K.W. ELECTRONICS

SINGLE SIDE BAND TRANSCEIVER

KW ATLANTA

INSTRUCTION MANUAL

K.W. Electronics Limited
Vanguard Works
1 Heath Street,
Dartford,
Kent, England.

K W Electronics

KW ATLANTA

500 Watt Transceiver

Operation on all amateur bands from 10—80 metres

- ★ COMPLETE COVERAGE OF ALL BANDS 3.5 to 30 MHz
- ★ SSB, AM, CW
- ★ 7360 BEAM DEFLECTION TUBE BALANCED MODULATOR
- ★ STEEP SLOPE CRYSTAL FILTER 5.2 MHz
- ★ BUILT IN 100 KHz CRYSTAL CALIBRATOR
- ★ BUILT IN NOISE LIMITER
- ★ 500 WATTS P.E.P. INPUT
- ★ OPTIONAL PLUG-IN REMOTE VFO UNIT FOR SPLIT FREQUENCY OPERATION
- ★ VOX OPERATION WITH OPTIONAL PLUG-IN UNIT
- ★ FULL P.T.T. OPERATION
- ★ CALIBRATED 'S' METER
- ★ UPPER OR LOWER SIDEBAND SELECTION BY PANEL SWITCH
- ★ MATCHING A.C. POWER SUPPLY UNIT WITH BUILT IN SPEAKER
- ★ AUTOMATIC LINEARITY CONTROL
- ★ GRID BLOCK KEYING ON CW

FEATURES

Designed primarily for the export market, the K.W. Atlanta is now available in the U.K.

It falls into the higher power category and is intended for the discerning amateur who seeks good performance at moderate cost. The K.W. Atlanta is designed for optimum performance on upper or lower sideband and also offers peerless operation in the CW and AM modes. Construction of the K.W. Atlanta lives up to the very high standard generally associated with the engineering of all K.W. products; and once again particular attention has been paid to physical and electrical stability of the circuit.

The SSB generator and receiver filter features a steep slope crystal filter which gives superior audio quality on transmit, and superior selectivity on receive. Automatic linearity control on transmit limits "flat-topping" and the "grid-block" system of keying ensures a good keying characteristic for the C.W. man.

The precision British dual-speed tuning assembly facilitates rapid dial movement to the desired band segment and smooth low-speed drive for positive fine tuning.

The calibrated panel meter reads 'S' units on receive and P.A. cathode current on transmit. The A.C. power supply unit has a built in loudspeaker. Many advanced design features are incorporated in the KW ATLANTA which conforms to the following specification usually associated with high cost professional equipment.

FREQUENCY RANGE: 3.5–4.0 MHz.; 7.0–7.5MHz.; 13.9–14.35 MHz.; 21.0–21.5 MHz.; 28.0–29.7 MHz.

DIMENSIONS: Transceiver 10½" wide, 5½" high, 13¼" deep. A.C. Power Supply 5⅜" wide, 5½" high, 13¼" deep.

WEIGHT: Transceiver 18 lbs. approx. A.C. Power Supply 18 lbs. approx.

POWER INPUT: SSB 500 Watts P.E.P.; C.W. 350 Watts D.C.; A.M. 125 Watts.

RECEIVER: Sensitivity 0.5μV for 10 dB signal plus noise to noise ratio at 50 ohms. Selectivity 2.7 KHz at –6dB points; 4.4 KHz at –60 dB points. Audio Output 3 Watts into 3 ohms.

TRANSMITTER: Carrier Suppression better than 50 dB. Sideband Suppression Better than 50 dB. Distortion products 30 dB down.

A.C. POWER SUPPLY: Solid state throughout. Input 110–115 Volts and 230–240 Volts, 45–65Hz. Output 12.6VDC 6A; 12V 250 mA; 110V 100 mA; 275V 150 mA; 800V 550 mA (peak transmit).

MICROPHONE INPUT: High impedance;

OPTIONAL EXTRAS:

Plug-in VOX Unit

Plug-in External VFO Unit

TUBE COMPLEMENT:

Type	*Function*
2x6LQ6	Power Amplifier
6GK6	Driver
12BE6	Tx. Mixer
7360	Balanced Modulator
12BA6	Carrier Oscillator
12AX7	Mic. Amplifier
6EW6	V.F.O. Amplifier
12BZ6	Rx. R. F. Amplifier
12BE6	Rx. Mixer
12BA6	2nd Rx. I. F. Amp.
6EW6	1st. Rx. I. F. Amp.
12BA6	Xtal Calibrator
OA2	Stabiliser
6BN8	Audio Amp/AGC Amp.
12AX7	Audio Amplifier
6GK6	Audio Output
2N706	V.F.O. (transistor).

FRONT PANEL CONTROLS:

MOX/VOX Selector	VFO Tune
Calibrator on/off	Calibrator Set
ANL on/off	Coarse Load
Sideband Switch	Fine Load
Receive/Tune CW	Mic. Input
RF/AF gain/on-off	S-meter
PA Tune	Carrier Bal.
Grid Tune	Mic. Gain
Band selector	Key Jack (PSU)

REAR PANEL:

Power Supply Input	Antenna socket
VOX Input	PA Bias potentiometer
Ext. VFO Input	Aux. Relay

BRITISH EQUIPMENT FOR THE DISCERNING AMATEUR OPERATOR.

Manufactured, Sold and Serviced by:

K.W.ELECTRONICS LIMITED

VANGUARD WORKS 1 HEATH STREET DARTFORD KENT ENGLAND Telephone: DARTFORD 255

K.W. ATLANTA

Single-Sideband Transceiver 10-80 metres

1. GENERAL DESCRIPTION

The KW "Atlanta" Single Sideband Transceiver is designed for operation on all sections of the 10, 15, 20, 40 and 80 metre Amateur Bands in SSB or CW modes. The KW "Atlanta" is normally supplied with an A.C. power supply unit, suitable for Line input voltage 110-115v and 230-240v, 45-65 Hz and has an in-built speaker. "Push to Talk" operation is normal and provision is made for a plug-in Voice Control Unit (VOX). With an alternative Power Supply, mobile or portable operation is possible from a suitable 12 volt D.C. source.

Power input on all bands exceeds 500 watts P.E.P. on Sideband and 350 watts D.C. on C.W. By inserting carrier, by means of a front panel control and with the D.C. input reduced to 125 watts, A.M. can be transmitted. In addition to the usual automatic gain control (AGC) circuits, this equipment incorporates automatic linearity control (ALC) and automatic noise limiter (N.L.) and grid-blocked keying. A 100 kHz Crystal Calibrator is also included.

The single sideband signal is generated by means of a steep-slope crystal filter. Provision is made in the Transceiver for switch to upper or lower sideband operation. The VFO uses high stability transistors and the transceive operation permits the transmitted signal to be netted precisely on the receive frequency. Temperature compensation and voltage regulation is employed in all oscillator circuits.

DANGER

EXTREME CARE MUST BE TAKEN WHEN SERVICING THIS EQUIPMENT, ESPECIALLY WHEN ANY COVERS ARE REMOVED, SINCE POTENTIALS AS HIGH AS 900 VOLTS ARE PRESENT.

2. SIGNAL GENERATION THEORY

a) TRANSMIT

When the "push-to-talk" button on the microphone is pressed the transmitter is activated. This applies an output from the carrier osc V16 to the balanced modulator V15 control gain. Modulation from the microphone amplifier V17 will also be applied to a deflection plate of V15. The carrier oscillator signal is cancelled out in T1 and the double-sideband suppressed-carrier output from T1 is applied to the 5.2 MHz crystal filter where one sideband is suppressed to a level of approximately 50 db.

The 5.2 MHz single-sideband suppressed-carrier signal is then amplified by the first IF amplifier V8 and applied to the transmitter mixer.

The transistorized common-base Colpitts oscillator TR1 is fed through two stages of isolation, amplification TR2 and TR3 and then amplified by V5 - this signal is then fed to the transmit mixer. The K.W. Atlanta VFO is extremely stable after the initial warm-up period. Drift during the first hour from cold will be less than 1 KHz on 80, 40 and 20 metre bands and less than 2 KHz on 15 and 10 metres. Drift will be negligible after the initial warm-up period.

The output of V5 and V8 is additively mixed on the 10, 15 and 20 metre bands and subtractively mixed on 40 and 80 metres to provide a signal on the output frequency. This signal is then amplified by the driver V3 and the power amplifier V1 and V2. Automatic level control D1 / D2 is provided which controls the gain of the first IF amplifier in response to the average input of the power amplifier. This feature of the KW Atlanta will help prevent the transmitter from flat topping and spurious emissions. However, distortion will occur if the mic. gain control is not adjusted properly.

b) RECEIVE

In the receive condition all transmit circuits are biased off by the action of relays RL1 and RL2. Signals are fed from the Pi-network stage via RL2 to the receiver RF amplifier V6 for amplification then to the receiver mixer V7 where it is mixed with the local oscillator signal from V5. This provides a signal at the IF frequency, where it is shaped through the 5.2 MHz crystal filter and then amplified by V8 and V9. This signal is then mixed with the carrier oscillator V16 in the product detector V10a to produce an audible signal.

This signal can be "clipped" by the built-in automatic noise limiter by the action of the front panel NL switch. The signal is then amplified by V10b which feeds the AGC amplifier V11 and also the audio output stage V12.

3. INSTALLATION INSTRUCTIONS

a) UNPACKING

Carefully remove your KW Atlanta and Power Supply from the packing cartons and examine closely for signs of shipping damage. Should any be apparent, notify the delivery carrier immediately, stating the full extent of the damage.

Fill out and post the guarantee cards to your Agent or direct to K.W. to ensure registration is effective. Save packing material. You may need it later for reshipment or storage. Inspect packing material to be sure you have the mic plug and PL259 coaxial connector.

b) ANTENNA REQUIREMENTS

The KW Atlanta is designed for use with antennas resonant on the operating frequency and having approximate impedances of from 30 to 150 ohms. The SWR should be 2:1 or less. The antenna connection is provided at the SO 239 coaxial socket at the rear of the chassis.

CAUTION: NEVER ATTEMPT TO OPERATE THE KW ATLANTA WITHOUT FIRST CONNECTING IT TO AN ANTENNA OR 52 OHM DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR SERIOUS DAMAGE CAN RESULT.

When using an Antenna Tuning Unit such as the K.W. E-Z Match, always carry out the matching adjustment quickly and at reduced power. Never exceed 250mA meter current until the ATU has been adjusted for an acceptable SWR.

c) LOCATION

In general the location of the KW Atlanta is not critical but care should be taken to ensure that space is provided round the unit to allow adequate air circulation. Do not cover the top with books, papers or pieces of equipment as overheating may result.

d) LINE INPUT

The K.W. Atlanta A.C. PSU can be operated from either 115 VAC 50-60HZ or from 235 VAC 50-60 HZ. The Tag on the line cord will indicate voltage setting on leaving factory. Details for changing from one voltage input to the other is given in a later chapter. The green wire in the line cord grounded to chassis - red wire is "live" leg. (European coding is green/yellow for ground and brown is the "live" leg).

4. CONTROL FUNCTIONS

a) MAIN TUNING

The main tuning knob of the KW Atlanta determines the frequency on which you transmit and receive. Dial calibration points are provided every KHz on 80, 40, 20 and 15 metres and every 20 KHz on 10 metres. The upper scale is used on 80 and 20 metres whilst the blue centre scale is used on 40 and 15 metres. 10 metres is calibrated directly on the lower scale. Dial accuracy and tracking are very good but caution must be observed when operating near band edges. A remote VFO, model 4A is available for cross-band working on all Bands.

b) RECEIVER GAIN

The receiver gain control consists of two controls with concentric shafts. The forward knob is the audio gain control with an on-off power switch at the extreme counter clockwise end of rotation. The inner knob controls the RF gain of the receiver by varying the amount of negative bias applied to the grids ofthe AGC controlled tubes. This control is normally used at maximum gain, to ensure correct reading of the S-Meter but it may be desirable to reduce the RF gain when listening to loud signals to provide best readability.

c) BANDSWITCH

The band control is a five-position switch used to select the amateur band desired.

d) SIDEBAND

The sideband switch is a slider type marked NORMAL and OPP (opposite). In the NORMAL position, Upper Sideband is transmitted 10, 15 and 20 metres and Lower Sideband on 40 and 80 metres. The same condition applies when receiving. The reverse situation occurs with the switch in the OPP position e.g. lower sideband operation on 10, 15 and 20 metres with the slider switch in the OPP position. The appropriate dial calibration markers, USB and LSB, should be used for correct frequency Calibration on the Sideband being employed.

e) MIC GAIN

This control regulates the microphone gain on AM and SSB. It is ineffective when the unit is operated on CW.

f) CARRIER BALANCE

This control is used to tune-out the carrier when SSB operation is required and to insert carrier for the tune-up procedure and for AM transmission.

g) FUNCTION CONTROL

This control is labelled REC-TUNE-CW and is a 3 position switch. The REC position is for receiving and transmitting SSB or AM, the Tune position is for tuning up on low power, and the cw position for transmitting CW.

h) CAL SET

It has been provided to enable the operator to calibrate the VFO dial with the aid of the built in 100 KHz oscillator. This is located below and to the left of the main tuning knob.

CAUTION: When tuning for the 100 KHz harmonics of the calibrator care must be exercised. Several spurious image signals may be heard although they will be somewhat weaker than the actual harmonics. Under some conditions it may be desirable to dis-connect the antenna when making a frequency adjustment on the CAL SET Control.

i) XTAL CAL

This slider switch is used to operate the 100 KHz crystal calibrator. It should be put in the left hand position at all times, except when a calibration measurement is to be made.

j) NOISE LIMITER

The ANL slider switch in the right-hand position introduces to the circuitry a noise limiter which will be very useful in locations where some forms of electrical and static interference is experienced. Should you have static-free reception this switch should be in the left-hand position.

k) MOX-VOX

For VOX operation an external unit is required and this is plugged into the socket provided at the rear of the chassis. For Vox operation this slider switch should be put in the VOX position otherwise, for "push-to-talk" the MOX position should be used.

l) GRID TUNE

The grid tune control peaks the receiver RF amplifier anode circuit and the transmitter driver stages.

m) PA TUNE

The PA tune control together with the COARSE LOAD and FINE LOAD controls adjust the pi-network capacitors in the transmitter power amplifier as well as the receiver RF Amplifier grid circuit. Careful adjustment of these controls in the receive condition will result in approximately resonant conditions in the transmitter section.

n) S-METER

The S-Meter indicates relative signal strength of the receive signal. It is calibrated in S-Units from S1 to S9 and in db over S9. Each S-Unit equals approximately 5 dB and S9 equals approximately 50 microvolts. The S-Meter zero control is located at the rear of the chassis (near to side edge of chassis). On transmit the meter is automatically switched to the PA cathode circuit and indicates 0-800 mA on the lower scale.

o) MIC

This is a ¼" diameter phone jack of the three conductor variety to accomodate microphones with push-to-talk switches. The tip of the jack plug is connected to the PTT switch in the microphone, the ring connection is to the microphone and the sleeve is grounded being the connection in common to the microphone and PTT switch.

p) REAR CONTROLS and SOCKETS

Looking at the rear of the chassis, you have from left to right the Power Connector, Auxillary Socket (3-pin) providing relay contact connections for operating a Linear Amplifier or external Receiver. Antenna Socket, Octal Socket used as a connector to the VOX Unit. Ground Post, PA Bias Control, KEY Jack Socket (note that this Jack is of the normally closed variety). (Plugging a Key into this Jack will disable the transmitter on all modes of operation). Accessory Socket - 9-pin Noval. S-Meter Zero Adjust Control.

q) PHONES

The headphone jack is located at the front panel of the AC PSU Unit. It automatically disconnects the speaker when headphones are plugged in. The output impedance at the jack is 4 ohms. (We recommend headphones having an impedance of approximately 500 ohms).

5. OPERATION

A. PREPARATION

The following initial steps should be followed before attempting to operate the transceiver:-

a) Rotate AF Gain Control counter-clockwise to put the A.C. Line switch in the OFF position.

b) Connect a 50 or 75 ohm co-axial line antenna to the antenna socket on the transceiver rear panel.

c) Rotate the REC - TUNE/CW switch to the REC position.

d) Connect a ground wire to the rear panel chassis stud.

5A e) Connect the Power Supply cable mounting socket to the transceiver twelve-way chassis-plug on the rear panel.

f) Connect the Power Supply, Line cord to Line Supply (first ensure para 3d) has been checked).

B RECEIVER ADJUSTMENT

With Antenna connected to the Transceiver 'Ant. Input' Socket:-

a) Switch on Transceiver by turning the AF-GAIN control clockwise. The meter will rapidly indicate full scale deflection but this is in order.

b) Rotate RF-GAIN control fully clockwise.

c) Rotate BANDSWITCH to band required.

d) Rotate MIC-GAIN fully counter-clockwise.

e) Rotate CAR-BAL control to the mid-scale point (12 o'clock)

f) Set PA-TUNE control to mid-scale.

g) Set GRID-TUNE control to mid-scale.

h) Set PA FINE-LOAD to mid-scale.

i) Set PA COARSE-LOAD to position 5.

j) Set VFO dial to desired operation frequency.

k) Carefully adjust the PA TUNE and GRID TUNE controls for maximum receiver noise.

l) Set all four Slider Switches to the left-hand position i.e. NOR, CAL OFF, ANL OFF, SSB NORM.

m) Tune to a single sideband or CW signal and adjust COURSE LOAD Switch for optimum results.

n) Tune to a quiet frequency (no signal) and adjust S-Meter 'zero control at the rear panel for zero reading. This can best be done on the 15 or 20 metre band after re-checking para k). (Please note the GRID TUNE control is ineffective on receive, on the 10 metre band. It is in circuit on all bands for transmit and 15 to 80 metre bands on receive).

o) Switch-on CAL at slider switch. Check VFO calibration against the 100 KHz Oscillator at the calibration point nearest to the desired operating frequency.

C. TRANSMITTER OPERATION

CAUTION THE K.W. ATLANTA COVERS CERTAIN FREQUENCIES OUTSIDE THE AMATEUR BANDS. THEREFORE, CARE SHOULD BE EXERCISED WHEN OPERATING NEAR BAND EDGES.

Before attempting to tune the transmitter, the receiver section should be tuned as above, and a 'push to talk' high impedance microphone inserted in the Mic Jack Socket, connected to the Jack Plug as indicated.

a) With REC-TUNE-CW switch on REC, press the PTT switch on the microphone.

b) Quickly adjust the CAR BAL control for minimum meter current (PA cathode current). This usually occurs at about 12 o'clock position on the CAR BAL control.

c) Adjust the PA bias control on the rear panel until the meter reads 50 mA (centre Potentiometer on rear of chassis). Release PTT switch.

d) Set PA COARSE LOAD to position 5 and FINE LOAD to 12 o'clock position.

WARNING DO NOT ALLOW THE CATHODE CURRENT TO EXCEED 300 mA for 5 or 6 SECONDS IF THE PA TUNE IS NOT TUNED TO PA CURRENT DIP. Failure to observe this warning will result in rapid amplifier tube deterioration due to excessive plate dissipation.

e) Turn REC-TUNE-CW switch to the TUNE position, turn the CAR BAL control clockwise until a slight increase in cathode current is obtained. This inserts carrier.

f) Rotate PA GRID TUNE control for peak reading on meter, reducing carrier insertion if necessary to obtain a fine peak with PA GRID TUNE. Adjust CAR BAL control for PA OFF-RESONANCE current of 300 - 350 mA.

g) Rotate PA TUNE control for a dip in PA cathode current reading. Set PA COARSE LOAD to position 6, and re-dip cathode currentwith PA TUNE control, continue turning PA COARSE LOAD switch to positions 7, 8, 9 or 10 until with PA TUNE control set for a dip in PA CATHODE CURRENT the meter reads 270 - 300 mA. Fine adjustment of the PA LOAD may be made using the FINE LOAD control. It is important to remember that the last operation when tuning the PA stage, is to obtain a DIP in cathode current, and that this DIP should not be to more than 15% of the PA OFF RESONANCE cathode current.

Re-adjust CAR BAL control for minimum cathode current. Switch back to REC.

h) AVERAGE PA COARSE LOAD SWITCH POSITIONS

Approximate PA Coarse Load positions for a 50 ohm non-inductive load.

Band	PA Coarse Load Position
80	7
40	8
20	9
15	9
10	10

A large deviation from these positions indicates a possible matching problem.

i) VOICE TRANSMISSION (SSB)

After tuning up as above, press the "Push to Talk" button on the microphone and adjust the CAR BAL control for minimum cathode current.

Speak into the microphone and slowly rotate the MIC GAIN CONTROL clockwise until occasional peaks 200mA are obtained. Due to heavy damping of the meter the average anode current meter reading looks low. In fact the KW Atlanta is producing voice peaks of 500 watts.

j) CW OPERATION

Tune transmitter up as in e, f and g. Switch to CW, press key and adjust CAR BAL control for cathode current of 350 mA, key in normal way. Switch back to REC to receive.

k) AM OPERATION

Tune the transmitter as para C(i) and leave the Mic Gain control in the same position. Put REC-TUNE/CW Switch to REC. Press the "Push to Talk" button on the microphone and adjust CAR BAL control either side of centre position (where carrier is balanced out) to obtain a cathode current meter reading of approx 180-200mA. Speak normally into microphone, and adjust CAR BAL control until voice peaks give a slight increase (about 20mA) on cathode current. If the cathode current is too high the voice peaks will cause the meter reading to kick downwards and the CAR BAL control should be adjusted to give a lower carrier insertion by turning slowly towards the centre position.

k) AM OPERATION continued

For AM reception, slowly tune the main VFO dial across the AM transmission to a "null" point on the carrier when clear speech can be resolved. With a little practise, it will be found that the "Sideband" slider switch can be in the NORM or OPP position. Some stations may be resolved more easily on NORM, others on OPP but the "null" point will be approximately the same.

l) TRANSMITTER TUNING WITH AN SWR BRIDGE

With an SWR Indicator in circuit (e.g. KW Match SWR Indicator) reading forward power, simply adjust the PA TUNE and PA LOAD controls for maximum forward power. This results in the best possible efficiency, and should be carried out with the function switch in the "TUNE" position.

D. ALIGNMENT AND MAINTENANCE

Equipment required:-

1. Calibrated RF signal generator
2. Calibrated AF signal generator
3. 500 watt dummy load with output meter.
4. Vacuum-tube voltmeter
5. Field strength meter
6. Coil adjustment tool

PRE-ALIGNMENT

1. Set neutralising capacitor C413 to Mid point and C315 to approximately $\frac{3}{4}$ turn from full compression.
2. Peak IF transformers for maximum background noise with AF GAIN and RF GAIN adjusted fully clockwise.
3. Loosely couple field strength meter to C318.
4. Rotate PA bias control fully anti-clockwise.

VFO AMPLIFIER ALIGNMENT

Connect VTVM between Pin 1 of V7 (receiver mixer) and earth. On the 30v scale, adjust VFO amplifier anode tuned circuits for maximum VTVM reading as follows:-

Band	VFO frequency KHz	Dial frequency KHz	Coil
80	9000	3800	L19
40	12325	7125	L18
15	16025	21225	L17
10	23300	28500	L18

K.W. ATLANTA TEST FIGURES AND DATA

Dial Frequency	Oscillator Frequency
3500	8700
3800	9000
4000	9200
7000	12200
7200	12400
7300	12500
21000	15800
21250	16050
21450	16250
28000	22800
28500	23300
29000	23800
29700	24500

Band	PA Grid	Dial freq.	Adjust	
			RX	TX
80	12.00 o'clock	3800	L9	L3
40	1.00 o'clock	7150	L10	L4
20	1.00 o'clock	14150	L13	L5
15	10.00 o'clock	21450	VC41	VC25
10	9.30 o'clock	29.700	L8A, L8B	L15, L7.

K.W. ATLANTA ALIGNMENT OF T1 (BALANCED MODULATOR OUTPUT TRANSFORMER/RX MIXER ANODE COIL).

1. Receive Alignment

The following procedure enables T1 to be tuned using only the internal 100 KHz calibrator signal.

Switch CAL on, tune grid tune and PA tune for maximum signal, using the 'S' Meter. Tune the bottom core for maximum signal output, having first adjusted the upper core level with the top of the can. This adjustment aligns the mixer anode to the IF frequency. Align the top core approximately by observing the 'S' Meter indication and turning the core into the can until a slight decrease in signal level is observed.

2. Transmit Alignment

Connect a Dummy Load and output meter (K.W. 103 etc.) to the Atlanta Antenna socket. Switch to tune and insert carrier.

CAUTION: Do not exceed 200mA cathode current.

Tune the transceiver in the normal manner for approximately 25-50W output. Align the top core of T1 for maximum RF output.

3. NOTE: Due to interaction between the alignment of top and bottom cores of T1 it is advisable to re-peak the bottom core on receive having subsequently aligned the upper core on transmit.

The above procedures should result in the best compromise between receive gain and drive level being achieved in the alignment of the T1.

4. Replacement, 7360 Balanced Modulator Tube

Due to the spread in characteristics in the balanced modulator tube and circuitry, it has been found, in practice, that when replacing the 7360 tube used in the K.W. Atlanta, it may be necessary to re-align the stage to obtain optimum carrier suppression.

Should it be found after replacing the tube that adequate carrier suppression does not result, the following procedure should be adopted.

Remove the screws, securing the sub-chassis cover. Connect VTVM across the Dummy Load. It will be observed that the beehive trimmer C114 is connected between chassis and either pin 6 or 7 of V15, the 7360 base. Carefully unsolder the C114 tag and transfer it to either pin 6 or 7, as the case may be. Energise the PTT circuit, set MIC GAIN to minimum, adjust CAR BAL for minimum indication on the VTVM and adjust C114 in conjunction with CAR BAL until the VTVM indicates less than 0.3 Vrf on both NORM and OPP positions of the sideband selector switch.

SPECIFICATION

Frequency Range

3.5	-	4.0 MHz
7.0	-	7.5 MHz
13.9	-	14.35 MHz
21.0	-	21.5 MHz
28.0	-	29.7 MHz

POWER INPUT

Single sideband suppressed carrier — A3J
500 Watts P.E.P.

CW. — A1

350 Watts D.C. input

AM. — A3H

Single sideband with carrier
135 Watts D.C. input approx

DISTORTION

Distortion products down approximately 30 db.

SIDEBAND SUPPRESSION

Unwanted sideband suppressed better than 50 db.

CARRIER SUPPRESSION

Carrier Suppression better than 50 db.
Receiver sensitivity better than 10 db signal plus noise ratio for 0.5 mv input at 50 ohms impedance.

AUDIO OUTPUT AND FREQUENCY RESPONSE

Audio output 3 w to 3 ohm load. Frequency response essentially flat from 300 - 3000 Hz.

TRANSMITTER OUTPUT

Wide range Pi-network matches 15 - 500 ohms resistive.

METERING

S-Meter 0- S9+50db on receive, Power Amplifier cathode current 0-800mA on transmit.

FRONT PANEL CONTROLS

REC-TUNE/CW, AF GAIN, RF GAIN, PA TUNE, GRID TUNE, BAND SWITCH, CAL SET, COARSE LOAD, FINE LOAD, CARRIER BALANCE, MIC GAIN, MOX-VOX SWITCH, CAL SWITCH, ANL SWITCH, OPPOSITE SIDEBAND SWITCH.

REAR PANEL CONNECTIONS & CONTROLS

Power connector, VOX connector, external VFO connector, Auxil[illegible] Relay switching, antenna socket, bias potentiometer, CW Key Jack.

TABLE COMPLEMENT

V 1	6LQ6	Power Amplifier
V 2	6LQ6	Power Amplifier
V 3	6GK6	Driver
V 4	12BE6	Transmitter Mixer
V 5	6EW6	VFO Amplifier
V 6	12BZ6	Receiver RF Amplifier
V 7	12BE6	Receiver Mixer
V 8	6EW6	1st I.F. Amplifier
V 9	12BA6	2nd I.F. Amplifier
V10	12AX7	Product Detector / Receiver Audio
V11	6BN8	AGC Amplifier / Rectifier
V12	6GK6	Audio Output
V13	OA2	Voltage Stabiliser
V14	12BA6	100 KHz Calibrator
V15	7360	Balanced Modulator
V16	12BA6	Carrier Oscillator
V17	12AX7	Transmit AF Amplifier / Mic Amplifier

TRANSISTOR DIODE COMPLEMENT

TR1	2N706	VFO
TR2	2N706	Amplifier
TR3	2N706	Emitter Follower
D1	1OD2	ALC Diode
D2	1OD2	ALC Diode
D3	1OD2	Relay Silencing Diode
D4	1OD2	AGC Charging Bypass
D5	BZY93C10	Zener Voltage Stabiliser

POWER REQUIREMENTS

Heaters 12.6 volts, 3 amps A.C. or D.C.

Relay 12 volts D.C. 250mA

Bias -110 volts D.C. 100mA

H.T. High Voltage 800 volts D.C. 550mA Peak transmit

High Voltage 275 volts D.C. 150mA.

DIMENSIONS AND WEIGHT

Width	10½ ins.	Height	5½ ins.
Depth	13¼ ins.	Weight	18 lbs.

VOLTAGE CHART

TUBE TYPE		PIN NUMBER								
		1	2	3	4	5	6	7	8	9
V1	R	0	85	0	12	6.5	85	0	0	0
6LQ6	T	250	85	0	12	6.5	85	250	0	0
V2	R	0	85	0	6.5	0	85	0	0	0
6LQ6	T	250	85	0	6.5	0	85	250	0	0
V3	R	0	80	0	6.5	0	0	280	270	0
6GK6	T	0	*	0	6.5	0	0	280	270	0
V4	R	95	0	0	12	230	200	95	0	0
12BE6	T	0	0	0	12	260	85	0	0	0
V5	R	0	.85	0	6.5	140	130	0	0	0
6EW6	T	0	.85	0	6.5	140	130	0	0	0
V6	R	*	.85	0	12	230	110	0	0	0
12BZ6	T	*	0	0	12	260	-12.5	0	0	0
V7	R	3.6	0	0	12	240	80	*	0	0
12BE6	T	3.4	0	0	12	250	-12.5	*	0	0
V8	R	*	0.55	12	6.5	235	130	0	0	0
6EW6	T	*	0.55	12	6.5	245	140	0	0	0
V9	R	*	0	0	12	230	100	0.3	0	0
12BA6	T	*	0	0	12	250	-8.5	0	0	0
V10	R	110	*	0.9	12	0	185	*	1.65	0
12AX7	T	38	*	0.4	12	0	250	-65	0	0
V11	R	*	2.7	*	6.5	12	*	210	*	73
6BN8	T	*	2.7	*	6.5	12	*	85	*	30
V12	R	0	-3.8	0	12	6.5	0	260	240	0
6GK6	T	0	-20	0	12	6.5	0	260	255	0
V13	R	-	-	-	-	145	-	-	-	-
OA2	T	-	-	-	-	145	-	-	-	-
V14	R	0	0	0	13	110	270	95	0	0
12BA6	T	0	0	0	13	105	270	95	0	0
V15	R	0	0	90	6.5	0	245	245	18-25	18-25X
7360	T	0	235	0	6.5	0	150	150	15-20	15-20X
V16	R	-4.5	0	0	12	90	210	1.5	0	0
12BA6	T	-3.8	0	0	12	85	210	1.5	0	0
V17	R	68	*	0	6.5	6.5	90	0	0.8	0
12AX7	T	40	*	0	6.5	6.5	70	0	1.5	0

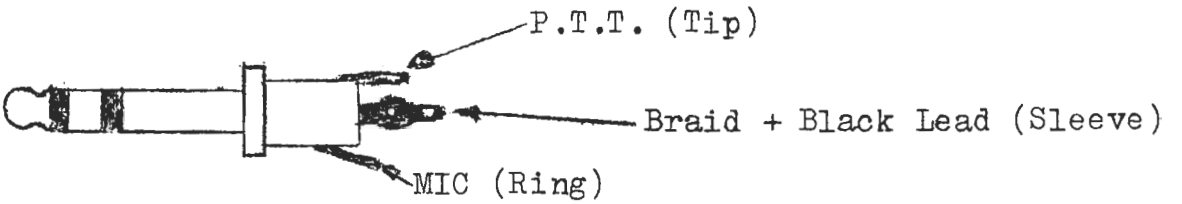
All Voltage Measurements made with AVO Meter Model 8. 20Kohms per Volt or Similar.

* Not Measurable

X Depends on CAR BAL Setting.

K.W. ATLANTA.

MIC PLUG CONNECTIONS
SHURE 201 & 401A MIC

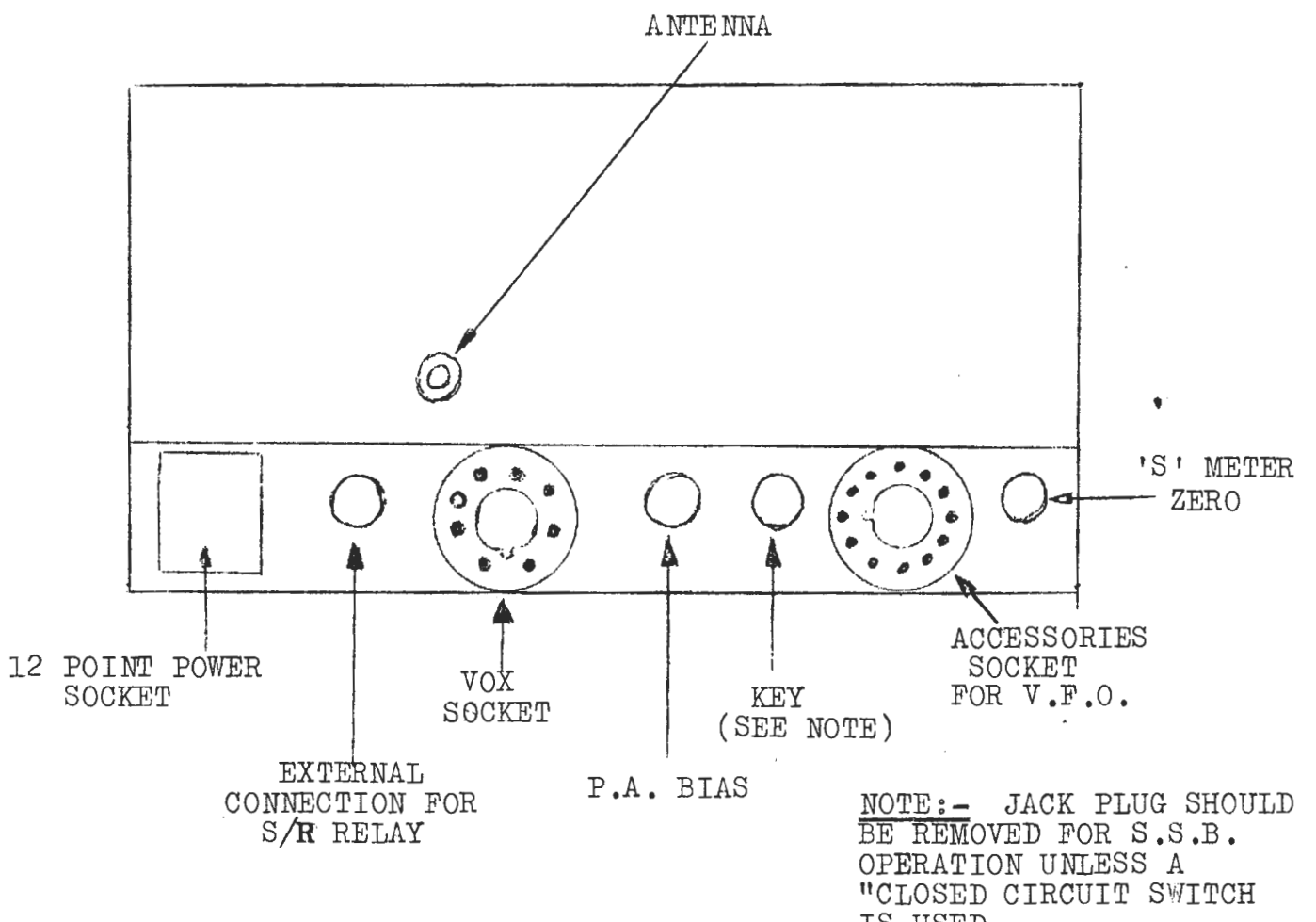


Tip RED=P.T.T.
Ring WHITE = MIC (LIVE)
Sleeve(BLACK+) GROUND RETURN (EARTH)
(BRAID) FOR MIC &P.T.T.

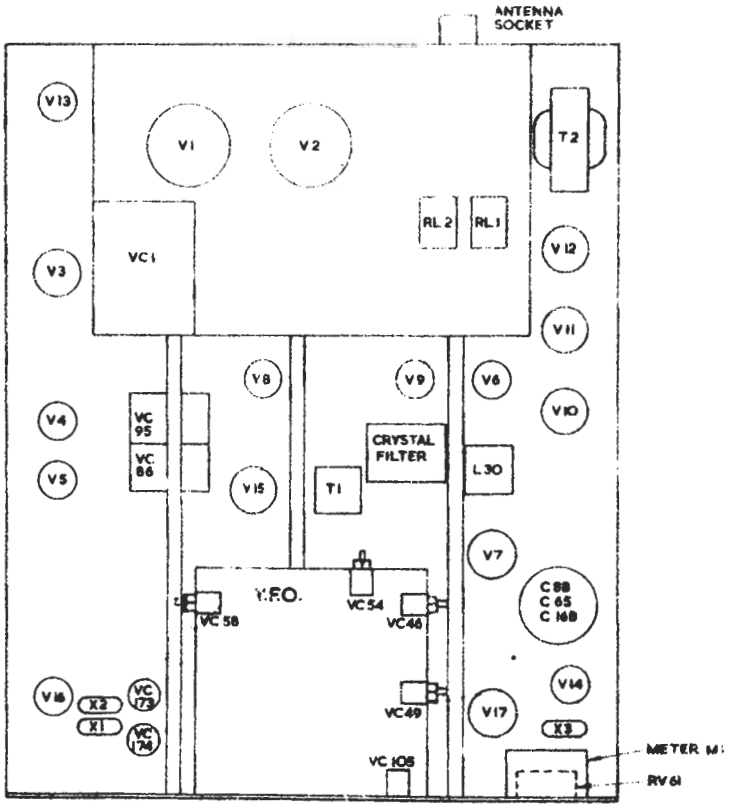
NOTE:
FOR VOX OPERATION

INTERNAL MIC CONNECTIONS are modified as follows: Remove Mic. and White Lead, where both terminate on switch, join and insulate.

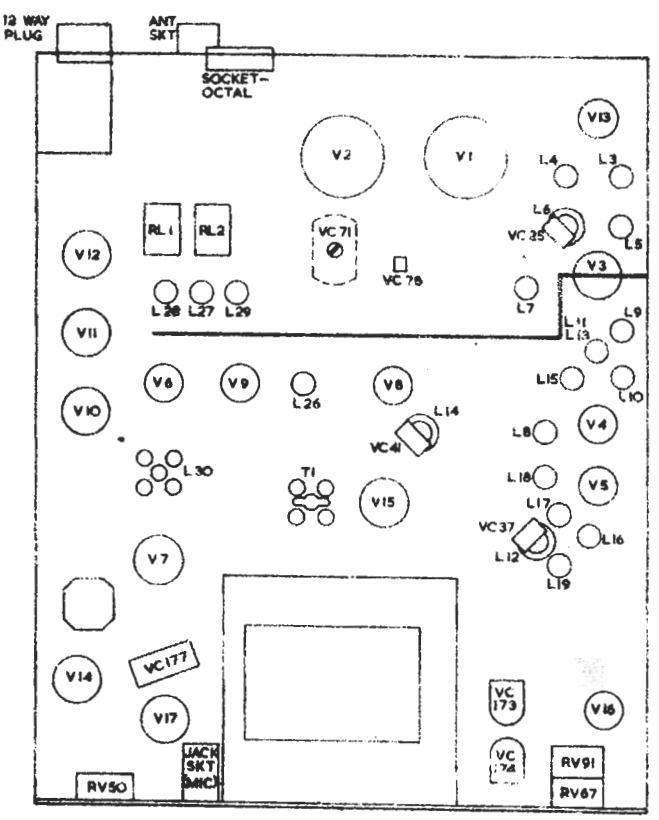
REAR VIEW OF CHASSIS



NOTE:- JACK PLUG SHOULD BE REMOVED FOR S.S.B. OPERATION UNLESS A "CLOSED CIRCUIT SWITCH IS USED.



LOCATION OF ADJUSTMENTS.
(VIEW ON TOP OF CHASSIS).



LOCATION OF ADJUSTMENTS.
(UNDER CHASSIS VIEW).

P.A. NEUTRALISATION - K.W. ATLANTA

1) Compression Trimmer VC78 is the 10 metre neutralising capacitor. This is mounted on a small tag strip adjacent to the 4th and 5th bandswitch wafers within the screened section of the under-chassis P.A. compartment.

Check that four 10,000pf disc ceramics have been fitted to all V1, V2, screen pins at each tube base, i.e. pins 1 & 7 on each tube. (We suggest these be fitted to earlier models which had only one on each tube).

The tube sockets themselves should be firmly bonded (soldered) to the P.A. sub-chassis.

10 Metre Neutralisation

Adopt the following neutralisation procedure, using dummy load and RF output indicator (e.g. K.W. 103 meter).

i) Screw-in, VC78 to full capacity using an insulated trimming tool.

ii) Open VC78 $\frac{3}{4}$ of a turn on the screw.

iii) Set (a) P.A. TUNE to 1 o'clock
(b) Bandswitch to 28 MHz and VFO to 28.500 MHz.
(c) GRID TUNE to 10 o'clock.
(d) COARSE LOAD to position 9.
(e) FINE LOAD to 12 o'clock.

iv) Switch to TUNE on 3 position, Function Switch (or if 2 position function switch fitted, to TUNE/CW) and insert carrier so that P.A. meter indicates approx. 300m/A.

v) Adjust VC78 until a shallow dip on PA meter coincides with maximum output (between 130 and 200 watts) PA Meter should read 350-500m/A. at resonance and correctly loaded. (Do not exceed 500m/A.).

vi) It may be necessary to peak L7 10M driver coil and L15 10M. mixer coil to provide adequate drive to reach these figures. (See drawing).

vii) Having aligned the equipment with the bottom cover removed, refit the cover and check that alignment holds. Due to the extra capacitance introduced by the bottom cover, it may be necessary to re-adjust L7, L15 and VC78.

2) 15 Metre Neutralisation

No separate neutralisation capacitor is fitted. VC 71 the 20M. Neutralisation capacitor also covers this band. Reference frequencies used for checking neutralisation are; 20 Metres - 14.150 MHz; 15 Metres - 21.450 MHz.

Therefore, should minimum dip to around 500m/A. coincide with maximum output, 250-350 Watts on 20M. (14.150 MHz), neutralisation should also hold for 15M. (21.450 MHz.). The adjustment of the compression trimmers on the 15M. driver and mixer coils, L6 and L14 should only be attempted, using an insulated trimming tool.

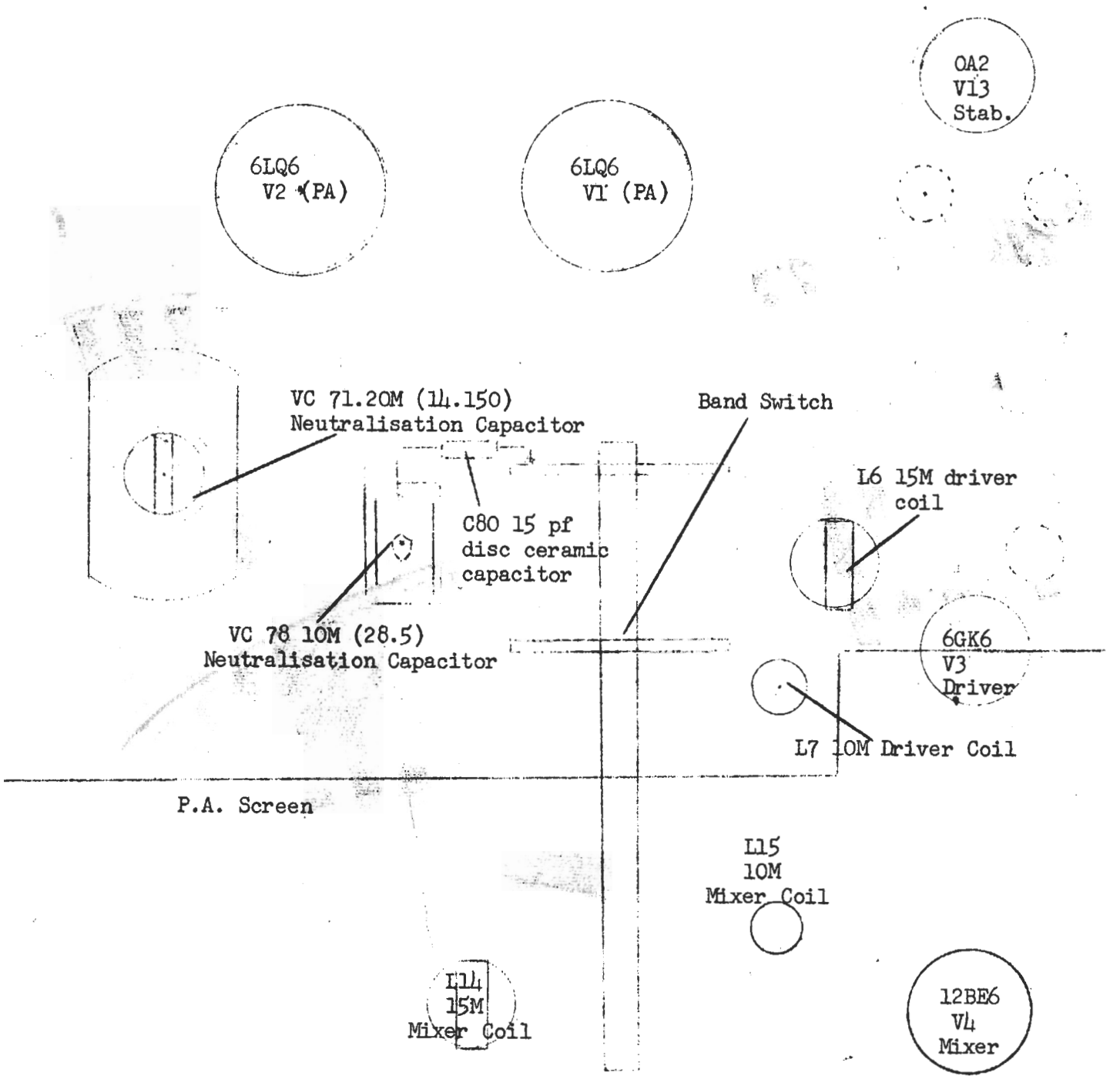
It should be noted that it is possible to seriously misalign the 10 & 15 Metre driver and mixer circuits. (Only a small adjustment should be necessary). It is also possible to mis-tune L7 and L15 to the VFO frequency on 10 metres i.e. 23 MHz instead of the required output of 28 MHz.

A separate general coverage receiver is perhaps the simplest form of test equipment for checking correct alignment. The receiver with small "pick-up" Antenna should be tuned to the output frequency of the transmission which may then be monitored aurally or by observing the S Meter if one is fitted.

K.W. ATLANTA. NEUTRALISATION PROCEDURE

LOCATION OF ADJUSTMENTS

PARTIAL VIEW OF UNDERSIDE OF SUB-CHASSIS



GUARANTEE

This equipment is conditionally guaranteed by us for a period of six months from date of purchase by the actual user. In the event of any failure during this period, due to faulty workmanship or material, the dealer from whom the equipment was purchased should be notified. The dealer reserves the right to make a reasonable charge for labour, obtaining from us any necessary part for replacement free under this guarantee.

Equipment should not be returned to us direct without prior arrangements having been made. Equipment returned must be sent carriage paid by the sender and well packed. If rail transport is used, the package should be consigned at Railway Company's Risk rate. We also reserve the right to make a charge for labour, handling expenses and return carriage.

Any interference or alteration to equipment, without our consent, renders this guarantee void. The guarantee does not apply to equipment purchased second-hand or at less than our standard list price. The guarantee is not transferable.

Valves used in this equipment are guaranteed by the valve manufacturer for a period of three calendar months from the date of purchase. This guarantee is only given in respect of faulty workmanship and material and does not cover misuse or consequential damage. Claims under this guarantee will only be considered if the valve is returned to the valve manufacturer through the dealer from whom the equipment was purchased supported by proof of the date of purchase of the equipment as issued by K.W. Electronics Ltd. To ensure proper examination, the right is reserved to break open any valve, if necessary, without obligation to return or replace.

Please complete and return the Guarantee Card within one month of the date of purchase.

REPAIRS UNDER GUARANTEE

If the material or equipment was purchased direct from K.W. ELECTRONICS LTD., and you wish to return it for service under guarantee, you should write to the address shown below giving full particulars including the details listed. Upon receipt of such notice, KW will promptly advise you respecting the return. Failure to secure our advice prior to forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

ADDRESS
K.W. ELECTRONICS LTD.
SERVICE SECTION
VICEROY WORKS
R/O 23 HIGH STREET
CRAYFORD
KENT
Tel: CRAYFORD 22040

INFORMATION NEEDED
(a) Type number, name and serial number of equipment.
(b) Date of delivery of equipment.
(c) Nature of trouble.
(d) Number of hours of service.
(e) Cause of trouble if known.

If the equipment was purchased from an agent it should be returned to the agent for service.

OUT OF GUARANTEE REPAIRS

If you wish to return your equipment for repairs, write to the above address giving full particulars including the details listed. Upon receipt of such notice, KW will advise you respecting return. Do not send the goods without first obtaining our advice.

INFORMATION NEEDED
(1) Type number, name and serial number of equipment.
(2) Number of hours of service.
(3) Complete instructions detailing work to be performed.
(4) Your return address.
(5) Method of shipment by which the equipment should be returned.
(6) Special instructions.

SERVICE QUERIES

Any technical queries regarding KW Electronics Equipment should be addressed to our Crayford works and marked "For the attention of Service Section".