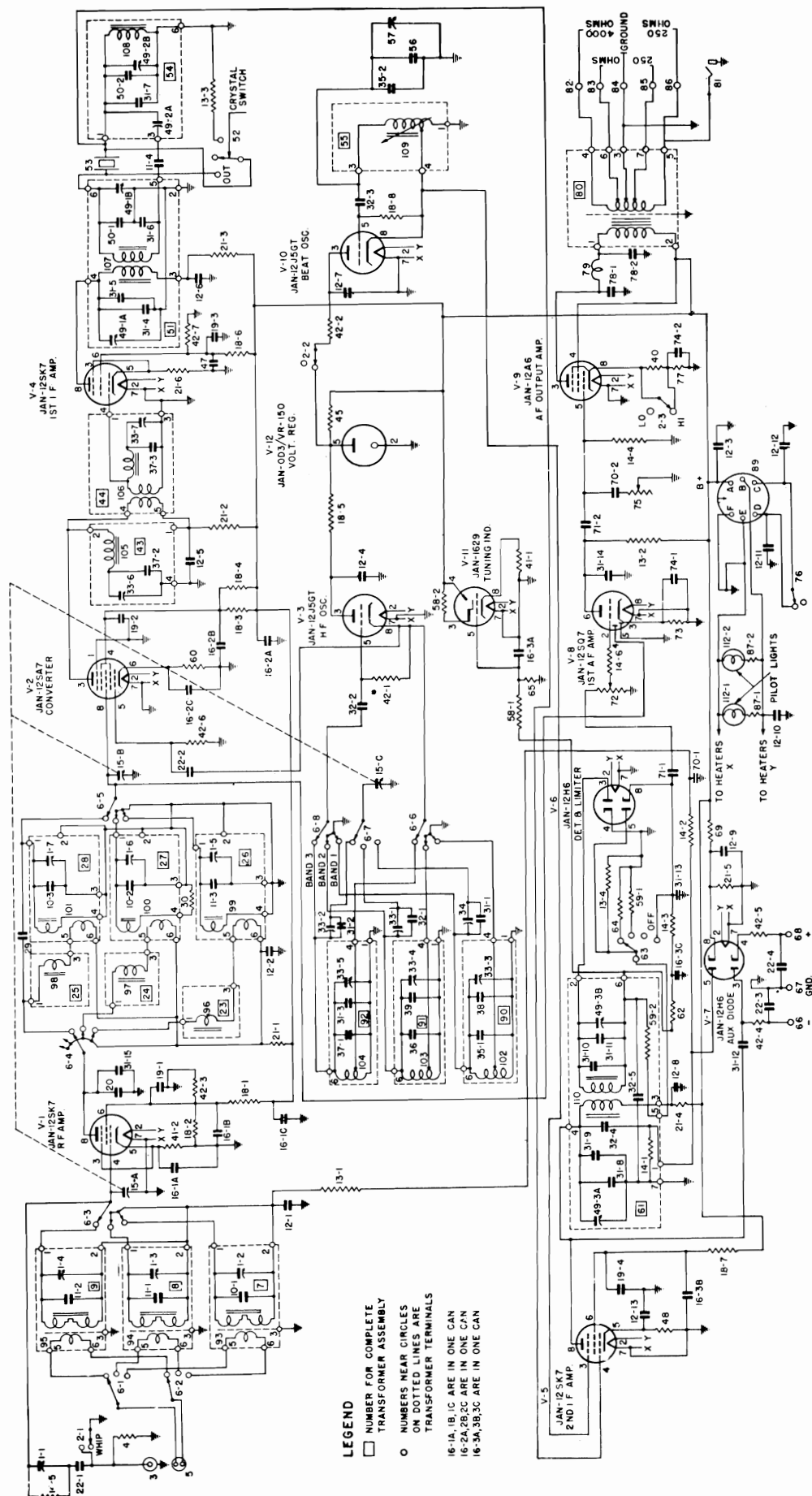
BC-779, 794, 1004

This is the military version of the Hammarlund Super-Pro. 455 kc IF. These receivers normally use a separate power supply, or may be battery operated. Six, 45 volt batteries are used, 5 for the plate, 1 for bias. The filament uses a 6 volt battery.



BC-969A

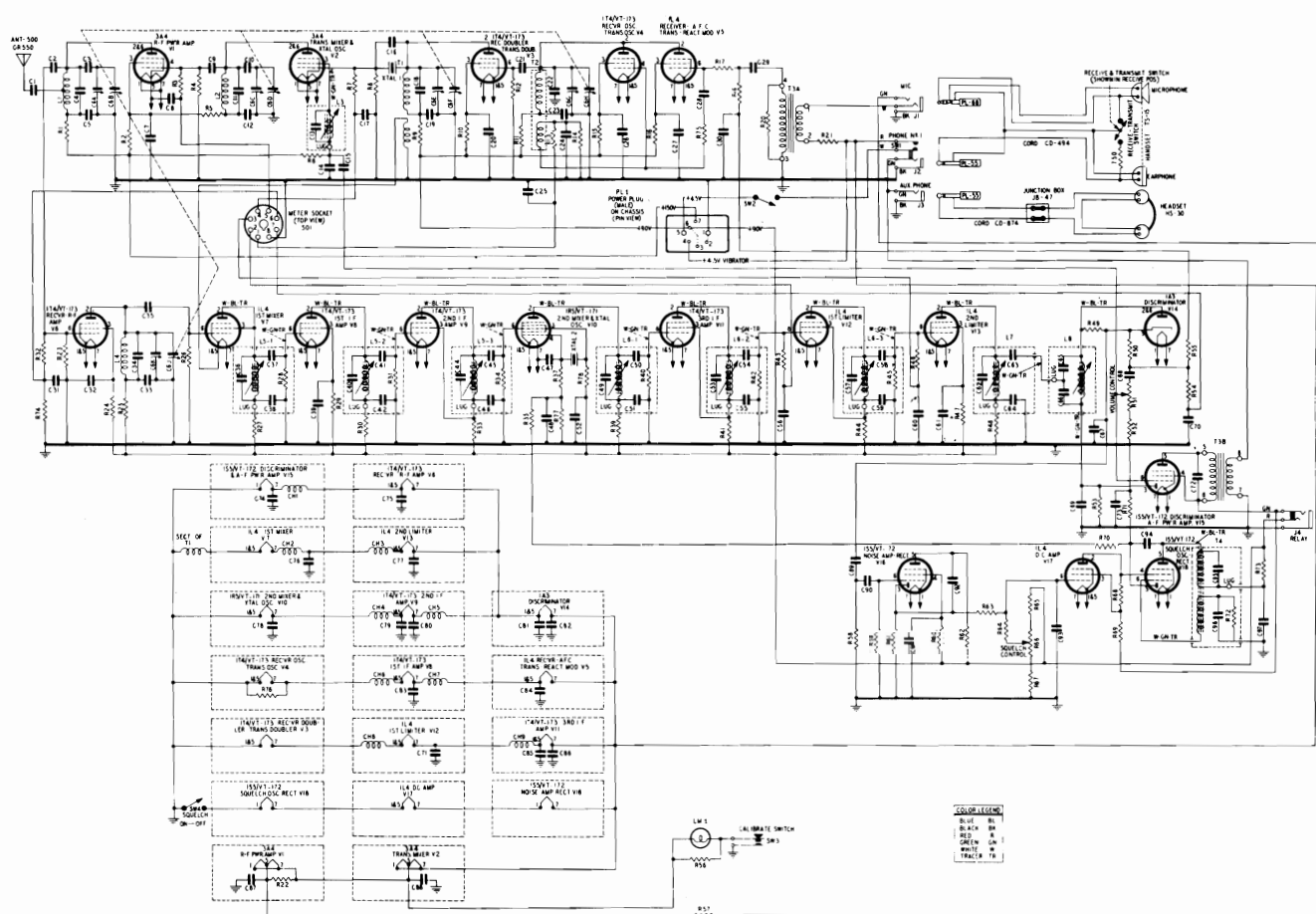
The BC-969A is a superheterodyne receiver covering the VLF band of 15 to 150 kc. The intermediate frequency is 455 kc. Power is supplied by an AR-61A supply or a PE-223. It may be operated on any power supply producing 12 volts at 2 amperes and 250 volts at 120 ma dc. The receiver employs a BFO, noise limiter, crystal filter, AVC and uses a VR tube for oscillator stability.



BC-1000

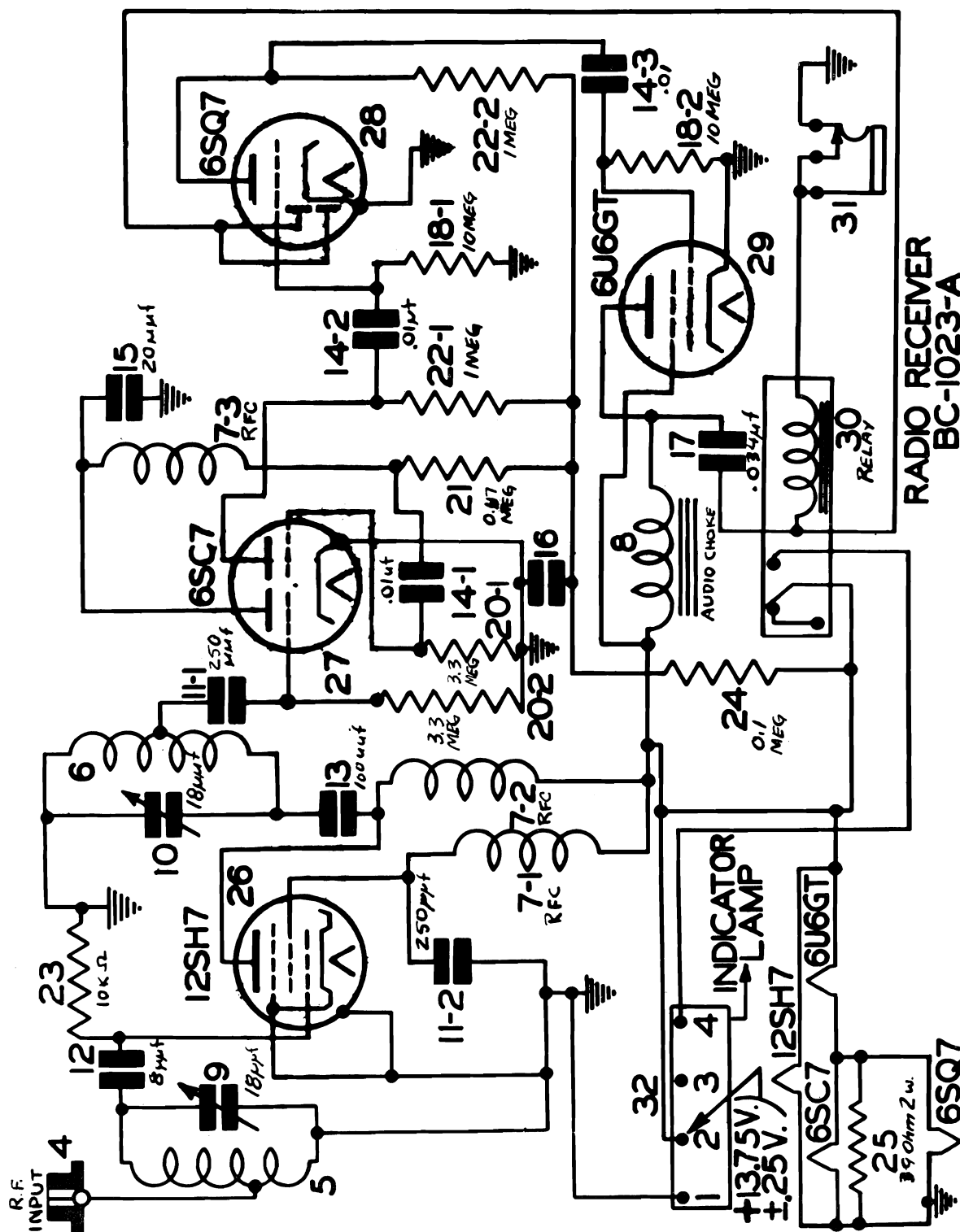
The SCR-300-A, whose major component is the receiver-transmitter BC-1000-A is a low power, battery operated set. It is primarily designed to be carried on the back of one man like a knapsack. It operates within the frequency range of 40.0 to 48.0 mc. The transmitter and receiver both tune to the same frequency simultaneously. The emission is FM and each transmit channel is 200 kc from the previous one, having been hand calibrated at the factory. Output is approximately one half watt to the antenna. Harmonics of a 4.3 mc crystal within the equipment are used for calibration points. The equipment employs squelch, AVC and AFC to maintain the transmitter on frequency. One special note is that during transmit periods the DIAL LIGHT AND CALIBRATE button should not be depressed. The IF frequency of the receiver is 4.3 mc for the first IF stages, and 2.5 mc for the second IF stages, the receiver being of the double conversion superheterodyne type.

Power requirements are 4.5 volts (filament) at 0.3 amperes and 90 volts plate supply at 25 ma. On transmit the requirements are 4.5 volts at 0.5 amperes, 90 volts plate supply at 25 ma, and 150 volts at 45 ma. Normally a 90 volt and a 60 volt battery are connected in series for the transmitter supply. In operation a telephone headset or earphones and lip type microphone are used by the operator.



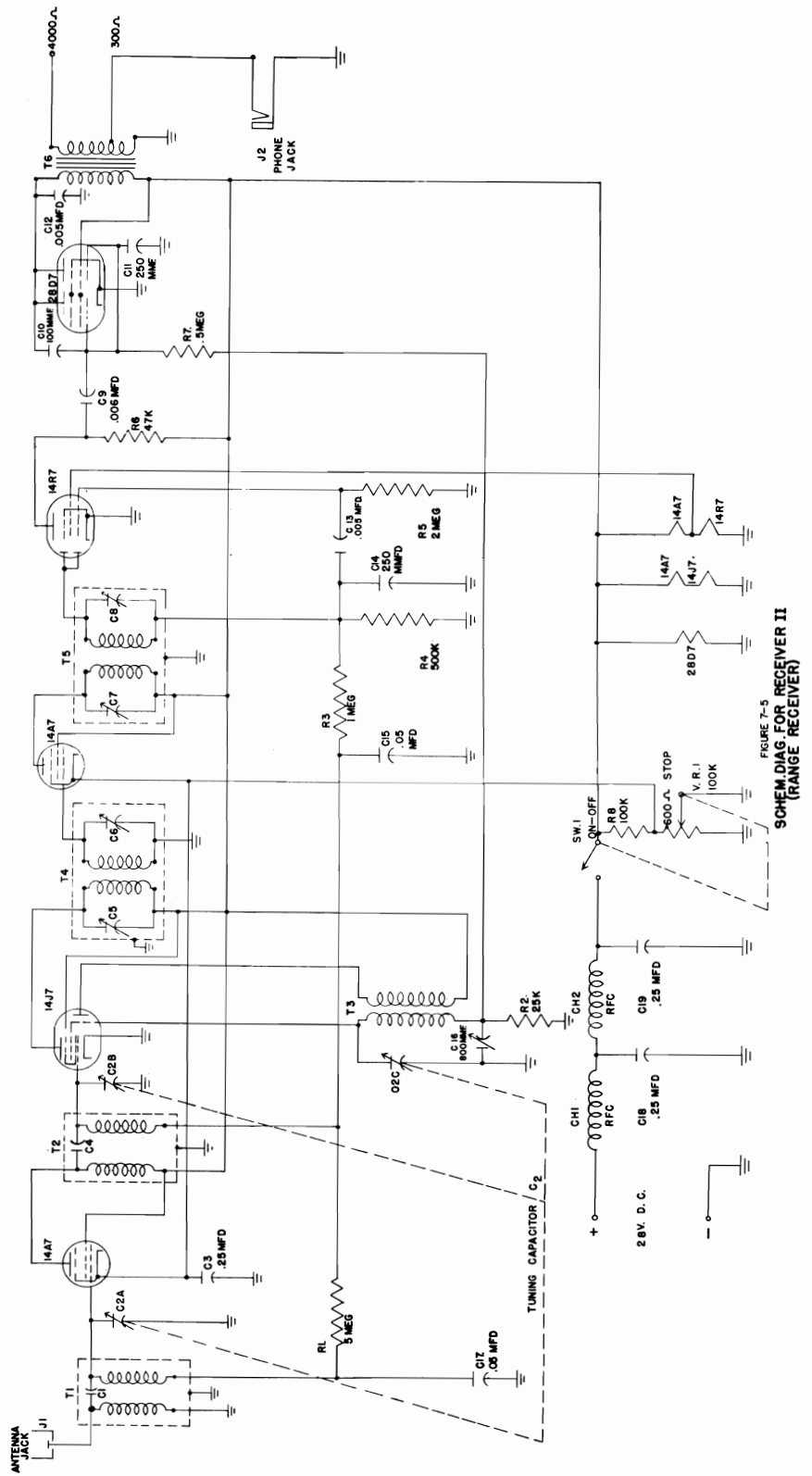
The BC-1023 is a VHF receiver covering the range of 62 to 80 mc. It is normally fixed tuned at 75 mc. Its purpose is to receive the 75 mc marker beacon signals used in aircraft landing systems, and to cause a light to operate when such a signal is received. The receiver has a simple RF amplifier followed by a grid leak detector and an audio amplifier. The audio signal is further detected and caused to operate a relay for control of the pilots' indicator. A phone jack is provided for signal monitoring.

Power requirements are 13.75 volts (nominal) at 1.05 amperes. The equipment operates without additional high voltage.



BC-1206

The BC-1206 receiver is a 200 to 400 kc superheterodyne using 28 volts on the filaments and plates. The output is to either low or high impedance headsets. The input is designed to operate on very short antennas such as are generally found in aircraft. The intermediate frequency is 135 kc. The entire receiver is designed for installation on the panel of a plane, the size being 4 by 4 by 6 5/8 inches.

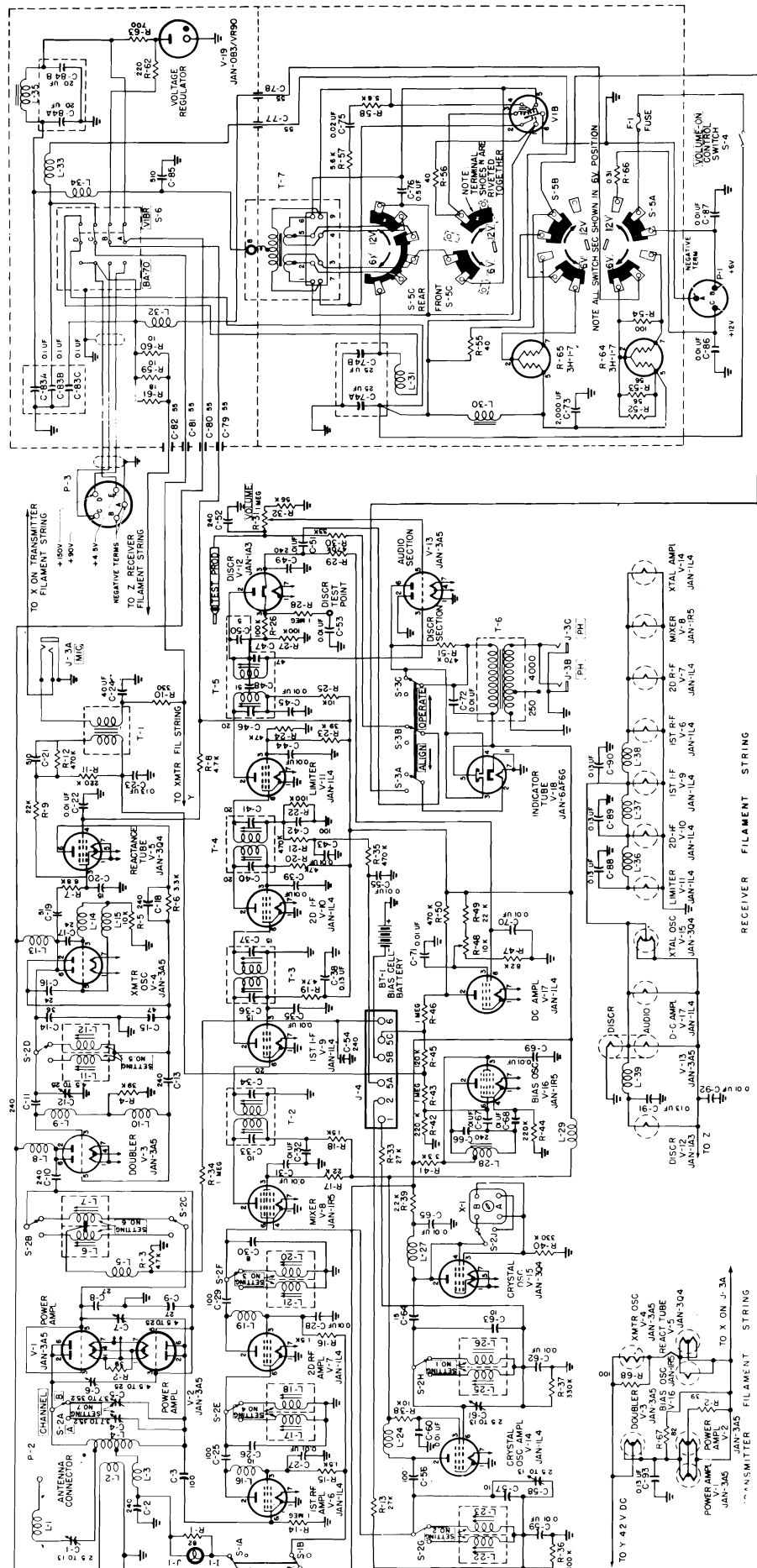


The BC-1335 is a self-contained FM transmitter receiver covering the range of 27 to 38.9 mc. The unit operates on either of two channels, each crystal controlled. One crystal is used per channel. This controls the receiver. The transmitter is monitored by the receiver during transmissions and this causes the transmitter oscillator to be held on frequency by means of a reactance tube across the transmitter oscillator. A carbon microphone such as a T-17 is used with the 1335. The press-to-talk feature of the microphone energizes the transmitter filaments. The receiver output is to a headset. A telephone type handset may be used. The receiver IF is 4.3

mc. The receiver local oscillator is below the signal frequency and uses the fourth harmonic of the crystal.

The power supply uses either 6 or 12 volts (negative ground). Provision is made by the input power plug and a switch to select between input voltages. For positive ground vehicles it will be necessary to reverse the high voltage leads going to the synchronous vibrator

The BC-1335 is manually used with a whip antenna though a coaxial output is also available. Power output is approximately 2 to 4 watts.

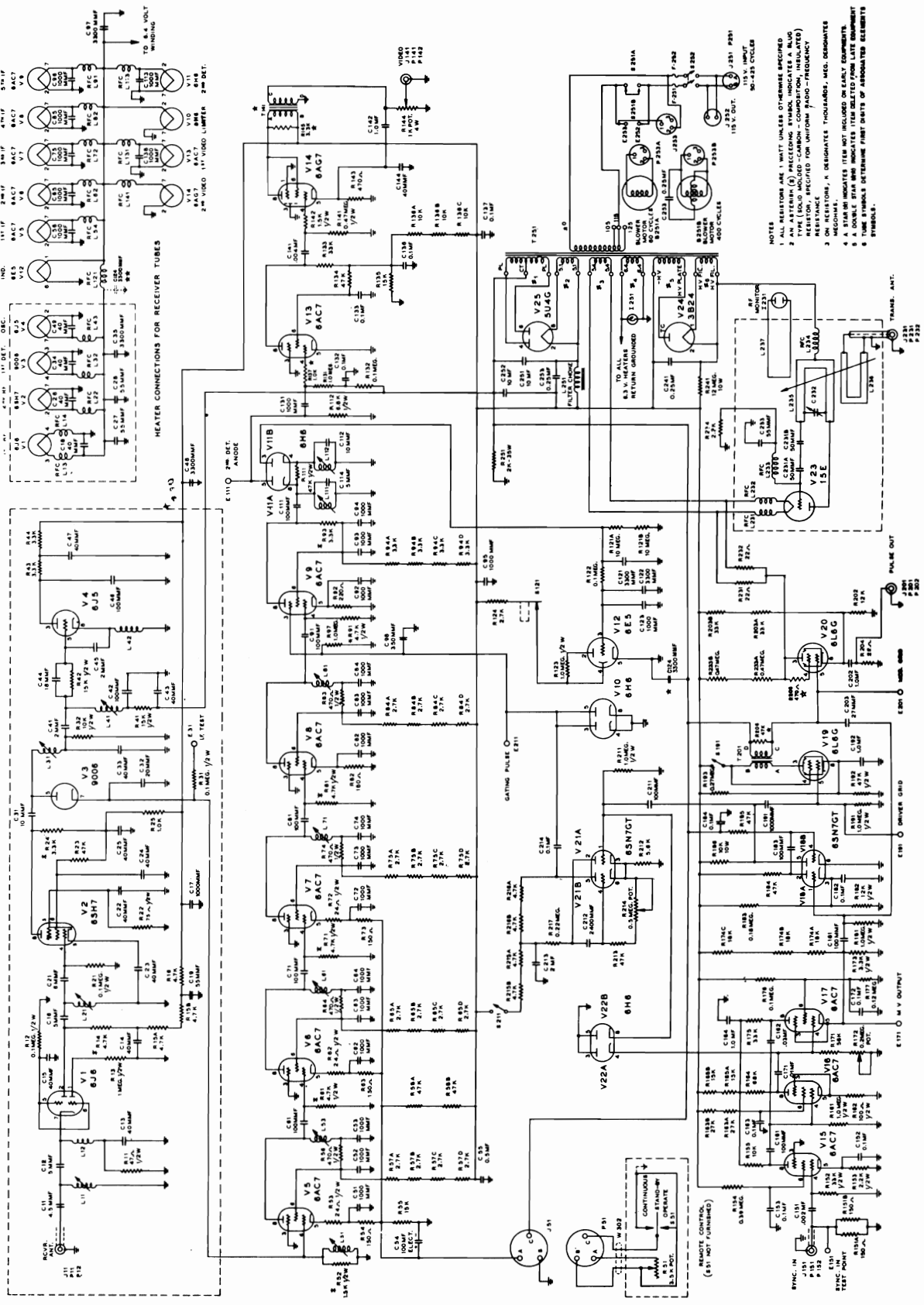


NOTE CHANNEL SWITCH S-2A, S-2B, S-2C, S-2D, S-2E, S-2F, S-2G, S-2H, S-2J SHOWN IN ALL RESISTOR VALUES IN OHMS UNLESS OTHERWISE SPECIFIED
B POSITION ALL CAPACITOR VALUES IN UUF UNLESS OTHERWISE SPECIFIED

The BN is an IFF transmitter receiver operating in the 157 to 187 mc band. It is designed to operate from 110V 60 cycles. Some models may have been modified to 400 cycles by a change in the blower motor only. The receiver is of the super-heterodyne type using a wide band IF covering 28 to 32 mc. The output of the IF is detected and amplified by a video amplifier with a response from 100 cps to 200 kc.

BN

The RF section has found much use as a converter for 2 meters to a 26 to 30 mc receiver.



- NOTES
- 1 ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED
 - 2 AN ARROW IN PRECEDING SYMBOL INDICATES A BLOWN FUSE
 - 3 A STAR IN PRECEDING SYMBOL INDICATES A FREQUENCY RESISTOR, SPECIFIED FOR UNIFORM RADIO-FREQUENCY RESISTANCE
 - 4 ON RESISTORS, A DESIGNATOR "H" INDICATES HIGHER RESISTANCE
 - 5 A STAR IN PRECEDING SYMBOL INDICATES ITEM NOT INCLUDED FOR LATE EQUIPMENT
 - 6 A DOUBLE STAR IN PRECEDING SYMBOL INDICATES ITEM DELETED FOR LATE EQUIPMENT
 - 7 TIME SYMBOLS DETERMINE FIRST DIGITS OF APPROXIMATE ELEMENTS

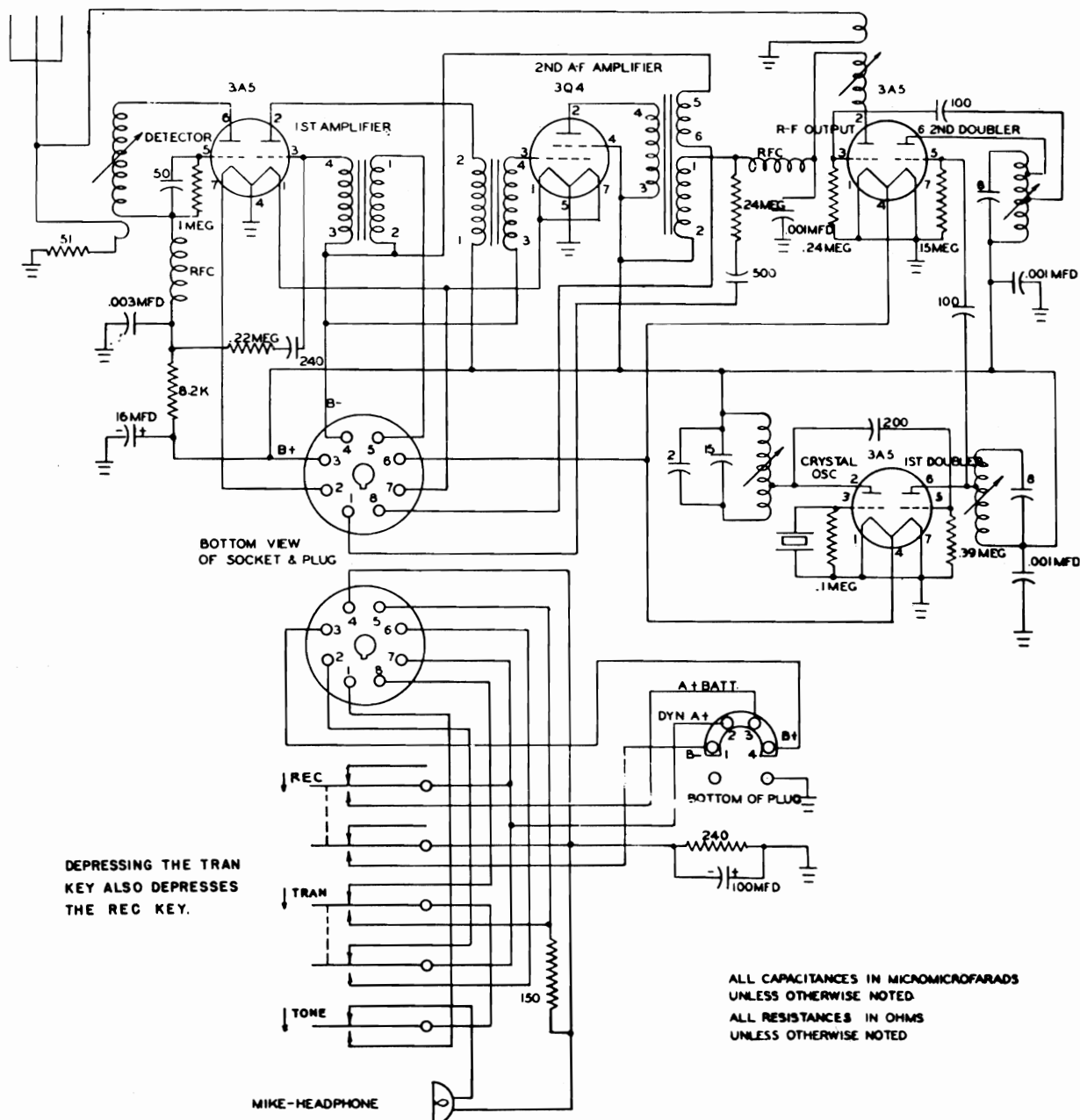
52



CRC-7

The AN/CRC-7 is a hermetically sealed transceiver with a watertight battery compartment. Transmission is on MCW or AM. Originally designed for operation at 140.58 mc the hermetically sealed portion may be opened and the crystal changed and the coils trimmed to the 2 meter band. The crystal should be in the 18 mc band for multiplication factor of 8 times. The stages should be tuned with the antenna fully extended.

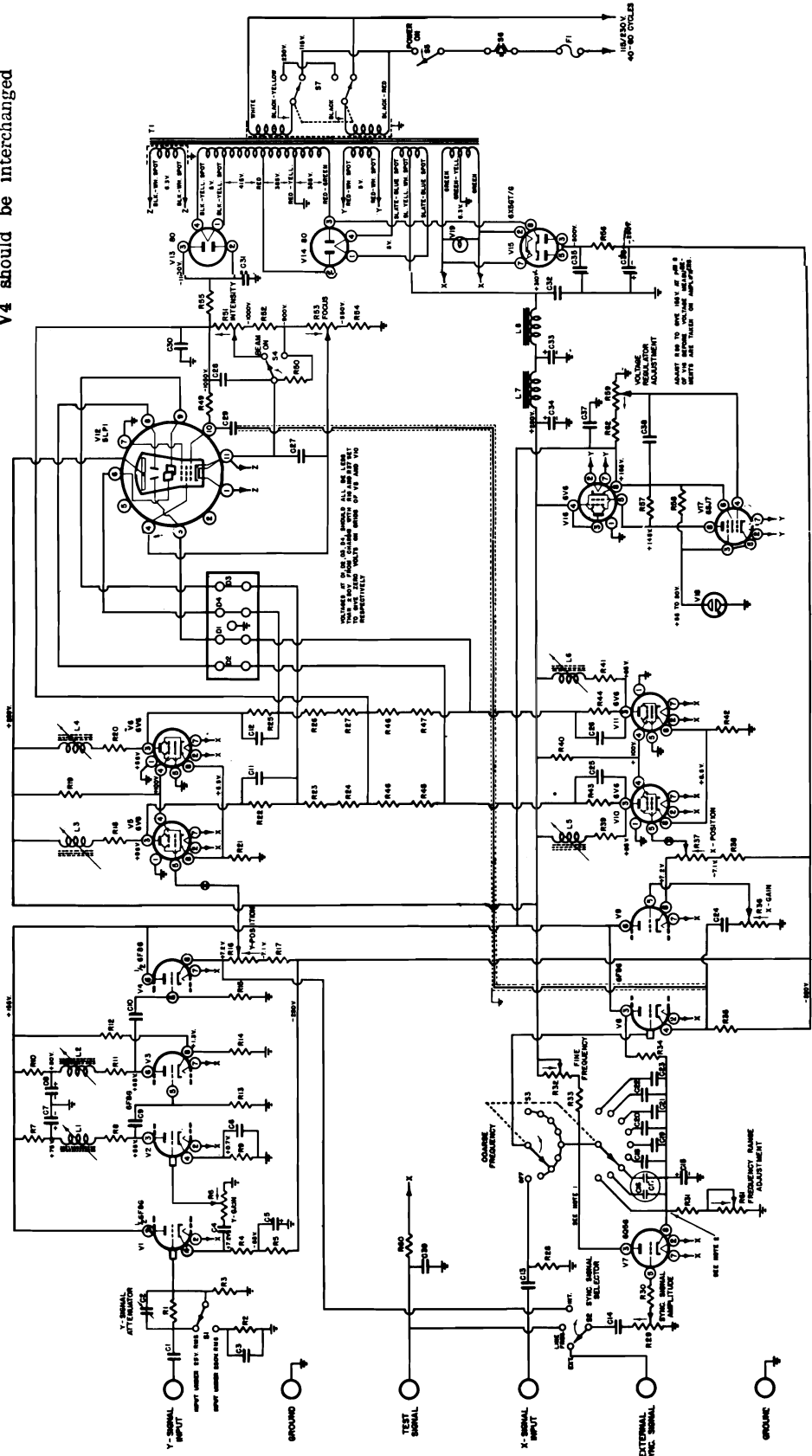
The microphone also serves as headset on receive. Power is switched by turning the appropriate filament switching. See conversion CQ-April '58.



TYPE 208 CATHODE-RAY OSCILLOSCOPE DD-825-D-5

Often available in surplus is the 208 oscilloscope. The vertical input impedance is 5 megohms shunted by 5 mmf while the horizontal input is 2 megohms shunted by 30 mmf. The response is 2 cps to 100 kc. The sweep range is 2 cps to 50 kc.

Pin connections of V1 and V4 should be interchanged



ALL VOLTAGES SHOWN AS MEASURED BY
ELECTRONIC TYPE VOLTMETER

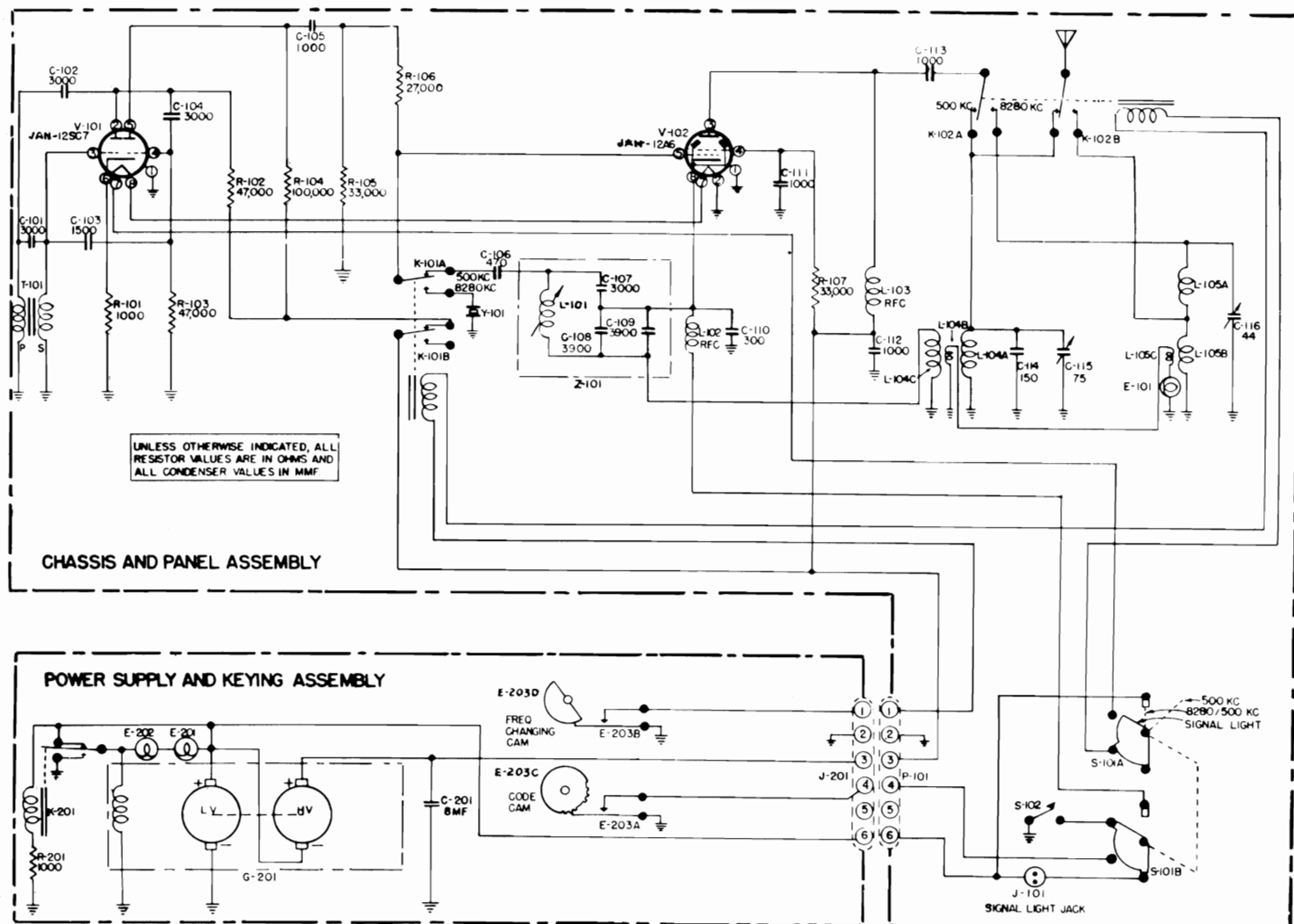
① VOLTAGE MEASUREMENTS ON AMPERES-RESISTANCE OF V1, V10 AND
V11, V12 SHOULD BE MADE WITH 500 OHM 100V ADAPTER TO ZERO
VOLTAGE OF 10 AMP V10

NOTE: 1. ADJUST 40V DEFLECTION ADJUSTMENT OF V1, V10 AND
V11, V12 SHOULD BE MADE WITH 500 OHM 100V ADAPTER TO ZERO
VOLTAGE OF 10 AMP V10

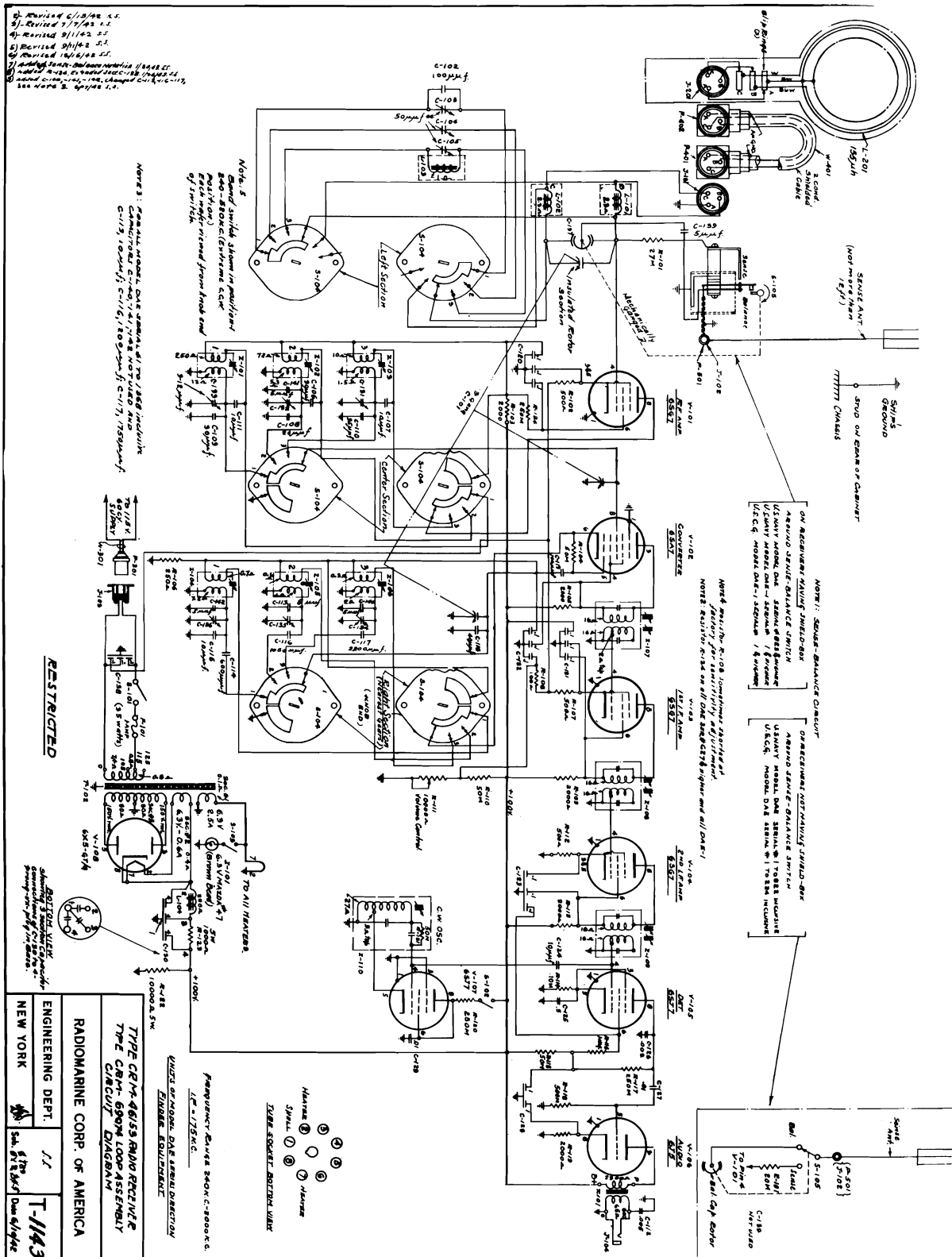
SCHEMATIC OF CIRCUIT

CRT-3

The Gibson Girl transmitter is also known as the AN/CRT-3 because of its similarity to the cathode ray tube shape. It is a transmitter producing 2 1/2 watts on 500 kc and 2 watts in 8280 kc both of which are international distress frequencies. It is normally carried in lifeboats or with other survival equipment. In operation it is held between the operator's legs and the hand crank is turned. A series of coded signals used to key the transmitter are developed by the crank rotation. A generator is operated simultaneously to supply filament and plate power to the transmitter. Power is also supplied to a visual lamp for night operation. The antenna is held aloft by either a kite or a balloon provision being made to generate hydrogen for balloon inflation. Hand keying is possible.



2- Revised 6/13/42 S.S.
3- Revised 7/7/42 S.S.
4- Revised 9/11/42 S.S.
5) Revised 9/14/42 S.S.
6) Revised 10/6/42 S.S.
7) Added 10/20/42, 10/20/42, 10/20/42 S.S.
8) Added 10/20/42, 10/20/42, 10/20/42 S.S.
9) Added 10/20/42, 10/20/42, 10/20/42 S.S.
10) Added 10/20/42, 10/20/42, 10/20/42 S.S.

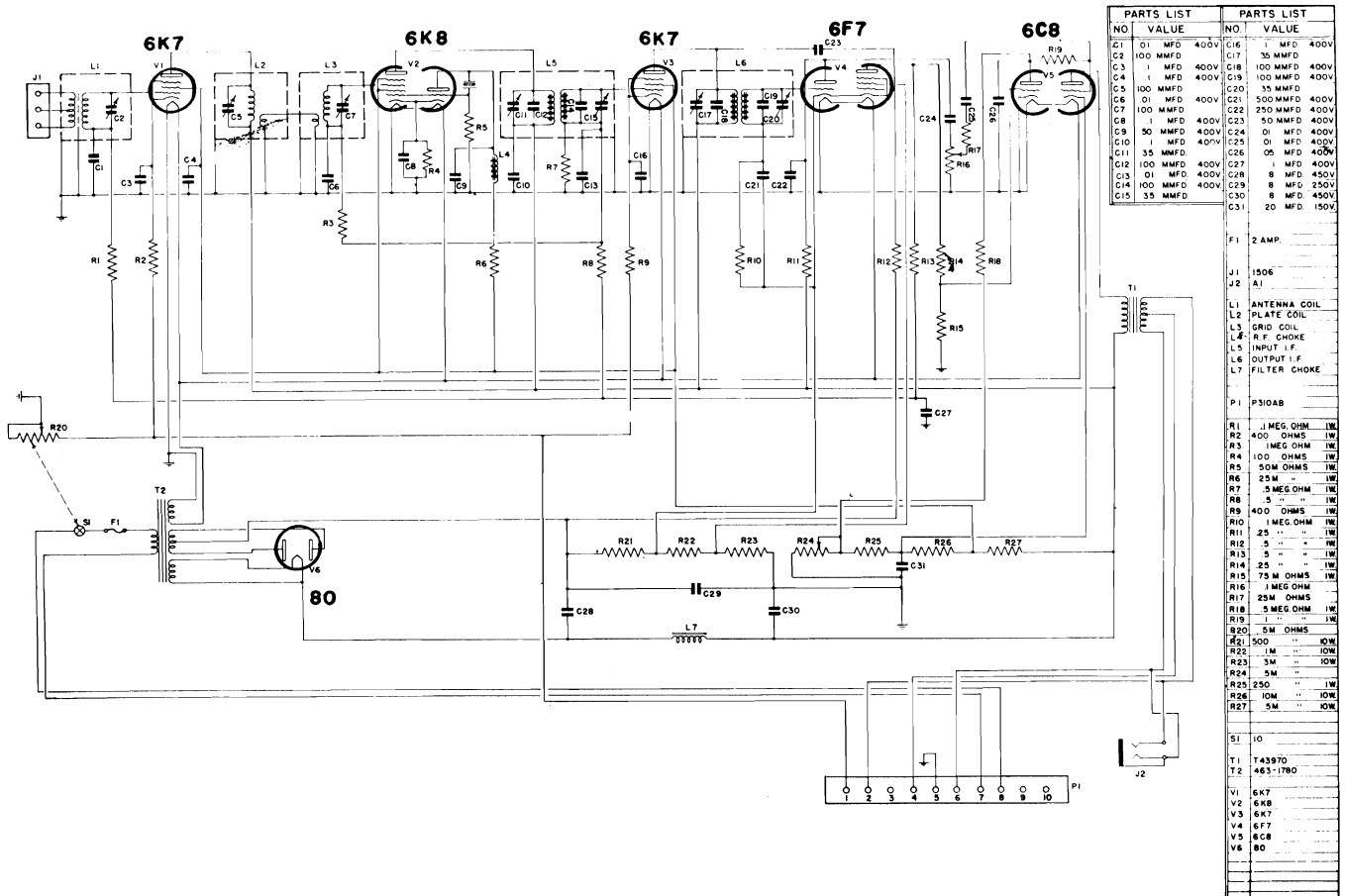


F-3

The Wilcox F-3 (ARC-3) receiver is a rack-mounted fixed frequency receiver covering the range of 1900 to 16500 kc range. Some models may cover different frequencies from these in standard groups.

Group 1	1900 to 3600 kc
Group 2	3100 to 6100 kc
Group 3	5100 to 10000 kc
Group 4	8100 to 16500

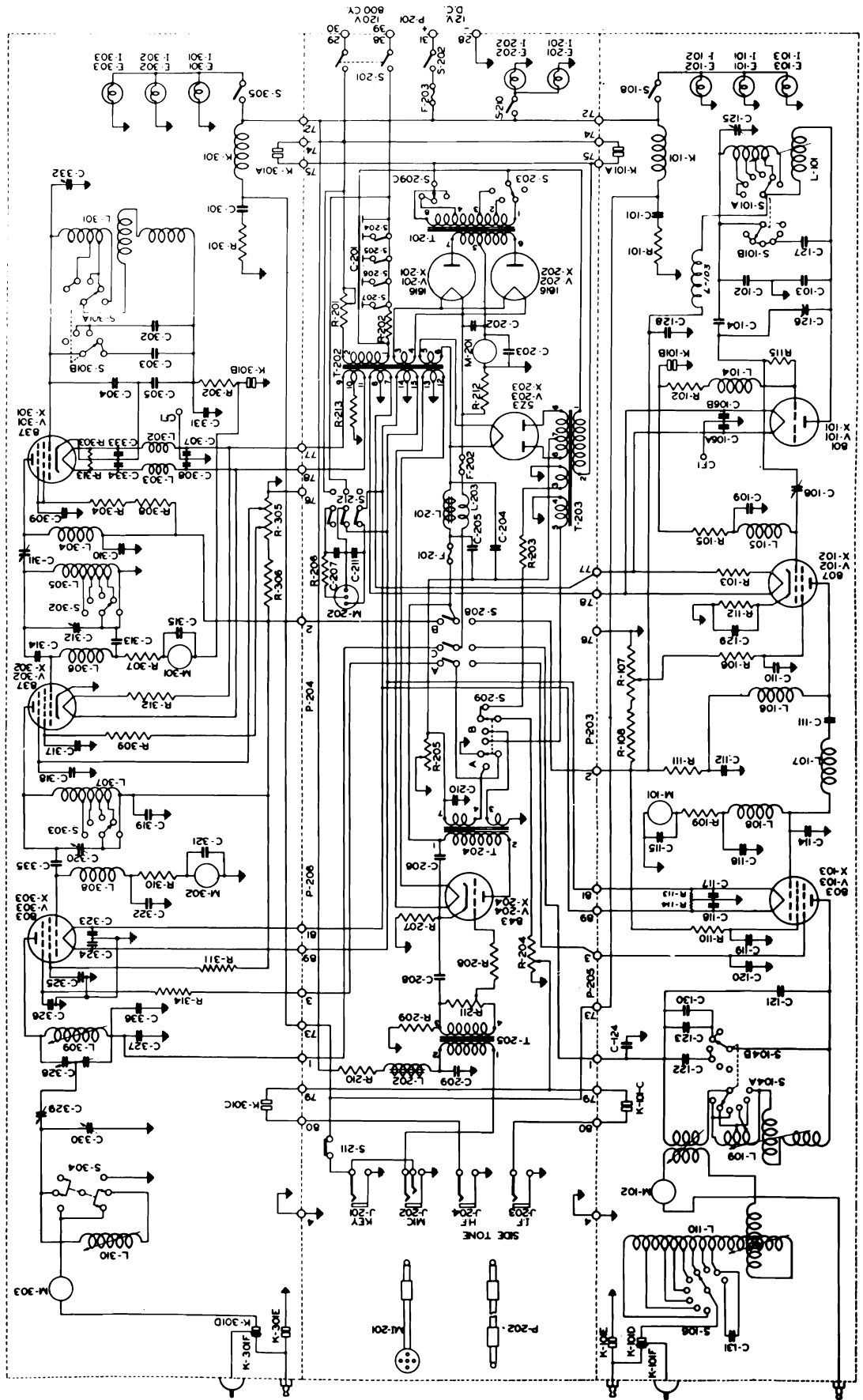
The F-3 is a superheterodyne using a crystal controlled oscillator and has a 455 kc IF. AVC and a Morse suppressor are provided.



The GO-9 is a Naval Airforce transmitter for use on patrol aircraft. It is rated at 100 watts and covers a frequency range of 300 to 600 kc and 3.0 to 18.1 mc. The equipment is constructed in three side-by-side

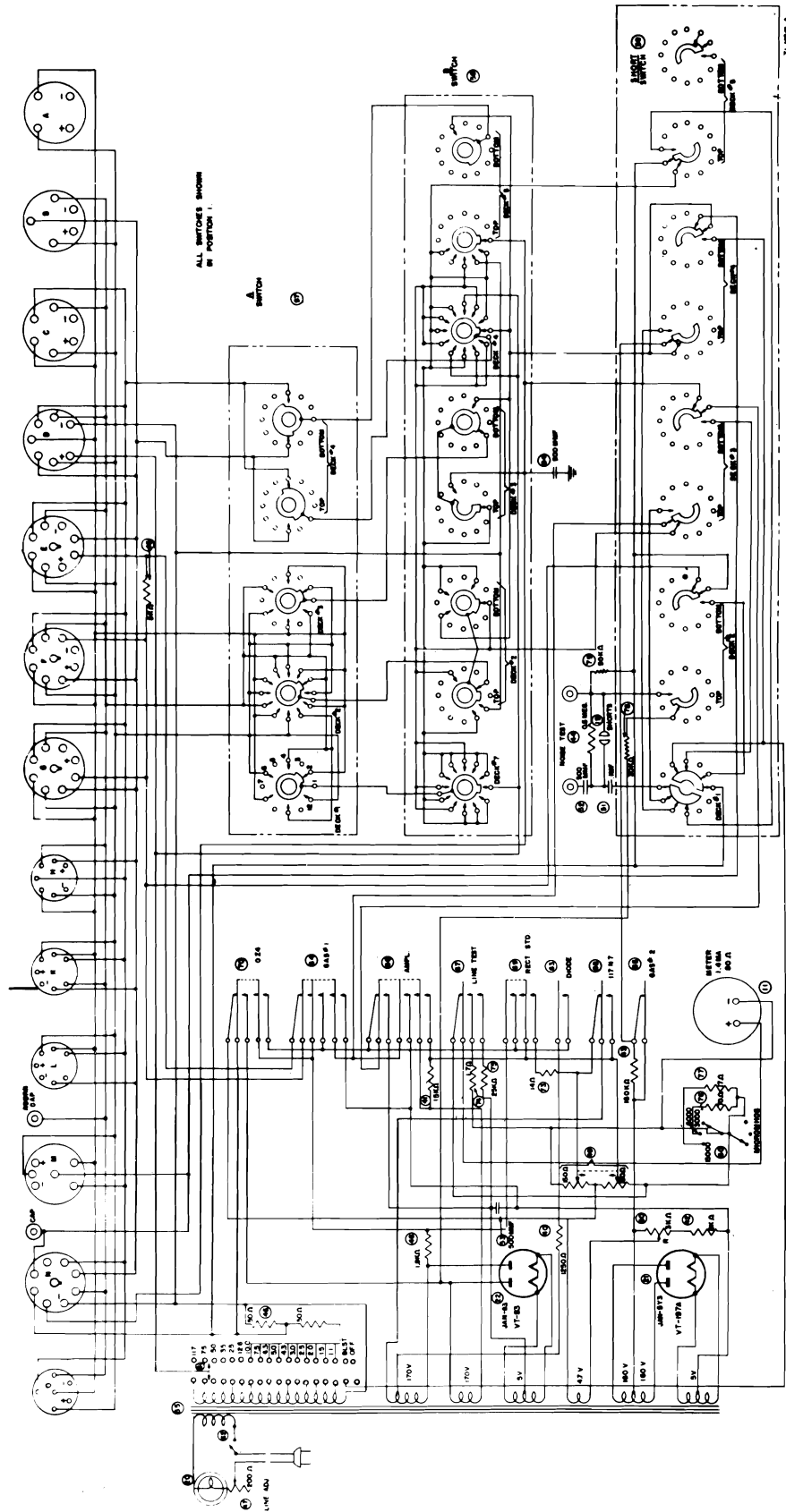
sections, the middle one being a power distribution section. Input power is 110V 800 cps, and either 12 or 24 volts dc.

The TBW is very similar to the GO-9.



I-177

The I-177 is a transconductance type tube-tester (part of test set I-56-K). An adapter can easily be made for testing the newer tubes (Noval based 9 pin) See September, 1959 CQ for more data.

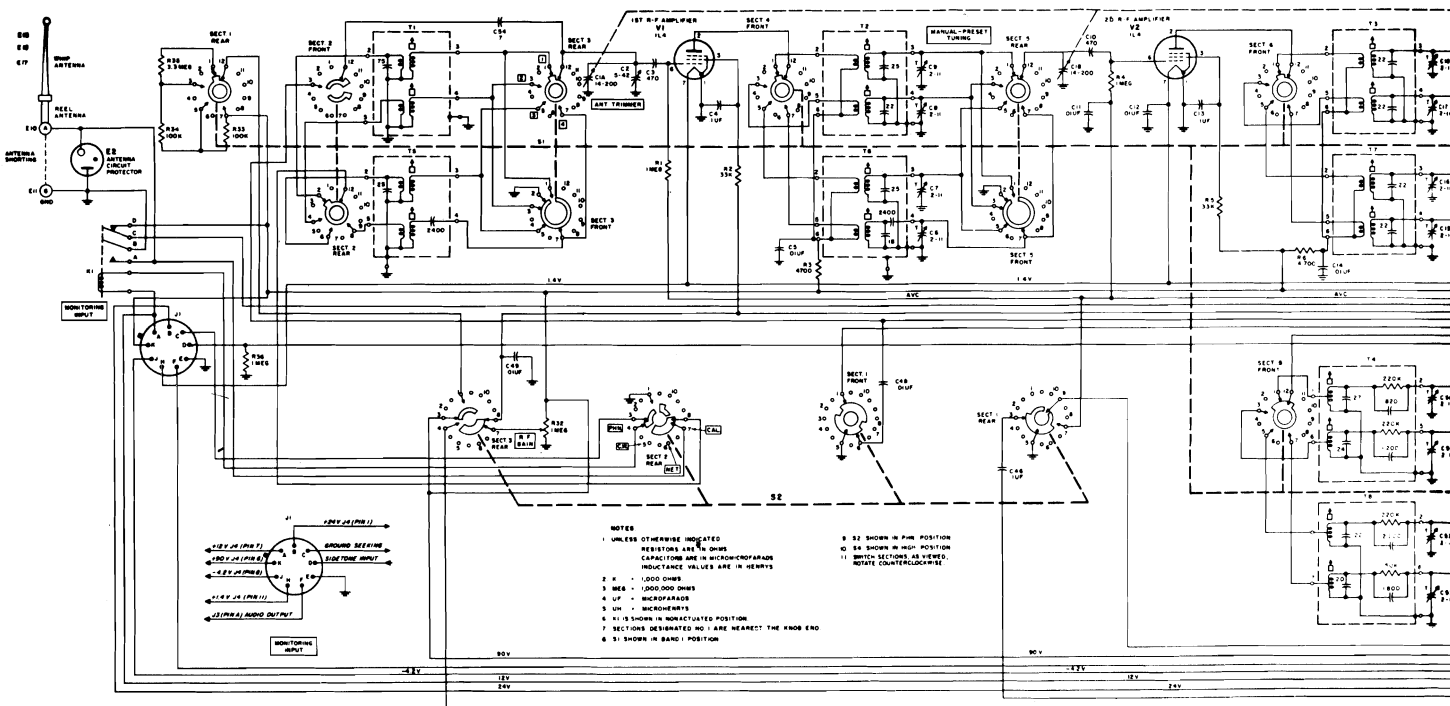


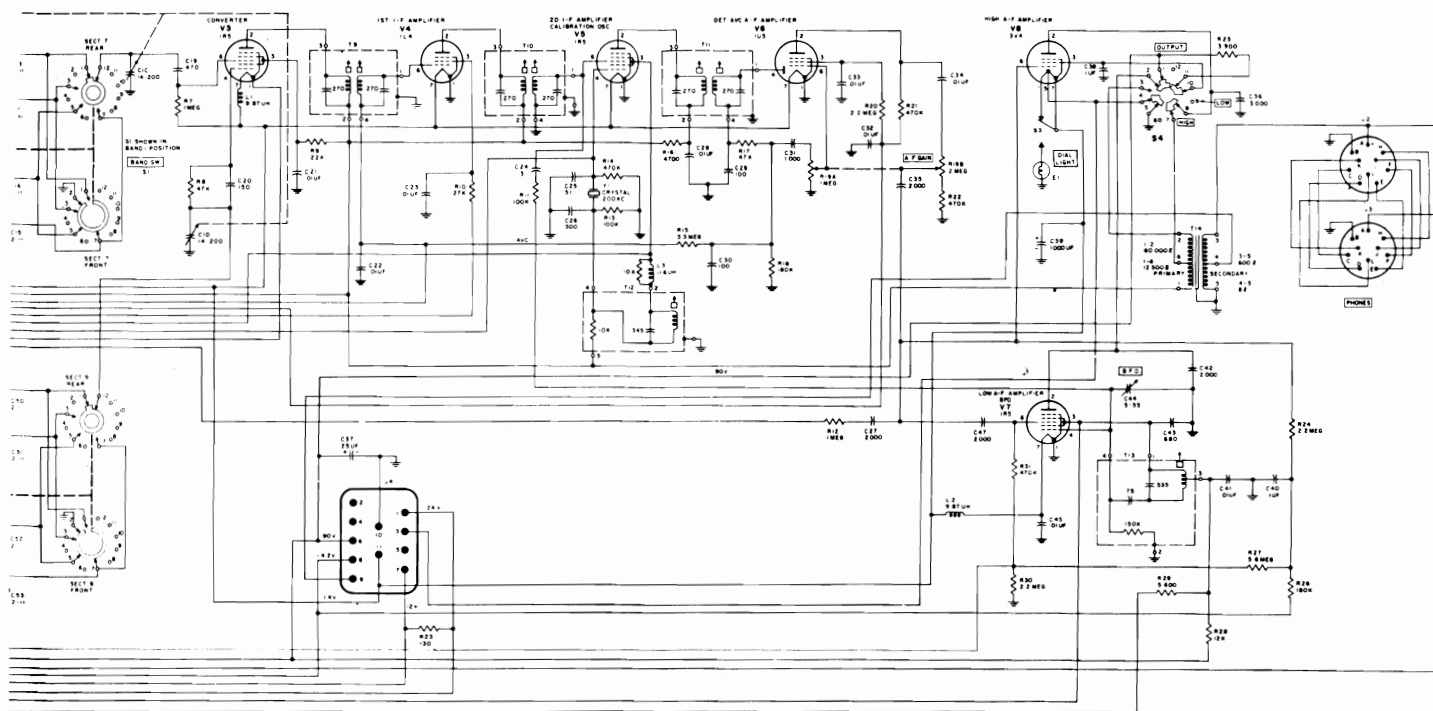
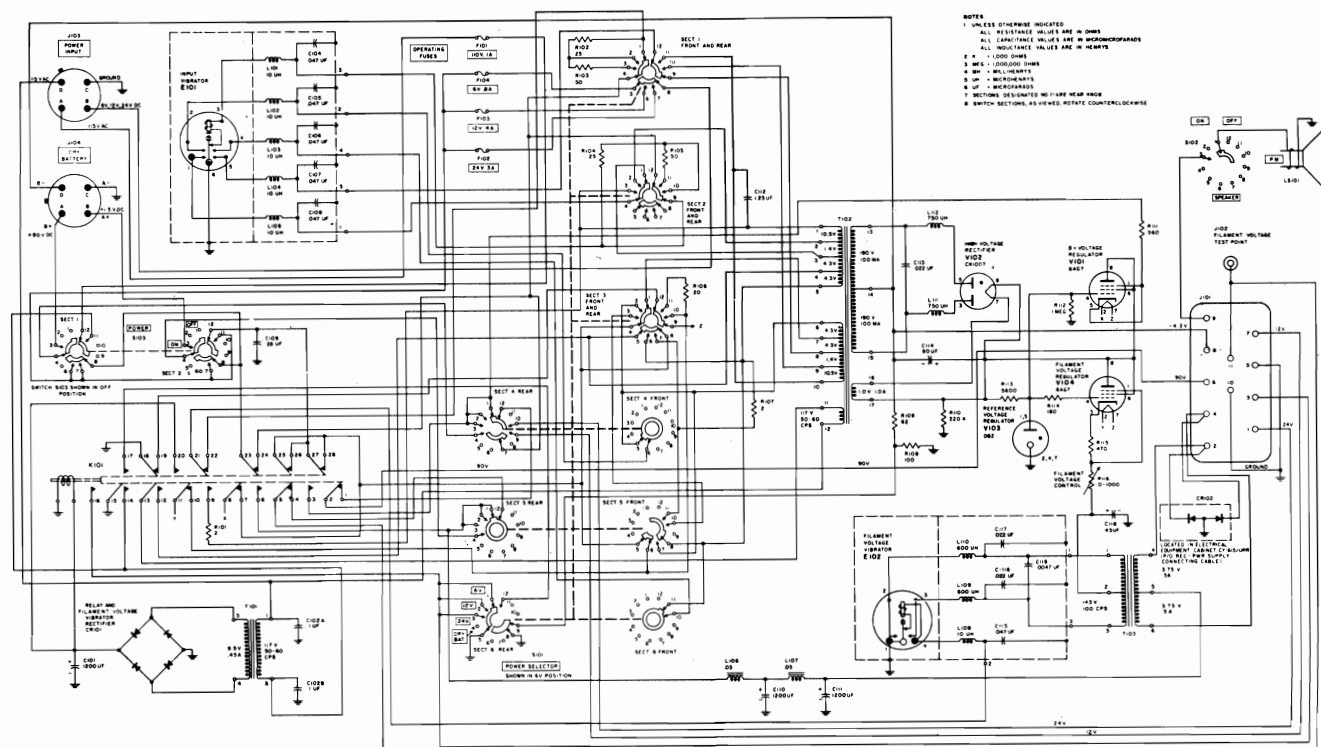
AN/GRR-5

The AN/GRR-5 is a mobile radio receiver used for tactical purposes. It may be used with its internal speaker, or with handsets or other equipment. It covers a frequency range of 1.5 mc to 18 mc. It can operate from 6, 12 or 24 volts dc for mobile use, 115 volts 60 cycles for fixed use or from 1.5 volts at 350 ma and 90 volts at 27 ma for portable use. It is capable of reception of AM, CW, MCW. Provision is made for ten preset frequencies, although the equipment is capable of continuous tuning. A built in crystal calibrator supplies a check point every 200 kc. The intermediate frequency is 455 kc.

The equipment is divided into two sections. The receiver proper is known as the Radio Receiver R-174/URR while the power supply is known as the Power Supply PP-308/URR.

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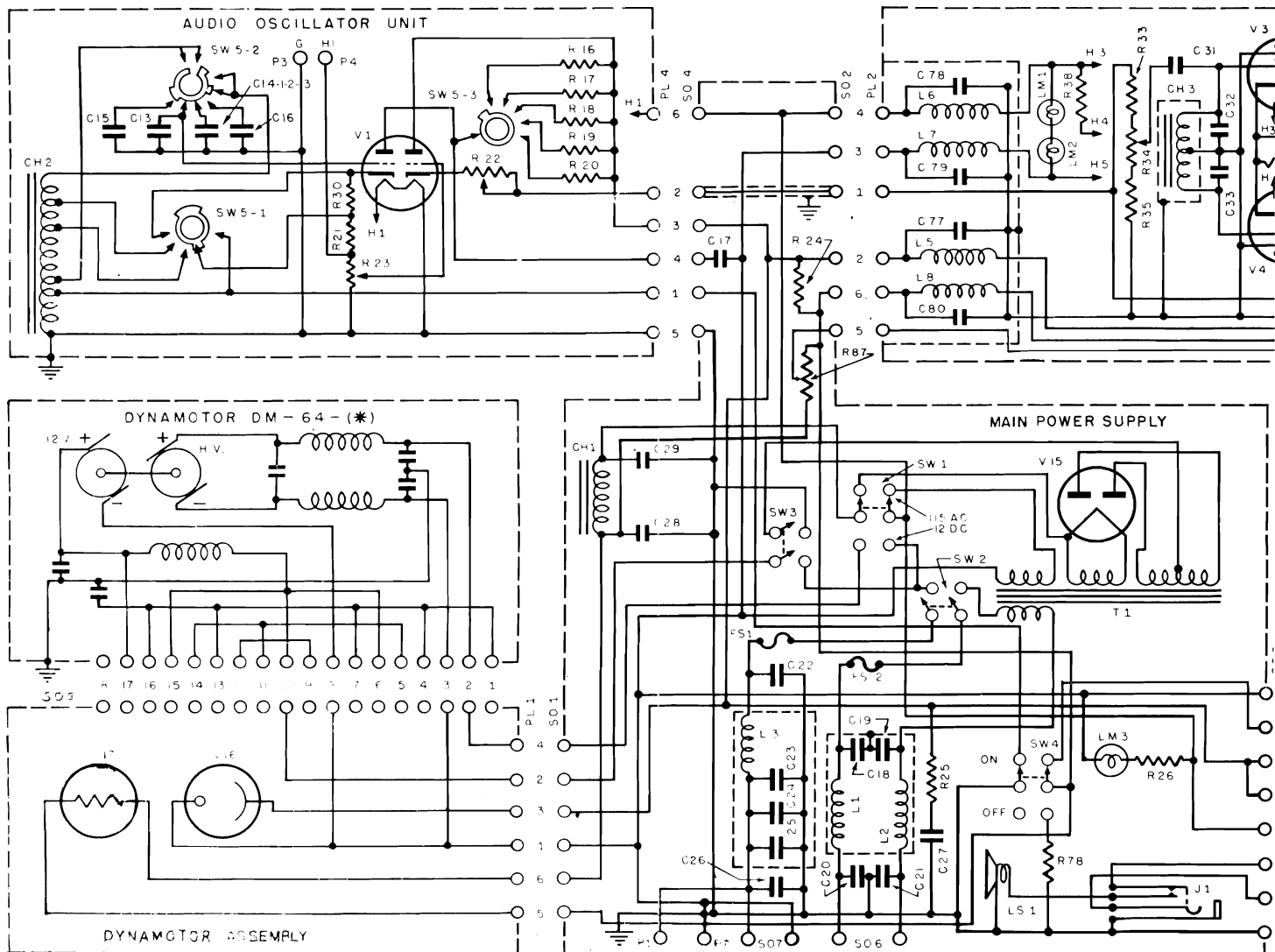




I-208

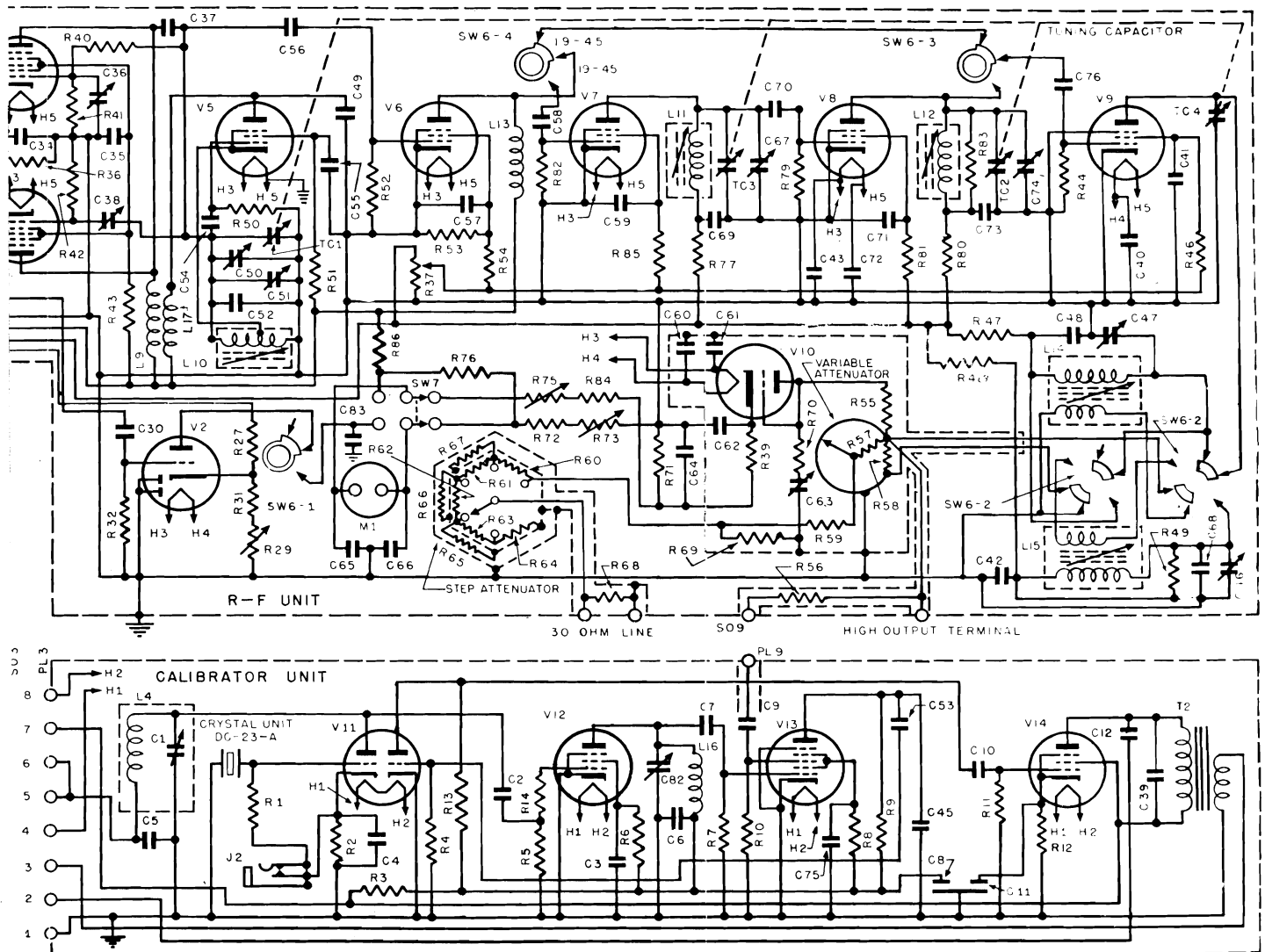
The signal generator I-208 covers the frequencies of 1.90 to 4.5 mc and 19 mc to 45 mc. It is used to align FM equipment such as the BC-603 and BC-683.

The frequency deviation can be adjusted from 0 to 5 kc on each side of the center frequency of the 1.9 to 4.5 mc band, and from 0 to 50 kc either side of the 19 to 45 mc. Five modulation frequencies are provided: 150, 400, 1000, 2500



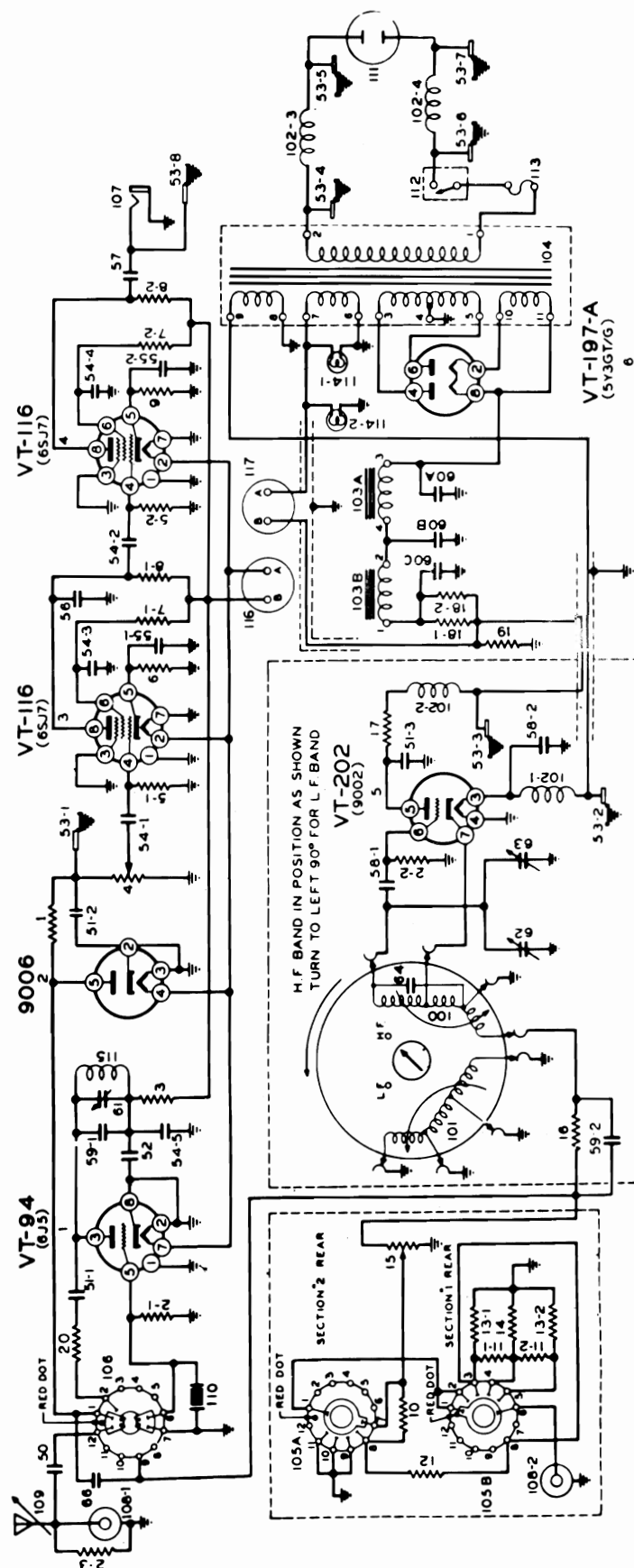
and 5000 cps. External modulation is possible. Up to 0.1 volt is developed at the end of the cable (30 ohm transmission line). Up to 0.84 volt is available from the high output line. An attenuator is used to set the output as needed.

Power is either 12 volts dc or 115V 60 cps.



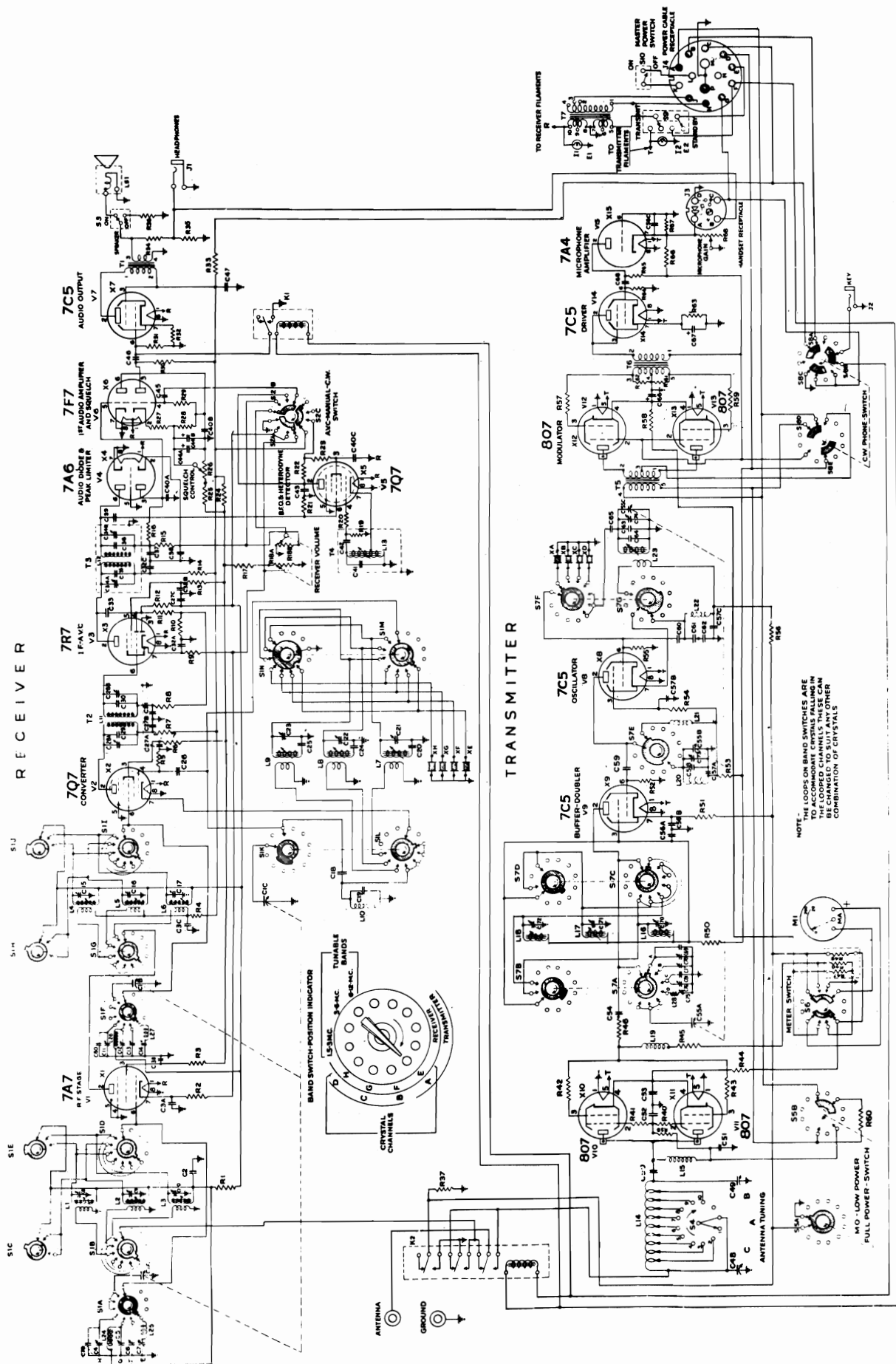
I-122

This equipment provides RF signals for the alignments and operation of the RC-182 and RC-282, and similar equipments. It provides signals for both IF and RF alignments in two bands, 8 to 15 mc and 135 to 230 mc (on third harmonic of 45 to 76 mc). A 5 mc crystal calibrator built in, allows the use of the I-222-A as a heterodyne frequency meter.



JT-350A

The Jefferson-Travis 350A transmitter-receiver covers 1.5-12 mc in three bands. IF 455 kc. 75 Watt CW or AM VFO or XTAL. Power: 12, 24, 32, 115 vdc, 115 vac. This is a nice rig.



* RATING OR VALUE CHANGED IN SETS OF CANADIAN AND U.S. MANUFACTURE.



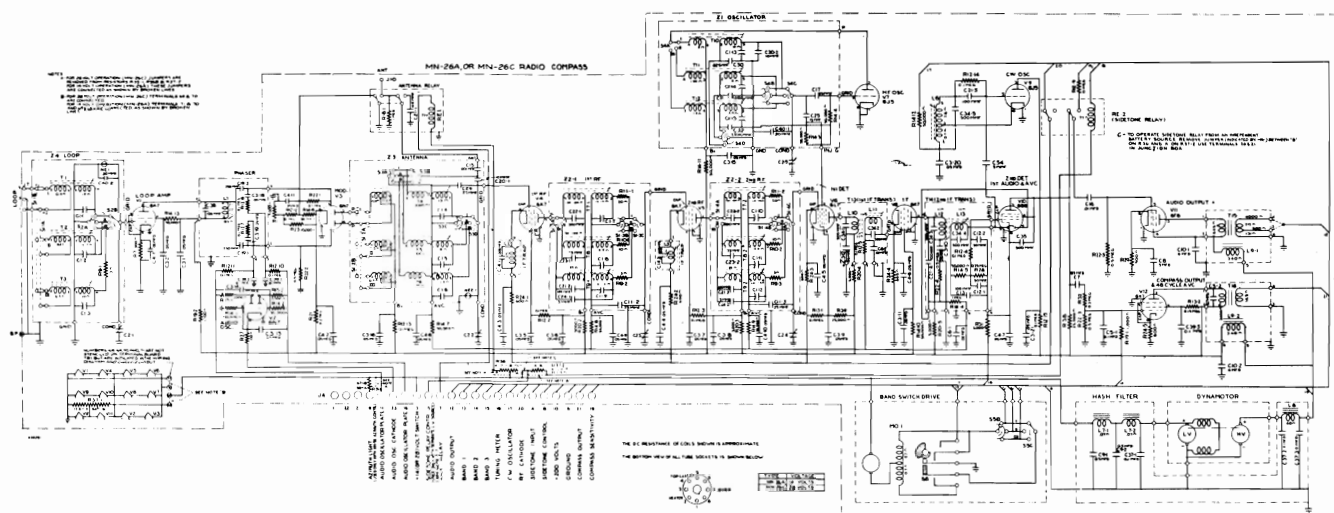
MN-26

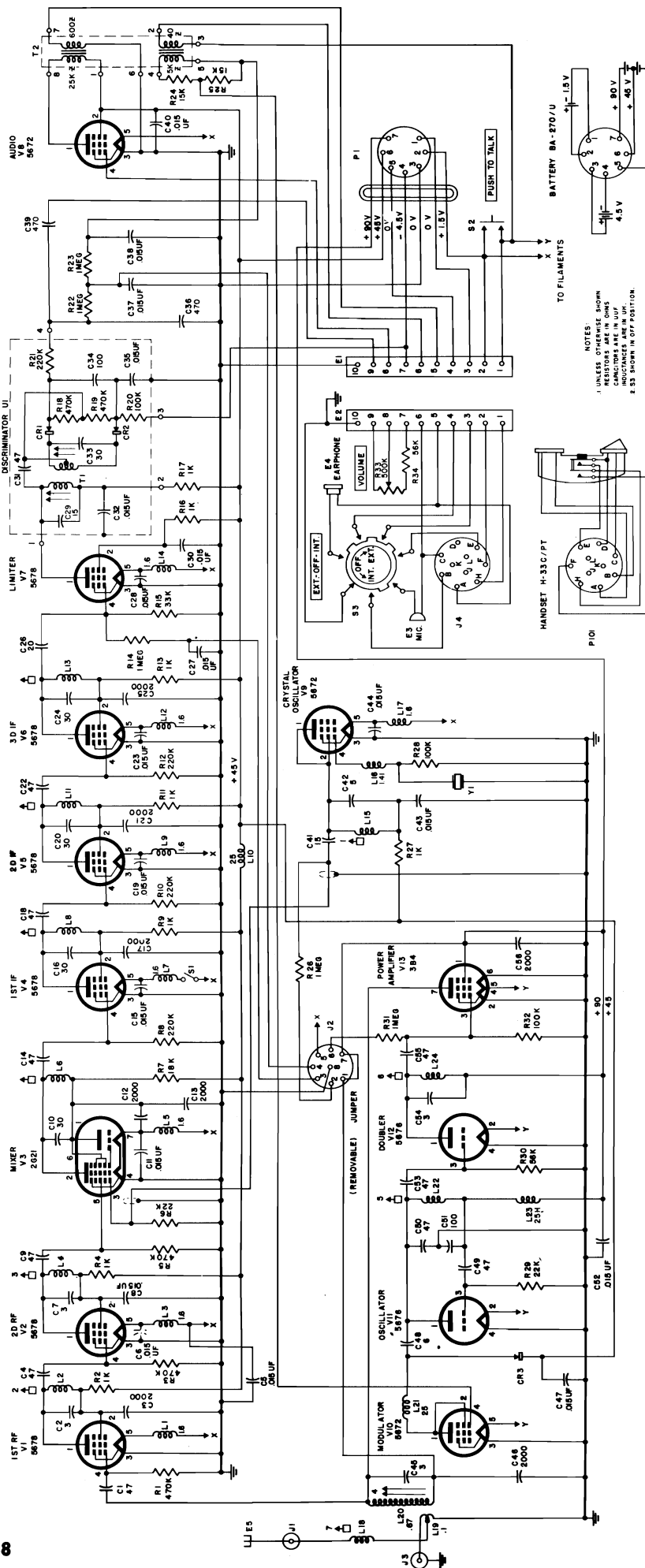
The MN-26 is an aircraft communication direction finder type superheterodyne receiver. It covers a variety of frequencies and input voltages of either 14 or 28 volts. The last letter designates the frequency range and voltage as given in the following table.

<u>Letter</u>	<u>Freq. Range</u>	<u>Input Voltage</u>
A	150-1500 kc	14
C (and CA)	150-1500 kc	28
M	200-850 kc	28
	3.4-7.0 kc	
W	200-1750	14
X	200-1750	28
Y	150-695 kc	28
	3.4-7.0 kc	28

The MN-26 () requires a remote control box, MN-28, a loop antenna MN-20 or MN-24, azimuth indicators MN-40D or MN-22A, and suitable mechanical (flexible shaft) and electrical cables.

The receiver itself is located remotely in the aircraft so as to save cockpit space. For a tuning meter, the MR-57A is used, and the IN-4A is a left-right meter for homing. The loop is mounted outside of the aircraft and rotates.



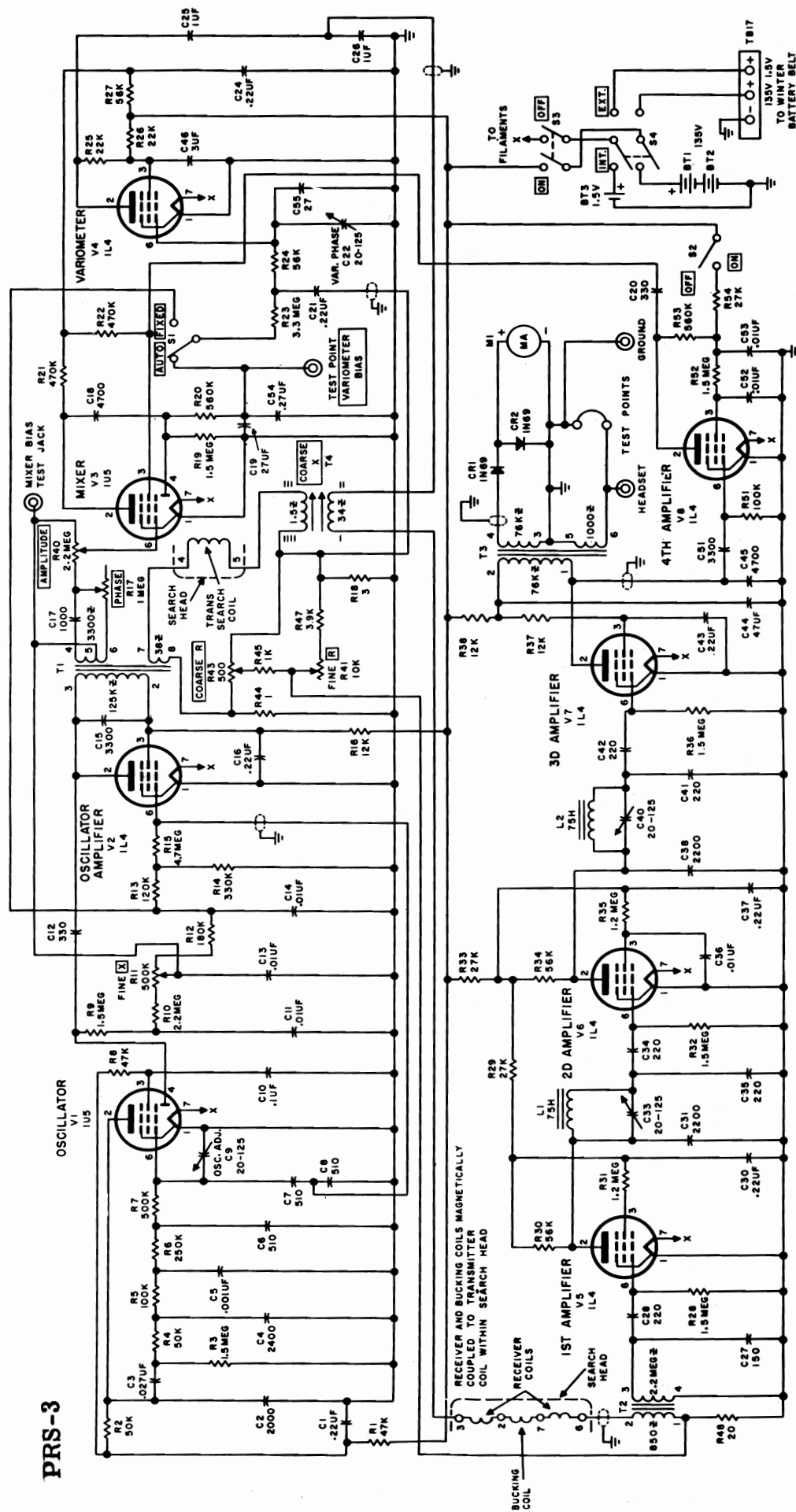


The PRC-6 is a handi-talkie type equipment operating in the frequency range of 47 to 55.4 mc on one of 47 preset channels. It is frequency modulated and has a range of about one mile. It has a transmitter power output of about one-quarter watt. The entire unit is self contained including batteries and may be hand held like a telephone. The transmitter employs four tubes, plus nine in the receiver which also supply AFC control. Power requirements of the transmitter are 1.5 volts at 1 ampere, 45 volts at 14 ma and 90 volts at 28 ma. The total receiver power requirements are 1.5 volts at 440 ma. and 45 volts at 13 ma. The

receiver is a superheterodyne type and uses a 4.3 mc IF. The receiver local oscillator is preset by crystal control and both receiver and the transmitter are tuned to the same frequency. The transmitter is reactance controlled to the preset frequency and the same reactance control is used for modulation. A volume control is provided to adjust receiver level. A built-in antenna is provided and is used by both transmitter and receiver. Provision is made for use of a separate antenna. Provision is also made for the use of a separate handset when desired.

NOTES
1. UNLESS OTHERWISE SHOWN
RESISTORS ARE IN OHMS
CAPACITORS ARE IN UUF
RESISTORS ARE IN OHMS
CAPACITORS ARE IN UUF
RESISTORS ARE IN OHMS
CAPACITORS ARE IN UUF

PRS-3



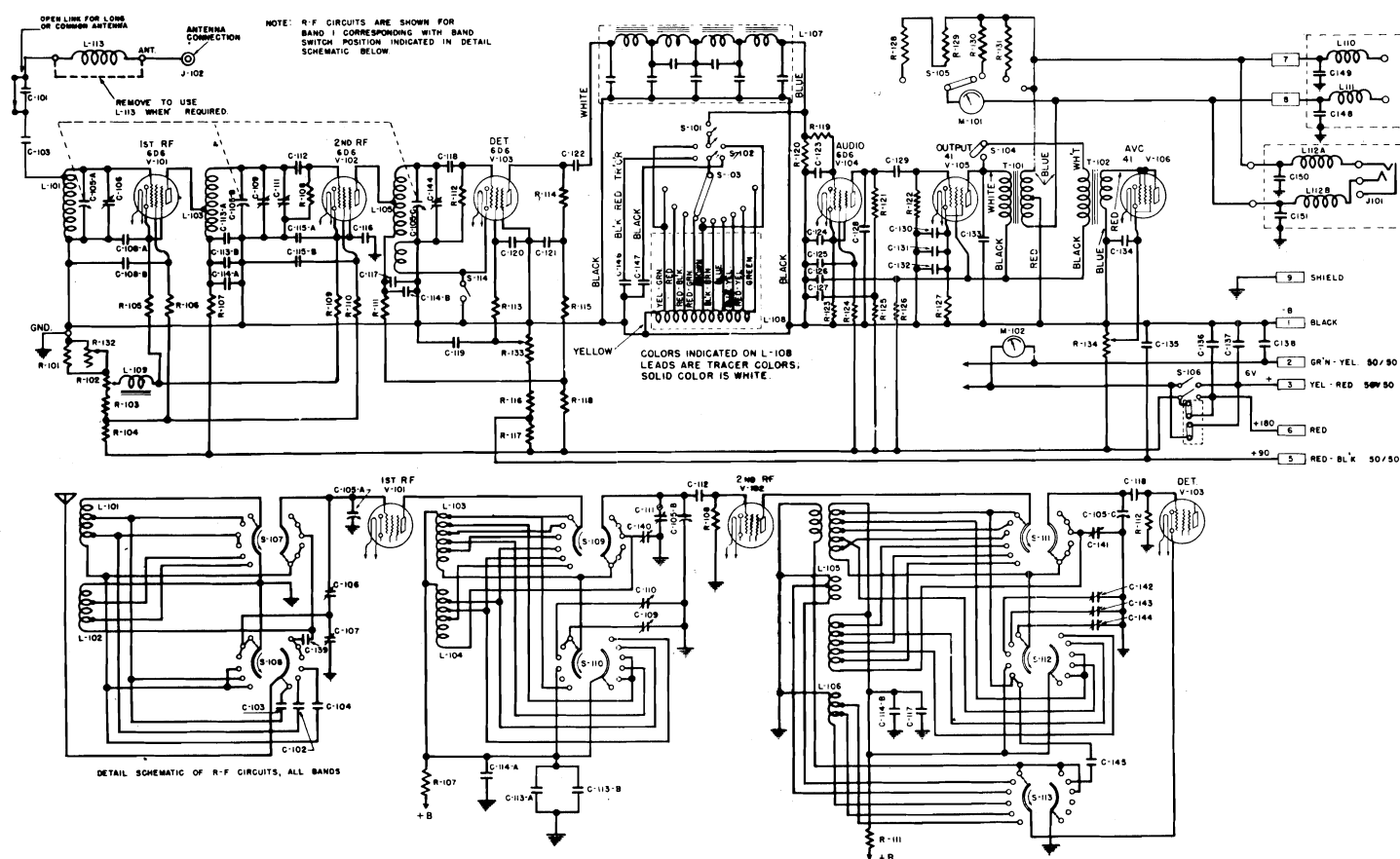
The AN/PRS-3 is a mine detector apparatus. It operates by having a single transmitter head (coil of wire) energized by a 1000 cycle signal, which is in turn received by four receive coils located adjacent to the transmit coil. Any metal located near the field of energy of the head is likely to cause an unbalance in the signal received by the pick-up heads and can be detected. The detected signal is read on a meter, and can be heard in a set of earphones

worn by the operator. The design of the head will allow the equipment to operate properly in the presence of magnetic ores without the unbalance that would be expected. The required voltages are 1.5 volts for the filaments and 135 volts for the plate supply. The equipment is actually built in two sections, the probe assembly, and the electronic assembly, complete with batteries. Various models have been made, with only minor differences between them.

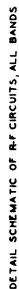
RAK

The RAK is a Navy low frequency receiver covering 15 to 600 kc. It operates with a power supply input of 115V 60 cycles. Battery operation is also possible.

The circuit consists of two stages of RF amplification and a regenerative detector. Bandswitching is used to cover the total range, and a series of sharp filters are employed to eliminate interference.

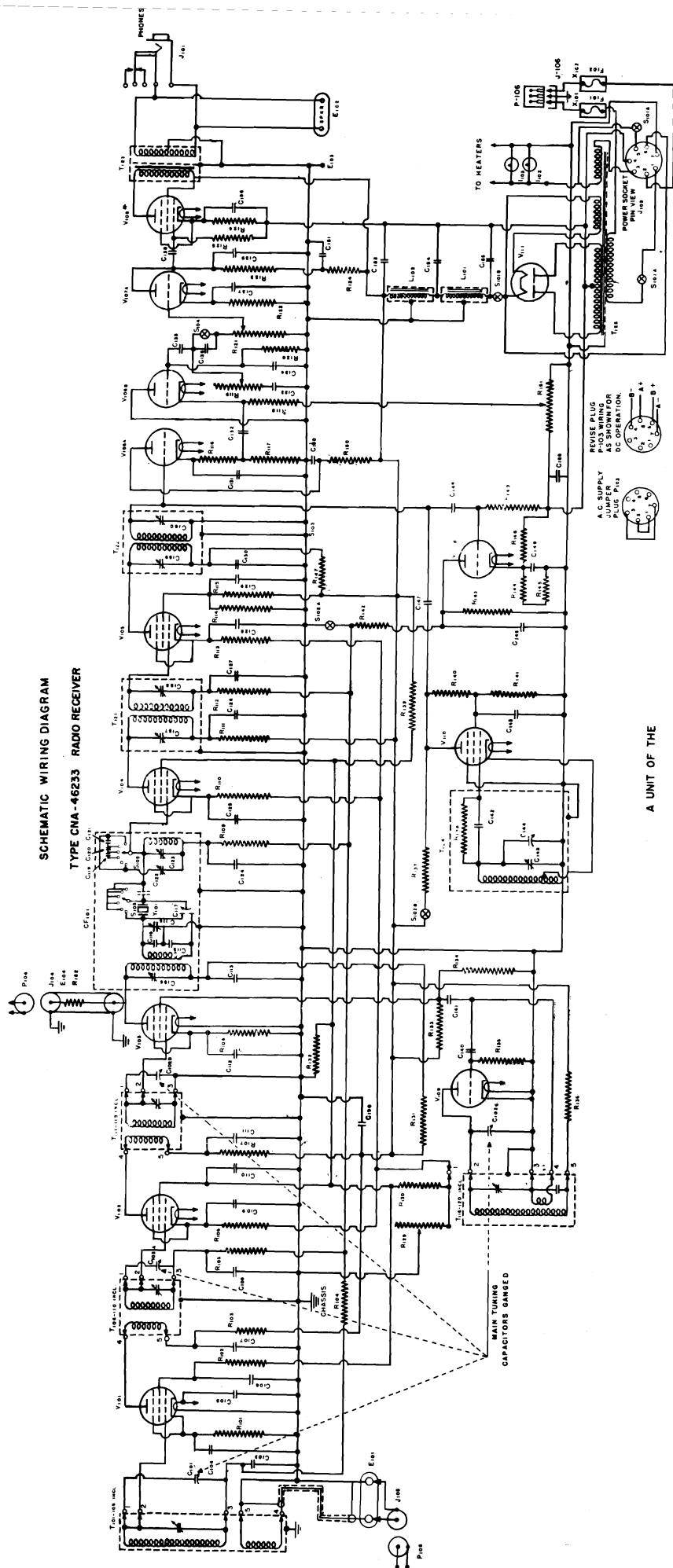


The RAL is a TRF receiver covering 300 kc - 23 mc in nine bands. Sensitivity is quite good due to the regenerative detector and selectivity is achieved with a variable audio filter. A separate AC power supply is used. The RAK is the low frequency counterpart of this receiver. While it is possible to use the RAL for amateur communications, it is an almost hopeless antique and certainly not worthy of any conversion efforts.



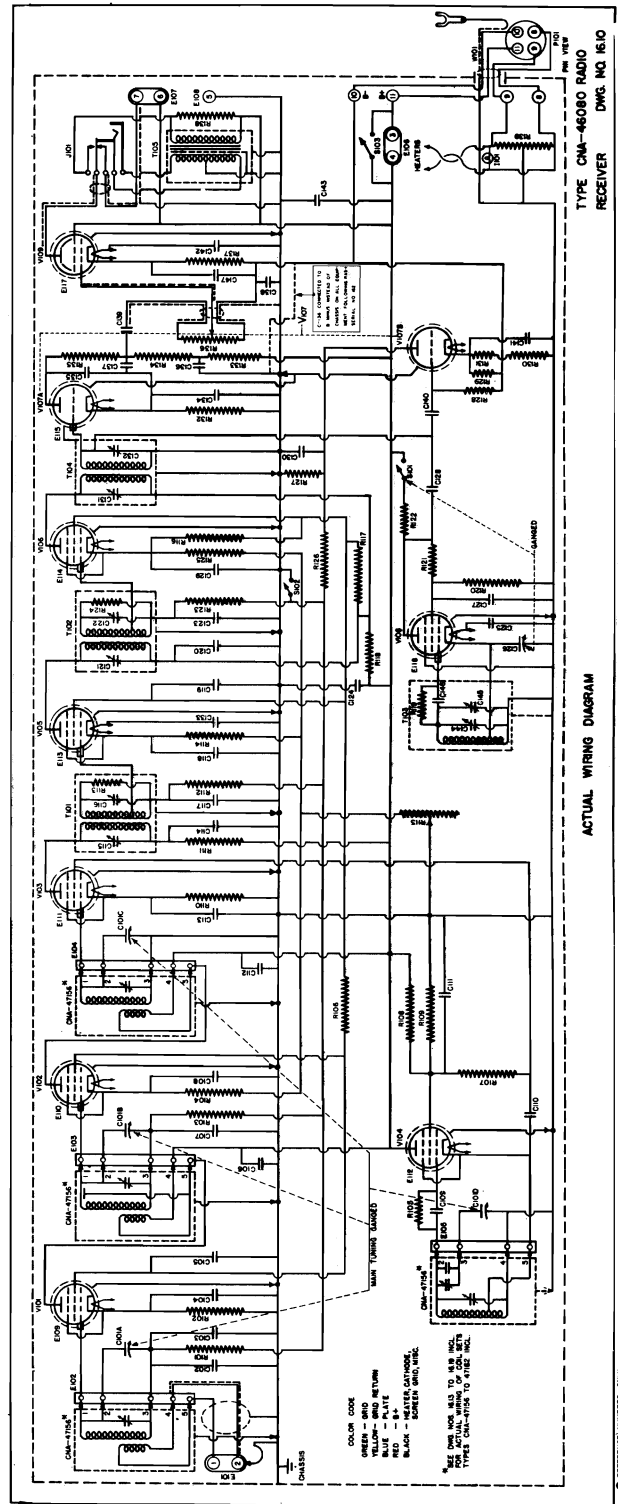
RAO-7

The RAO-7 is the Navy model of the NC-100XA National receiver. The main difference being the addition of a second rf stage for reduced radiation from the local oscillator and the omission of the "S"-Meter. The RAO is a general coverage receiver with no electrical bandspread and covers from 540-kc to 30 mc with an IF of 455 kc. Odd numbered models (5, 7, etc.) operated from 115 VAC, 60 cycles.



RAS

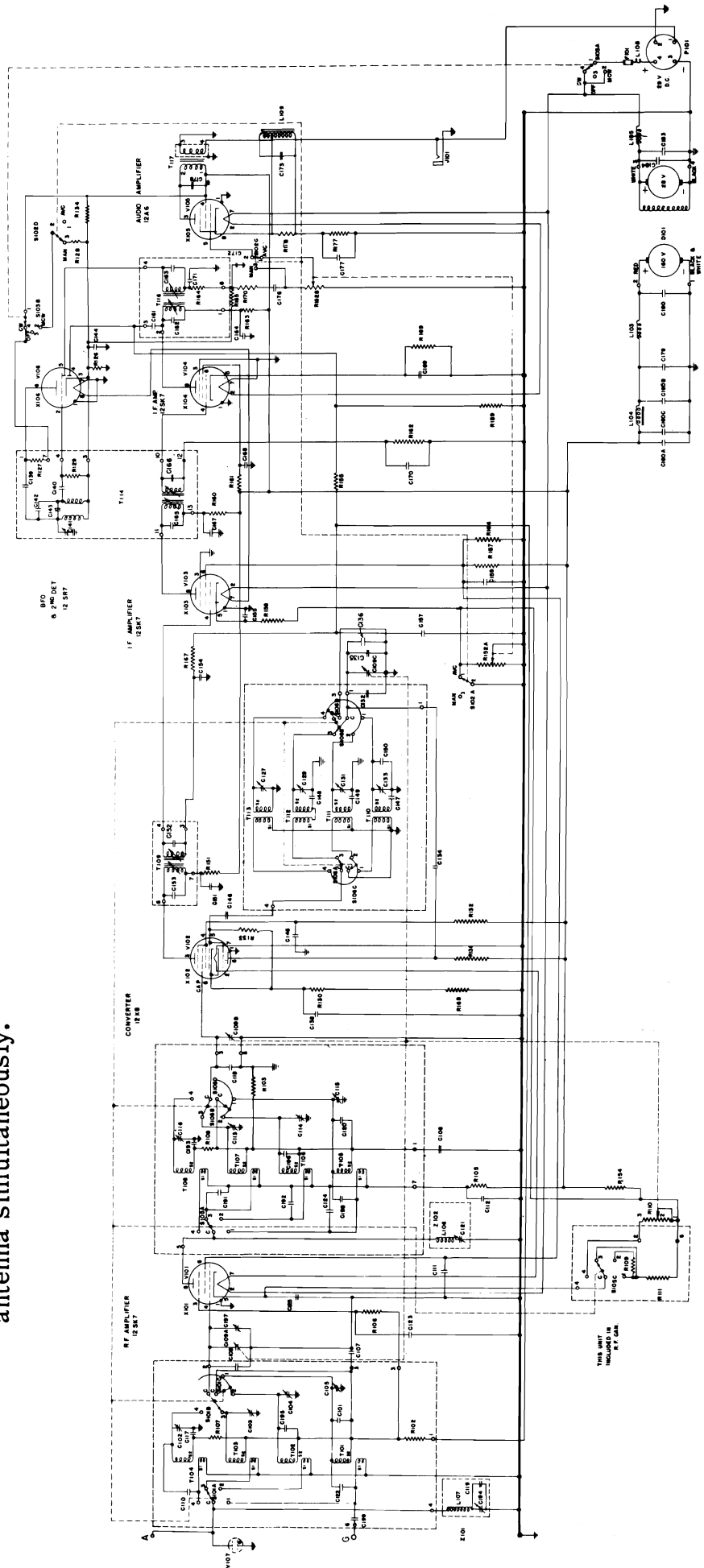
The RAS is the famous National HRO receiver with a thin Navy disguise. It covers from 190 kc to 30 mc with seven plug in coil drawers. A separate AC power supply was used. IF frequency is 175 kc.



RAX

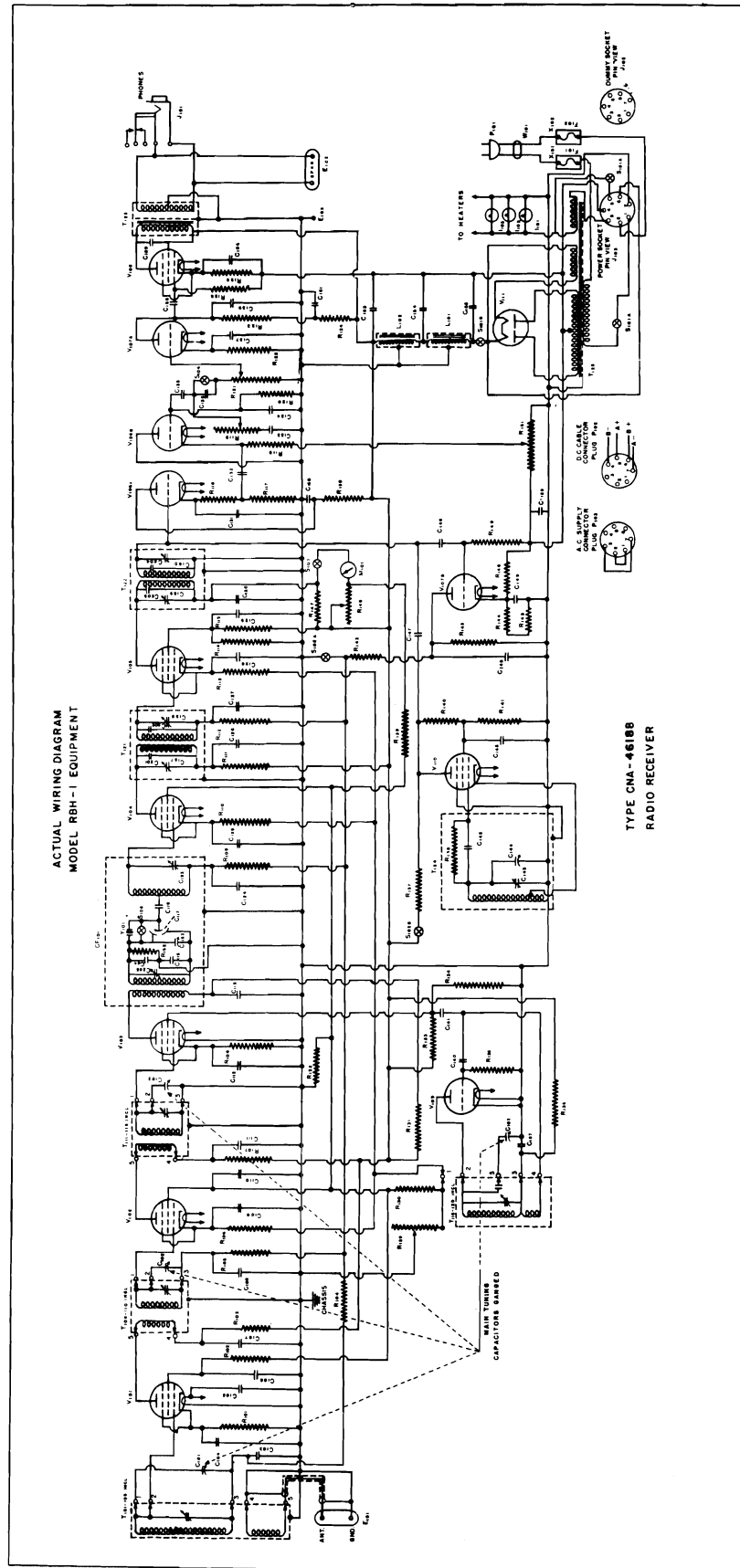
The RAX aircraft radio equipment is a receiver system designed for the U. S. Naval Air Force and covers a range of 200 kc to 27 mc, in three individual receivers. Unit 1, Navy model CG-46115 covers the range of 200 kc to 1500 kc in four bands. Unit 2 Navy model CG-46116 covers the frequency range of 1500 to 9000 kc in four bands, and Unit 3, Navy model CG-46117 covers the frequency range of 7000 to 27000 kc in five bands. Each receiver has a power supply consisting of a dynamotor, the output power of which is 166 volts at 90 ma, operating from an input of 28 volts.

Each receiver is a superheterodyne with unit 1 having an IF of 160 kc, unit 2 having an IF of 915 kc and unit 3 having an IF of 2275 kc. Each unit is capable of receiving CW as well as voice and MCW, and are designed to operate from a common antenna simultaneously.



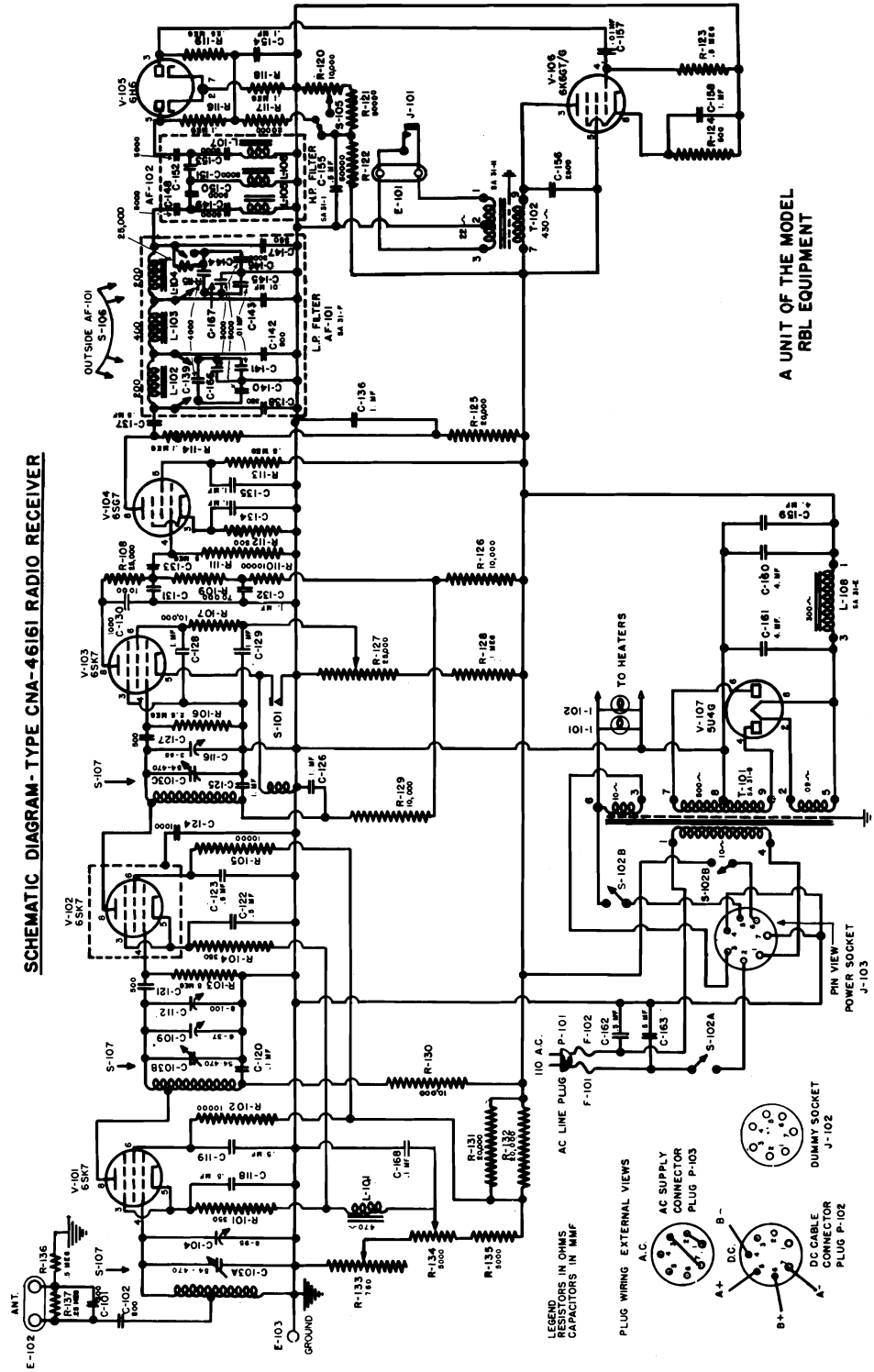
RBH

The RBH is a Navy receiver similar in design to the National NC-100 but covering the range 300-1200 kc and 1.7 - 16 mc. It has an IF of 1560 kc.



The RBL is a low frequency (15-600 kc) TRF receiver using a regenerative detector and similar in appearance to the NC-100 (RAO, RBH). The RBL has extremely sharp selectivity in both RF and audio services.

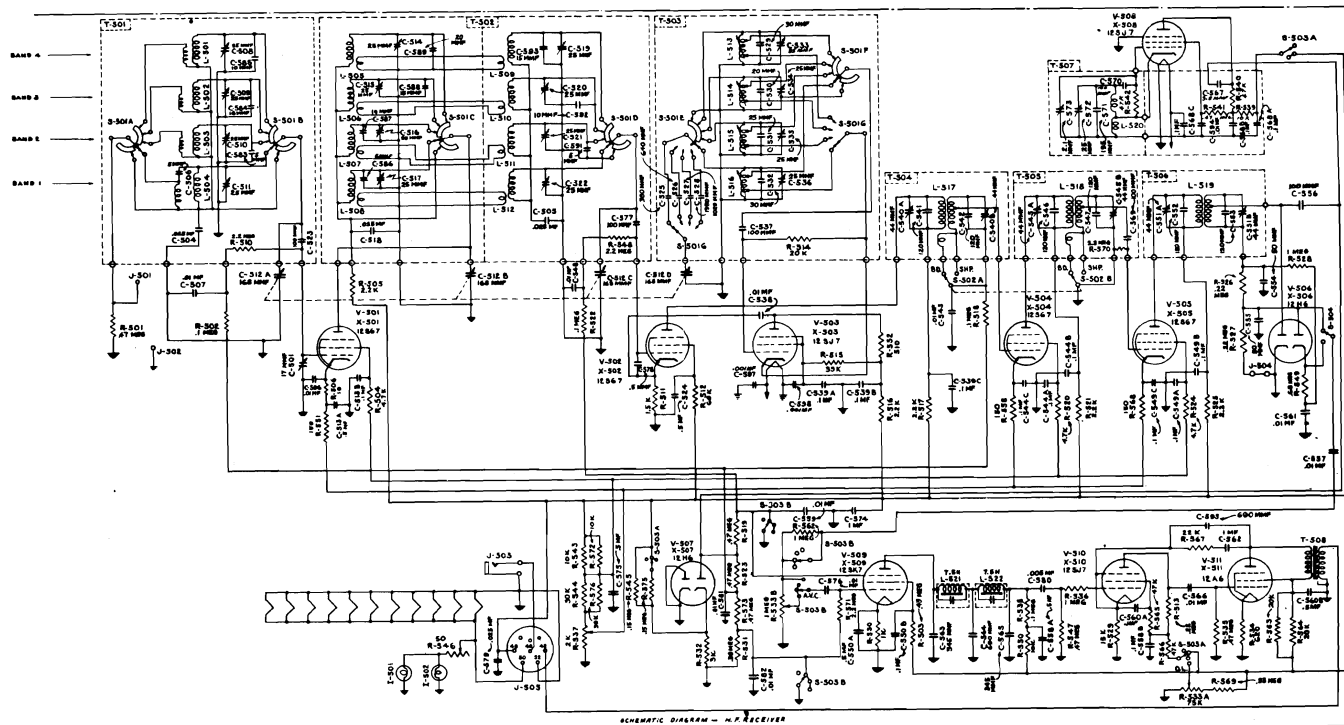
SCHEMATIC DIAGRAM-TYPE CNA-46161 RADIO RECEIVER



RBM

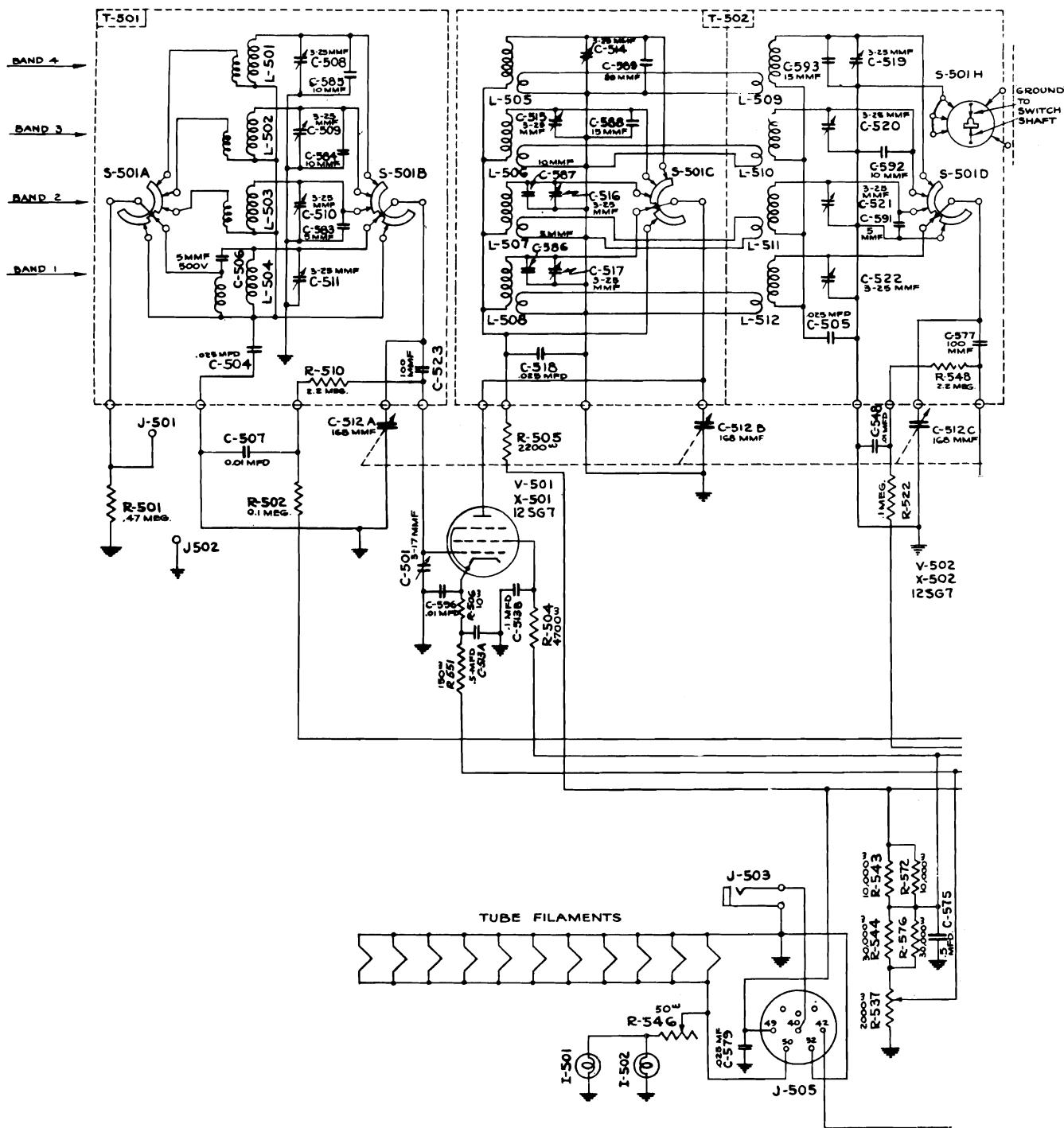
The RBM is a nomenclature covering two separate receivers, and their associated equipments. Essentially it is a high frequency (2-20 mc) receiver and a medium frequency receiver (200 to 2000 kc.). Both receivers are highly selective using 140 kc in the IF of the MF receiver and 1255 as the IF frequency in the HF unit.

Each receiver incorporates AVC, BFO, noise limiter, antenna trimmer and headset output. No provision is made for loudspeaker operation. Both units are normally housed within a water-tight cannister which becomes an operating table. Normally the equipment is associated with the TBW transmitter. Power is provided either by means of a dynamotor and storage batteries or an AC supply. Power requirements are 190 to 225 volts at 75 ma. and 12.6 volts at 3 amperes.

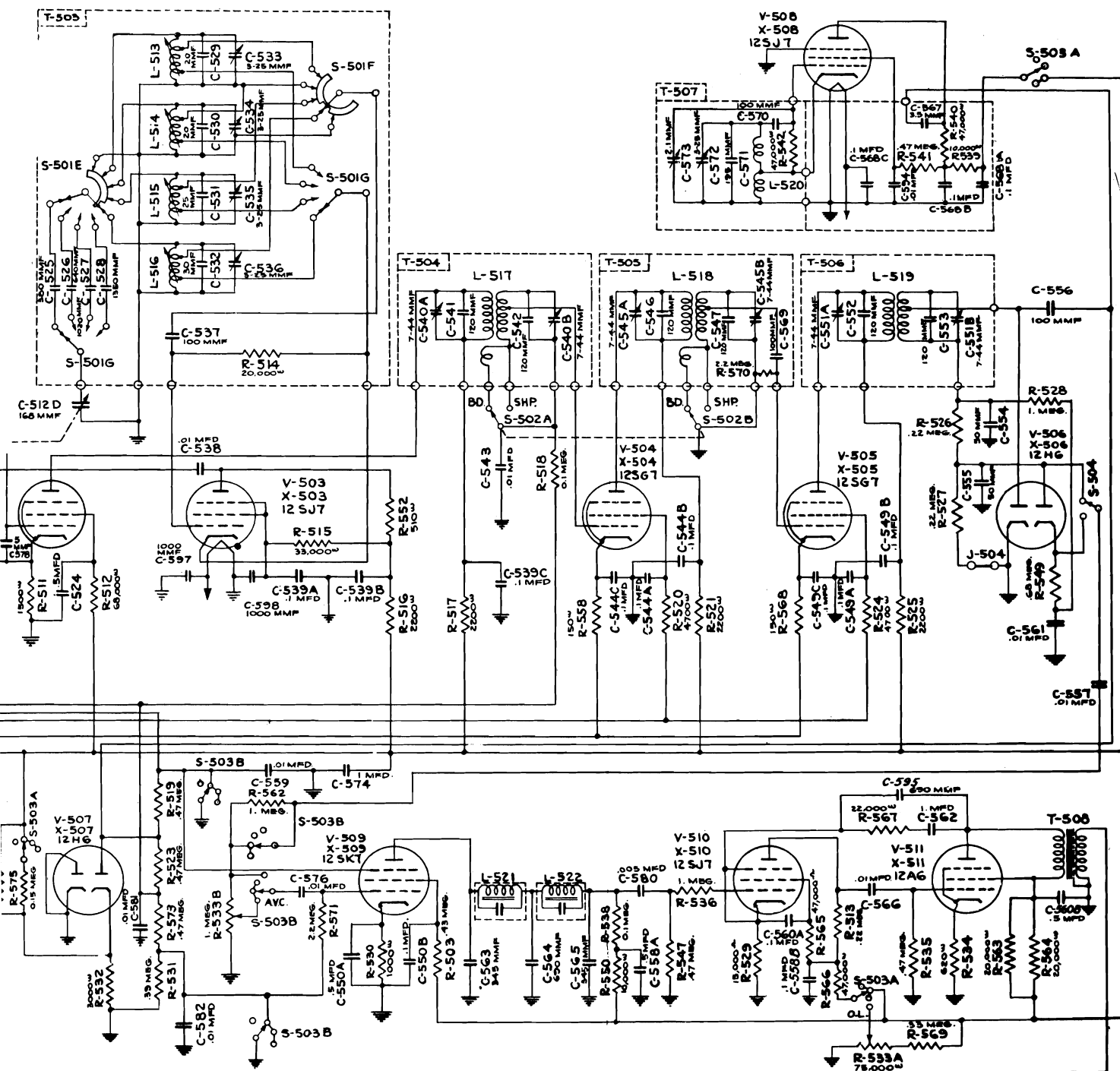


RBS

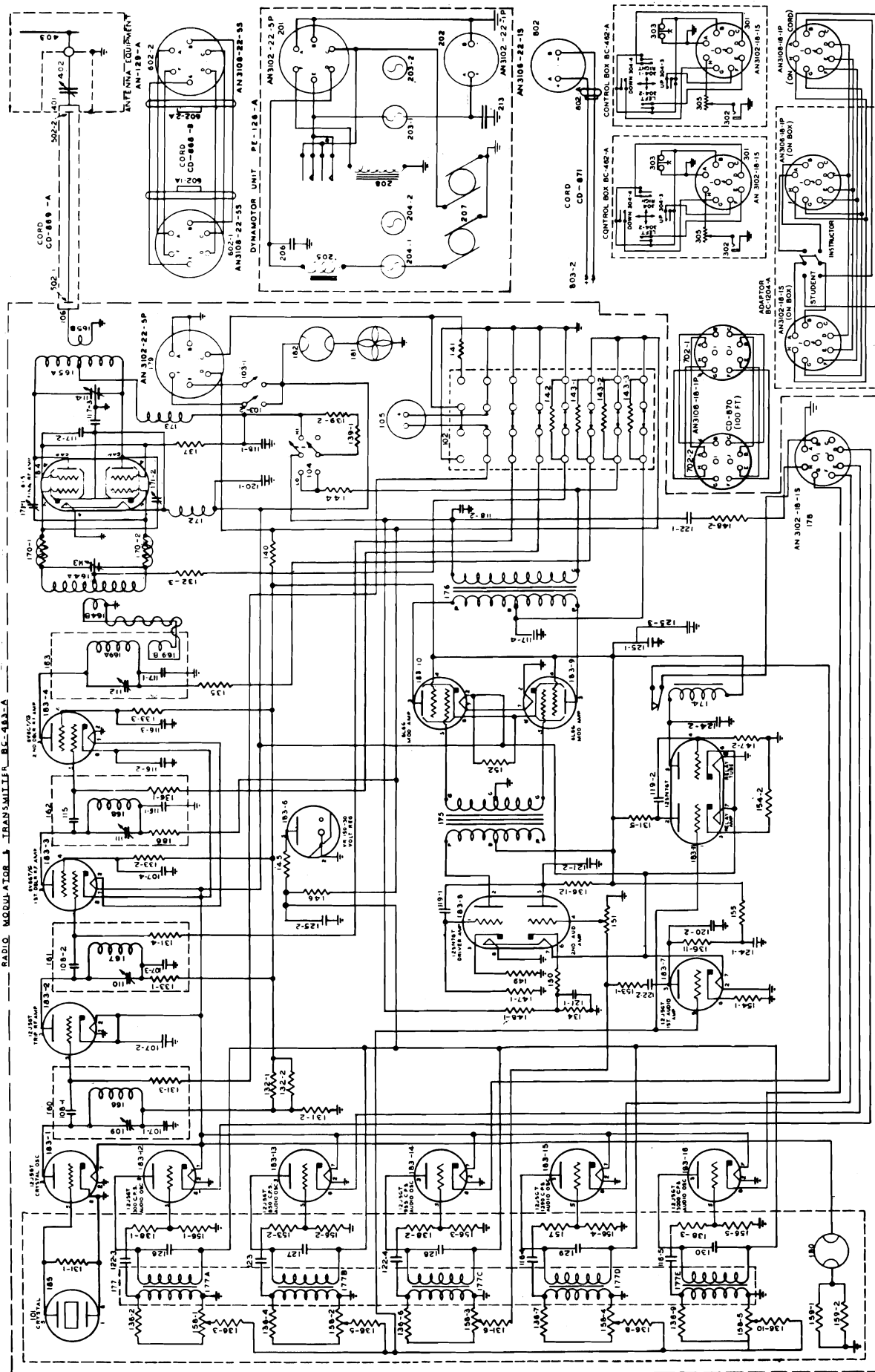
The RBS receiver is a shipboard receiver covering the frequency band of 2.0 to 20.0 mc in four bands. It is capable of receiving both CW and voice AM and operates directly from 110v AC, from a separate power supply. The RBS employs both noise



limiter and AVC, and features two positions of selectivity, broad and sharp. The intermediate frequency is 455 kc. A tuned filter is used in the audio stages to provide for additional selectivity.



RADIO MODULATOR TRANSMITTER BC-463-A



The RC-57 equipment is used to control the drone type pilotless aircraft when used for target purposes. It is a receiver, battery operated, with four audio tone channels, each supplying control signals for use within the aircraft control system. The equipment operates within the range of 68 to 73 mc and is preset to frequency prior to take-off. Operation from the dry battery supply is approximately 3 hours. Five tuning units are available,

TU-41

TU-43

TU-44

TU-45

TU-55

73 mc

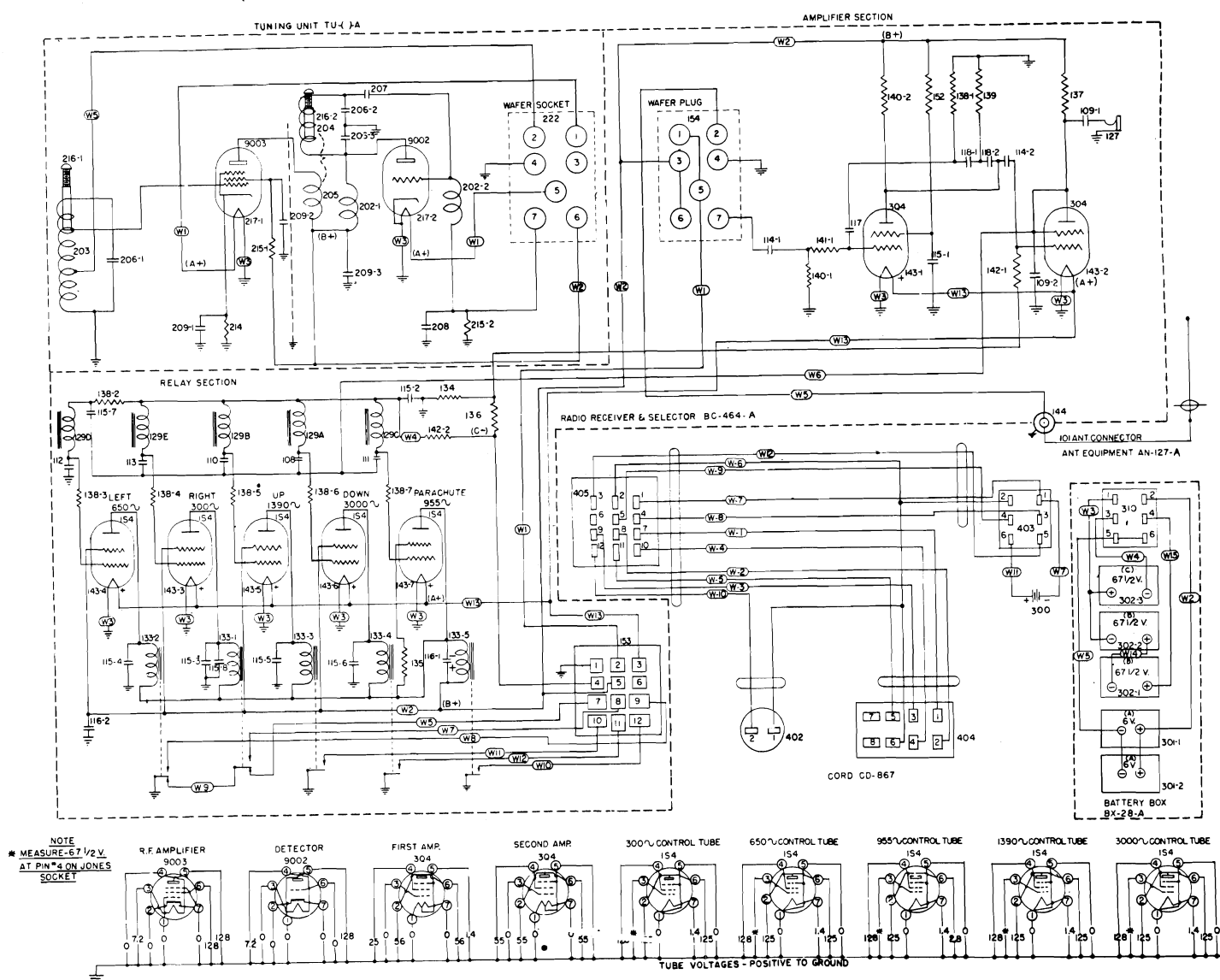
71.3 mc

69.6 mc

68.0 mc

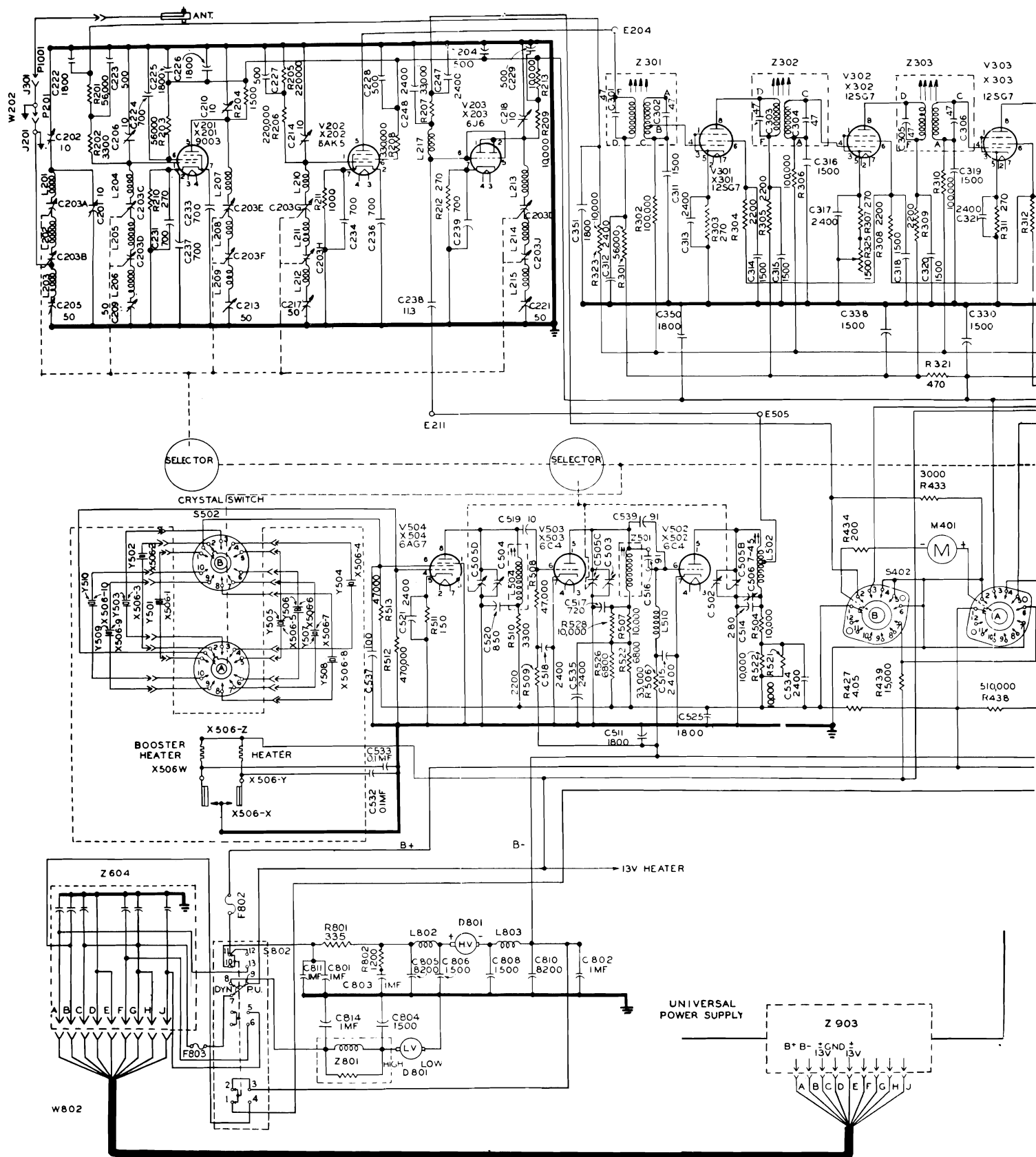
68-73 mc

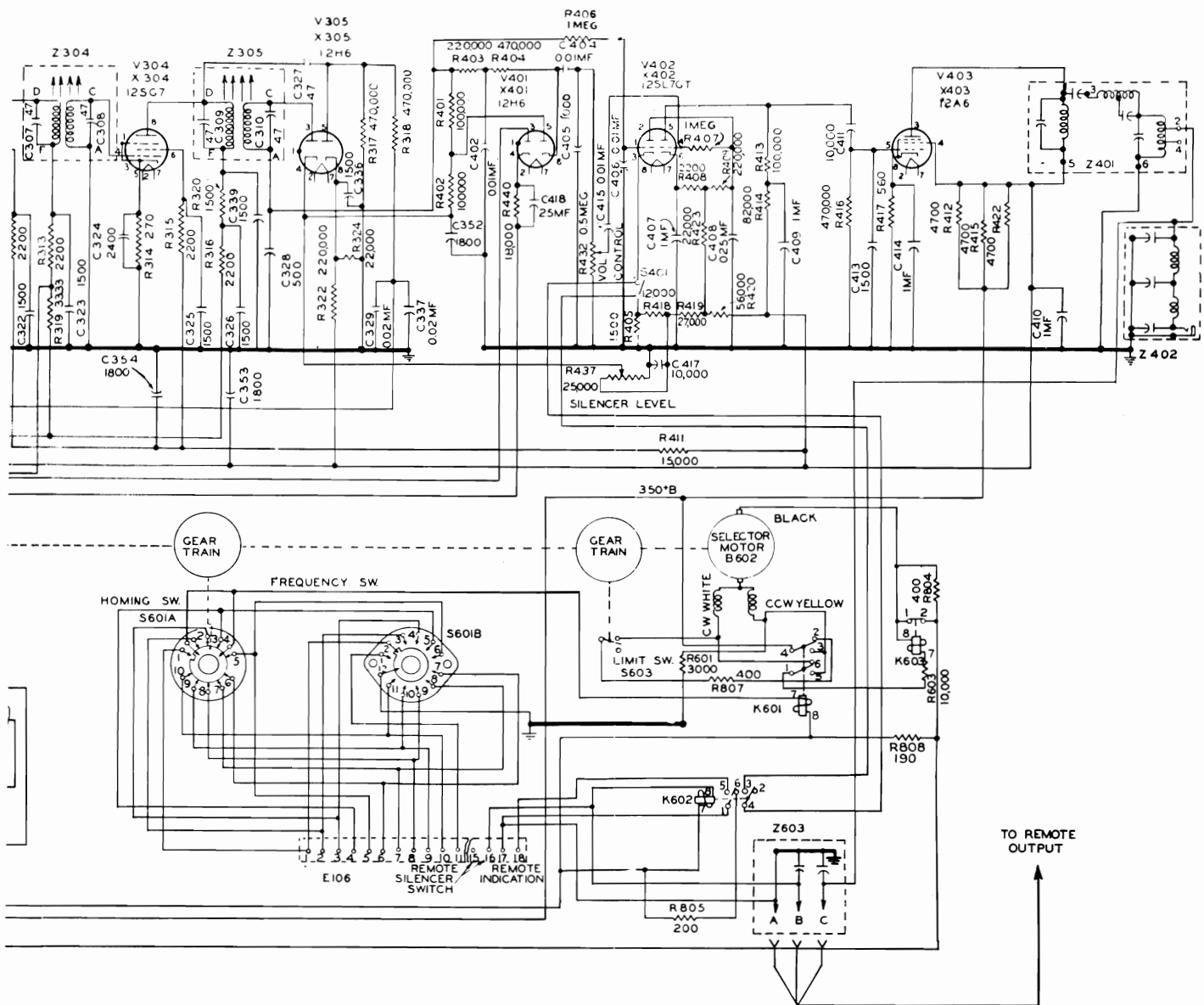
Power supplied to the receiver is obtained from dry cells



RC-57-A, Schematic Diagram Target Control Receiving Equipment

RDR



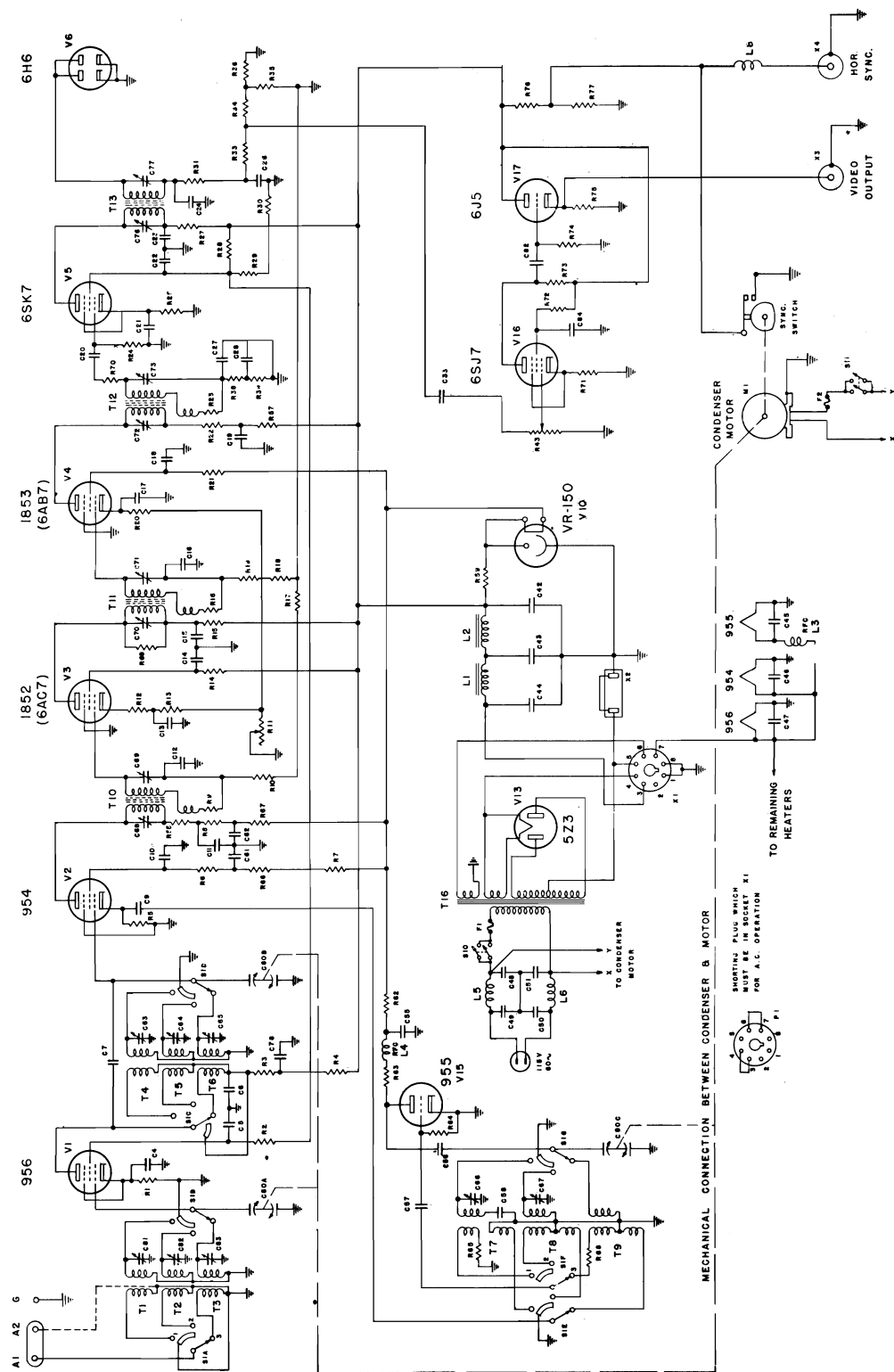


The Navy RDR is a VHF-UHF receiver covering the frequency range 225-390 mc. Originally part of the MAR equipment it may be used by itself as it is fully self contained. The receiver is a ten channel crystal superheterodyne capable of remote channel selection and operation. It includes a dynamotor enabling it to operate from a 13 volt dc supply. Some models were made for 24 volt systems as well. An external power supply may be used when desired.

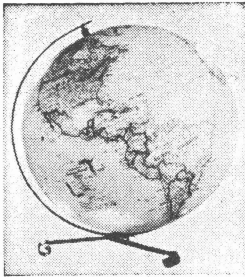
The intermediate frequency of the receiver is 30.2 mc and the receiver circuits incorporate a noise limiter, AVC, squelch and other features. The crystal oscillator operates in the 4814.815 to 7777.778 kc range. Accessories include remote control devices and a gasoline generator. Many sectional RF stages were released to surplus, at the termination of the contract.

RDC

The RDC (Navy) is a receiver for panoramic reception over the frequency range of 28.5 to 140 mc, in three bands. Presentation is provided to an external oscilloscope. Scanning the frequency range is accomplished by a motor drive rotating the tuning capacitor. The receiver is a superheterodyne with an IF of 5.25 mc. The output is video, after detection, and this is then provided to the oscilloscope for presentation. Synchronization signals are provided for the oscilloscope, but the oscilloscope must provide its own sweep source. The sweep recurrence is 15 cps and this provides 15 complete band inspections every second. Power input is 115 volts 60 cycles



THE HAM SHOP

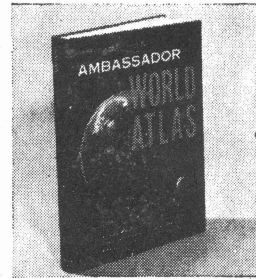


19" GLOBE

Here is a chance to preserve your breath for posterity! This beautiful World Globe, made by Hammond, is a must for every hamshack. Plain for \$19.95 or lighted for \$24.95. The first 10,000 people who jump at this bargain will get a year of CQ at no extra charge.

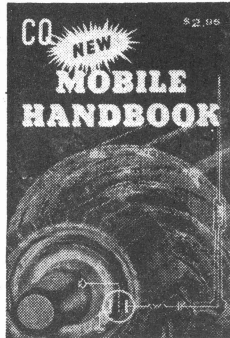
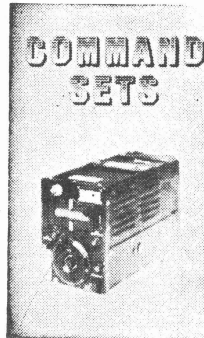
ATLAS

What! You don't know where Nicobar Island is? Incredible! And with the CQ deal on the Hammond Atlas so reasonable too. This is a reference book that will get good usage around your house if you have any kids. 7 lbs. of colored maps and a gazetteer for only \$12.50... and you get a year of CQ.



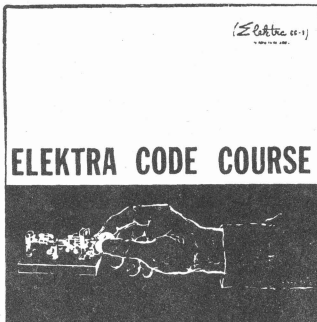
COMMAND SETS

This IS a collection of reprints, containing all of the available information on the conversion of the popular "Command" transmitters and receivers into good ham transmitters and receivers. Invaluable for Novice, Technician, General, Advanced and Extra class operators. 136 fabulous, amazing terrific pages for only \$1.50 postpaid.



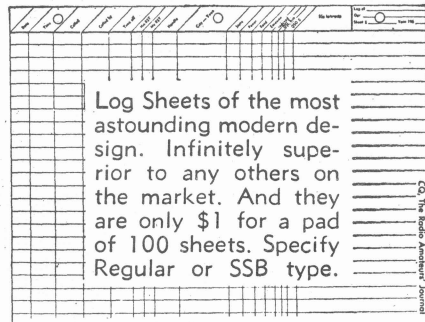
MOBILE HANDBOOK

Anyone who tries to go mobile without getting this book should register for a sanity hearing. Bill Orr, W6SAI has put everything you need to know in this book...it is NOT a collection of reprints like some other mobile handbooks we could mention. Build-its by the dozen...solutions to ignition problems, keeping the battery charged, noise...only \$2.95 postpaid.



CODE RECORD

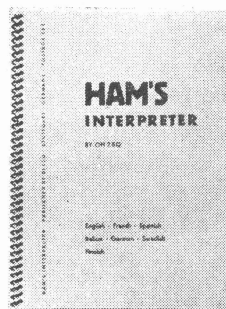
Learning code is a snap with this record. Speeds from 3 to 16 WPM, depending upon turntable speed. This 12" LP record has on it all you need to learn the code for both the Novice and General License. \$3.50 each.



Log Sheets of the most astounding modern design. Infinitely superior to any others on the market. And they are only \$1 for a pad of 100 sheets. Specify Regular or SSB type.

HAM'S INTERPRETER

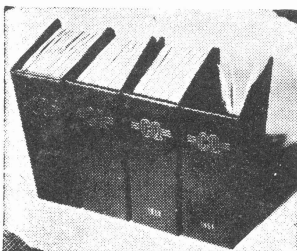
Now you can talk in broken French, Spanish, Italian, German, Swedish and Finnish. This handy little book gives all the popular ham conversation in seven languages, including letters and numbers. Only \$1.50 postpaid.



TVI HANDBOOK

WIDBM's newly written TVI book (nn reprints) covers all aspects of curing TVI from both the Ham's viewpoint and that of the TV viewer or the TV serviceman. It includes 2- and 6-meter TVI as well as Industrial, Medical and

Utility TVI. Profusely illustrated with diagrams, photos, charts, tables and FCC regulations pertaining to radio and television interference. Price \$1.75 postpaid, USA, \$2.00 Foreign.

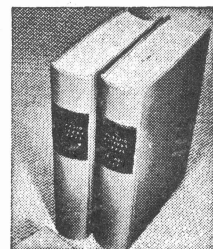


BINDER

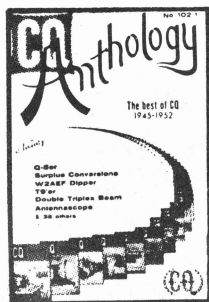
There is no other good way to keep your back issues. Make 'em neat. We supply the binder, with the year embossed in gold, not merely a sticker which will come off later. Specify what year you want stamped on your binder. \$3.50 each.

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By far the handiest way to keep your library. Why not go first-class? This impressive volume is only \$10.00. We only made a few of them this year, so don't expect to get one later.



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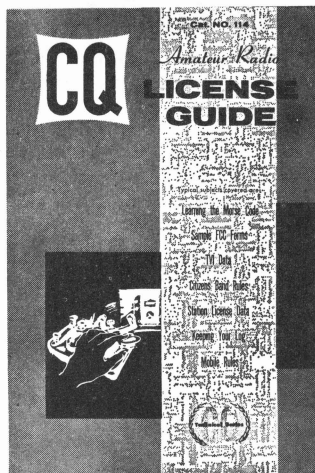
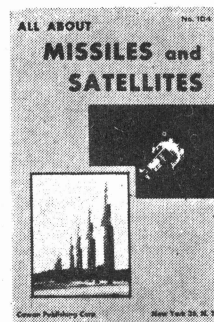


CQ ANTHOLOGY

Most amateurs do not have a good file of back issues of CQ. So we've looked back through the years 1945-52 and assembled all in one place the articles that have made a lasting stir. The issues containing most of these articles have long ago been sold out. The price is a paltry \$2.00.

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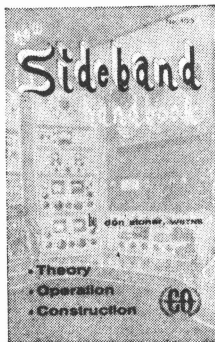
HI-FI BOOK

This nifty volume contains the latest dope on amplifiers, preamplifiers and equalizers plus a buyer's guide of component manufacturers! Over 150 — 5½" x 8½" pages of heavily illustrated descriptions covering Hi Fi Audio Components—the greatest publication value in its field today. Only \$2.50 per copy.



SIDEBAND HANDBOOK

Written by Don Stoner, W6TNS, was almost one full year in the preparation of this terrific volume. This is not a technical book. It explains sideband, showing you how to get along with it... how to keep your rig working right... how to know when it isn't... and lots of how to build-it stuff, gadgets, receiving adaptors, exciters, amplifiers. Price, only \$3.00.



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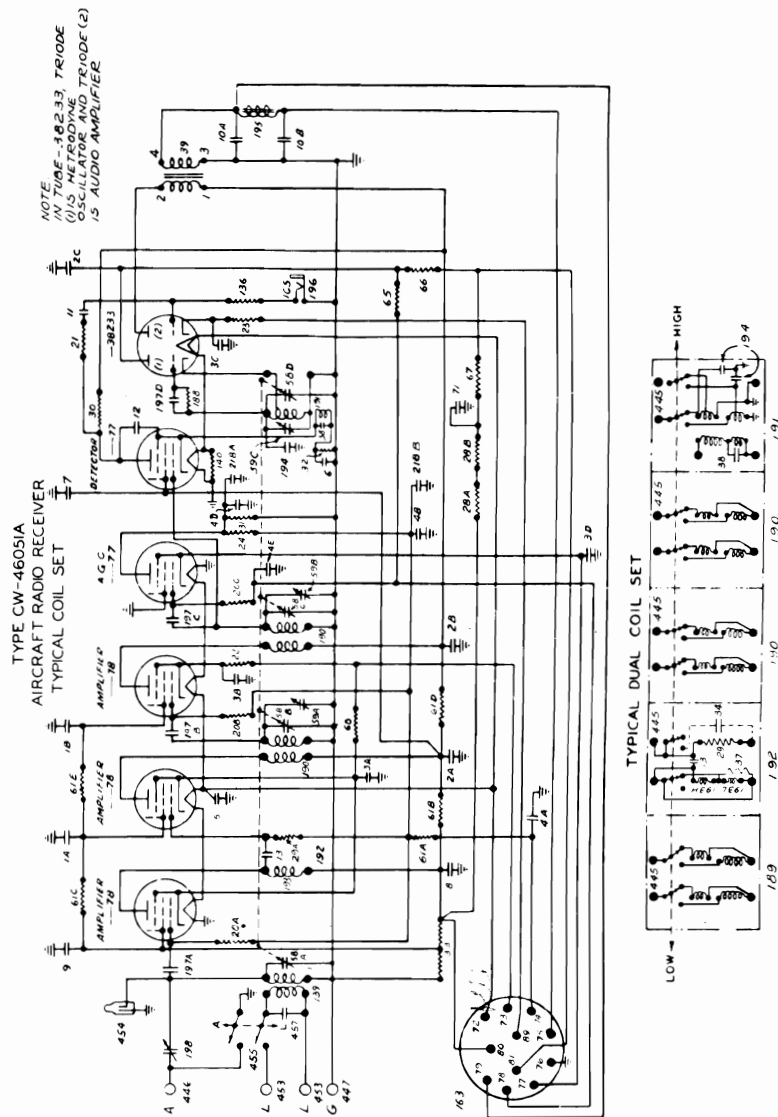
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RU-4A/GF-3, RU-5A/GF-4, RU-7/GF-5 and RU-13/GF-8

Receiver coil sets of model RU-16 and RU-17 equipments are interchangeable with corresponding coil sets of the models RU-3, RU-3A, RU-4, RU-4A, RU-5, RU-5A, RU-6, RU-7, RU-10, RU-11, RU-12, RU-13 and RU-14. Corresponding units of the RU-17/GF are interchangeable with those of the model RU-14/GF-9.

The transmitter uses plug in coils for each band. The transmitter operates from a VFO and a calibration chart is supplied for each coil set. The receiver uses plug in coils although a dual band plug in coil box was also available.

The RU equipment was used in Naval aircraft for communications much as the ARC-5 equipment was, but wasn't as modern as the ARC-5 sets. The transmitters cover the frequency range of 2060 to 4523 kc and 6000 to 9050 kc. The receivers cover the frequency range of 195 to 13,575 kc. Transmission and reception is on voice, CW or MCW. The major differences in the equipments is the power supply input voltages. The RU-16 operates on 12 volts while the RU-17 operates on 24 volts dc. Corresponding dynamos, control boxes and antenna relays are of a voltage appropriate to the system. The RU-16 can be identified by the use of a black nameplate, while the RU-17 uses blue nameplates. Corresponding units of the RU-16/GF-11 are interchangeable with the



ARC-5

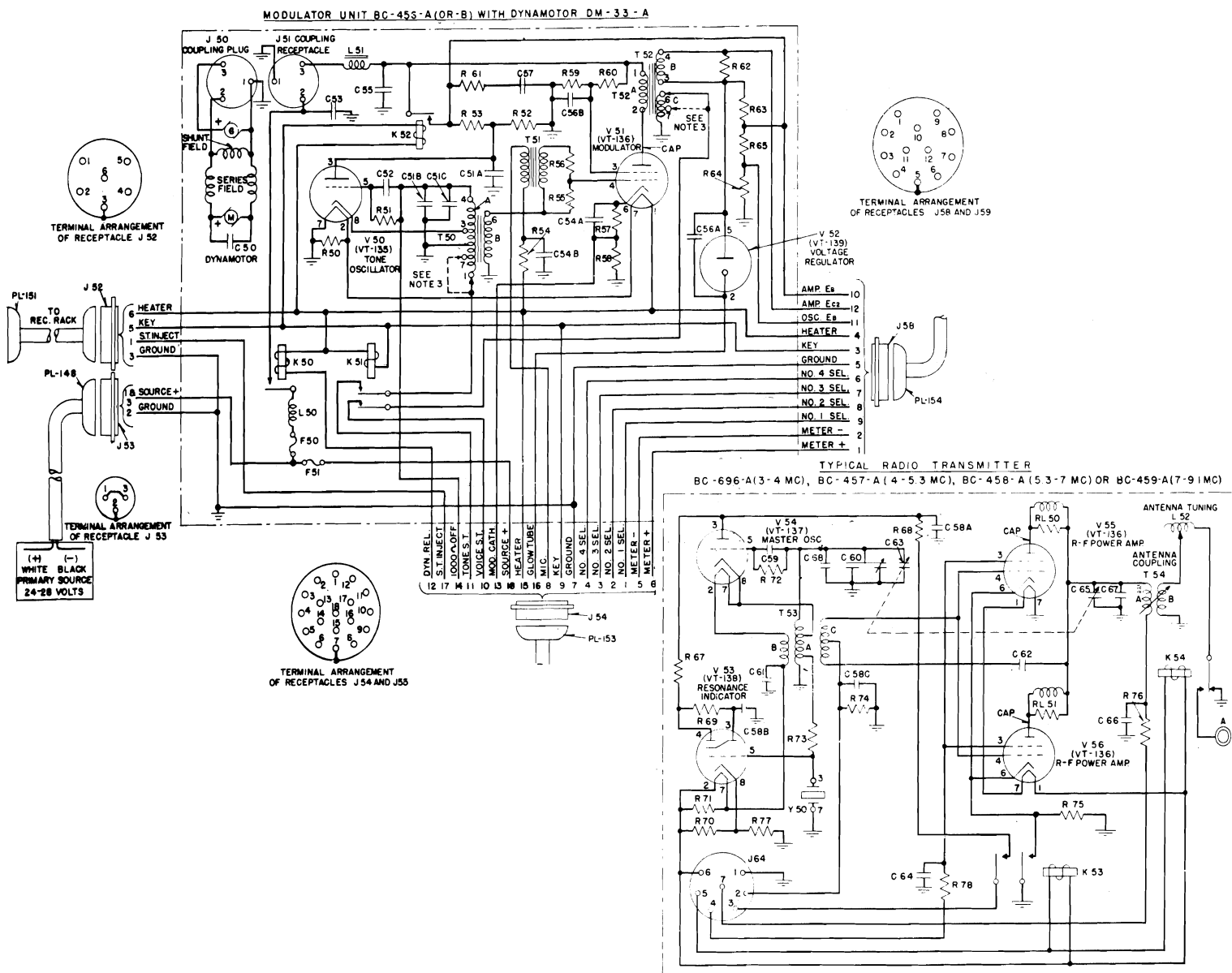
This equipment is a multichannel aircraft communications equipment. Several different transmitters, receivers and accessories are provided to make the equipment extremely flexible. More amateur radio conversions have been accomplished on this equipment than on any other surplus yet available.

There are many different military designations for the units of SCR-274N, including: R-23, 24, 25, 26, 27, 28, 148, BC-453, 454, 455, 456, 457, 458, 459, 451, 696, 946, T-18, 19, 20, 21, 22, 23, MD7, DM-33, DY-8, C-29, RE-2. Many of these numbers may be followed by the letter A, B, C, D, etc.

Receiver audio output is designed to match 8000 ohm headsets. Receivers with a Bsuffix, also have 600 ohm output. When converting, it is usual to remove the adaptor box from the front panel and mount an Off-On switch, a volume control, a BFO switch and a phone jack in this space. All the connections for these are brought to the plug which mates with the adaptor box, greatly simplifying this operation.

Transmitters are capable of outputs up to 100 watts depending on the plate voltage used. The VFO units of this series are remarkably stable, and rival most commercial equipment. They also have a high degree of linearity, and have been widely used by amateurs for sideband applications.

Conversion of the transmitter and receiver units is covered, almost to the point of exhaustion, in the book "Command Sets" which sells for \$1.50.



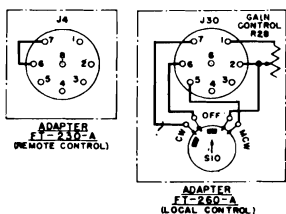
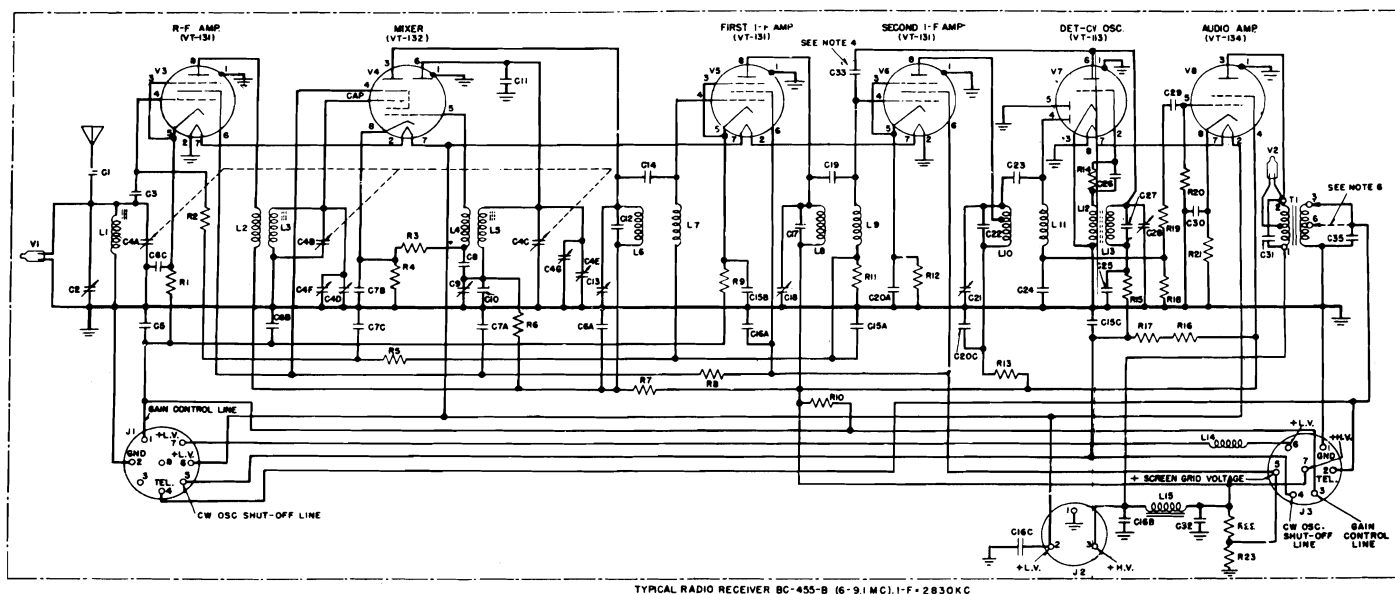
MD-7

The MD-7 uses a pair of 1625's to modulate any of the ARC-5 transmitters. It is almost completely unused by amateurs except as a source of parts, i. e. the modulation transformer can be quite handy.

AN/ARC-5 (SCR-274N) Major Components

ARC-5 Nomenclature	SCR-274N Nomenclature	Frequency Band Megacycles	Function	Receiver I. F. Kilocycles
R-23/ARC-5	BC-453	0.190-0.550	Receiver	85
R-148/ARC-5	-----	0.190-0.550	Receiver	85
R-24/ARC-5	BC-946	0.520-1.500	Receiver	239
R-25/ARC-5	-----	1.500-3.000	Receiver	
R-26/ARC-5	BC-454	3.000-6.000	Receiver	1415
R-27/ARC-5	BC-455	6.000-9.100	Receiver	2830
R-28/ARC-5	-----	100.0-156.0	Receiver	
T-15/ARC-5	-----	0.500-0.800	Transmitter	
T-16/ARC-5	-----	0.800-1.300	Transmitter	
T-17/ARC-5	-----	1.300-2.100	Transmitter	
T-18/ARC-5	-----	2.100-3.000	Transmitter	
T-19/ARC-5	BC-696	3.000-4.000	Transmitter	
T-20/ARC-5	BC-457	4.000-5.300	Transmitter	
T-21/ARC-5	BC-458	5.300-7.000	Transmitter	
T-22/ARC-5	BC-459	7.000-9.100	Transmitter	
T-23/ARC-5	-----	100.0-156.0	Transmitter	

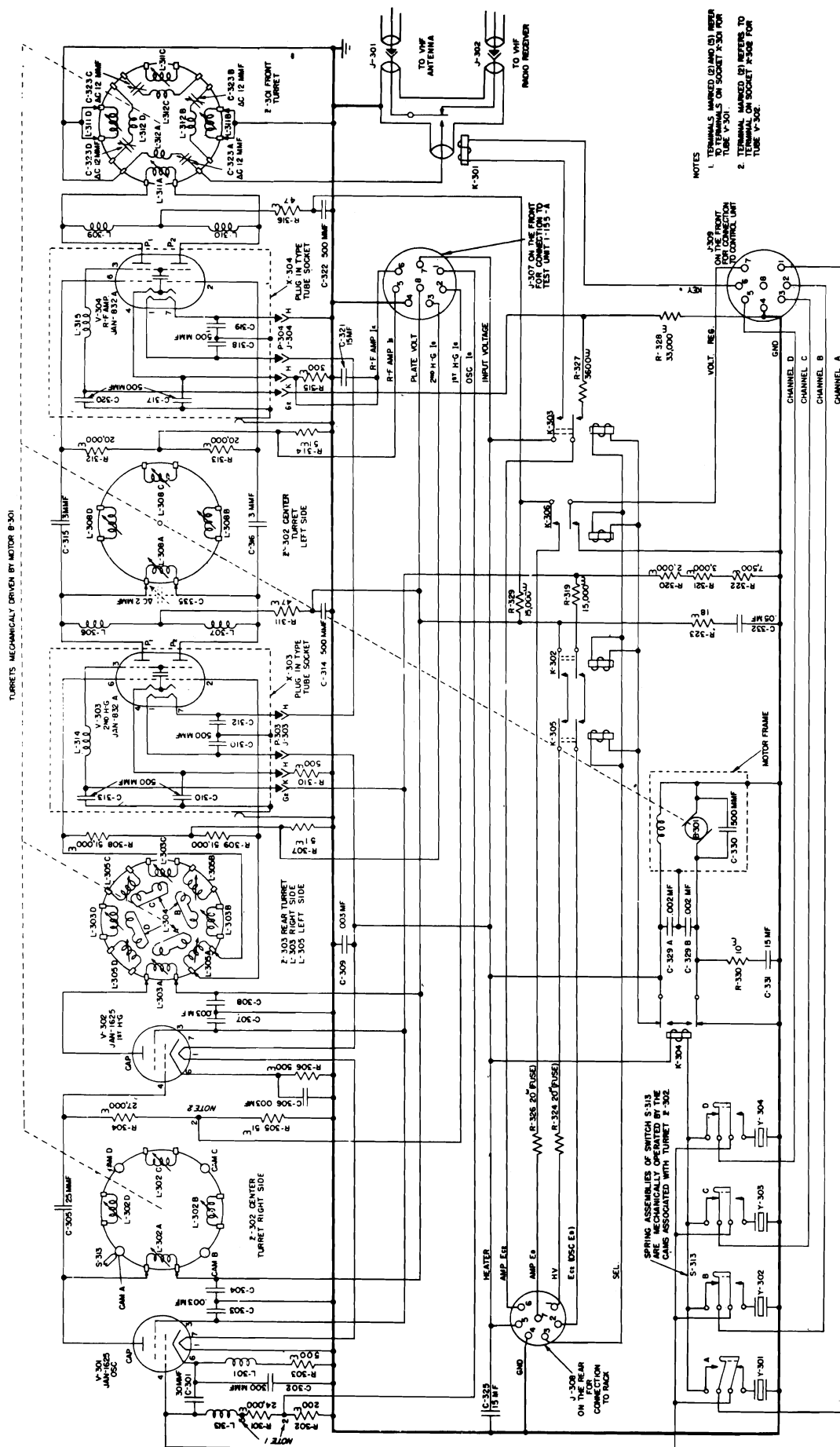
RADIO SET SCR-274-N RECEIVING EQUIPMENT,
SCHEMATIC CIRCUIT DIAGRAM



- NOTES:
1. CAPACITOR ABBREVIATIONS
MMF - MICROMICROFARADS
MF - MICROFARADS
 2. ALL PLUGS AND RECEPTACLES ARE SHOWN AS VIEWED FROM THE OUTSIDE.
 3. ALL RELAYS ARE SHOWN IN THE NON-ENERGIZED POSITION.
 4. THE CAPACITANCE BETWEEN PIN PLUGS IN THE 2ND I-F RECEPTACLE CONSTITUTES C-33.
 5. TERMINAL NUMBERS APPEARING ON RECEPTACLES OF JACKS IN RECEIVERS AND ADAPTERS AND ALL CIRCUIT SYMBOLS ARE FOR REFERENCE PURPOSES ONLY THEY DO NOT APPEAR ON THE EQUIPMENT.
 6. TRANSFORMER T1 IN BC-453-B, BC-454-B AND BC-455-B RECEIVERS IS PROVIDED WITH A TAP (TERMS) FOR LOW IMPEDANCE HEADSETS. THESE THREE RECEIVERS AND RADIO RECEIVERS BC-453-A, BC-454-A AND BC-455-A ARE NORMALLY FURNISHED WITH CONNECTION SHOWN IN SOLID LINES FOR USE WITH HIGH IMPEDANCE (8000 OHMS) HEADSETS. RADIO RECEIVERS BC-453-B, BC-454-B, AND BC-455-B CAN BE CHANGED FOR USE WITH LOW IMPEDANCE HEADSETS BY REMOVING THE TWO WIRES ON TERMINAL 3 AND CONNECTING THEM TO TERMINAL 6 AS SHOWN IN DASHED LINES.

ARC-5 VHF Transmitter

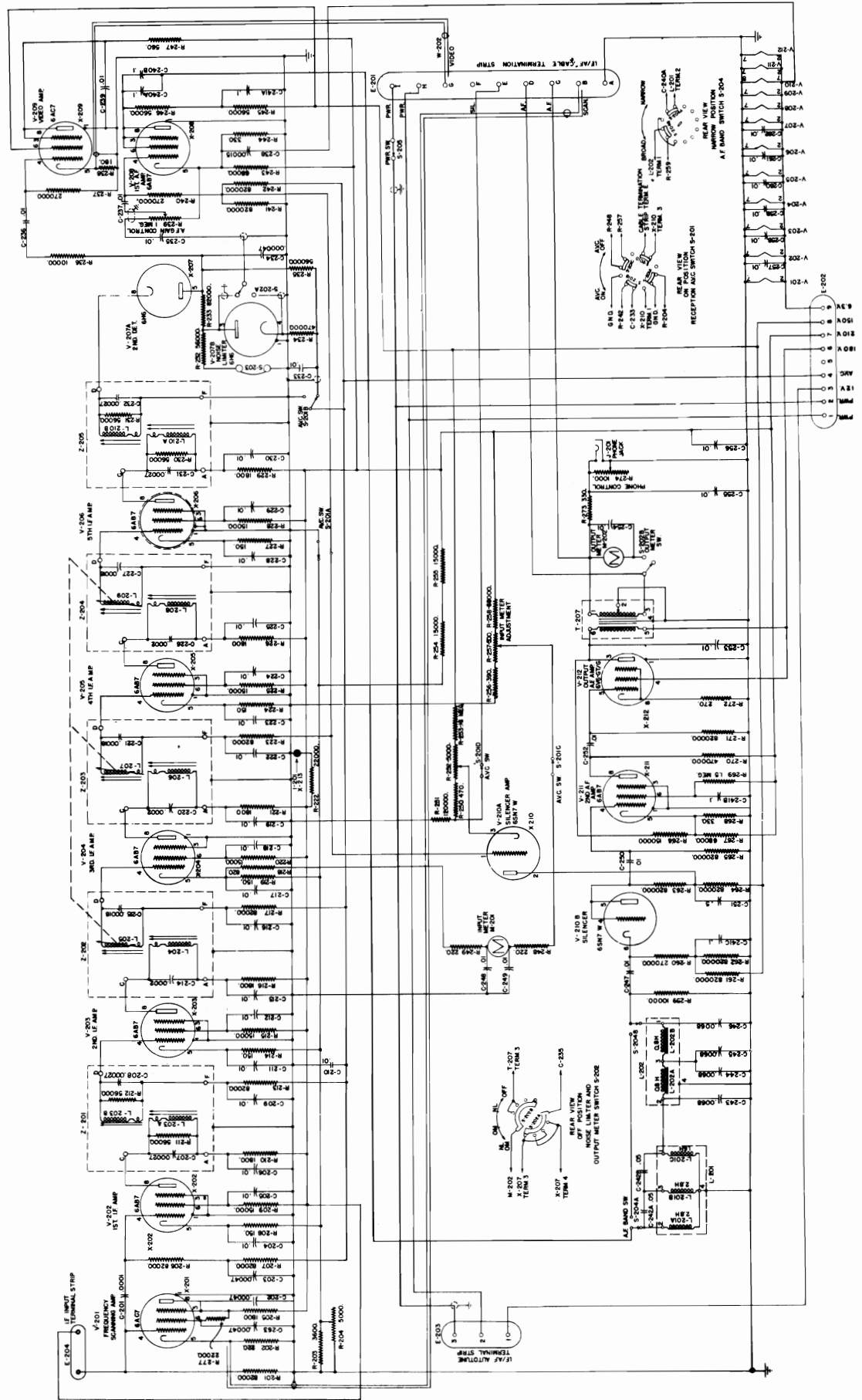
The ARC-5 VHF Transmitter is easily converted for ham use on the two meter band. It can be operated with the automatic channel selection (4 channels). Enterprising amateurs have rewound some of the coils to provide a bandswitching transmitter for 10-6-2-1 1/4 meters.



- NOTES
1. TERMINALS MARKED (1) AND (2) REFER TO TERMINALS ON SOCKET P-301 FOR TUBE V-301.
 2. TERMINAL MARKED (3) REFERS TO TERMINAL ON SOCKET P-302 FOR TUBE V-302.

RDZ

The RDZ is a 200-400 mc receiver originally used aboard ship. It features either manual tuning or ten channel autotune and operates from 110 VAC, 60 cycles AC. This unit is large, weighing in at about 200 lbs, and is a little antiquated for amateur UHF work. It has an IF of 15.5 mcs.



SCR-522

The SCR-522 and SCR-624 are very similar in components and can be considered for practical purposes, to be identical. The SCR-522 is primarily airborne. The equipment consists of several major components, the BC-624 receiver, the BC-625 transmitter and the power supply. They may be used independently or together. The frequency range is 100 to 156 mc. Reception is AM and four preset channels may be selected.

The receiver is a superheterodyne with a 12 mc IF. Operation is crystal controlled using 8 to 8.72 mc crystals. Conversion to 2 meters, tunable is covered in CQ, July, 1947. The receiver incorporates squelch as well as a noise limiter. AVC is employed as well. Audio output is taken from the output transformer, terminal 7 is 4000 ohms; terminal 6 is 300 ohms and terminal 5 is 50 ohms, with respect to ground.

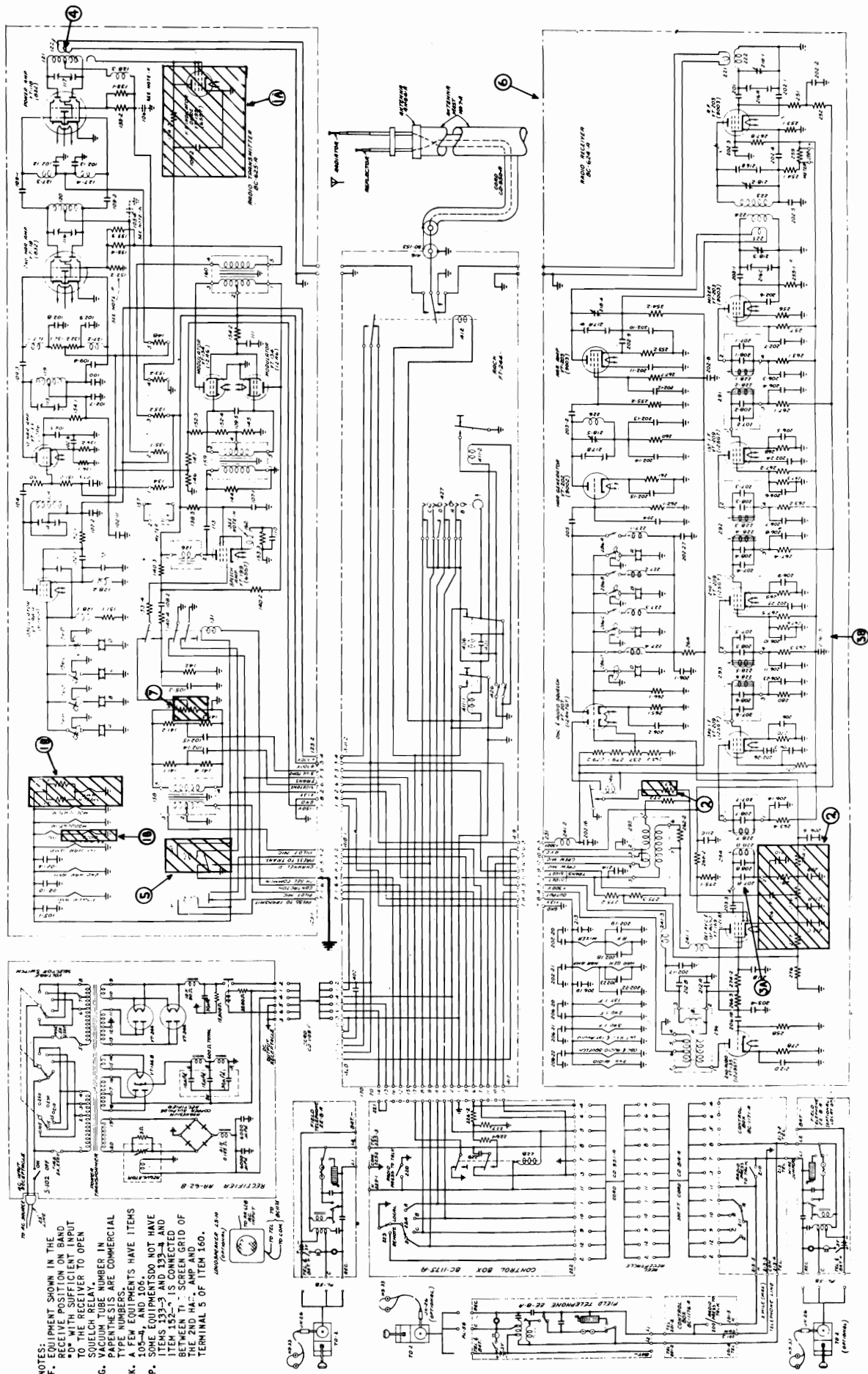
The transmitter is crystal controlled, four channels. Second harmonic of the crystal oscillator is fed to two stages of triplers and then to the final stage.

When the transmitter is mounted within the FT-244A rack a cam and shaft mechanism select the preset positions of both transmitter and receiver to accomplish tuning. An external meter is plugged in when tuning set-up is necessary.

Total power requirements are

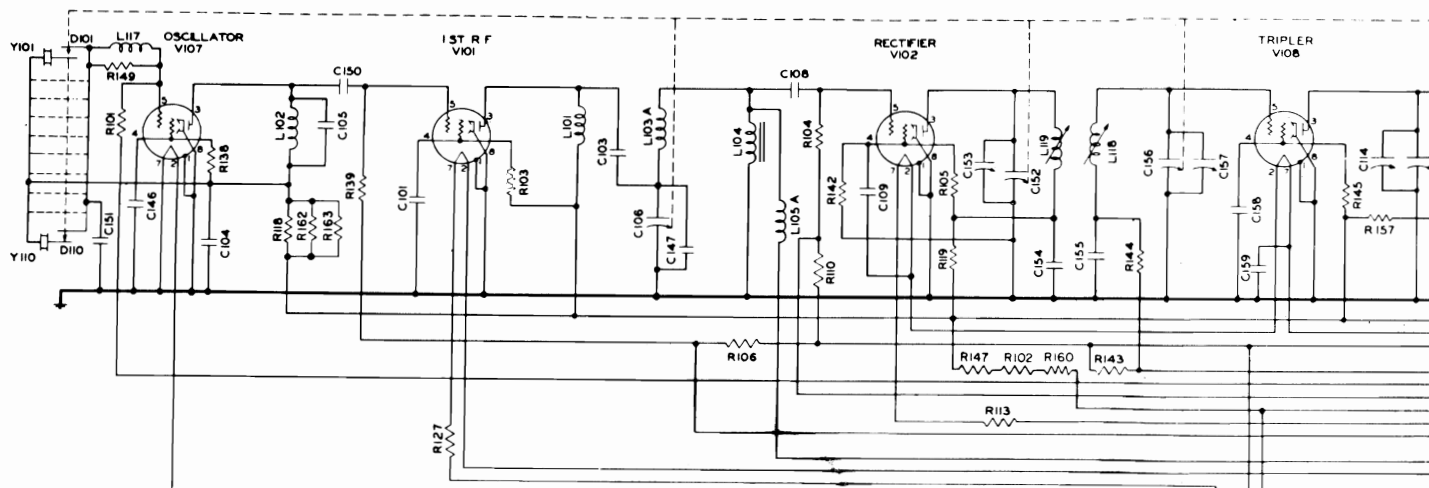
310V	230 ma dc,	High voltage
150V (neg)	8 ma dc,	Bias
12.6V	3.5 amp,	filament
13 volts	0.5 amp dc relay and motor	

Accessories include the BC-1175A control box, the BC-1171A control box, the BC-1176A control box, the PE-94A 24 volt power supply, the PE-98A 12 volt power supply BC-602 control box and many more. The AC supply is designated RA-62.



SCR-608A

The SCR-608A and SCR-628A are basically the same equipment. They operate from 27 to 38.9 mc and are calibrated every 100 kc. They operate on FM or CW. The receivers are tunable, but the transmitters are crystal controlled. Ten preset channels are available. The receiver IF is 2.65 mc. They operate on 12 or 24 volts dc and have a loudspeaker built into the receiver. The



RADIO TRANSMITTER BC-684-A

CAPACITORS

C101	0.003 UF 800 V
C103	100 UF 800 V
C104	500 UF 800 V
C105	15 UF 500 V
C106	350 UF MAX-AIR GAP 0.025"
C113	60 UF MAX-AIR GAP 0.025"
C115	60 UF MAX-AIR GAP 0.025"
C119	80 UF MAX-AIR GAP 0.025"
C152	60 UF MAX-AIR GAP 0.025"
C156	60 UF MAX-AIR GAP 0.025"

CANCELLED

C108	500 UF 800 V
C109	0.003 UF 800 V

C111	0.003 UF 800 V
C112	0.003 UF 800 V

C114	20 UF MAX-AIR GAP 0.025"
C116	20 UF MAX-AIR GAP 0.025"

C117	0.003 UF 800 V
C118	0.003 UF 800 V

C120	20 UF MAX-AIR GAP 0.025"
C121	0.003 UF 800 V

C122	0.003 UF 800 V
C123	0.01 UF 300 V

C124	0.002 UF 1200 V
C125	60 UF MAX-AIR GAP 0.030"

C126	20 UF MAX-AIR GAP 0.025"
C127	100 UF MAX-AIR GAP 0.0195"

C128	100 UF MAX-AIR GAP 0.0195"
C129	100 UF MAX-AIR GAP 0.0195"

C130	100 UF MAX-AIR GAP 0.0195"
C131	100 UF MAX-AIR GAP 0.0195"

C132	100 UF MAX-AIR GAP 0.0195"
C133	100 UF MAX-AIR GAP 0.0195"

C134	100 UF MAX-AIR GAP 0.0195"
C135	100 UF MAX-AIR GAP 0.0195"

C136	100 UF MAX-AIR GAP 0.0195"
C137	0.5 UF 600 V

C138.1	0.1 UF 600 V
C138.2	0.1 UF 600 V

C139	0.5 UF 600 V
C140	30 UF 50 V

C141	0.5 UF 600 V
C142.1	0.1 UF 600 V

C142.2	0.1 UF 600 V
C143	0.5 UF 600 V

C145	2 UF 1000 V
C146	0.003 UF 800 V

C147	175 UF 800 V
C148	0.003 UF 800 V

C149	0.001 UF 1200 V
C150	0.001 UF 800 V

C151	50 UF 800 V
C153	20 UF MAX-AIR GAP 0.025"

C154	0.003 UF 800 V
C155	0.003 UF 800 V

C157	20 UF MAX-AIR GAP 0.025"
C158	0.003 UF 800 V

C159	0.01 UF 300 V
------	---------------

APPARATUS LEGEND

C161	100 UF 800 V
------	--------------

C162	4 UF 50 V
------	-----------

C164	0.003 MF 800 V
------	----------------

SWITCHES

D101	PUSH BUTTON ASSEMBLY
D110	CRYSTAL SELECTORS

D111	PUSH BUTTON ASSEMBLY
D120	ANT CAP SELECTORS

D121	ANT CUR-TUNE
D122	RECEIVER TUNE-OPERATE

D124	ON-OFF POWER SUPPLY
D125	METER SWITCH

D126	TANK-OTHER USE SWITCH
------	-----------------------

LAMP

E101	PILOT LAMP
------	------------

FUSE

F101	1/2 AMPERE FUSE
------	-----------------

JACKS

J101	MAGNETIC MICROPHONE
------	---------------------

J102	CARBON MICROPHONE
------	-------------------

COILS

L101	1ST RF PLATE CHOKE
------	--------------------

L102	OSC PLATE
------	-----------

L103A	1ST RF PLATE TUNING
-------	---------------------

L104	MODULATION
------	------------

L105A	RF CHOKE
-------	----------

L106	TRIPLER PLATE TUNING
------	----------------------

L107	DOUBLER GRID TUNING
------	---------------------

L108	DOUBLER PLATE TUNING
------	----------------------

L110	POWER AMP TUNING
------	------------------

L111	ANTENNA COUPLING
------	------------------

L117	OSC GRID FILTER
------	-----------------

L118	TRIPLER GRID TUNING
------	---------------------

L119	RECTIFIER PLATE TUNING
------	------------------------

L120	POWER AMP RF CHOKE
------	--------------------

L121	POWER AMP RF GRID CHOKE
------	-------------------------

L122	POWER AMP ANTI-SING
------	---------------------

L123	FILAMENT CHOKE
------	----------------

METER

M101	ANT CUR-TUNE METER
------	--------------------

POTENTIOMETER

P101	50,000 Ω SIDETONE CONTROL
------	----------------------------------

PLUGS

PG 101	TRANSMITTER
--------	-------------

PG 103	DYNAMOTOR
--------	-----------

PG 104	DYNAMOTOR
--------	-----------

RESISTORS

R101	100,000 Ω 1/2 W
------	------------------------

R102	667 Ω 25 W
------	-------------------

R103	250,000 Ω 1 W
------	----------------------

R104	70,000 Ω 1/2 W
------	-----------------------

R105	50,000 Ω 1/2 W
------	-----------------------

R106	100 Ω 1/2 W
------	--------------------

R107	30,000 Ω 1 W
------	---------------------

R108	30 Ω 1/2 W
------	-------------------

R109	75,000 Ω 2 W
------	---------------------

R110	1000 Ω 1/2 W
------	---------------------

R111	30,000 Ω 1 W
------	---------------------

R112	10 Ω 1/2 W
------	-------------------

R113	10 Ω 10 W
------	------------------

R114	30,000 Ω 2 W
------	---------------------

R115	100,000 Ω 1/2 W
------	------------------------

R116	30,000 Ω 2 W
------	---------------------

R117	50,000 Ω 1/2 W
------	-----------------------

R118	100,000 Ω 2 W
------	----------------------

R119	1,200 Ω 1/2 W
------	----------------------

R120	200 Ω 1 W
------	------------------

R121	100 Ω 1/2 W
------	--------------------

R122	250,000 Ω 1 W
------	----------------------

R123	10,000 Ω 1 W
------	---------------------

R124	10,000 Ω 1/2 W
------	-----------------------

R125	5,000 Ω 1/2 W
------	----------------------

R126	75,000 Ω 2 W
------	---------------------

R127	10 Ω 10 W
------	------------------

R128	10,000 Ω 1/2 W
------	-----------------------

R129	5,000 Ω 25 W
------	---------------------

R130	100 Ω 10 W
------	-------------------

R131	12 Ω 25 W
------	------------------

R132	12 Ω 25 W
------	------------------

R133	80 Ω 10 W
------	------------------

R134	30,000 Ω 1/2 W
------	-----------------------

R135	30 Ω 10 W
------	------------------

R136	30,000 Ω 1/2 W
------	-----------------------

R137	100 Ω 1/2 W
------	--------------------

R138	50,000 Ω 1/2 W
------	-----------------------

R139	100,000 Ω 1/2 W
------	------------------------

R140	12 Ω 25 W
------	------------------

R141	12 Ω 25 W
------	------------------

R142	180,000 Ω 1 W
------	----------------------

R143	100 Ω 1/2 W
------	--------------------

R144	100,000 Ω 1/2 W
------	------------------------

R145	50,000 Ω 2 W
------	---------------------

R147	667 Ω 25 W
------	-------------------

R149	50 Ω 1/2 W
------	-------------------

R151	100,000 Ω 1 W
------	----------------------

R153	8.3 Ω 17.9 W
------	---------------------

R154	8.3 Ω 17.9 W
------	---------------------

R155	100,000 Ω 1/2 W
------	------------------------

R156	30 Ω 1 W
------	-----------------

R157	300 Ω 1 W
------	------------------

R158	50 Ω 1/2 W
------	-------------------

R159	100,000 Ω 1 W
------	----------------------

R160	667 Ω 25 W
------	-------------------

R161	30,000 Ω 1 W
------	---------------------

R162	100,000 Ω 2 W
------	----------------------

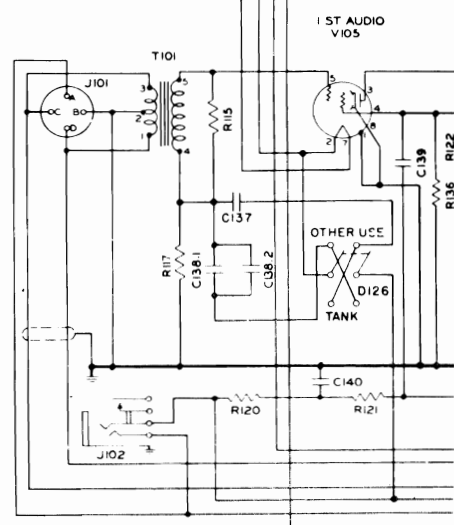
R163	100,000 Ω 2 W
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RELAYS

S101	ANTENNA SWITCHING
------	-------------------

S102	DYNAMOTOR STARTING
------	--------------------

S103	RECEIVER DISABLING
------	--------------------



TRANSFORMERS

T101	AF INPUT
------	----------

T102	AF OUTPUT
------	-----------

THERMOCOUPLE

TC101	ANT CUR THERMOCOUPLE
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THERMOSTAT

TD101	OVEN THERMOSTAT
-------	-----------------

VACUUM TUBES

V101	VT-164 (619)
------	--------------

V102	VT-164 (619)
------	--------------

V103	VT-164 (619)
------	--------------

V104	VT-165 (624)
------	--------------

V105	VT-164 (619)
------	--------------

V106	VT-164 (619)
------	--------------

V107	VT-164 (619)
------	--------------

V108	VT-164 (619)
------	--------------

CRYSTAL HOLDERS

Y101	CRYSTAL HOLDERS
------	-----------------

Y102	CRYSTAL HOLDERS
------	-----------------

Y103	CRYSTAL HOLDERS
------	-----------------

Y104	CRYSTAL HOLDERS
------	-----------------

Y105	CRYSTAL HOLDERS
------	-----------------

Y106	CRYSTAL HOLDERS
------	-----------------

Y107	CRYSTAL HOLDERS
------	-----------------

Y108	CRYSTAL HOLDERS
------	-----------------

DYNAMOTOR DM-35-1

C101	0.003 UF 1
------	------------

C102	0.003 UF 1
------	------------

JACKS

J101	DYNAMOTOR
------	-----------

J102	DYNAMOTOR
------	-----------

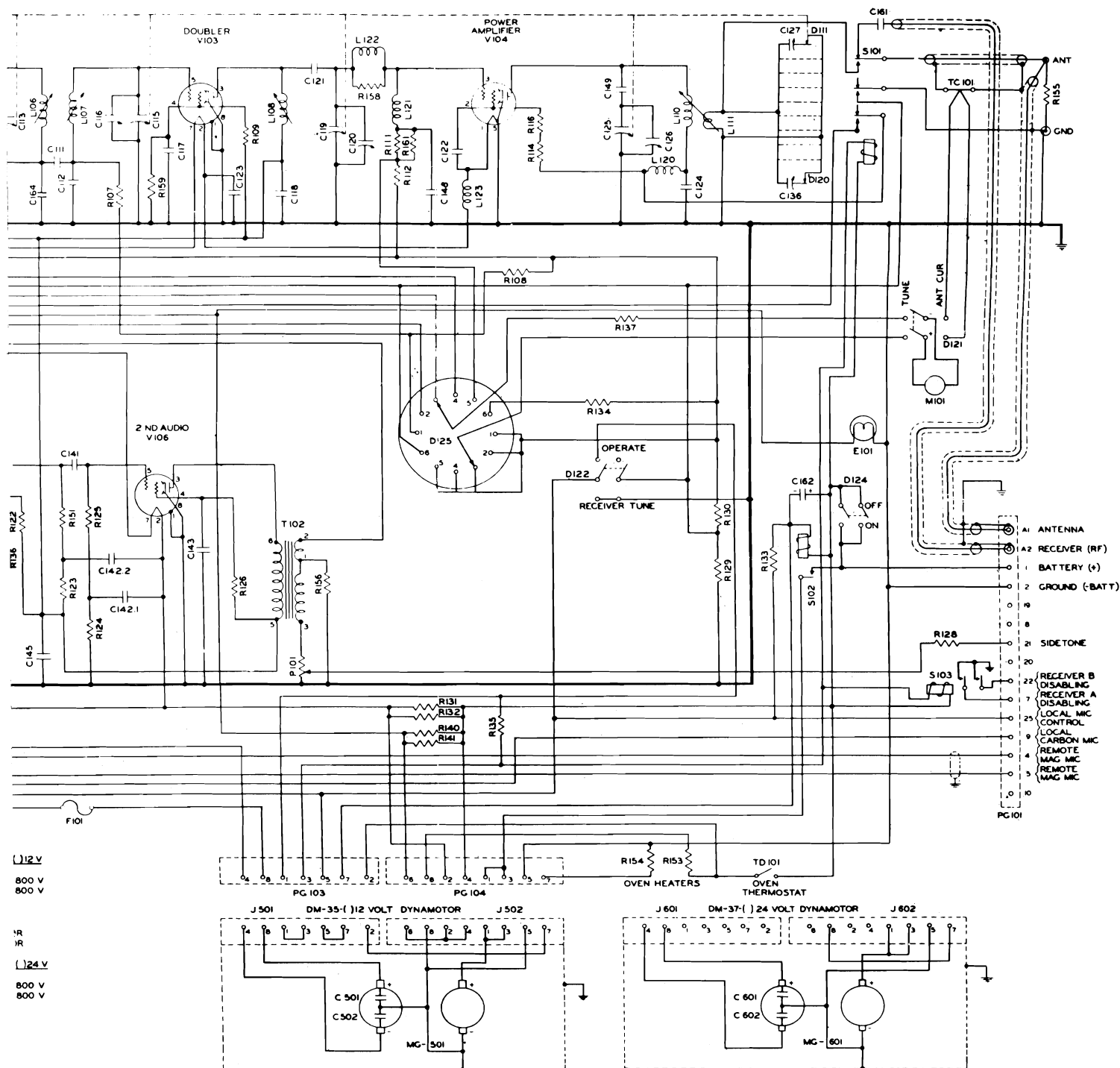
DYNAMOTOR DM-37-1

C101	0.003 UF 1
------	------------

C102	0.003 UF 1
------	------------

transmitter produces 20 watts output with a frequency deviation of 40 kc. The crystals are in the 375 kc to 540.277 kc range. On 12 volts the system draws 24 amperes. On 24 volts the system draws 14 amperes.

Frequency changing is accomplished by means of the pre-set push-button. The receiver is known as the BC-683 and the transmitter as the BC-684A.

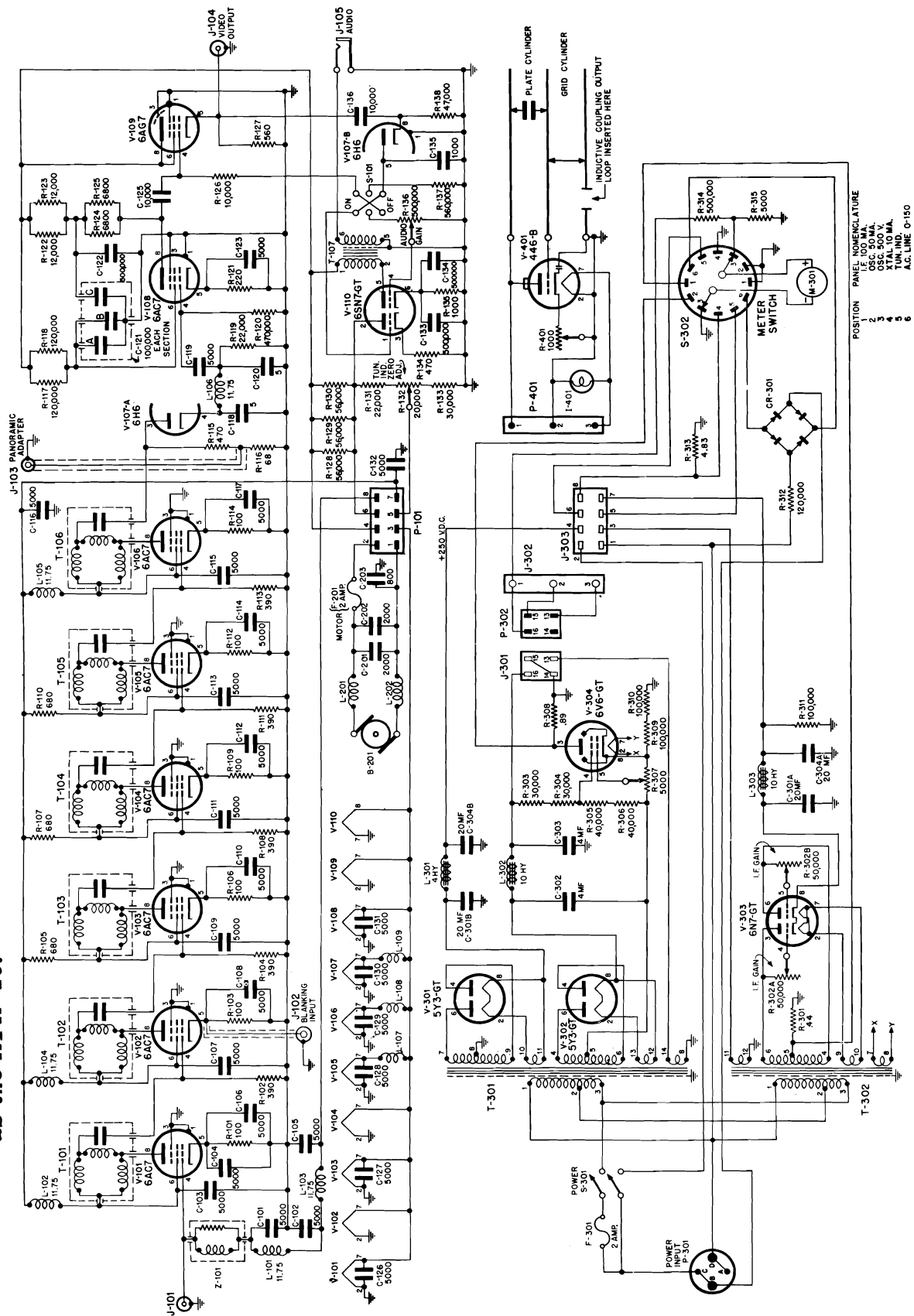


Frequency changing is accomplished by means of the pre-set push-button. The receiver is known as the BC-683 and the transmitter as the BC-684A.



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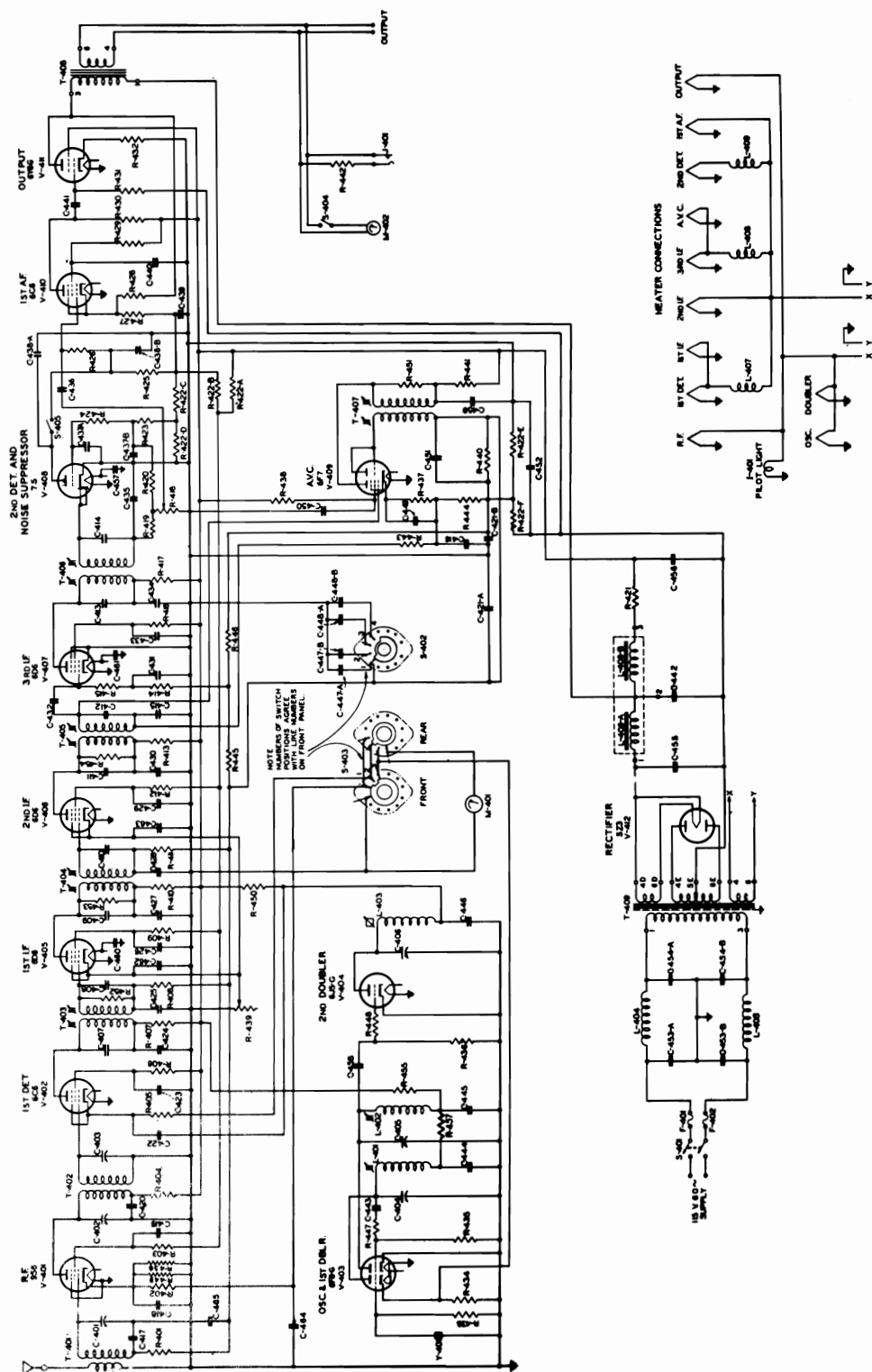
The AN/SPR-2 is classified as a radar receiver. Its purpose was to intercept enemy radar signals for analysis preparatory to countermeasures. It covers the frequency range of 1000 to 6000 mc, but can be used to 10000 mc if the signals are strong enough. Two tuning units are available, the TN-56/SPR-2 which covers 1000 to 3000 mc, and the TN-57 which covers 3000 to 6000 mc. Higher frequency operation is possible because the antenna input is directly to the mixer and harmonics of the oscillator are used to convert the signal to the 30 mc IF. An output is provided, before detection, for a connection to a 30 mc panoramic adapter such as the APA-10.



TBS Receiver

The TBS receiver is a 60 to 80 mc crystal controlled superheterodyne. It employs a 5.3 mc IF and operates directly from 110 volts 60 cps. Each stage of the RF amplifiers, the mixer and the oscillator multiplier is separately tuned and metered whenever necessary.

The TBS includes a noise limiter, AVC, output meter and is designed to operate from 50 ohm coax. The output is 600 ohms. For conversion data, see CQ, May 1958, p. 55.



Transmitter-receiver. The receiver tunes from 2.0-8.0 mc with an IF of 1515 kc; the transmitter tunes from 2.0-5.8 mc, running 40 watts input on CW and 10 watts on phone. Power: 6 volts bias, 1.5 volts filament and 90 volts for the receiver; 12.6 vdc at 2 amps and 500 volts at 80 ma for the transmitter.



Symbol	Value	Symbol	Value
R201	200k $\pm 10\%$ $\frac{1}{2}w$	R207	10k $\pm 10\%$ $\frac{1}{2}w$
R202	10k $\pm 10\%$ $\frac{1}{2}w$	R208	1 Meg. $\pm 10\%$ $\frac{1}{2}w$
R203	50k $\pm 10\%$ $\frac{1}{2}w$	R209	1 Meg. $\pm 10\%$ $\frac{1}{2}w$
R204	2.5k $\pm 10\%$ $\frac{1}{2}w$	R210	50k $\pm 10\%$ $\frac{1}{2}w$
R205	1k $\pm 10\%$ $\frac{1}{2}w$	R211	150k $\pm 10\%$ $\frac{1}{2}w$
R206	2 Meg. $\pm 10\%$ $\frac{1}{2}w$	R212	20k $\pm 10\%$ Potentiometer

RECEIVER CAPACITORS

Symbol	Value	Symbol	Value
C201	13.3 mmfd Var.	C215	7-45 mmfd Var.
C202	139.4 mmfd Var.	C216	7-45 mmfd Var.
C203	250 mmfd $\pm 10\%$ 500v	C217	0.006 mfd $\pm 10\%$ 500v
C204	7-45 mmfd Var.	C218	0.006 mfd $\pm 10\%$ 500v
C205	7-45 mmfd Var.	C219	0.006 mfd $\pm 10\%$ 500v
C206	7-45 mmfd Var.	C220	0.006 mfd $\pm 10\%$ 500v
C207	0.02 mfd $\pm 10\%$ 400v	C221	2x.5 mfd $\pm 10\%$ 200v
C208	700 mmfd $\pm 15\%$ 500v	C222	0.006 mfd $\pm 10\%$ 500v
C209	400 mmfd $\pm 15\%$ 500v	C223	0.006 mfd $\pm 10\%$ 500v
C210	300 mmfd $\pm 15\%$ 500v	C224	100 mmfd $\pm 10\%$ 500v
C211	7-45 mmfd Var.	C225	5 mmfd $\pm 10\%$ 500v
C212	7-45 mmfd Var.	C226	2x.5 mfd $\pm 10\%$ 200v
C213	7-45 mmfd Var.	C227	0.01 mfd $\pm 10\%$ 600v
C214	7-45 mmfd Var.	C228	100 mmfd $\pm 10\%$ 500v

Symbol	Value	Symbol	Value
R213	30k $\pm 10\%$ $\frac{1}{2}w$	R229	13.3 mmfd Var.
R214	10k $\pm 10\%$ $\frac{1}{2}w$	R230	0.006 mfd $\pm 10\%$ 500v
R215	6.8k $\pm 10\%$ $\frac{1}{2}w$	R231	200 mmfd $\pm 5\%$ 500v
R216	10k $\pm 10\%$ $\frac{1}{2}w$	R232	0.006 mfd $\pm 10\%$ 500v
R217	500k $\pm 10\%$ $\frac{1}{2}w$	R233	200 mmfd $\pm 5\%$ 500v
R218	1k $\pm 10\%$ $\frac{1}{2}w$	R234	15 mmfd $\pm 10\%$ 500v

Symbol	Value	Symbol	Value
C301	100 mmfd $\pm 2\%$ 600v	C310	0.01 mfd $\pm 10\%$ 1200v
C302	171 mmfd Var.	C311	50 mfd Elec. 25v
C303	25 mmfd Var.	C312	0.006 mfd $\pm 10\%$ 500v
C304	0.01 mfd $\pm 10\%$ 600v	C313	110 mmfd $\pm 10\%$ 1200v
C305	0.01 mfd $\pm 10\%$ 600v	C314	0.01 mfd $\pm 10\%$ 1200v
C306	0.001 mfd $\pm 10\%$ 600v	C315	50 mfd Elec. 25v
C307	193 mmfd Var.	C316	0.5 mfd $\pm 20\%$ 600v
C308	0.001 mfd $\pm 10\%$ 600v	C317	0.5 mfd $\pm 20\%$ 600v

k = Kilohms
Meg = Megohms

TRANSMITTER RESISTORS

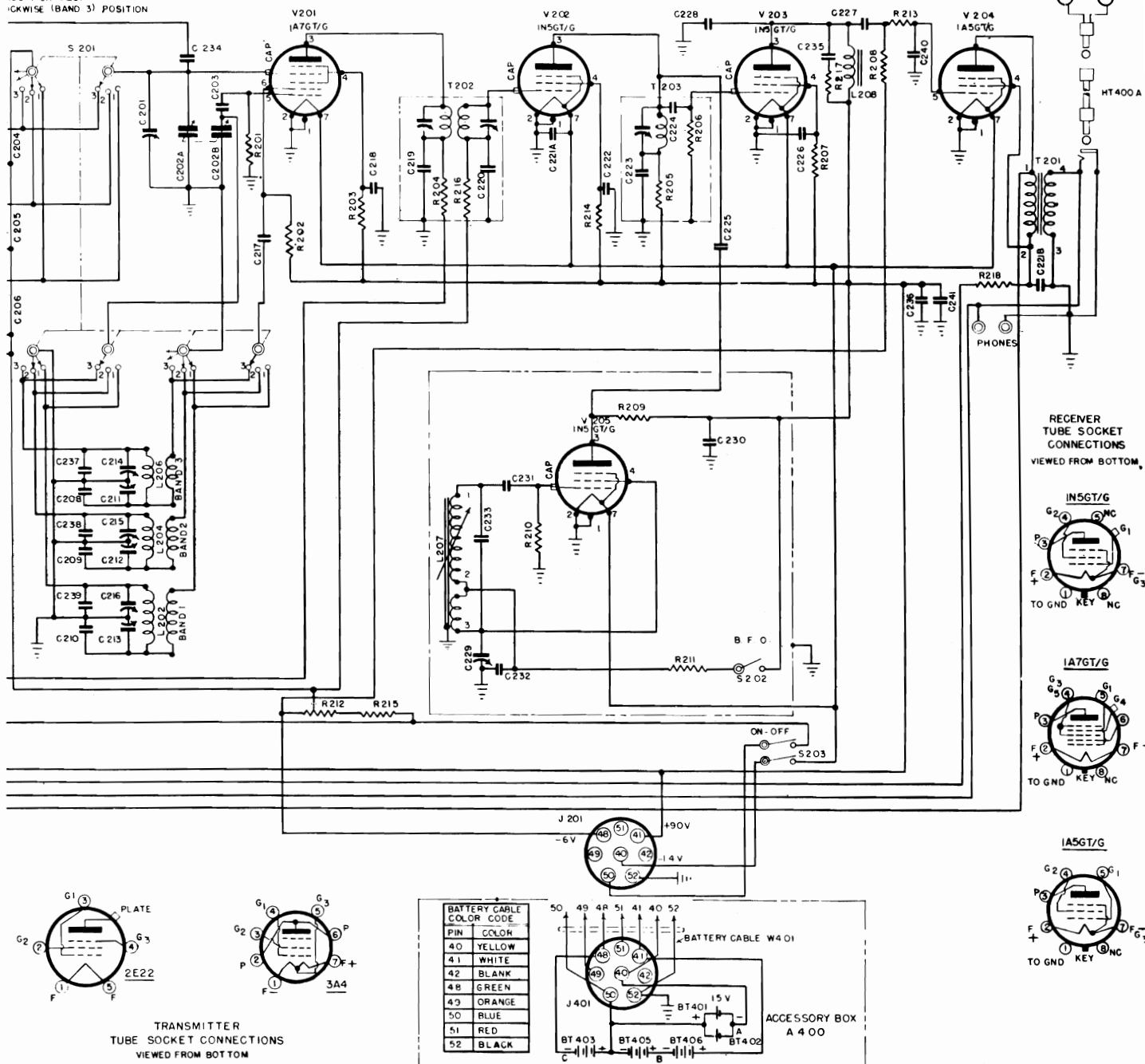
Symbol	Value	Symbol	Value
R301	10k $\pm 5\%$ $\frac{1}{2}w$	R310	1.43 Ohms—Evac.
R302	10k $\pm 5\%$ $\frac{1}{2}w$	R311	140k—Evac.
R303	5k $\pm 10\%$ 8w	R312	0.4 Ohms—Evac.
R304	4.0 Ohms $\pm 5\%$ 20w	R313	20k $\pm 10\%$ 8w
R305	100 Ohms $\pm 5\%$ 2w	R314	20k $\pm 10\%$ 8w
R306	240 Ohms $\pm 5\%$ 1w	R315	2 Meg. $\pm 10\%$ $\frac{1}{2}w$
R307	30 Ohms $\pm 5\%$ 1w	R316	3.3k $\pm 10\%$ 1w
R308	68 Ohms $\pm 5\%$ 2w	R317	100k $\pm 5\%$ $\frac{1}{2}w$
R309	390 Ohms $\pm 5\%$ 2w	R318	100k $\pm 5\%$ $\frac{1}{2}w$

TRANSMITTER CAPACITORS

Symbol	Value	Symbol	Value
C309	0.01 mfd $\pm 10\%$ 1200v	C318	0.5 mfd $\pm 20\%$ 600v
C310	50 mfd Elec. 25v	C319	1 mfd $\pm 10\%$ 600v
C311	0.006 mfd $\pm 10\%$ 500v	C320	1 mfd $\pm 10\%$ 600v
C312	0.006 mfd $\pm 10\%$ 500v	C321	0.006 mfd $\pm 10\%$ 500v
C313	110 mmfd $\pm 10\%$ 1200v	C322	0.0001 mfd $\pm 10\%$ 500v
C314	0.01 mfd $\pm 10\%$ 1200v	C323	0.006 mfd $\pm 10\%$ 500v
C315	50 mfd Elec. 25v	C324	0.006 mfd $\pm 10\%$ 500v
C316	0.5 mfd $\pm 20\%$ 600v		
C317	0.5 mfd $\pm 20\%$ 600v		

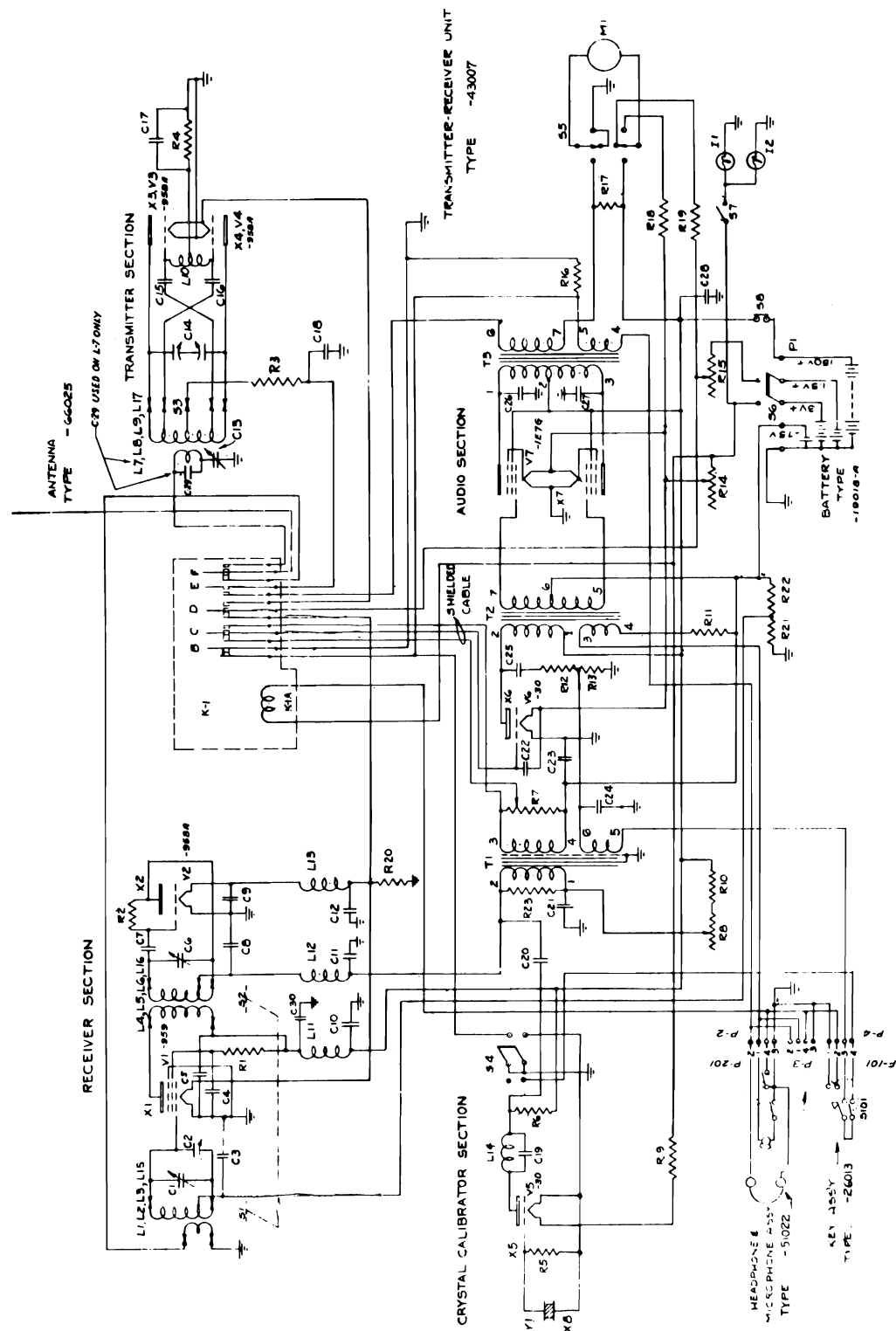
RECEIVER SECTION

40SWITCH S201 SHOWN IN EXTREME
CLOCKWISE (BAND 3) POSITION



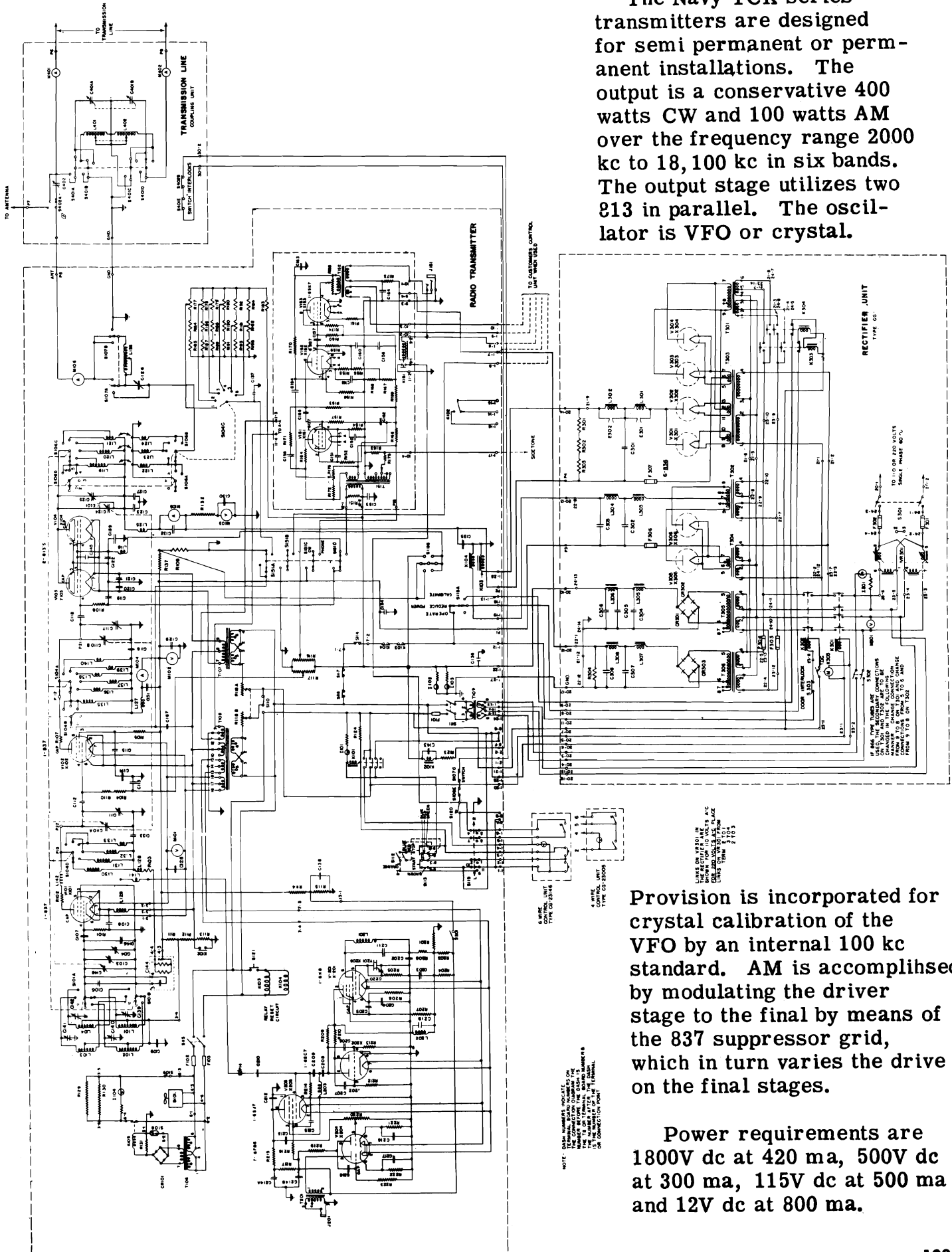
TBY

This is a small, battery operated, 28-40 mc transmitterpreceiver. Its instability makes it a poor unit for amateur use, very poor. For conversion data, see CQ, September 1957, P. 64.



TCK

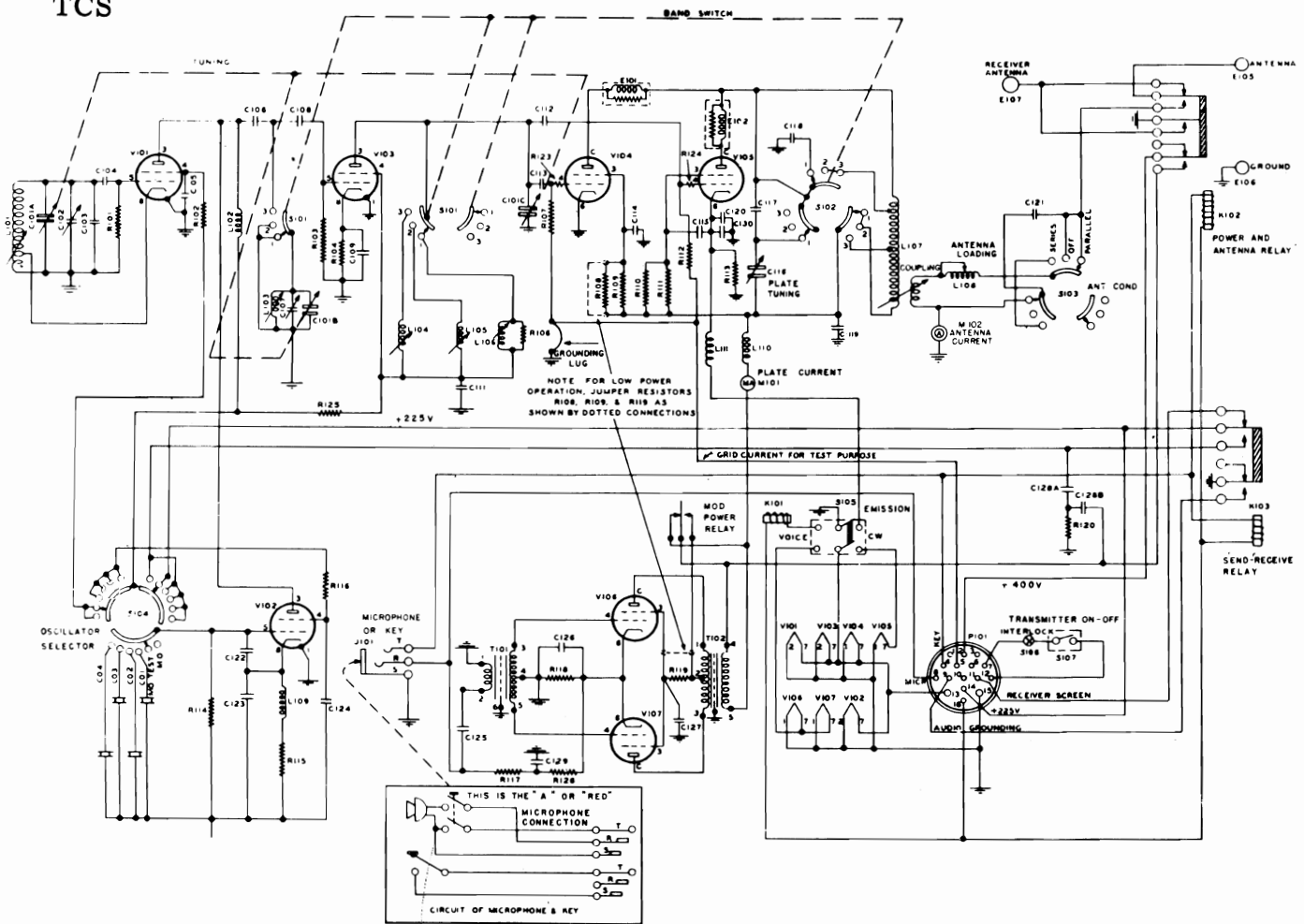
The Navy TCK series transmitters are designed for semi permanent or permanent installations. The output is a conservative 400 watts CW and 100 watts AM over the frequency range 2000 kc to 18,100 kc in six bands. The output stage utilizes two 813 in parallel. The oscillator is VFO or crystal.



Provision is incorporated for crystal calibration of the VFO by an internal 100 kc standard. AM is accomplished by modulating the driver stage to the final by means of the 837 suppressor grid, which in turn varies the drive on the final stages.

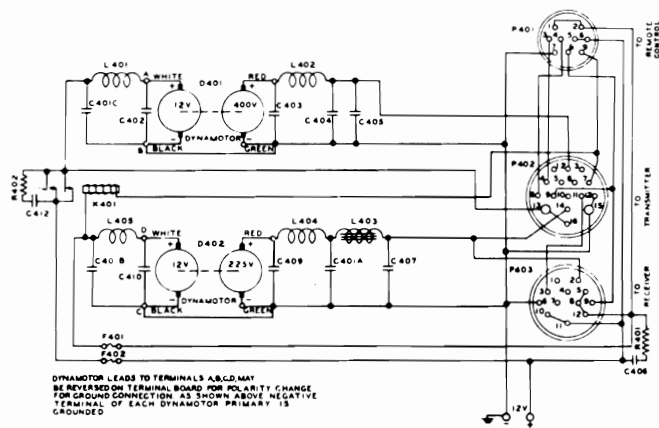
Power requirements are 1800V dc at 420 ma, 500V dc at 300 ma, 115V dc at 500 ma and 12V dc at 800 ma.

TCS

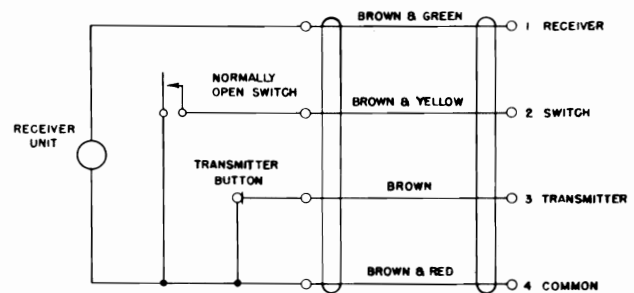


TRANSMITTER UNIT SCHEMATIC

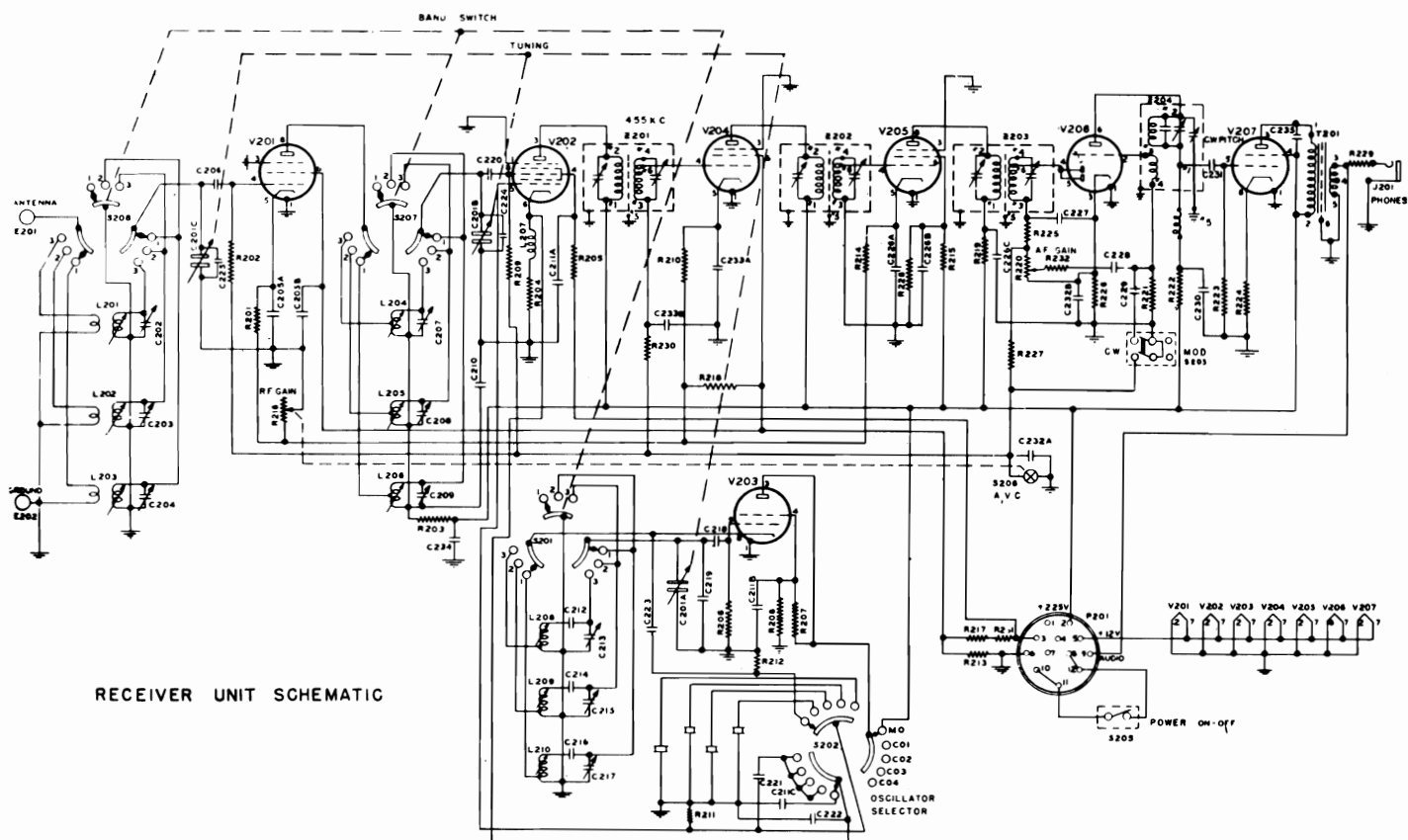
The TCS is a Navy transmitter-receiver equipment providing crystal controlled or tunable communications over the 1.5 to 12 mc band. The transmitter is conservatively rated at 25 watts CW and 10 watts AM phone. The receiver is a superheterodyne with an IF 455 kc. The oscillator is on the



POWER-SUPPLY UNIT



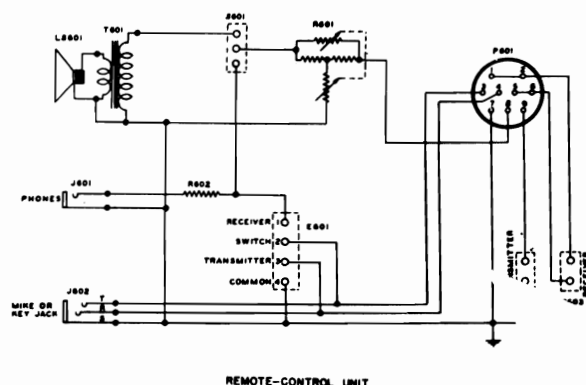
HANDSET SCHEMATIC



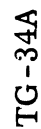
RECEIVER UNIT SCHEMATIC

high side. A separate control box is used when a loudspeaker is required. The main power supply operates from 12 volts dc, although other supplies were made available for operation from 12, 24, 32, 115 volts dc and 115 volts ac.

An antenna tuning unit is provided for the TCS, consisting of a loading coil tapped at appropriate points. Relays are provided for switching and press to talk operation. The various stages of the transmitter are tuned by the VFO knob, with fixed adjustments being located under the calibration chart. The output circuit consists of a pi-network which will match a wide range of antenna impedances.

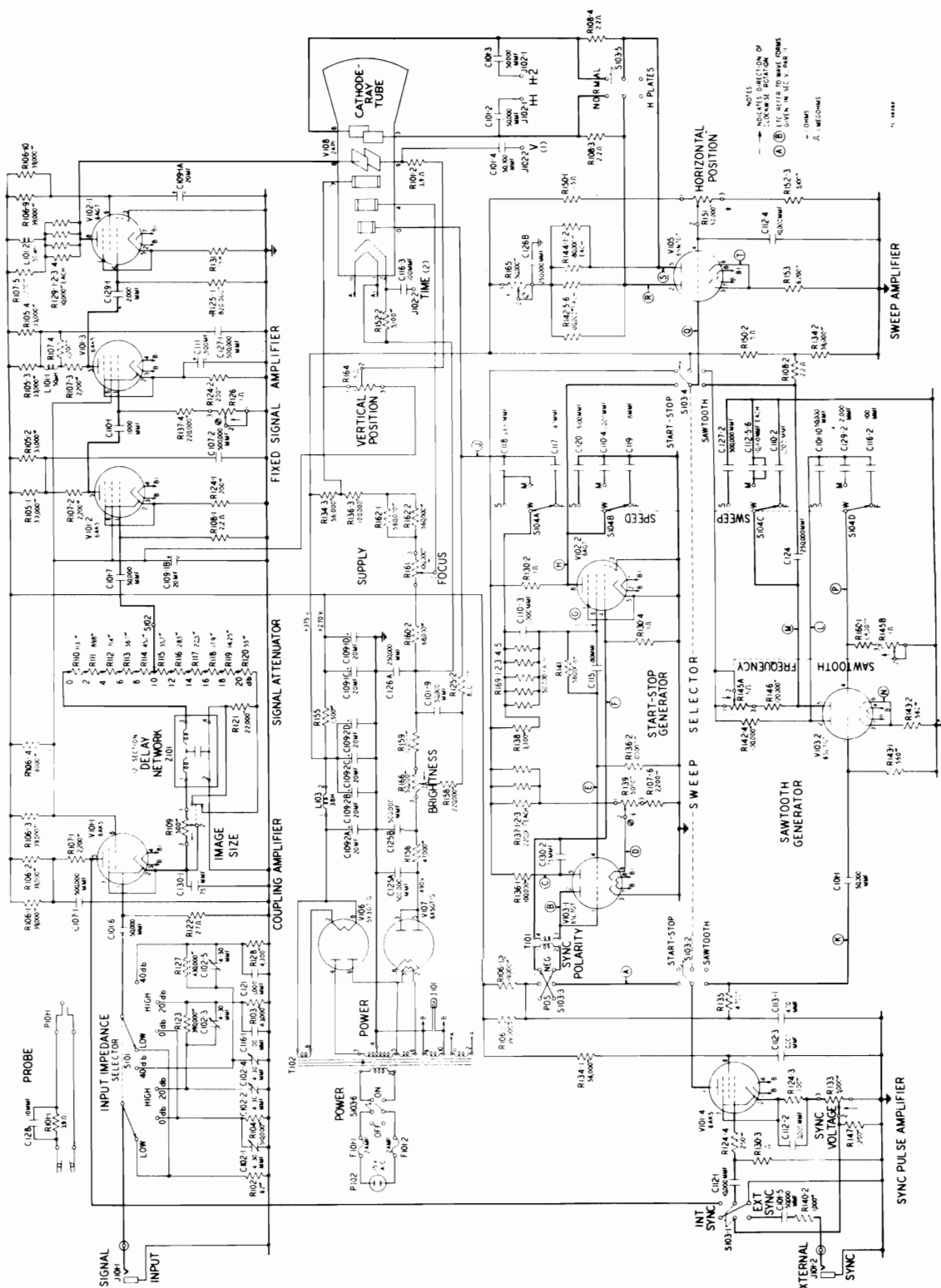


REMOTE-CONTROL UNIT



tion of the tape, and light is permitted to pass through the paper onto a photoelectric cell which in turn keyes an oscillator. The oscillator may also be keyed by a telegraph key. Approximately three watts of power may be obtained from the amplifier within the equipment at either 4, 8 or 15 ohms impedance. The equipment may operate from either 115 or 230 volts 60 cycle AC.

The TS-34 is an extremely flexible portable oscilloscope. It operates from 110 v at from 50 to 1200 cycles and draws 90 watts. The sawtooth horizontal sweep is variable from 10 cycles to 50 kc in three ranges and a separate input is provided for direct connection to the plates. A Start-Stop sweep is available for examining pulses. The sensitivity is .1 to 100 volts. The TS-34 uses a 2" CRT with a built in magnifying glass. There are provisions for internal or external sync. This is a good item for any ham shack.



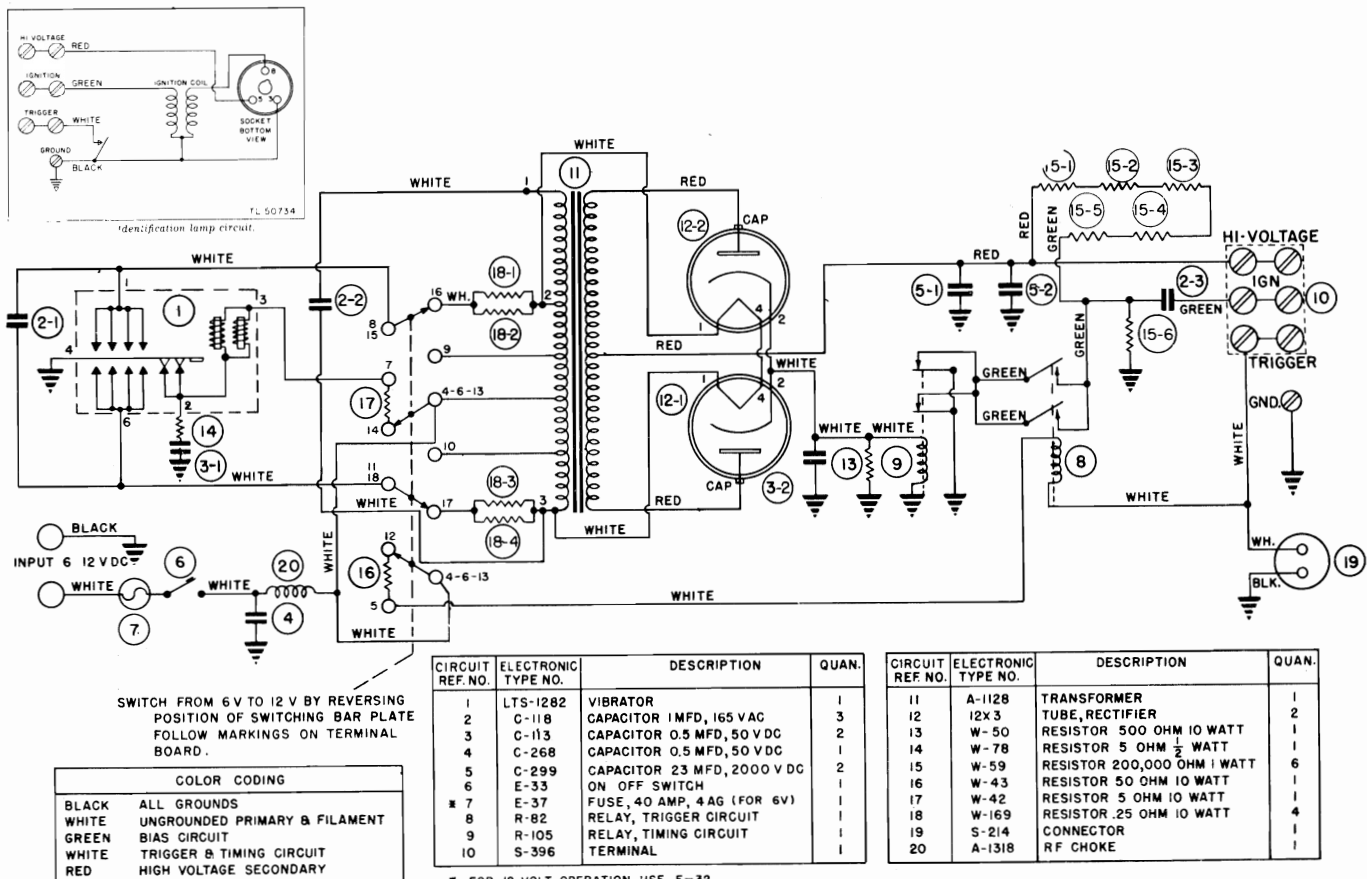
corresponding to the preset frequencies of the Loran receivers. Three levels of output signals are provided. The output is either pulsed or CW, and provides the necessary calibration signals required. The input power is 80, 115 or 230v AC.

The TS-251/UP is a small portable signal generator used for testing the LORAN type equipment. It operates on four pre-set frequencies,

Channel	Preset Frequency
1	1950
2	1850
3	1900
4	1750

AN/VVX-1

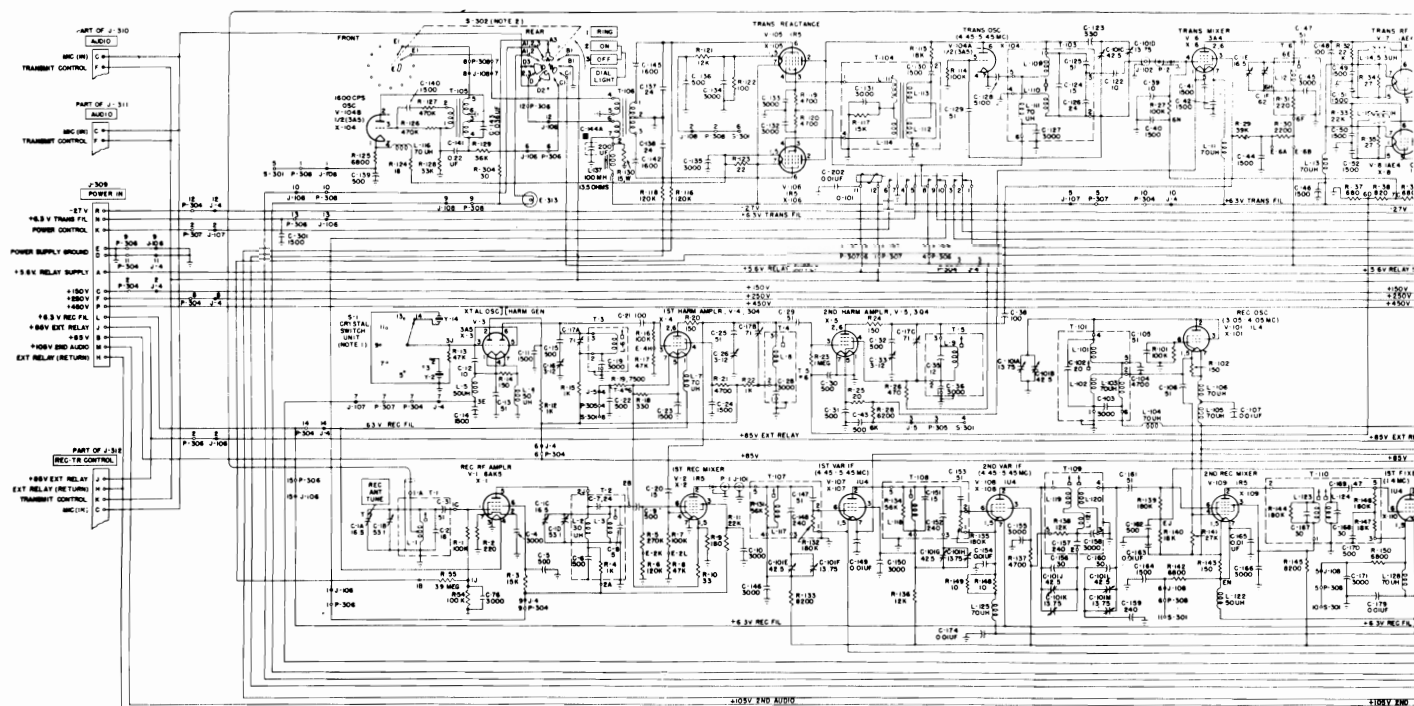
The AN/VVX-1 is an electron flash device, suitable for photographic purposes. It originally was used as an identification device for military vehicles, providing one pulse of light which could be aimed at the ground vehicle requiring identification. It is visible up to 3 miles in daylight. A suitable light shield is employed to aid in directing the lamp beam. The power supply is operated by six or 12 volts in the case of the PP-49/VVX-1 or twelve or 24 volts in the case of the PP-50/VVX-1X. The power supply generates 2000v DC for lamp operation -- DANGER HIGH VOLTAGE.



AN/VRC-8-9-10

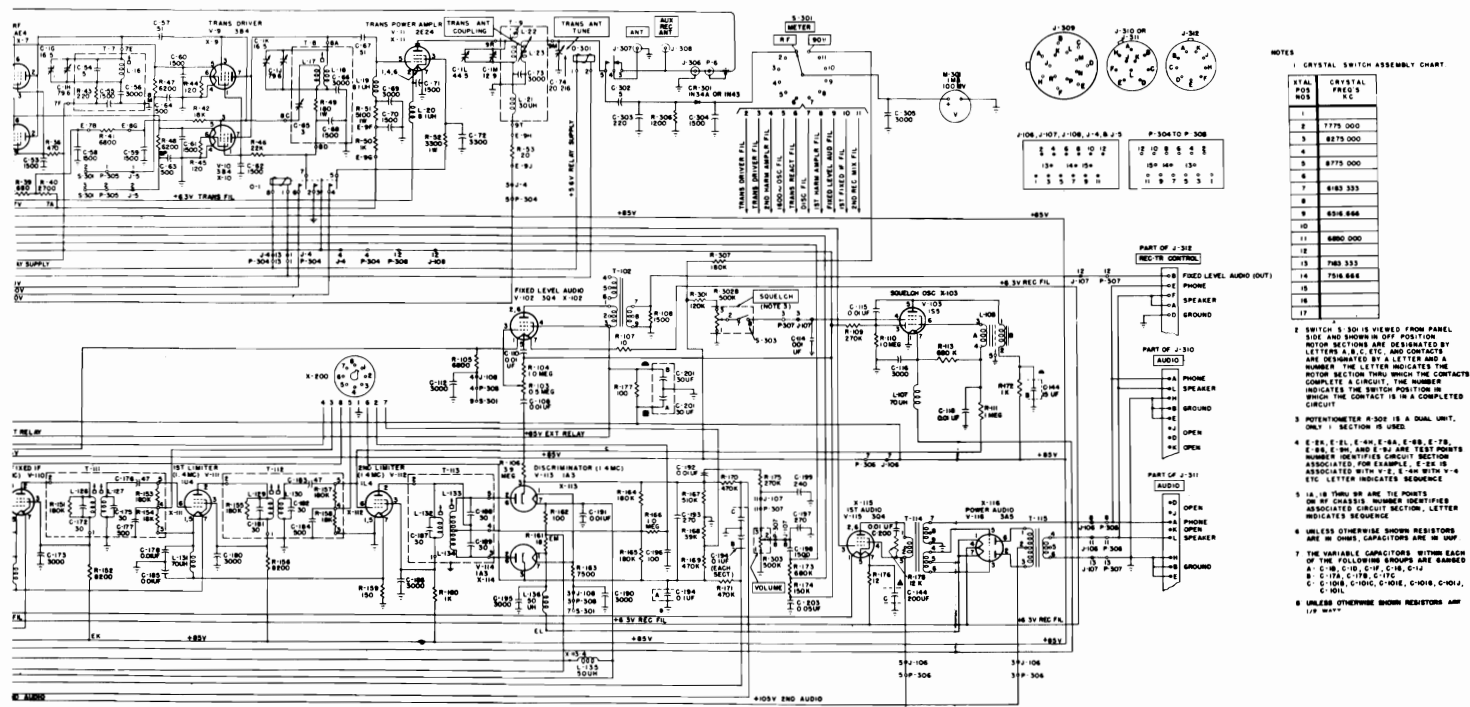
The AN/VRC-8-9 and 10 are three equipments that are primarily identical except for frequency range of operation. The AN/VRC-8 covers the range of 20.0 to 27.9 mc. The AN/VRC-9 covers the range of 27.0 to 38.9 mc. The AN/VRC-10 covers the range of 38.0 to 54.9 mc. The emission is FM and provision is made for voice and mcw (FM) operation. Provision is made for preset or continuous tuning type of frequency control. Push to talk as well as remote operation are features of this equipment. The power output may be either 2 watts or 16 watts depending upon the operation at low or high power. The receivers are extremely sensitive, being able to provide 30 db of quieting for a one-half microvolt signal. The input power is 12.6 volts at 2.3 amperes for receive and 11.9 amperes for transmit conditions or 24 volts at 1.5 amperes for receive and 7.3 amperes for transmit, under high power output. The basic receiver-transmitters have been assigned the nomenclatures as follows.

RT-66/GRC	for the	AN/VRC-8
RT-67/GRC	for the	AN/VRC-9
RT-68/GRC	for the	AN/VRC-10



Each receiver is a double conversion superheterodyne. The RF amplifier tunes the signal and the first mixer converts it to a band of 4.45 to 5.45 mc whereupon the first IF stages are tuned to correct incoming signal and it is converted in the second mixer to the final (second) IF of 1.4 mc. Limiters operate in the second IF to eliminate any AM of the signal and allow the discriminator to operate properly. The receiver first oscillator uses a crystal oscillator and a harmonic generator operating at the low side of the signal. Likewise, the second oscillator operates at the low side of the signal. The transmitter oscillator is kept on frequency by sampling part of the transmitter oscillator signal and causing the reactance tube to keep the oscillator on frequency, by way of the discriminator action on the signal.

The equipment includes, AVC action, squelch, side tone provisions and a construction of extremely good quality.





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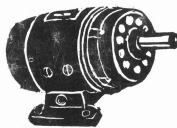


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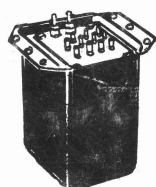
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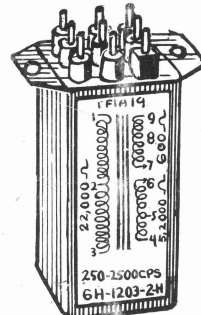
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