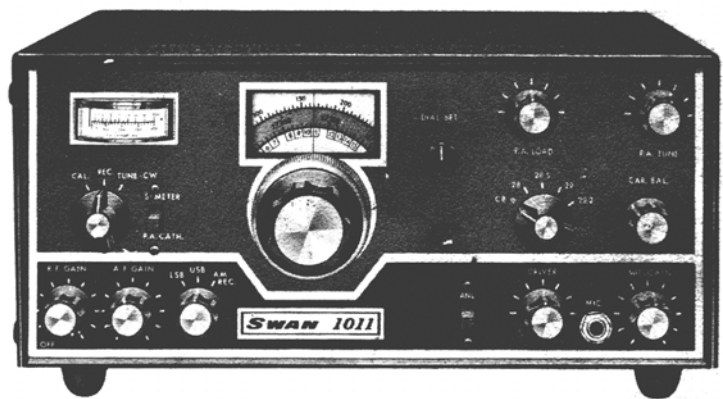


OPERATION AND MAINTENANCE



SWAN MODEL 1011



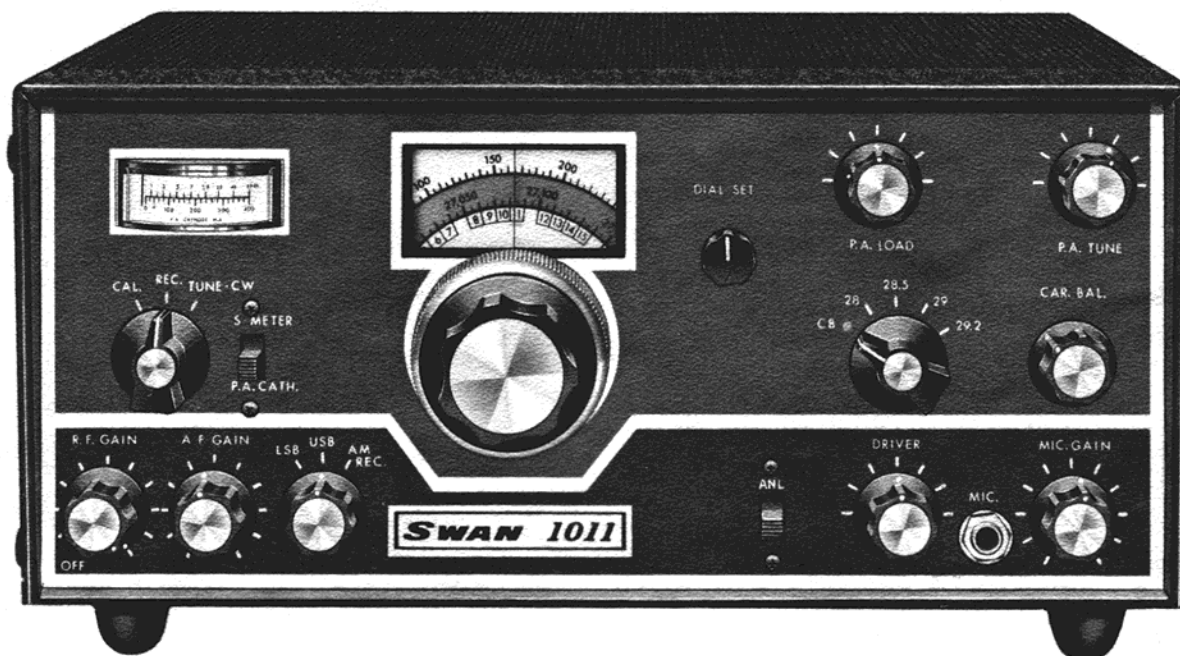
SWAN
ELECTRONICS

OCEANSIDE, CALIFORNIA

A subsidiary of Cubic Corporation

OPERATION AND MAINTENANCE

SWAN MODEL 1011



INTRODUCTION

The Swan Model 1011 Single Sideband Transceiver is designed to be used in SSB, AM, or CW modes in the 10 meter amateur radio band. In addition, the 1011 is also a tunable receiver in the CB band.

Power input exceeds 260 watts, PEP, on single sideband 60 watts AM and 180 watts on CW. The Model 1011 includes automatic gain control, (AGC), automatic level control, (ALC), and grid block keying.

The internal AC power supply permits fixed station or portable operation wherever 117 volts 50-60 cycles is available. Export models for 208-220-240 volts are available on special order.

For 12-14 volts DC operation in mobile, marine or portable applications, a DC converter unit, model 14-A is

available. It attaches to the back of the 1011 in place of the AC power cord connector. Its dimensions are only $1\frac{1}{2} \times 3 \times 4$ in.

The Model 1011 generates a single sideband signal by means of a crystal lattice filter, and the transceiver operation automatically tunes the transmitter to the received frequency. Provisions are included in the transceiver for operation on either upper or lower sideband.

Basic circuitry of the single conversion design has been proven in several thousand of the popular Swan transceivers. Mechanical, electrical, and thermal stability is exceptionally high. All oscillators are temperature compensated and voltage regulated. Push-to-talk operation is standard, with provision for plugging in the Model VX-2 accessory Vox unit for automatic voice control.

SPECIFICATIONS

FREQUENCY RANGES

28.0-28.5 mc
28.5-29.0 mc
29.0-29.5 mc
29.2-29.7 mc
26.96-27.26 mc (Receive only)

POWER INPUT

Single Sideband, Suppressed Carrier:
260 watts, PEP, minimum on all bands.
CW: 180 watts, dc input on all bands.
AM: (Single Sideband with Carrier)
60 watts dc input on all bands

DISTORTION

Distortion products down approx. 30 db.

UNWANTED SIDEBAND SUPPRESSION

Unwanted sideband down more than 50 db.

CARRIER SUPPRESSION

Carrier suppression greater than 50 db.

RECEIVER SENSITIVITY

Less than 0.5 microvolt at 50 ohms impedance for signal-plus-noise to noise ratio of 10 db.

AUDIO OUTPUT AND RESPONSE

Audio output, 3 watts to 3.2 ohm load. Response essentially flat from 300 to 3000 cps in both receive and transmit.

TRANSMITTER OUTPUT

Wide-range Pi-network output matches resistive loads from 50 to 75 ohms.

METERING

Power amplifier cathode current 0-400 ma on transmit, S-Meter 0-70 db over S9 on receive.

FRONT PANEL CONTROLS

AF Gain, RF Gain, Sideband Selector, CAL-REC-TUNE/CW, Mic. Gain, Bandswitch, Carrier Balance, PA Plate Tune, Driver Tune, PA Load, Dial Set, Meter Switch, ANL Switch.

REAR PANEL CONTROLS AND CONNECTIONS

Bias potentiometer, CW key jack, Jones plug power connector, Antenna jack, S-Meter zero, Auxiliary relay switching, Outboard VFO connector, Headphone Jack. The Vox Connector is located on the side of the chassis.

VACUUM TUBE COMPLEMENT

V1 12BA6 VFO Amplifier
V2 12BE6 Transmitter Mixer
V3 6GK6 Driver
V4 6LQ6 Power Amplifier
V5 6BZ6 Receiver RF Amplifier
V6 6BZ6 Receiver Mixer
V7 12BA6 First IF Amplifier
V8 12BA6 Second IF Amplifier
V9 12AX7 Product Detector/Receive Audio
V10 6AV6 AGC Amplifier/Rectifier
V11 6AQ5 AF Output
V12 12BA6 100 KC Calibrator
V13 6JH8 Balanced Modulator
V14 12AX7 Microphone Amplifier

TRANSISTOR COMPLEMENT

Q1 2N706 Oscillator
Q2 2N5130 Buffer
Q3 2N706 Carrier Oscillator

POWER REQUIREMENTS

117 VAC, 60 cps at 4 amps. (208-220-248 volt, 50-60 cps at 2.5 amps., export model). 12-14 volts DC operation with model 14-A converter unit plugged into back of 1011. Current drain: 8 amps, receive mode. 12 amps average with voice modulation. 25 amps maximum in TUNE mode. (See Fig. 2, page 5)

DIMENSIONS

Height 5 1/2 in.
Width 13 in.
Depth 11 in.

WEIGHT

Weight 24 lbs.

INSTALLATION

GENERAL

The installation of the Swan 1011 is not at all difficult and it involves only the placement of the transceiver in its operational area (fixed or mobile), connection of power (either 117 volts ac, or 12 volts dc), and the connection of an antenna. The following paragraphs are therefore devoted to the installation requirements involving microphones, fixed and mobile operation, and recommended antenna types. Before actual installation, be sure to check for possible shipment damage. Remove the cabinet, (three screws on each side), and check to make sure that all tubes are firmly in place.

FIXED INSTALLATION

Locate the 1011 in an area which is well ventilated and which provides complete operational freedom of the front panel controls. Connect the ac power cord to the 12 pin Jones connector on the back. If the 1011 is a 117 volt model, plug the power cord into a standard 117 volt, 50-60 cycle outlet having a capacity of at least 10 amps. If the 1011 is an Export model, it should be first set to the proper voltage tap: 208, 220, or 240 volts, 50-60 cycles. Remove the cabinet, and locate the terminal strip near the top of the power transformer. There are 3 terminal lugs, and a decal indicates the voltage tap for each. Connection has been made to the 220 volt tap at the factory. If your supply voltage is 208 or 240, unsolder the red colored wire and move it accordingly.

Connect an antenna to the 1011 which is suitable for 10 meter or CB operation.

FIXED ANTENNAS

A standard PL239 coax connector plug will fit the antenna jack, and 50 or 75 ohm coax cable to the antenna is recommended. RG58 or RG59 is satisfac-

tory for runs up to 50 feet. For longer runs the larger RG8 or RG11 produces less line loss, particularly on 10 meters.

Any of the common antenna systems designed for use on the amateur 10 meter band will work well with the 1011. However, the amateur should consider an antenna system which best fits his operational requirements. For example, a rotatable beam antenna is usually best suited for DX operation. Methods for constructing antennas and antenna tuners are described in detail in the ARRL Antenna Handbook and similar publications. It is recommended that these publications be consulted during the design of any antenna system.

MOBILE INSTALLATION

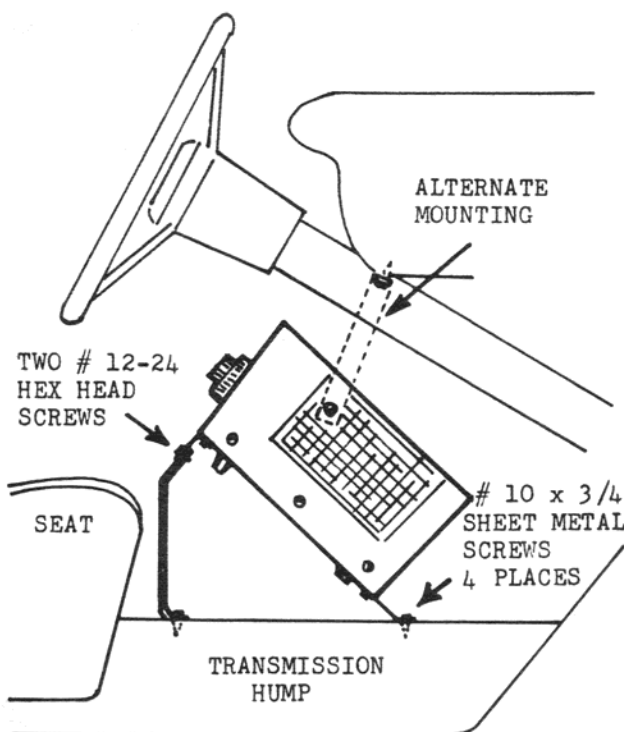
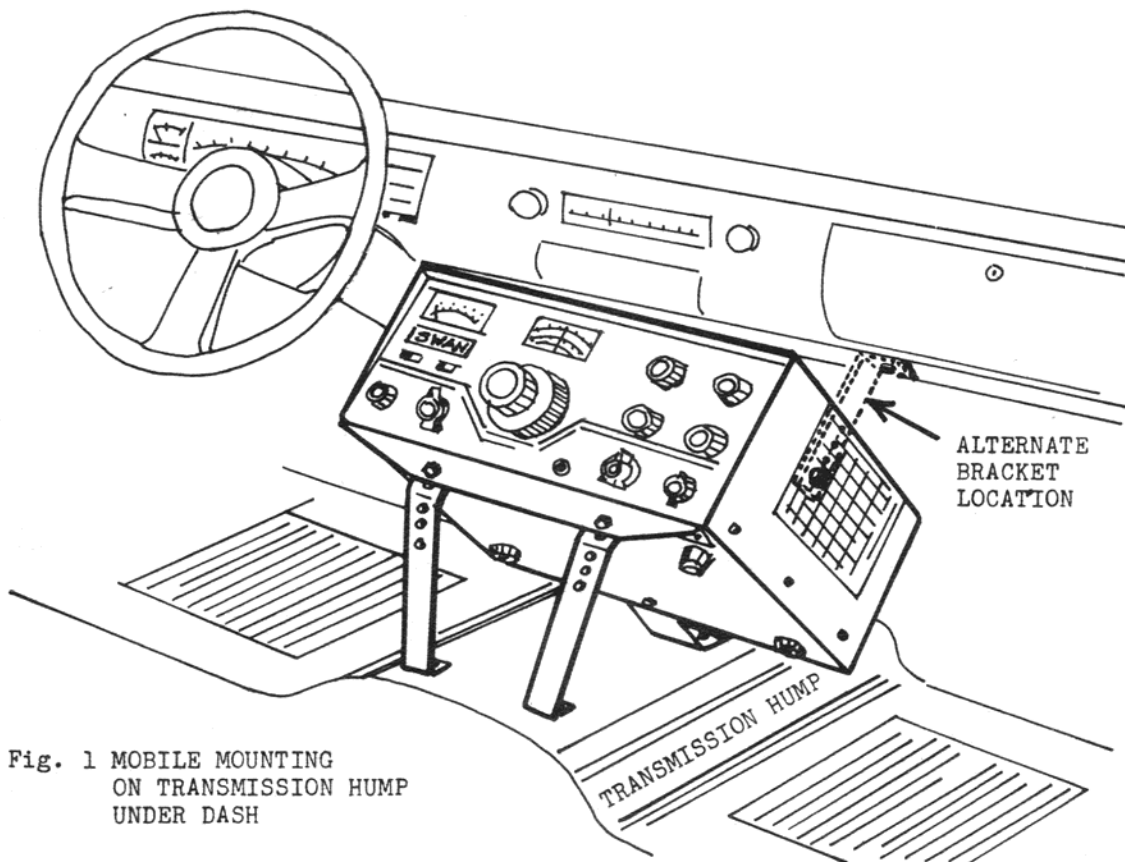
Many different methods of mobile installation are possible, and it is expected that hams will find methods which are best suited for their installation requirements. Swan Electronics has available a Mobile Mounting Kit which is suitable for under-the-dash installations. Figure 1 shows the recommended mounting methods using this kit.

DC CONVERTER, MODEL 14A

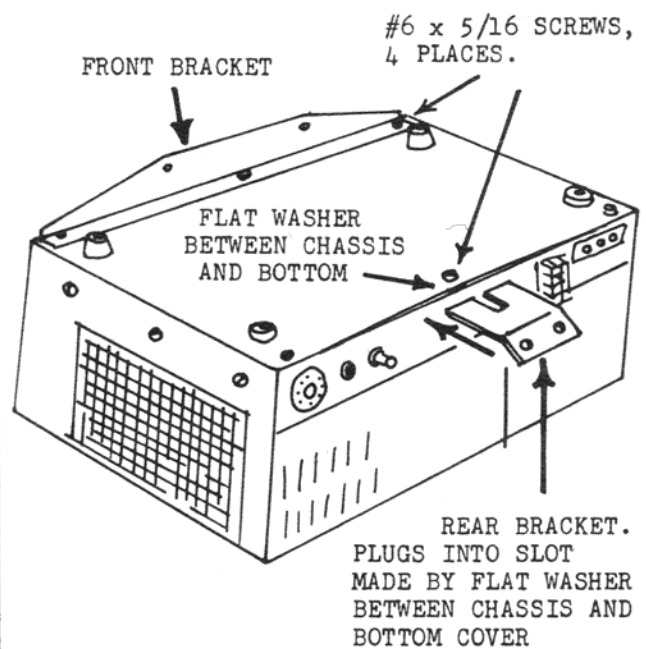
For 12-14 volt DC operation in mobile installations, it will be necessary to use the 14-A converter, which plugs directly into the back of the 1011 in place of an AC power connector.

MOBILE ANTENNAS

The standard type mobile antennas designed for 10 meters or CB band will perform well with the 1011. Generally speaking a full length 8 or 9 foot whip will be more efficient than the shorter inductively loaded types.



MOBILE MOUNTING, SIDE VIEW



TRANSCIVER, BOTTOM VIEW

MICROPHONE

The microphone input is designed for high impedance microphones only. The choice of microphone is important for good speech quality, and should be given serious consideration. The crystal lattice filter in the transceiver provides all the restriction necessary on audio response, and further restriction in the microphone is not required. It is more important to have a microphone with a smooth, flat response throughout the speech range. The microphone plug must be a standard ¼ inch diameter three contact type. The tip connection is for push-to-talk relay control, the ring connector is the microphone terminal, and the sleeve is the common chassis ground. The microphone manufacturer's instructions should be followed in connecting the microphone cable to the plug. Either a hand-held or desk type microphone with push-to-talk control will provide a suitable installation.

CONTROL FUNCTIONS

On-Off Switch (On AF Gain Knob)

Turns power supply on and off.

Cal-Rec-CW

Calibrate

All voltages are applied to receiver. Grounds cathode of V12.

Receive

All voltages are applied to receiver.

Tune - CW

Transmitting circuits are energized. 1502 is disconnected from ground shifting carrier frequency into filter passband. Carrier is fully inserted. P. A. cathode resistor is switched in, reducing input power.

Mic. Gain

Controls potentiometer R1404 in the grid of V14A and controls amount of audio to the balanced modulator.

Car. Balance

Controls potentiometer R1308 in the balanced modulator deflection plate circuit, and permits nulling out the carrier.

RF Gain

Controls variable resistor R505, common in the grids of Receiver Mixer V6, RF Amplifier, V7 and V8 IF Amplifiers.

AF Gain

Controls potentiometer R1101 in grid circuit of V11 AF Output, and controls audio volume.

Main Tuning

Controls 1608 in frequency determining tank circuit of VFO.

Driver

Controls C2A and C2B in plate tanks of transmitter mixer and driver.

PA Tune

Controls 407 in pi-network to tune final power amplifier plate to resonance.

PA Load

Controls 408 in pi-network to match impedance of output load. Tunes input to Receiver RF Amplifier.

Frequency Range

Switches tank coils and associated capacitors in VFO, VFO Amplifier, Driver and Transmit Mixer.

Mode Switch

LSB Receive and Transmit on Lower Sideband.

USB Receive and Transmit on Upper Sideband.

AM Receive AM signals. (Insert Carrier to transmit AM)

ANL Switch

Meter Switch



FIG. 2. SWAN CYGNET MODEL 1011, REAR VIEW, WITH 14-A D.C. CONVERTER ATTACHED.

OPERATION

PRE-OPERATION ADJUSTMENTS

Before connecting any cables to the Swan 1011 perform the following steps:

1. Rotate the PA BIAS control on the rear chassis apron fully counter clockwise.
2. Rotate the CAL-REC-TUNE-CW to REC.
3. Rotate the RF Gain Control counter clockwise to operate the power switch to OFF.

CONNECTIONS

1. Connect wire from earth ground to ground stud provided on rear of chassis. This is not essential, but is recommended.
2. Connect a 50 to 75 ohm antenna feed-line to the coaxial connector on rear panel.
3. Connect the AC power cable to the Jones connector on the rear panel.
4. Connect the AC power cable to the proper voltage source.

WARNING

Dangerous high voltage is present on the plate of the power amplifier whenever the power supply is energized.

RECEIVE OPERATION

1. Rotate the RF GAIN Control clockwise to about the 3 o'clock position. The power switch will operate applying voltage to the transceiver.
2. Wait approximately one minute to allow the tube filaments to reach operating temperature. During this period, perform the following steps:
 - a. Rotate Frequency Range to desired range.
 - b. Rotate MIC. GAIN fully counter-clockwise.
 - c. Rotate CAR. BAL. control to the midscale position.
 - d. Set PA TUNE control to mid-position.
 - e. Set DRIVER control to mid-position.
 - f. Set PA LOAD to mid-position.
 - g. Set tuning dial to desired operating frequency.
 - h. Set AF GAIN control to approximately 10 o'clock position.
3. Carefully adjust the DRIVER and the PA TUNE controls for maximum receiver noise.

NOTE

The DRIVER control resonates the transmitter driver stages and the receiver RF amplifier plate circuit. The PA TUNE and PA LOAD controls adjust the input and output capacitors in the trans-

mitter power amplifier final plate circuit, as well as the receiver RF amplifier grid circuit. Proper adjustment of these controls in the receive position will result in approximately resonant conditions in the transmitter stages.

RECEIVER TUNING

Precise tuning of a single sideband signal is very important. Do not be satisfied to merely tune until the voice can be understood, but take the extra care of setting the dial to the exact spot where the voice sounds natural. Above all, avoid the habit of tuning so that the voice is pitched higher than normal. This is an unfortunate habit practiced by quite a number of operators. The following points help to explain the effects of mistuning:

1. If you tune so the received voice is higher than normal pitch, you will then transmit off frequency, and your voice will sound lower than normal pitch to the other station. He will probably retune his dial to make you sound right. If you keep this up, you'll gradually waltz one another across the band. If both of you are mistuning to an unnatural higher pitch, you'll waltz across the band twice as fast. (And someone will no doubt be accused of frequency drift.)
2. Mistuning results in serious harmonic distortion on the voice, and should be quite noticeable to the average ear. Some will claim that if they don't know how the other person's voice actually sounds, they can't tune him in properly, but this is not true. With a little practice, it will be fairly easy to tell. Some voices are relatively rich in harmonics, and are easier to tune in than a person with a "flat" voice. Also, a transmitter, which is being operated properly with low distortion will be easier to tune in than one which is being over-driven and is generating excessive distortion. There is no mistaking when you have a station tuned right on the nose. It will sound just like "AM," so to speak. Mainly, avoid the habit of tuning so everyone sounds higher than normal pitch, or like Donald Duck. This is incorrect, unnecessary, and sounds terrible.
3. A vernier control for receive frequency, sometimes referred to as "incremental tuning," is not available on the Swan 1011. Such a device is not necessary if proper tuning habits are exercised.
4. Your Swan 1011 will automatically transmit on exactly the same frequency as the one to which you are listening. There is no adjustment for making them the same, since by using the same oscillator for both send and receive, it happens automatically. If separation of receive and transmit frequency control is desired, the Model 508 or 510X VFO unit may be used.

TRANSMITTER TUNING

Special Notes: Read Carefully. Be sure that you understand and remember these notes when tuning the transmitter.

- ① The most important detail to keep in mind when tuning the transmitter portion of your Swan 1011 is that the P.A. TUNE control must be resonated as quickly as possible!
- ② This is accomplished by adjusting the P.A. TUNE for minimum meter reading with function switch in TUNE mode. P.A. cathode current, as indicated by the meter will show a "dip" as P.A. TUNE is rotated through resonance. Stop at the "dip," or minimum reading.
- ③ The P.A. tube is dissipating all the power input when it is not in resonance, and can be permanently damaged in just a few seconds.
- ④ Once resonance has been established, the P.A. can operate at full power input for quite awhile, although we recommend 30 seconds as a safe maximum. But, it is most important to realize that the 30 second limit assumes that the P.A. TUNE control has been immediately resonated. This rule applies generally to all transmitters.
- ⑤ Do not tune more often than necessary. You should not have to retune except when changing bands or antennas. The P.A. tube will last for many months or even years of normal operating, but excessive tuning will shorten tube life.

TRANSMITTER TUNING STEPS

- ① The Sideband Selector must be in USB position while tuning. Set Tuning Dial to desired frequency. MIC. GAIN at minimum, CAR. BAL. straight up at 12 o'clock. Microphone with press-to-talk switch plugged into Mic. Jack on front of panel. Function switch in REC. position. Meter switch in P.A. CATH. position.
- ② Press the Mic. Switch, and quickly rotate CAR. BAL. control for minimum meter reading. If the control has no effect at this time, do not be concerned. The P.A. (Power Amplifier) stage is now resting, or "idling," and there is no grid drive being applied. The meter is reading "idling" current, which should be about 40 ma. This point is indicated on the meter scale by a small triangular symbol. The permissible idling range is 30 to 50 ma. If the meter does not read within this range, adjust P.A. BIAS on back of the transceiver. This requires a screw driver, and should not be required often. If idling current tends to creep upward slightly with warm-up, set it at 30 ma. Excessive creep indicates that the P.A. tube is gassy, and may need to be replaced soon.

- ③ If this is the first time you are tuning the transmitter, set P.A. LOAD to 9 o'clock. After experience in tuning, this control may be pre-set to the previously determined position.

Note Up to now the transmitter has been "idling," and there has been no particular time limit involved. The following steps apply grid drive, and require caution. Observe, the recommended 30 second time limit.

- ④ With the function switch still in REC. position, again press the Mic. button and:
 - a. Set the CAR. BAL. control to 3 o'clock or 9 o'clock.
 - b. Rotate the DRIVER control for maximum meter reading.
 - c. *Immediately* rotate the P.A. TUNE control for minimum meter reading, or "dip." This is the critical "resonating" adjustment which *must be done quickly* to preserve P.A. tube life!
 - d. Re-adjust CAR. BAL. for minimum meter reading.
- ⑤ Switch to TUNE position and observe meter reading. Begin advancing the P.A. LOAD control clockwise in small steps, each time "dipping" the P.A. TUNE control for minimum meter reading. As P.A. LOAD is turned further clockwise, the P.A. TUNE "dip" will become more shallow, until finally it may be difficult to see the dip.

The proper degree of loading is when the dip is about 10 per cent down from the maximum off-resonance reading. In other words, if the meter reads 200 Ma. when P.A. TUNE is off resonance, it should dip to about 180 Ma. at resonance. Or, if the meter reads 250 Ma. off resonance, then adjust P.A. LOAD so that P.A. TUNE dips to 225 Ma. at resonance.

The specific meter reading is not vitally important. Tube condition and line voltage can affect the meter reading. It will normally read 200 Ma. or more when off resonance. With high line voltage and new tubes it may be as high as 300 Ma. Remember, the P.A. should never be held out of resonance for more than a second or two, just long enough to observe the meter reading and tune for the dip.

- ⑥ The preceding Step completes Transmitter Tuning procedure. Return the function Switch to REC. position.

Note that the 1011 operates at reduced power in TUNE-CW mode. The P.A. cathode bias resistor, R406, is in the circuit during TUNE and CW operation. In voice mode the bias resistor is shorted out, and the 1011 operates at full P.E.P. input rating.

VOICE TRANSMISSION

After tuning up as outlined above, switch to REC. position. Press the microphone switch and then carefully set the CAR. BAL. control for minimum meter reading. While speaking into the mike, slowly rotate the MIC. GAIN control until occasional peak readings of 100 to 120 ma. are obtained. With most microphones, the MIC. GAIN control will be set between 9 and 12 o'clock, but it may vary considerably. The ALC circuit will help limit cathode current, but turning the MIC. GAIN up too high will still produce flat-topping and spurious signals, so it is important to hold it down. The meter is quite heavily damped, and its reading with average voice modulation may not look very impressive, but the voice peaks are going well over the 260 watt power rating of your Swan transceiver.

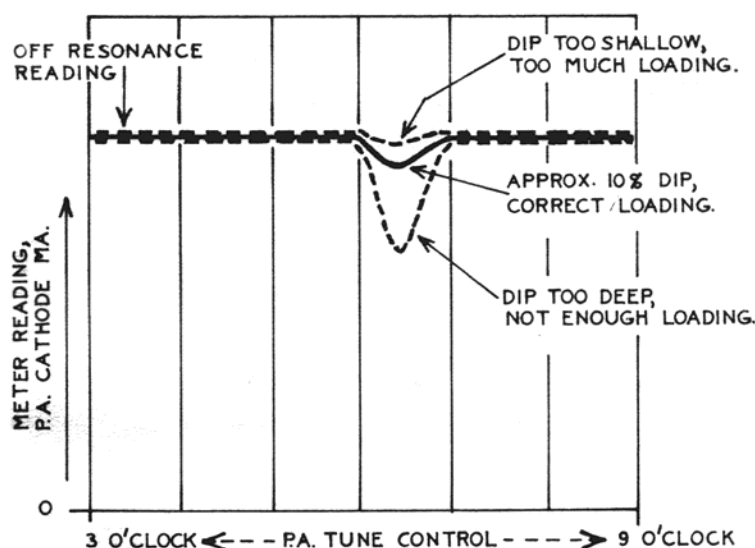


FIGURE 3.

ILLUSTRATING PROPER P.A. LOAD ADJUSTMENT AS INDICATED BY "DIP" IN P.A. CATHODE CURRENT WHEN TURNING P.A. TUNE CONTROL THROUGH RESONANCE.

NOTE

Transceiver will not modulate with Function Switch in CAL. position.

AM TRANSMIT (Upper Sideband With Carrier)

- ①. Tune transmitter to full output on upper sideband as described above.
- ②. Rotate MIC. GAIN control to minimum, full CCW.
- ③. With Push-to-talk pressed, rotate CAR. BAL. control until cathode current is approximately 75 ma.
- ④. While talking in a normal tone of voice into the microphone, increase MIC. GAIN setting until the meter kicks upward slightly. This setting will result in excellent AM transmission.

CW OPERATION

- ①. Insert a CW Key in the Key Jack on back of the Transceiver.
- ②. Close the key and tune the transmitter as outlined in Step 5. Power input will be approximately 180 watts.
- ③. In CW operation it will be necessary to switch the Function control back to REC. for receiving and then to CW for transmitting.
- ④. While receiving, the carrier oscillator frequency is located 300 cycles outside the passband of the crystal lattice filter, thus providing a single heterodyne note, or "single-signal" for CW reception. When transmitting in CW mode, the carrier frequency is moved approximately 800 cycles higher, placing it well inside the passband. This frequency shift is termed "Off-set CW transmit frequency," and avoids the problems encountered when the receive and transmit frequency are exactly the same. This is desirable for voice communication, of course, but when using the CW Keying mode the receiver must be tuned off frequency several hundred cycles in order to hear an audio beat. By providing this shift automatically, CW operation is greatly simplified.

CIRCUIT THEORY

GENERAL DISCUSSION

The Swan 1011 transceiver provides single sideband, suppressed carrier transceive operation, and generates the single sideband signal by means of a crystal lattice filter. To permit a logical discussion of this mode of operation certain definitions are necessary. In a normal AM signal, (double sideband with carrier), a radio frequency signal is modulated with an audio frequency signal. This is considered by many to be merely a case of varying the amplitude of the carrier at an audio rate. In fact, however, there are actually sideband frequencies generated, which are the results of mixing the RF and the AF signals. These sidebands are the sum of, and the difference between the two heterodyned signals. In the detection of this conventional AM signal, the two sidebands are mixed with the carrier to recover and reproduce the audio intelligence. This is an inefficient means of transmission, because only 25 percent of the transmitted power is used to transmit intelligence. There are other attendant drawbacks, also. The bandwidth of AM voice transmission is approximately 6 kc, while the actual demodulated audio is only approximately 3 kc. The result is inefficient use of the frequency band, and over half of the allotted band is unusable due to heterodynes, interference, and congestion.

In the single sideband, suppressed carrier mode of transmission, only one of the sideband signals is transmitted. The other sideband and the carrier are suppressed to negligible level. In addition to increasing the transmission efficiency by a factor of four, single sideband effectively doubles the number of stations or channels which can be used in a given band of frequencies.

It should be remembered that in the single sideband, suppressed carrier mode of transmitting, the unwanted sideband and carrier are only suppressed, not entirely eliminated. Thus, with a transmitted signal from a transmitter with 50 db sideband suppression, the other or unwanted sideband will be present, and will be transmitted, but its level will be 50 db below the wanted sideband. When this signal is received at a level of 20 db over S9, the unwanted sideband will be present at a level of approximately S5. The same is true of carrier suppression. With carrier suppression of 60 db, and a signal level of 20 db over S9, carrier will be present at a level of approximately S3 to S4.

For the following discussion refer to the schematic diagram, and to Figures 4, 5, and 6.

SIGNAL GENERATION

When the push-to-talk switch on the microphone is pressed, the transmitter portion of the transceiver is activated, and it generates a single sideband, suppressed carrier signal in the following manner. Carrier is generated by Q3 Carrier Oscillator, which is a Pierce os-

cillator with the crystal operating in parallel resonance. This stage operates in both the transmit and receive modes. When transmitting, the RF output of the oscillator is injected into the control grid of the Balanced Modulator, V13. This balanced modulator is a beam deflection tube, and operates similar to a cathode ray tube in that the electron beam from the cathode is deflected to one output plate or the other by the charge appearing on the deflection plates. The carrier signal fed to the control grid of the balanced modulator appears on both plates of the output. The two plates are connected to Transformer T1301 in push-pull, so the carrier signal cancels itself out in T1301. The deflection plate dc voltages are adjusted by means of the carrier balance control so that the RF being fed to the output plates will cancel out, and the output from T1301 will be zero. Audio signals from the Microphone Amplifier, V14, are applied as a modulating voltage to one deflection plate, and the two sidebands resulting from the sum and difference frequencies of the audio and carrier signals appear in the output of transformer T1301. Carrier suppression is approximately 60 db.

The double sideband, suppressed carrier signal is then coupled from the secondary winding of T1301 to the crystal filter, which suppresses the lower sideband, and permits only the upper sideband to be fed to the First IF Amplifier V7. The carrier frequency is generated at approximately 5500.0 kc, normal sideband. With the opposite sideband crystal, the carrier crystal frequency will be 5503.3 kc, and this positions the double sideband signal on the other side of the filter response curve, attenuating the upper sideband by at least 50 db. In the single conversion mixing process, these sidebands become inverted on 80 and 40 meters. Thus the Swan 270B normally operates on lower sideband on 80 and 40, while on 20, 15, and 10 meters normal operation is on upper sideband.

Q1, the VFO 2N706 Oscillator, operates in the common base configuration as a Colpitts oscillator. Q2, the buffer is used for isolation. The extremely good regulation achieved through using the Zener diode regulator D1712 across the bias supply voltage, also contributes to the stability.

The VFO in the Model 1011 exhibits extremely good stability after the initial warm-up period. Drift from a cold start will be less than 2 kc during the first hour. After the initial warm-up period, drift will be negligible.

The single sideband, suppressed carrier signal from the first IF Amplifier is fed to the Transmitter Mixer, V2, where it is heterodyned with the VFO signal. The resultant signal at the desired transmit frequency is amplified by the Driver, V3, and the Power Amplifier, V4. The signal from the VFO Amplifier is initiated in the transistorized VFO/Buffer circuit Q1 and Q2. The signal from the VFO is routed to the VFO Amplifier, and is mixed with the single sideband from the IF Amplifier, resulting in output in the 10 meter band.

CIRCUIT THEORY

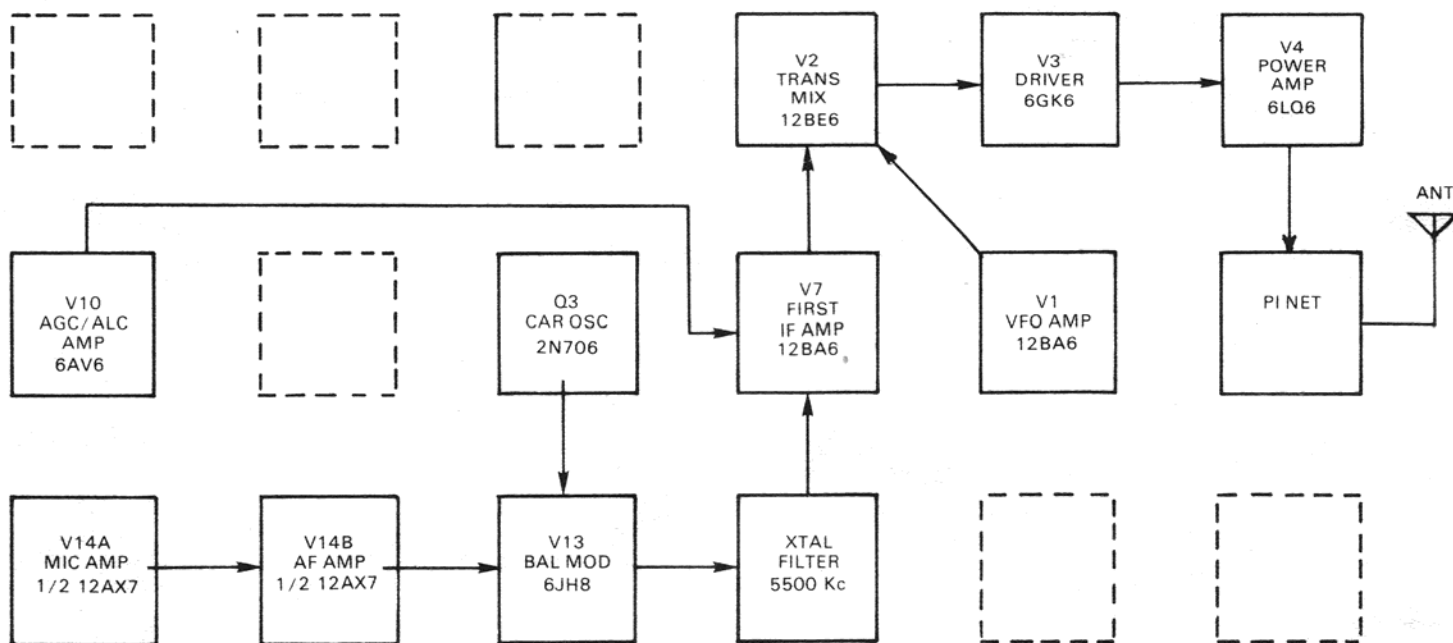


FIGURE 4. BLOCK DIAGRAM, TRANSMIT MODE

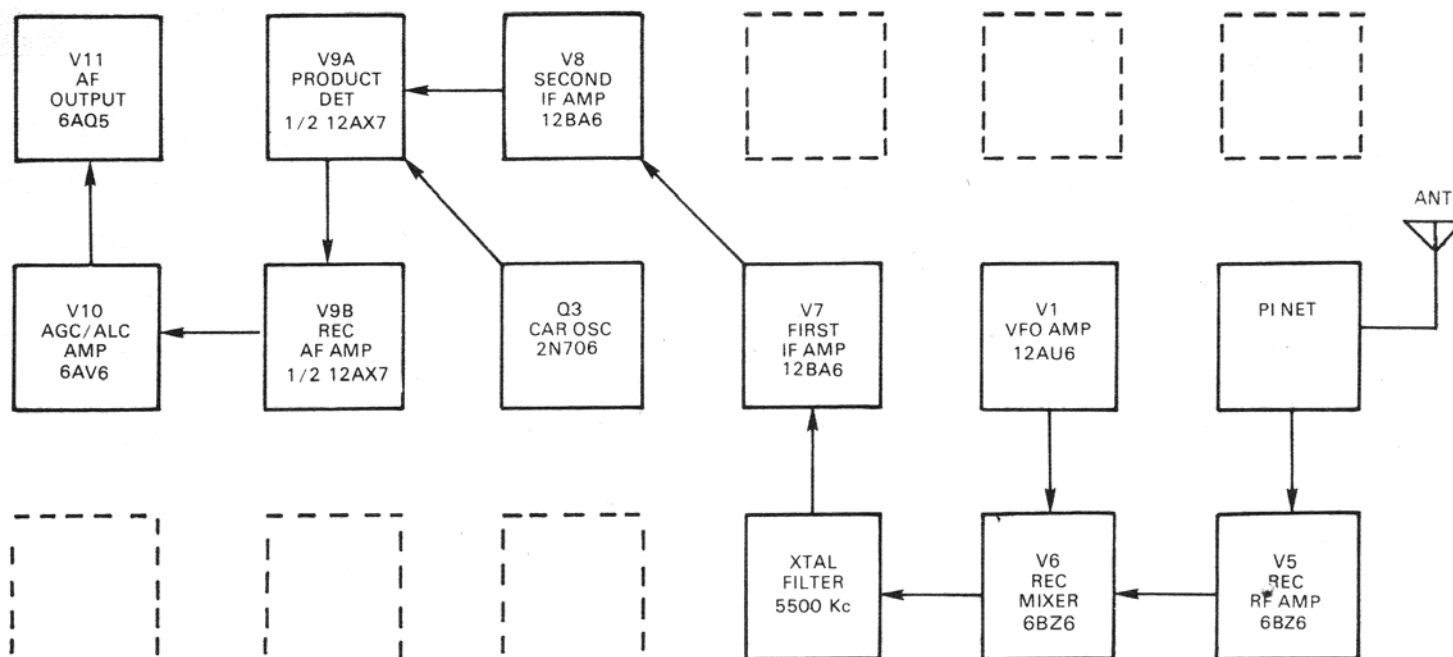


FIGURE 5. BLOCK DIAGRAM, RECEIVE MODE

CIRCUIT THEORY (Cont.)

When in TRANSMIT, the gain of the First IF Amplifier is controlled through the Automatic Level Control network (using the AGC Amplifier V10) to control the gain of the stage in response to the average input power to the Power Amplifier. This ALC system will compensate for any extremely strong input signals, but does not completely eliminate the necessity of proper adjustment of the Mic. Gain Control. This feature will help prevent the transmitter from flat topping and spurious emissions, but considerable distortion may occur if the Mic. Gain Control is not properly adjusted. Refer to Operating Instructions.

TUNE AND CW OPERATION

Normally, the frequency of the carrier oscillator is approximately 300 cps outside the 6 db passband of the crystal lattice filter. In TUNE position, the frequency of the carrier oscillator is moved approximately 800 cps to place it well within the passband of the crystal lattice filter. A similar procedure is followed for CW to allow full carrier output during CW operation.

RECEIVE

In RECEIVE position, or at any time when the transmitter is not in TRANSMIT, all circuits used in transmitting are disabled through the relay controlled circuits, K1. The relay is energized for transmitting and de-energized for receiving. One contact, when de-energized, allows signals from the transmitting tank circuit and antenna to be fed to the Receiver RF Amplifier, V5, where they are amplified and then fed to the control grid of the Receiver Mixer, V6. The local oscillator signal from the VFO Amplifier is now used to heterodyne the received signal to the IF frequency. All IF amplification is accomplished at this frequency, nominally 5500.0 kc, through V7 and V8 IF amplifiers. In the Product Detector V9A, the IF signal is heterodyned with the carrier frequency generated by Carrier Oscillator, Q3. The resultant audio is then amplified by V9B, which then couples to V10, the AGC amplifier, and V11, the output audio stage.

FREQUENCY CALIBRATION

Frequency calibration of the Model 1011 is in 5 kc increments. Dial accuracy and tracking are quite good, but caution must always be observed when operating near band edges. Measuring the frequency with the 100 kc calibrator when working near band edges is recommended.

DIAL SET

A dial-set control has been provided so that dial adjustment can be made at any 100 kc point on the dial. With calibrator on, set the dial to any 100 kc point closest to the frequency you wish to work. Now adjust dial-set control to zero-beat the VFO with the 100 kc Calibrator. This provides greater accuracy of dial readout.

CAUTION

Care must be exercised when tuning for the 100 kc harmonics of the calibrator. Several spurious image signals may be heard, although they will be definitely weaker than the correct harmonics.

TRANSMIT AND RECEIVE SWITCHING

Transmit and receive switching is performed by relay K1. In TRANSMIT position, only those tubes that operate in the transmit mode are operative, all others being biased to cutoff through the relay contacts. In the RECEIVE position, with the relays de-energized, the tubes that are used only in transmit are cut off in the same manner. Relay K1 when de-energized, feeds signals from the output pi-network to the receiver. Note that relay K1 will not operate when the frequency range selector is in "CB" position.

POWER RATING

The Swan 1011 is capable of 180 watts, PEP input under steady state two-tone test conditions. The peak envelope power, when voice modulated, is considerably greater, typically 260 watts, or more.

The built-in power supply produces a no-load plate voltage of approximately 880 volts. Under TUNE conditions, or CW operation, this voltage will drop to approximately 680 volts. Under steady state two-tone modulation, the voltage will drop to approximately 710 volts. If the power amplifier idling current is 30 ma, and the two-tone current, just before flat-topping, is 200 ma, the peak two-tone current will be 300 ma. Under these conditions the PEP input will be 710 volts times 300 ma = 213 watts. Under voice modulation, because average power is considerably less, the power amplifier plate and screen voltages will be maintained higher, even during voice peaks, by the power supply filter capacitors. Peak plate current will therefore also be higher than with two-tone test conditions. Under typical operating conditions, peak plate current before flat-topping will be 350 ma at 800 volts, to result in an input of 280 watts, PEP. Readings of cathode current will not reflect this power input, however, because of the damping in the cathode current meter, cathode current readings under normal voice input should not average more than 100 to 120 ma.

POWER AMPLIFIER PLATE DISSIPATION

There is often a misunderstanding about the plate dissipation of tubes operated as AB1 amplifiers under voice modulation. In the Swan 1011, while in the transmit position, and with no modulation, the plate voltage will be approximately 830 volts, the plate current 30 ma, and the power input will be 25 watts.

Authorities agree that the average voice power is 10 to 20 db below peak voice power. Normally, some peak clipping in the power amplifier can be tolerated, and a peak-to-average ratio of only 6 db may sometimes occur. Under such conditions, the average power input will be 80 watts, and average plate current will be 100 ma. With power amplifier efficiency of 65 percent plate dissipation will be approximately 26 watts. The 6LQ6 is rated at 30 watts, continuous duty cycle, in normal TV service. Thus it can be seen that under normal operating conditions, the power amplifier tube in the Swan 1011 is not being driven very hard. Note, however, that proper modulation level must be maintained by correct setting of Mic. Gain, and that the length of time in TUNE position must be limited to not more than 30 sec. at a time.

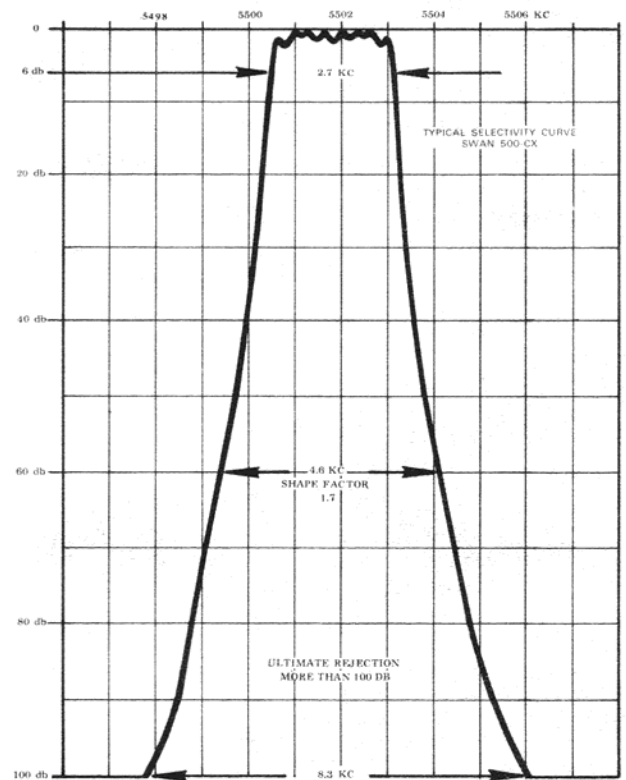


FIG. 6. CRYSTAL FILTER CHARACTERISTICS

ALIGNMENT AND TROUBLESHOOTING

The alignment procedures presented in this section are routine touch-up procedures for all tuned circuits and other adjustments. It is recommended that the procedures be performed in the order presented. However, if complete realignment is not required (as may be the case when just one tube is replaced), perform just those procedures required. Refer to Figures 7 and 8 for component placement.

RECEIVER ALIGNMENT

Receiver alignment involves only the adjustment of the Second IF coil. The R.F. coils which affect receiver performance are also used in transmit mode. Their adjustment is covered under "TRANSMITTER ALIGNMENT."

1. After allowing approximately five minutes for warm-up, tune the receiver to the middle of the band and at a "clear" frequency.
2. Adjust the P.A. TUNE, P.A. LOAD, and DRIVER front panel controls for maximum background noise.
3. Adjust IF coil L801 for maximum background noise.

S-METER ADJUSTMENT

With antenna disconnected and RF Gain fully clockwise, set R705, located on rear panel, for zero meter reading. Make sure no local signals are being received.

TRANSMITTER ALIGNMENT

1. Power Amplifier Bias.

- a. Set bandwidth at 28 mc. position, tuning dial at 28.3 mc. and Driver control at 12 o'clock.
- b. Set P.A. LOAD control to 9 o'clock.
- c. Press Mic. Button. Check idling current. It should be on the delta symbol when CAR. BAL. control is nulled. Adjust P.A. BIAS control, if required.
- d. With MIC. Button pressed, adjust CAR. BAL. control for slight increase in meter reading, 50 to 60 ma. Adjust P.A. TUNE to resonance, (dip).
- e. Adjust coils L101, L201 and L301 for maximum meter reading. When reading goes higher than 80 ma., or so, adjust CAR. BAL. for 60 ma. again.
- f. Adjust coils carefully for maximum peak. Exercise caution with CAR. BAL. control. Do not exceed 100 ma. reading for more than a few seconds. Be sure P.A. TUNE control is resonated, (adjusted for "dip" in meter reading).

2. Transmitter Circuits. The alignment of transmitter circuits involves the adjustment of tuned circuits in the VFO Amplifier, V1, the Transmit Mixer,

V2, and Driver stage, V3. It is recommended that a dummy load be connected to the antenna jack during this series of adjustments.

- a. Start first by adjusting 7 mc band. Set tuning dial and driver control as indicated by table I, page 18.
- b. Set P.A. LOAD control to 9 o'clock.
- c. Press Mic. Button. Check idling current. It should be on the delta symbol when CAR. BAL. control is nulled. Adjust P.A. BIAS control, if required.
- d. With Mic. Button pressed, adjust CAR. BAL. control for slight increase in meter reading, 50 to 60 ma. Adjust P.A. TUNE to resonance, (dip).
- e. Adjust coils as indicated by alignment chart for maximum meter reading. When reading goes higher than 80 ma., or so, adjust CAR. BAL. for 60 ma. again.
- f. Adjust coils carefully for maximum peak. Exercise caution with CAR. BAL. control. Do not exceed 100 ma. reading for more than a few seconds. Be sure P.A. TUNE control is resonated, (adjusted for "dip" in meter reading).
- g. Switch to 3.5 mc band, and repeat steps (a) through (f), following the tuning chart carefully. Follow this procedure through for each other band.

3. Power Amplifier Neutralization.

- a. After allowing approximately five minutes for warm-up, tune the transmitter to approximately 28.3 mc.
- b. Position the P.A. LOAD control to the 9 o'clock position, (full counter clockwise).
- c. Set meter switch to P.A. CATH.
- d. Key the transmitter with the microphone switch, and without speaking into the microphone, adjust the CAR. BAL. control for a power amplifier current of approximately 100 ma. Adjust the DRIVER control for peak. Quickly adjust CAR. BAL. to 100 ma. again if it increased to a higher reading.
- e. With the Mic. Button still pressed, rotate the P.A. TUNE control through its range from 9 o'clock to 3 o'clock. You will note a pronounced "dip" in meter reading at resonance. Observe any tendency for the meter to "peak" above the 100 ma. plateau on either side of resonance. If there is such a peak, adjust C401, the P.A. NEUTRALIZING trimmer to suppress the peak. When properly neutralized, the meter reading will hold steadily at 100 ma. except for the sharp dip at resonance but there will be no peak above the 100 ma. level.

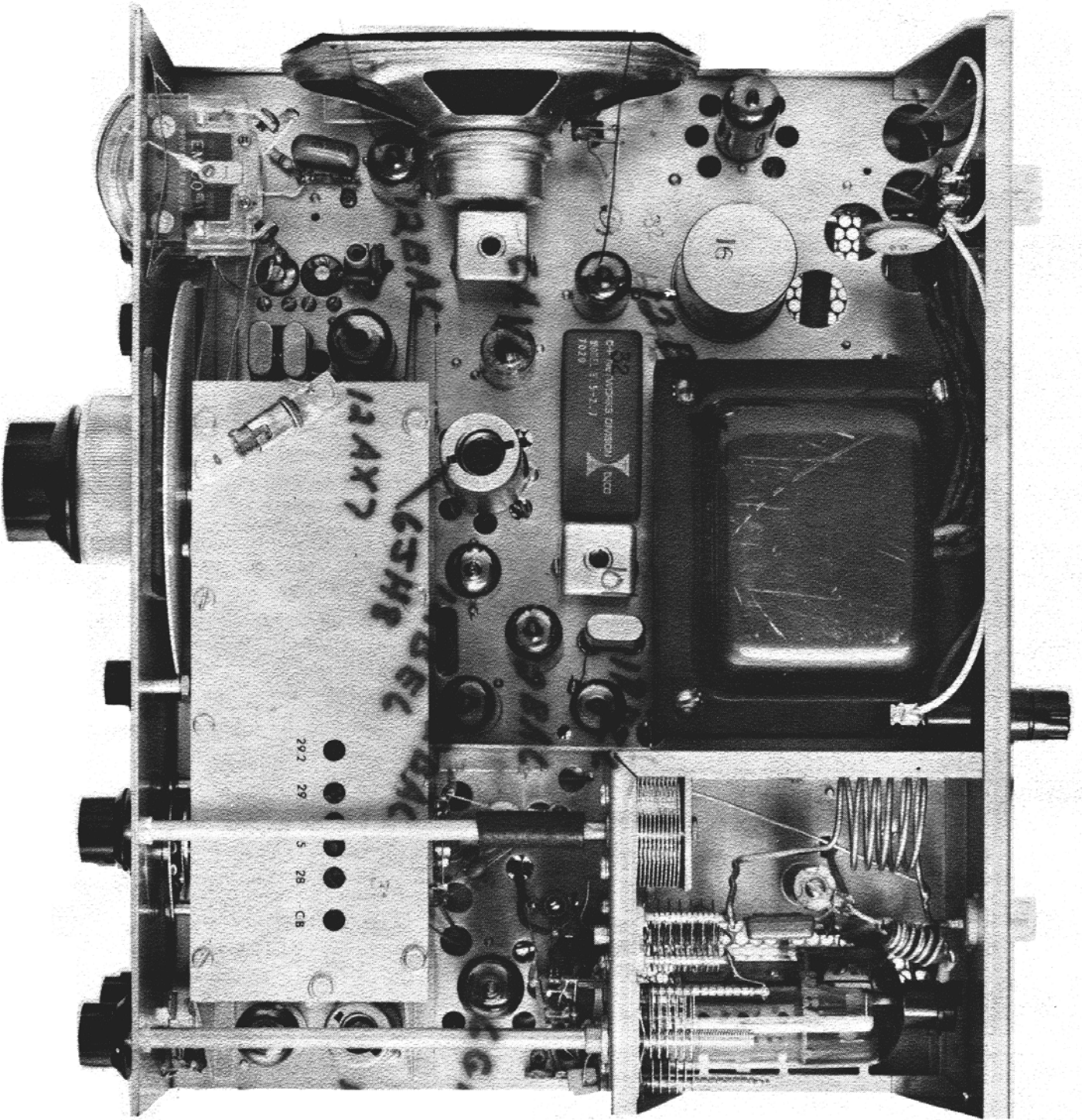


FIGURE 7. SWAN MODEL 1011 TOP VIEW

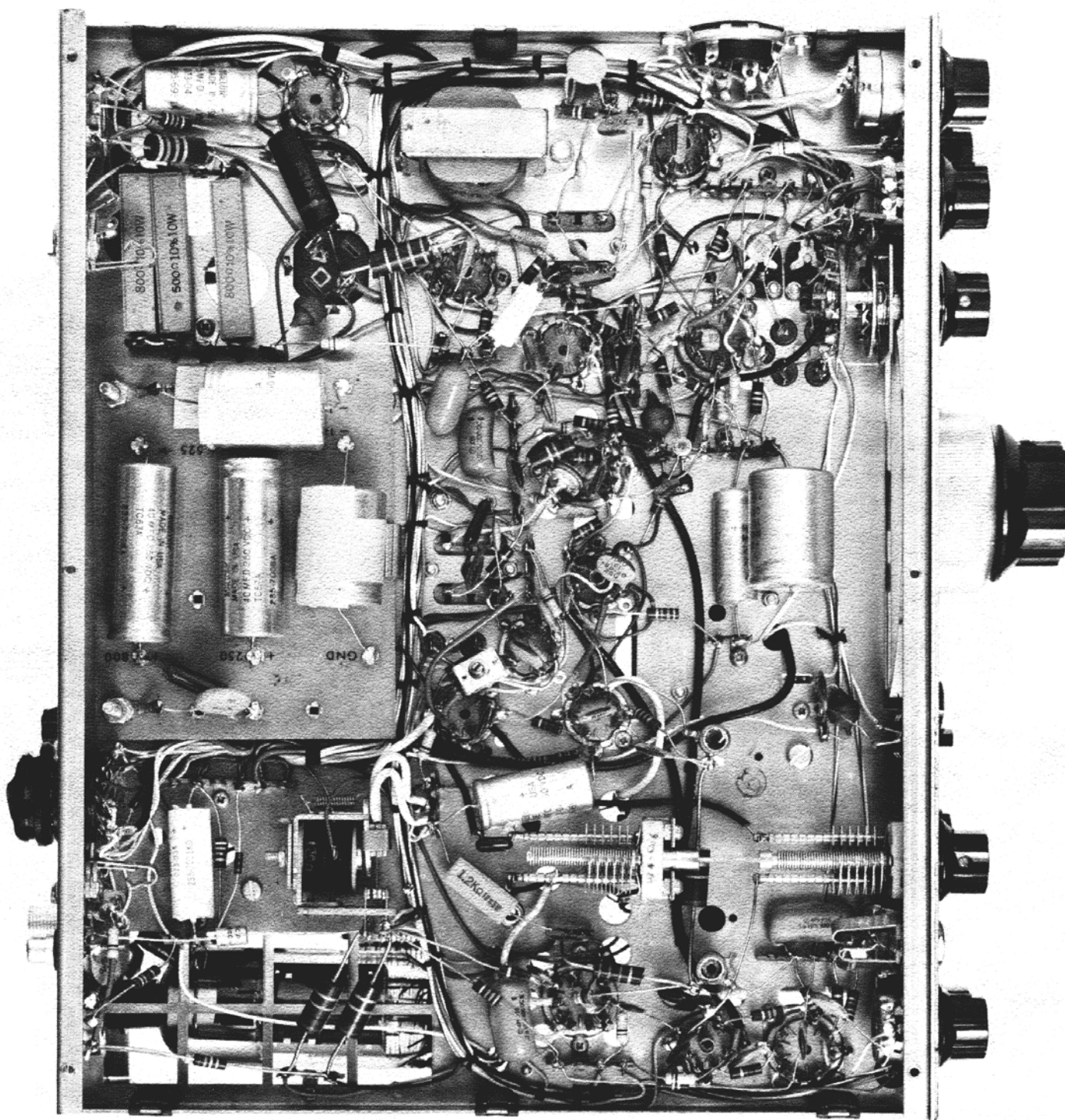


FIGURE 8. SWAN MODEL 1011 BOTTOM VIEW

f. Key the transmitter with the microphone switch and re-adjust the CAR. BAL. control for minimum power amplifier current. Power amplifier idling current should be on the delta symbol. If not, repeat the power amplifier bias adjustment described on Page 13.

4. Carrier Frequency Adjustment. A dummy load wattmeter and audio generator are required for this adjustment.

- a. After allowing a five-minute warm-up period, tune the transmitter to approximately 28.3 mc.
- b. Key the transmitter with the microphone switch and adjust the CAR. BAL. control for minimum power amplifier current.
- c. Insert 1500 cycles of audio from an audio generator into the Mic. Jack located on the front panel. Adjust the gain of the audio generator and the Mic Gain control (R1404) until the watt-meter reads approximately 10 or 15 watts.
- d. Adjust the first IF coil (L701) for maximum output. Adjust both slugs of the balanced modulator transformer (T1301) for maximum output.
- e. Increase gain of audio generator until wattmeter reads 40 watts. Sweep generator down to 200 cycles

and adjust the USB carrier oscillator trimmer (C1503) for a reading of 10 watts.

f. Switch to the LSB position. Adjust the LSB carrier oscillator trimmer (C1501) for a reading of 10 watts.

g. Re-check with audio generator set at 1500 cycles and 40 watts. Sweep down to 200 cycles and re-adjust Carrier Oscillator capacitor, if required, for 10 watts.

VFO CALIBRATION

After allowing approximately five minutes for warm-up, tune the dial, to the 200KC increment for any of the 10 meter ranges to be calibrated. For CB calibration, tune the dial to the 27,100KC increment. Using the 100KC crystal calibrator as a signal source, tune the signal for zero beat and note the corresponding dial reading. If the signal does not zero beat on the desired dial increment, locate the VFO cover and carefully adjust the correct trimmer until it does.

Use an insulated alignment tool for adjustment. Accuracy in other parts of the bands will be quite good, but remember that the 1011 is not to be considered a frequency standard. Be cautious when operating near band edges.

TROUBLESHOOTING

The information contained in Figures 7 and 8, together with the voltage and resistance chart and trou-

bleshooting guide should be sufficient for most troubleshooting by the average licensed amateur radio operator.

VOLTAGE AND RESISTANCE CHART

TUBE TYPE	R = Rec. T = Trans.	Socket Pin Numbers								
		1	2	3	4	5	6	7	8	9
V1 12BA6 VFO Amp.	R Volts T Volts Ohms	-6 -6 1.2K	0 0 0	0 0 0	12.6AC 12.6AC 0.2	45 50 0	45 50 *	0 0 0		
V2 12BE6 Trans. Mixer	R Volts T Volts Ohms	-1.2 -1.0 100K	0 0 0	0 0 0	12.6AC 12.6AC .02	250 250 *	-2 135 11K	0 0 35K		
V3 6GK6 Driver	R Volts T Volts Ohms	0 0 10	-6.7 -6.7 100K	0 0 0	0 0 0	6.3AC 6.3AC 0.3	NC NC NC	255 265 *	0 225 0.2	0 0 0
V4 6LQ6 Pwr. Amp.	R Volts T Volts Ohms	NC NC NC	-75 -75 6K	0 0 1.0	12.6AC 12.6AC 0.1	6.3AC 6.3AC 0.3	-75 -75 6K	0 225 0.1	0 0 0	NC NC NC
V5 6BZ6 Rec. R. F.	R Volts T Volts Ohms	0 0 1.1M	0 0 0	6.3AC 6.3AC 0.1	0 0 0	255 255 14K	115 0 40K	0 0 0		
V6 6BZ6 Rec. Mixer	R Volts T Volts Ohms	0 0 100K	0 0 0	0 0 0	12.6AC 12.6AC 0.1	250 265 11K	100 0 40K	-5 -5 45K		
V7 12BA6 1st I. F.	R Volts T Volts Ohms	-1.8 -1.8 500	0 0 0	0 0 0	12.6AC 12.6AC 0.1	210 220 15K	48 50 50K	0 0 0		
V8 12BA6 2nd I. F.	R Volts T Volts Ohms	-1.7 -1.7 110K	0 0 0	0 0 0	12.6AC 12.6AC 0.1	205 225 15K	105 0 40K	0 0 0		
V9 12AX7 Det. A. F.	R Volts T Volts Ohms	55 -3 400K	-1 -1.6 11K	0 0 300	0 0 0	0 0 0	145 0 125K	-25 -25 1M	0 0 0	6.3AC 6.3AC 0.2
V10 6AU6 AGC Amp.	R Volts T Volts Ohms	0 0 500K	2.0 1.6 5K	6.3AC 6.3AC 0.2	0 0 0	0 0 0	0 0 700K	225 175 100K		
V11 6AQ5 A. F. Output	R Volts T Volts Ohms	-9 -9 500K	0 0 0	0 0 0	6.3AC 6.3AC 0.2	237 262 10K	215 0 12K	NC NC NC		
V12 12BA6 100KC Cal.	R Volts T Volts Ohms	0 0 1M	0 0 0	12.6AC 12.6AC 0.1	225 175 100K	225 175 200K	75 55 0			
V13 6JH8 Bal. Mod.	R Volts T Volts Ohms	0 45 2K	0 45 75K	0 75 500K	6.3AC 6.3AC 0.2	0 0 0	-1.4 -1.4 35K	0 0 0	0 100 75K	0 100 75K
V14 12AX7 Mic. Amp	R Volts T Volts Ohms	50 45 1M	0 0 0	0 0 0	0 0 0	0 0 0	0 75 600K	0 0 0	0 0 10K	6.3AC 6.3AC 0.2

TROUBLESHOOTING CHART

DEFECT	POSSIBLE CAUSE
PA Idling Current Unstable	<ol style="list-style-type: none"> 1. Defective Power Amplifier Tube (V4). 2. Defective BIAS control and/or associated components. 3. Defective bias power supply.
Inability to Load per Operation Instructions	<ol style="list-style-type: none"> 1. Antenna not resonant at operating frequency. 2. Defective transmission line. 3. Defective antenna loading coil(s). 4. Tubes V1 through V4 defective.
Insufficient Sideband Suppression	<ol style="list-style-type: none"> 1. Carrier Oscillator (Q3) operating on incorrect frequency. 2. Crystal filter defective or mistuned.
Insufficient Carrier Suppression	<ol style="list-style-type: none"> 1. Tube V13 defective 2. Transformer T1301 defective or mistuned. 3. Carrier Oscillator (Q3) operating on incorrect frequency.
Microphonics in Transmitter	<ol style="list-style-type: none"> 1. Tubes V13 and/or V14 defective. 2. IF coil L701 Defective or incorrectly adjusted. 3. Microphone defective.
Low Receiver Sensitivity	<ol style="list-style-type: none"> 1. Tubes V5 through V10 defective. 2. Incorrect adjustment of the transmitter Pi-Network. 3. IF coil L801 incorrectly adjusted or defective. 4. K1 relay contacts defective.

TABLE I
VFO AND CARRIER OSCILLATOR FREQUENCIES

Tuning Dial	V1 Injection Frequency	Q1 Osc. Frequency	Q3 Osc. Carrier Frequency
26,950 KC	21,450KC	(1/2) 10,725 KC	5500 KC
27,260 KC	21,760KC	(1/2) 10,880 KC	5500 KC
28,000 KC	22,500 KC	(1/2) 11,250 KC	5500 KC
29,700 KC	24,200 KC	(1/2) 12,100 KC	5500 KC

RESISTORS

All resistors are ½ watt 10% tolerance, unless otherwise noted.

R101 1.5K
R102 47K
R103 10K-2W
R201 27K
R202 100K
R203 100K
R204 10K-2W
R205 470K
R206 2.7K
R301 100K
R302 100K
R303 10 Ohm
R304 100 Ohm
R401 100 Ohm
R402 25K Bias Pot.
R403 4.7K
R404 1K
R405 3 Ohm-5W
R406 100 Ohm-5W
R501 100K
R502 220K
R503 470 Ohm
R504 10K
R505 25K R.F. Gain
R506 10K
R507 470K
R601 47K
R701 1.5K
R702 33K-2W
R703 1K
R704 47K
R705 25K S-Meter Zero
R706 15K
R707 47K-2W
R708 100K
R801 100K
R802 1K
R803 4.7K
R901 100K
R902 270 Ohm
R903 270K
R904 47K
R905 10 Meg
R906 1 Meg
R907 47K
R908 100K
R1001 1 Meg
R1002 270K
R1003 470K
R1004 4.7K
R1005 15K
R1006 2.2 Meg
R1007 270K
R1008 2.2 Meg
R1009 100K
R1101 1 Meg A.F. Gain

R1201 1 Meg
R1202 27K
R1203 100K
R1301 1K
R1302 10K
R1303 10K
R1304 270K
R1305 10K-1W
R1306 27K
R1307 27K
R1308 5K Car. Bal.
R1309 1K
R1310 100K
R1311 27K
R1401 150K
R1402 47K
R1403 1K
R1404 1 Meg Mic. Gain
R1405 270K
R1406 470K
R1407 2.2 Meg
R1408 47K
R1501 10K
R1502 68K
R1503 18K
R1504 2.2K
R1505 1.5K
R1506 100 Ohm
R1601 2.7K
R1602 1.5K
R1603 1K
R1604 100K
R1605 470 Ohm
R1606 2.7K
R1607 1K
R1608 470 Ohm
R1609 470 Ohm
R1701 10K-2W
R1702 4.7 Ohm
R1703 150K-2W
R1704 150K-2W
R1705 800 Ohm-10W
R1706 1.2K-5W
R1707 270K
R1708 2.7K
R1709 800 Ohm-10W
R1710 500 Ohm-10W
R1711 100K

TRANSISTORS

Q1 2N706 Oscillator
Q2 2N5130 Buffer
Q3 2N706 Car. Oscillator

DIODES

D501 1N914
D701 1N914
D702 1N914
D703 1N914

PARTS LIST

D901 1N34A
D1001 1N914
D1002 1N34A
D1003 1N34A
D1201 1N34A
D1701 RCA 39804
D1702 1A-600V
D1703-1706 RCA 39804
D1707-1710 RCA 39804
D1711 RCA 39804
D1712 1N4742 Zener

COILS

L101 VFO Amp
L201 Trans. Mixer
L301 Driver
L302 82 uh
L401 82 uh
L402 55 uh
L403 Pi-Network
L404 30 uh
L701 5500KC I.F.
L801 5500KC I.F.
L1501 200 uh
L1601 VFO Coil
L1602 200 uh
L1603 200 uh
L1701 200 uh
L1702 17 uh

CAPACITORS

Unless otherwise specified, a capacitor is listed in pico farads with a whole number and in micro farads with a decimal number.

C101 .01 +80-20% 500V Disc
C102 .002 20% 1KV Disc
C103 27pf Disc
C104 1pf 500V Ceramic
C105 15pf Disc
C106 5pf Disc
C107 2pf Disc
C108 2pf Disc
C109 2pf Disc
C110 .01 +80-20% 500V Disc
C201 .05 200V Mylar
C202 .01 +80-20% 500V Disc
C203 470pf SM
C204 2pf 500V Ceramic
C205 .002 20% 1KV Disc
C2A 20pf Driver Tuning
C2B 20pf Driver Tuning
C301 270pf SM
C302 .002 20% 1KV Disc
C303 510pf SM
C304 .002 20% 1KV Disc
C401 20pf Neut. Trimmer
C402 3.3pf 3KV Disc
C403 .01 +80-20% 500V Disc

C404 .002 20% 1KV Disc
 C405 .01 +80-20% 500V Disc
 C406 270pf 2500V Mica
 C407 40pf P.A. Tune
 C408 410pf P.A. Load
 C501 .01 +80-20% 500V Disc
 C502 .01 +80-20% 500V Disc
 C503 30pf Disc
 C601 .01 +80-20% 500V Disc
 C602 220pf Disc
 C603 430pf SM
 C701 1 MFD 50V
 C702 50pf Disc
 C703 .01 +80-20% 500V Disc
 C704 .01 +80-20% 500V Disc
 C705 2pf Disc
 C706 .01 +80-20% 500V Disc
 C801 .01 +80-20% 500V Disc
 C802 .01 +80-20% 500V Disc
 C803 .01 +80-20% 500V Disc
 C804 50pf Disc
 C805 50pf Disc
 C901 220pf Disc
 C902 .002 20% 1KV Disc
 C903 150pf Disc
 C904 2 MFD 450V
 C905 500pf Disc
 C906 .002 20% 1KV Disc
 C1001 .05 200V Mylar
 C1002 .05 200V Mylar
 C1003 .001 20% Disc
 C1004 .01 +80-20% 500V Disc
 C1005 .001 20% Disc
 C1006 .001 20% Disc
 C1007 .001 20% Disc
 C1101 5 MFD 450V
 C1102 .01 10% 1000V Tubular
 C1201 50pf Disc
 C1202 60pf Trimmer
 C1203 150pf Disc
 C1301 .01 +80-20% 500V Disc
 C1302 .01 +80-20% 500V Disc
 C1303 .01 +80-20% 500V Disc
 C1304 .01 +80-20% 500V Disc
 C1305 .01 +80-20% 500V Disc
 C1306 220pf Disc
 C1307 .002 20% 1KV Disc
 C1401 .01 +80-20% 500V Disc
 C1402 .1 10% 400V Mylar
 C1403 .01 +80-20% 500V Disc
 C1404 .01 +80-20% 500V Disc
 C1405 .1 10% 400V Mylar
 C1406 100pf Disc
 C1407 .01 +80-20% 500V Disc
 C1501 6-30pf Ceramic Trimmer
 C1502 10pf Disc
 C1503 6-30pf Ceramic Trimmer
 C1504 270pf SM
 C1505 270pf SM
 C1506 .01 +80-20% 500V Disc
 C1601 Selected

C1602 5pf Trimmer
 C1603 5pf Trimmer
 C1604 5pf Trimmer
 C1605 Selected
 C1606 5pf Trimmer
 C1607 5pf Trimmer
 C1608 10pf Main Tuning
 C1609 Selected
 C1610 2pf Dial Set
 C1611 20pf Disc
 C1612 270pf SM
 C1613 6-30pf Ceramic Trimmer
 C1614 .01 +80-20% 500V Disc
 C1615 .01 +80-20% 500V Disc
 C1616 300pf SM
 C1617 27pf SM
 C1618 .01 +80-20% 500V Disc
 C1619 .01 +80-20% 500V Disc
 C1620 .002 20% 1KV Disc
 C1701 .01 +80-20% 500V Disc
 C1702 100 MFD 35V
 C1703 .01 +80-20% 500V Disc
 C1704 5 MFD 450V
 C1705 .0047 1KV
 C1706 .0047 1KV
 C1707 150 MFD 150V
 C1708 40 MFD 350V
 C1709 40 MFD 350V
 C1710 .002 20% 1KV Disc
 C1711 .01 +80-20% 500V Disc
 C1712A 40 MFD 450V
 C1712B 49 MFD 450V
 C1713 150 MFD 150V
 C1714 150 MFD 150V

TRANSFORMERS

T1101 A.F. Output Trans.
 T1301 5500KC. Bal. Mod. Trans.
 T1701 Power Trans.
 Z401 Parasitic Suppressor

RELAYS

K1 3 PDT Relay, 12 VDC Coil

CRYSTALS

Y1201 100KC Crystal Calibrator
 Y1501 5500KC Carrier Oscillator
 Y1502 5504KC Carrier Oscillator

TUBES

V1 12BA6 VFO Amp.
 V2 12BE6 Trans. Mixer
 V3 6GK6 Driver
 V4 6LQ6 Power Amp.
 V5 6BZ6 Rec. RF Amp.
 V6 6BZ6 Rec. Mixer
 V7 12BA6 First I.F. Amp.
 V8 12BA6 Second I.F. Amp.

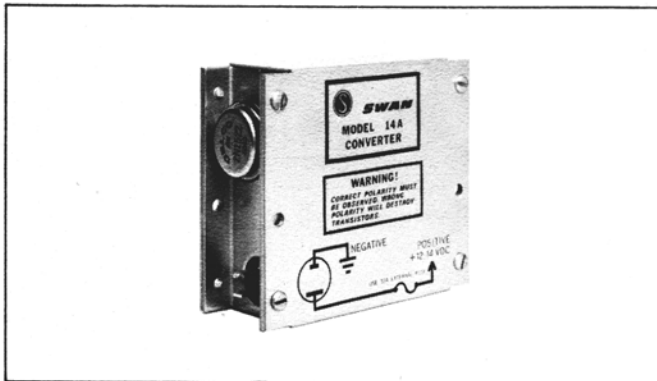
V9 12AX7 Prod. Det/Rec. Audio
 V10 6AV6 AGC/ALC Amp.
 V11 6AQ5 A.F. Output
 V12 12BA6 100KC Cal.
 V13 6JH8 Bal. Mod.
 V14 12AX7 Trans A.F./Mic. Amp.

SWITCHES

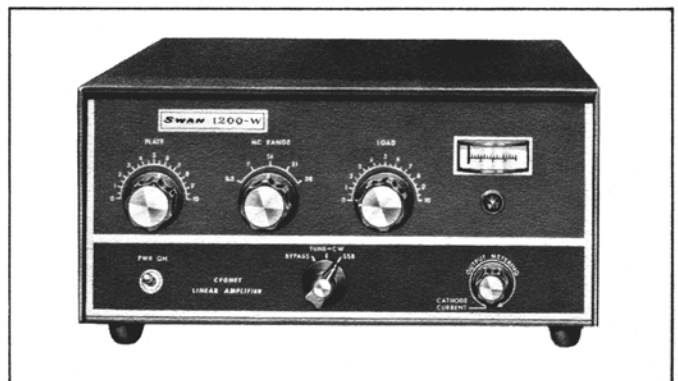
S1A-B Bandswitch
 S2 Power Off and On
 (Part of RF Gain)
 S3 Cal. Rec. Tune/CW
 S4 P.A. Cath./S-Meter
 S5 ANL
 S6 Sideband Selector

ACCESSORIES

THE FOLLOWING ACCESSORIES ARE DESIGNED FOR USE WITH THE MODEL 1011 TRANSCEIVER:



(A) MODEL 14-A PLUG-IN DC CONVERTER FOR 12 TO 14 VOLT DC OPERATION



**(B) MODEL 1200-W LINEAR AMPLIFIER
1200 WATTS P.E.P. INPUT, 5 BANDS**



(C) MODEL 508 EXTERNAL VFO FOR SEPARATE RECEIVE-TRANSMIT FREQUENCY. PLUGS DIRECTLY INTO BACK OF 1011



(D) SWAN HYBRID PHONE PATCH MODEL FP-1

**(E) MODEL VX-2 PLUG-IN VOX UNIT.
PLUGS DIRECTLY INTO
SIDE OF 1011**

See your Swan Dealer for further information.

WARRANTY POLICY

Swan Electronics Corporation warrants this equipment against defects in material or workmanship, except for tubes, transistors, and diodes, under normal service for a period of one year from date of original purchase. Tubes, transistors, and diodes are covered under the warranty policy for a period of 90 days. This warranty is valid only if the enclosed card is properly filled in and mailed to the factory within ten days of date of purchase. Do not ship to the factory without prior authorization. This warranty is limited to repairing or replacing only the defective parts, and is not valid if the equipment has been tampered with, misused or damaged.

