ATLAS No. 1, - POWER OUTPUT RATINGS AND MEASUREMENTS
41118/75

Notes have been prepared as a guide to what power output may be expected from the Atlas Model 180/210/215 Transceivers. It is hoped that they will clarify some of the questions regarding power output that have, arisen from a few owners and dealer service Atlas transceivers are fully guaranteed to meet minimum specs if there is any doubt or question about power, please read these notes first. If a transceiver does not come up to specs, contact Customer Service at Atlas and we will assist in correcting the problem. Specifications call for 2 minimum PEP. or CW output of 80 watts at 13.6 volts DC. supply. Minimum on 10 meters (Model 210 only) is 50 watts.

**Several factors will have a bearing oil power output measure- In determining whether a particular transceiver is meeting minimum specs, or not, the following conditions must be con-

1. Supply voltage must be 13.6 volts D.C, at the transceiver. Lower supply voltage reduces minimum output specs as follows:

Supply Voltage	**Minimum Spec, Watts**	**10 meter minimum**
13.6 volts	80 watts	50 watts
13.0	73	45
12.5	67	42
12.0	62	39
11.5	57	35

2. In mobile service the supply voltage may vary considerably, depending on charging conditions, engine running or riot running, and adjustment of engine voltage regulator. In fixed station operation the AC supply line may vary considerably, and will have a direct bearing oil the DC voltage supplied to the output amplifier, (See Note 4)

3. Transceivers will differ in power output by as much as 25% That is, some will make minimum spec. of 80 watts, while others may put out 100 watts or more. These are normal variations in the output transistors, and must be expected, Although the output efficiency will be the same 45 to 48%, some devices simply draw more power, and thus produce more output, This Means, of course, that the devices which run more than specified power will produce minimum power spec. at somewhat less than the rated 13.6 volts supply. But not all sets can be expected to do this. Most production sets are putting out 90 watts or better on the lower bands, including 20 meters; 10 and 15 meters generally runs closer to the minimum output spec,

4. Atlas AC supplies will vary tip to 5 per cent ill output voltage, This is because all components have a tolerance spec., including power transformers, voltage regulators, etc. For this reason there may be occasions when an Atlas transceiver will not quite meet key down CW output specs. with an Atlas AC supply. Since it is not required, the high current DC line from the power supply to the output amplifier is riot regulated, and under full CW load may drop below 13.6 volts. However, this sal-lie supply at the same AC input voltage will produce the rated peak and average power in SSB mode. Again, this is riot the average situation but call be the result of combining more than one marginal factor, such as a transceiver that will just make output specs at 13.6 volts, an AC supply that is running on the low side of normal output tolerance. and less than nominal AC supply voltage.

5. Power measuring instruments can vary widely. The advent of less expensive watt meters has lead to much confusion Accurate measurement requires a truly non-reactive ohm -,na frequency compensated , closely calibrated meter. Generally the watt meters costing less than 5200. will vary a great deal.

6. Collector current readings on the Atlas transceiver panel meter are also subject to variations in tolerance. Accuracy will be

within 2, amperes at full scale. Efficiency measurements should be made with an accurate series ammeter in the supply line as well as an accurate voltmeter At the present stale of the art, broad banded solid state power amplifiers run from 45 to 48 per cent efficiency. Low pass filters which are required to suppress harmonic output may reduce this another few cent, subject to component tolerances in the filters.

7. Maximum power output will normally be the same with a steady tone input in TRANS. mode as ill CW mode. Ill either case, Mic. Gain controls ,)owe.,.. If output is below spec. in CW mode, check the rig with at) audio generator, or -a steady whistle into the microphone. if you reach the expected power level With an audio tone input, but not in CW mode the transmitter is functioning, but. carrier frequency adjustment has apparently shifted. First of all, make sure the sideband selector switch is in NORM position since this is required for CW transmission.

Then try adjusting trimmer C608, a ceramic, trimmer located on PC-60O, the carrier oscillator board. It is reached by removing the bottom cover, and locating PC-600 near the loudspeaker. C608 is the rear trimmer. The front trimmer is C607, and adjusts the OPP. sideband. Turn C608 slowly while it,, CW mode with Mic. Gain fully clockwise until power output comes up to spec. Do not turn it further than this, An audio generator is recommended for checking roll-off. Feed 1000 cycles into the Mic. jack and adjust Mic Gain for 40 watts output. Then run the audio generator in frequency until power drops to 10 watts. This should occur at about 300 cycles. If you have to adjust C608 to a 6 d 1) roll-off (1/4 power) at less than 250 cycles in order to achieve proper CW power, then the D601-C609 circuit is probably not functioning, and the set will require factory servicing.

If you have any questions concerning these notes, please contact US.
73
Atlas Radio, Customer Service Dept.

ATLAS RADIO, SERVICE BULLETIN I.F. AND IMAGE SUPPRESSION
No. 4 -June 16, 1975

This bulletin is concerned with the addition of I.F. and Image traps to Atlas transceivers. Under most operating conditions, the I.F. and image rejection is adequate. However, a few cases have come to our attention, which indicate that additional suppression may be required.

The I.F. (Intermediate Frequency) was selected because of its relatively light occupation, primarily aircraft mobile use. Apparently there are some areas, however, where strong teletype transmissions are in the I.F. passband. This type of interference is characterised by not being tuneable. That is, the interference is the same regardless of where the tuning dial is set. It will be worse when the band switch is set to the 80 or 40 meter band.

Image interference is the kind caused by strong signals having a frequency equal to the desired signal plus or minus twice the I.F. In the Atlas transceivers, the image is exactly 11,040 kHz above the signal on the 160, 80 and 40 meter bands, and 11,040 kHz below the signal on 20, 15, and 10 meters. Image suppression on the three lower bands is sufficient to make interference extremely rare. It is on the three higher bands that image interference is more of a possibility. In the presence of very powerful short-wave broadcasting or commercial teletype stations, additional suppression may be necessary. New production models of the Atlas transceivers incorporate this additional suppression. on previous models if I.F. or image interference is a problem, traps are available from the factory at-no charge.

Following is a chart of image interference which may be experienced

20 meter bands 14,000 to 14,350 kHz
Primary Images 2,960 to 3,310
(Unlikely, but a special trap is available if required.) Secondary Images 11,440 to 12,140
(This is the range normally rejected by the 20 meter trap.)
15 meter bands 21,000 to 21,450 kHz'
Primary Images 9,960 to 10,410
10 meter bands 28,000 to 29,700 kHz
Primary Image: 16,960 to 18,660

There are two types of Trap Kits. one is made up of separate traps, and is for model 180's and the early series 210/215's. The other kit is for later series 210/215's, and is a small circuit boardswitch contains all four traps. (This is the system being installed in current production models.)

How to identify early series 210/215 When requesting traps for your Atlas, it is important to specify whether you have one of the earlier series, or the later series. Serial numbers less than 2300 are generally the earlier type, but the beet way is to remove the cabinet and check visually. The receiver input circuits will be found on PC-600 mounted on the front of the aluminium partition. (a) On the earlier series, the only adjustable components are two mica trimmers, and a ceramic trimmer for the 100 KHZ calibrator. (b) On the later series the PC-800 has five permeability tuned transformers, and the 100 KHZ calibrator is a separate circuit board installed on the back of the aluminium partition.

Be sure to specify if you have a 180, early series 210/215, or later series 210/215. Also, specify if you need traps for I.F., 20, 15, or 10 meters.
Installation of traps, model 180 and early 210/215s. The separate traps are Identified *as* follows:

(1) I.F. Trap: 16 turns with 820 pF polystyrene capacitor.
(2) 20 meter secondary image trap: 8 turns with 470 pF silver mica capacitor.
(3) 15 meter primary image trap: 8 turns with 470 pF silver mica capacitor.
(4) 10 meter primary image trap! 6 turn with 470 pF silver mica capacitor.

These traps may be installed as required, either all or part of them, depending on the type of interference. They mount in front of the bandswitch wafer, as illustrated in Fig 1.

Electrically, the parallel tuned trap is connected in series with the switch lead for the particular band being trapped. Thus, if 15 meters is the bandswitch required a trap, set the band selector to this band, and note which terminal lug on the bandswitch is engaged. Disconnect the wire from this terminal, and insert the trap. Connect the lower end of the trap to the terminal, and reconnect the wire lead to the upper end of the trap.

The I.F. trap, if required, is connected in series with the lead going from the antenna relay to the bandswitch. There Is also another wire lead going to the same terminal on the bandswitch, coming from the crystal calibrator. Be sure that you connect the trap in series with the proper lead.

If all four traps are to be installed, positioning them will be somewhat awkward, and care must be exercised so as not to short circuit any connections. It Is recommended that only the necessary traps be installed on early series 210/215's. 180's will not require more than the I.F. trap -,--ki/or 20 meter trap.

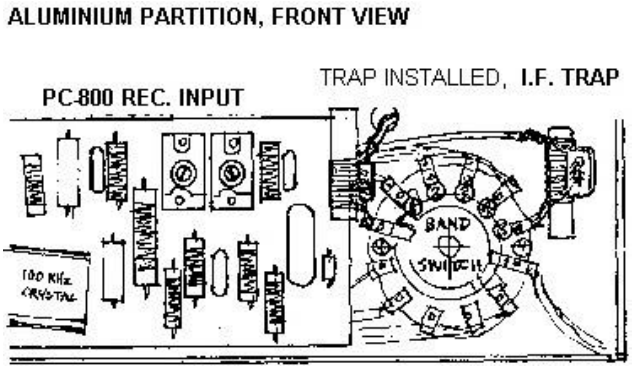

Fig 1, Model 210/215 early

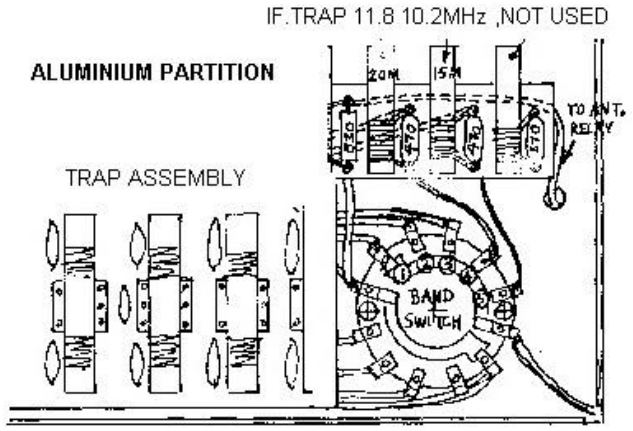

Fig 2: Model 215, later series

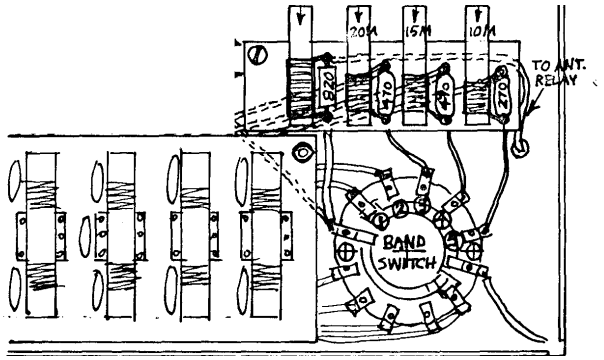

Fig 3, Model 210, later series

Installation of traps in later series 210's and 215's This kit consists of a circuit board with four traps assembled on it. On one end is the I.F. trap, followed by traps for 20, 15, and 10 meters. The 10 meter trap is not used on the model 215. Follow the illustration in Fig. 2 when installing the kit in model 215's, and Fig. 3 for 210's.

of Traps;
The traps are pre-tuned to their nominal centre frequency. However, a final adjustment may be required after installation. This can be done by nulling out the interfering signal, or by using a signal generator. If interference has been noted on a particular part of the band, set the dial to that frequency, and then couple a strong signal from the generator to the antenna input jack. Tune the generator through the image range until the signal is heard. Then adjust the trap for a null, or minimum signal. It will be found that the traps will add an additional 30 to 35 db of suppression. Use a small insulated screwdriver for trap adjustment.

Adjustment Procedure:
(1) IF Trap bandswitch on 80 meters Signal Gen. at 5521 kHz. Tune trap for null, minimum signal. Increase generator output so null can be seen on S-meter.
(2) 20 meter trap : Set bandswitch to 14 MHz band, a dial to band centre, or to frequency of maximum interference. Tune generator between 11,440 and 12,140 kHz until the image signal is heard. Adjust trap for null.
(3) 15 meter band: Same procedure. Tune generator between 9,960 and 10,410 kHz until signal is heard, and adjust trap for null.
(4) 10 meter trap Same procedure. Tune generator between 16,960 and 18,660 kHz. Adjust trap for null.

If any difficulties are encountered in the installation or adjustment of the traps, contact Atlas Radio, Customer Service Dept. for assistance.
73

ATLAS INC. SERVICE BULLETIN # 7, 210x/215x. IMAGE SUPPRESSION:
Nov 31,1975

The PC-800 circuit board contains the input tuning circuits for the receiver. A ground loop "coupling" condition has been discovered which may cause image suppression to be considerably less than the 60 db specification. This may be occurring on the 14, 21, and 28.5 MHz bands. Early models of the 210 and 215 are not affected by this condition because they have an earlier version of the PC-800 board.
Check your PC-800 assembly first. it will be found mounted on the front side of the aluminium shield, directly behind the crystal filter. If it has permeability tuned, (slug tuned), transformers mounted vertically, then it is the model which may have insufficient image suppression.
Some -PC-800 boards have 5 of the double tuned transformers, one for each band. These are an earlier version. The ,present production sets have 3 transformers in model 210x's for the 3 higher bands, and 2 transformers in the model 215x's for the 2 higher bands. The lower bands are now being tuned by nonadjustable bandpass filters.

MODIFICATIONS: Refer to Fig. 1 for details prior to modification. In the 210/ 215 and 210x/215x models produced to date there have been a few production changes, so the one sketch does not quite fit all models. However, it is accurate enough for the purpose at hand. Most transceivers will have a trap coil assembly mounted above the bandswitch, as illustrated. If you have an earlier set without these traps, and are experiencing 25 meter broadcast interference when working the 20 meter band, you will want to install a trap for this band. Write to the factory, customer service dept., for free shipment of the necessary 11.8 MHz trap.
Step 1 - Changing ground connections on PC-800 coils.
(a) Remove the 2 screws that hold the PC-800 to the aluminium shield. The lower left screw is a bit tricky, and requires a long, slender screwdriver. In most cases it can be removed by angling the screwdriver down over the top edge of the front panel. (If this fails, it may be necessary to remove the drum dial, PC-200 board, and R.F. Gain control, in that order. The screwdriver can then be run through the R.F. Gain panel hole to reach the screw.) Be sure to catch the brass spacers that hold the PC-800 away from the aluminium shield.
(b) The PC-800 assembly can now be moved upward far enough to reach the coil connections. Note that on the double tuned open transformers the ground end of each coil connects to a central terminal on the square plastic base. Cut the connections at this terminal.
(c) Locate the capacitor associated with each coil. There is one next to the upper coil; connect the ground end of the coil to the upper terminal of the capacitor. It may be necessary to break away some of the brown plastic around the capacitor lead to expose its bare wire. Use a minimum of solder and heat in making the connection.
(d) Do the same with the lower coil, connecting to the lower terminal of the capacitor, as illustrated.
(e) When this operation has been performed on the 14, 21, and 28.5 MHz transformers, the troublesome ground ,.coupling loops" will no longer exist. Replace the PC-800 mounting screws and spacers. Tighten them securely.
Step 2 - Trap Changes.
(a) The I.F. trap is connected in series with the antenna lead coming from the antenna relay. It has been found that it deteriorates image rejection on 20 meters by several db. Therefore, we recommend that it be disconnected, and the antenna lead be run directly to the bandswitch, as illustrated.
(b) An I.F. trap is not really a necessity, since the frequency, 5520 kHz, is almost entirely unoccupied. However, if should find it necessary or desirable, an I.F. trap may be connected in series with each of the lower bands, 1.8, 3.5, and 7 MHz. This is being done now on production sets as a precautionary measure.
The 15 meter trap, which is no longer required on 15 meters, can be made into an I.F. trap by replacing its 470 pF tuning cap. with a 2200 pF cap. Thus, on the 210/210x model there will be an I.F. trap each for the 80 and 40 meter bands.
(c) Neither the 15 meter or 10 meter series connected traps are necessary after the ground loops on the PC-800 have been removed. Sensitivity will benefit somewhat by removing them from the circuit. Cut the jumper wires going from the traps to the bandswitch, and route the PC-800 leads directly to the bandswitch.

Step 3 - Adjustments.
The input transformers on PC-800 will require retuning after the modifications have been made.
(a) Couple a signal generator or a signal into the antenna jack. Tune both the upper and lower coils for maximum sensitivity on each band.
(b) On 20 meters set the tuning dial to 14,200 kHz, and the signal generator to 11,840 kHz. Increase generator output, and tune its frequency up and down until the image frequency is heard, and seen on the S-meter. Adjust the 20 meter trap for minimum signal.
Note that the 11,840 kHz image is a secondary image created by the VFO 2nd harmonic. The primary image falls at 3l60 kHz. No trap is required for this image, since after the ground loop modifications it is suppressed more than 75 db.
(c) If I.F. traps are connected in series with the lower bands, feed a 5520 kHz signal into the antenna jack, tune its frequency up and down until you can hear the beat note, and see it on the S-meter. Then adjust each I.F. trap on its respective band for Minimum signal.
If any problems with the above procedures are encountered, please contact Atlas Radio, Customer Service Dept., 417 Via Del Monte, Oceanside, Calif., Zip Code 92054. Phone (714)433-1983

73 Clint Call W60PT

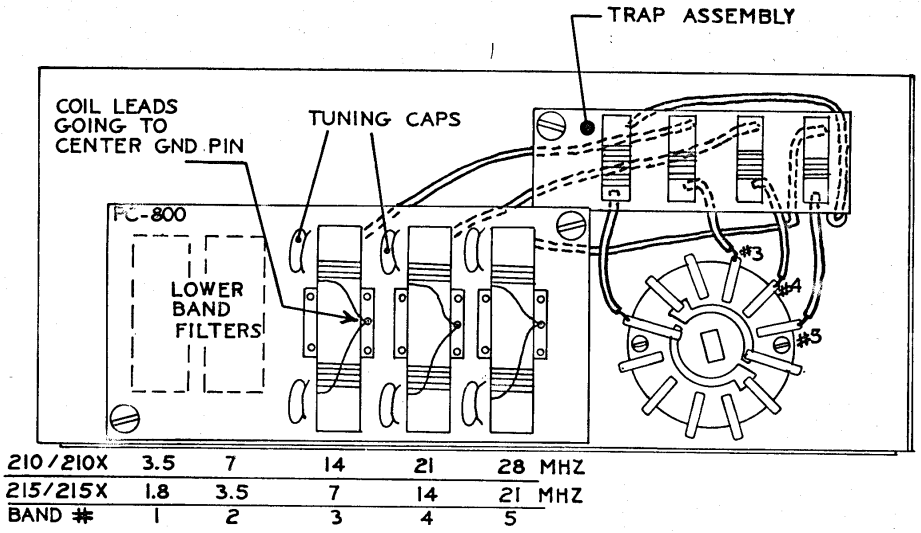

FIG. 1. BEFORE MODIFICATION

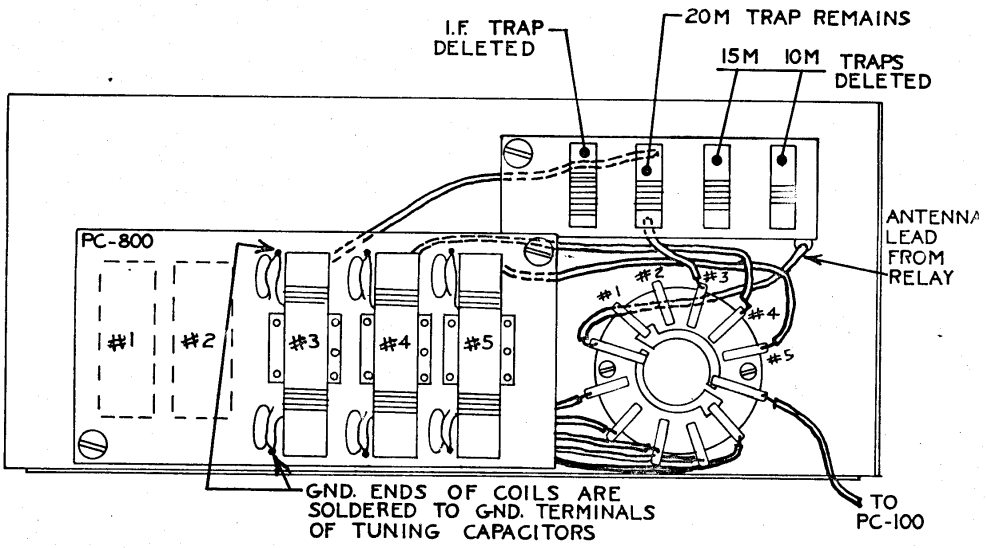

FIG. 2. AFTER MODIFICATION

NOTE THAT ILLUSTRATIONS MATCH MODEL 210/210X AND 20 METERS IS BAND #3. ON MODEL 215/215X 20 METERS IS BAND #4.

ATLAS RADIO, INC. SERVICE BULLETIN #7B, Supplement to #7 20 METER IMAGE SUPPRESSION:
FEB.2, 1976

Addition of a second parallel tuned trap tuned to 11.8 MHz will provide an addition al 15 to 18 db suppression of 25 meter broadcast images. The second trap has a slug tuned coil with 470 pF shunt capacitor, similar to the other one located above the switch wafer. The second trap is connected in series with the 20 meter lead going from the double tuned input transformer on PC-800 to the lower half of the switch wafer. Thus, one trap is connected in series with the output and the other is in series with the input terminal of the double tuned 20 meter input transformer on PC-800.

INSTALLATION: First, locate the 20 meter terminal lug on the lower half of the switch wafer. Then, carefully unsolder and remove the wire lead going to this terminal. Next, while holding the new trap in a vertical position, connect its lower wire lead to the 20 meter switch terminal. Connect the wire lead which was unsoldered in the first step above to the upper wire lead on the trap. Be sure that the solder connections are well done, since the trap is being supported by these connections. Position the trap carefully so the upper terminal does not short circuit to any other terminals.

ADJUSTMENT: The traps require a small metal screwdriver to adjust for minimum image reception. The 20 meter input transformer on PC-800 requires a hexagon nylon-adjusting tool for peaking 20 meter signals. A signal generator is best for making these adjustments.
If one is available, first peak the input transformer at 14,200 kHz using a signal amplitude which provides an S9 meter reading, (approx. 30 microvolts @ 50 ohms). Then tune the generator down to 11,840 kHz
and increase its output until the image signal can be heard. Move the generator frequency up and down until you find its signal. Then adjust the 2 traps for minimum signal.
Finally, go back to 14,200 kHz with the generator, and check adjustment of the input transformer.
If a signal generator is not available, these adjustments can be made with antenna signals, although not as easily. It will be necessary then to hear an actual image signal in order to adjust the traps for null.

ATLAS MODEL 210X/215X INTERNAL SPURIOUS SIGNALS: TECHNICAL BULLETIN #11
DECEMBER 29, 1975

All super heterodyne receivers have a tendency to generate a number of unwanted signals within their tuning range. These are caused by harmonies of the various oscillators used in the circuit. Single conversion designs are generally more free of spurious signals because there are only 2 oscillators the VFO at the first mixer, and the carrier oscillator, or BFO at the second mixer stage, (detector). Multiple conversion requires the use of at least one additional oscillator, leading to greater numbers of spurious by products. The Atlas transceiver employs the single conversion concept, largely for this reason,,

Even so, there are a few internal spurious signals which can be found when the antenna is disconnected. With a properly working antenna, and normal atmospheric noise being received, these spurious signals will generally disappear into the noise level, and cause no interference to reception. There are 2 frequencies where the spurious may be audible with antenna connected, but the signal level will be less than an equivalent 1 microvolt signal. One of these frequencies is at approximately 1840 kHz on the model 215X. The other one is at approximately 3680 kHz in the 80 meter band of both models.

With the antenna disconnected., other spurious signals will be found at approximately 3945, 7360, 14,195, 14,350, and 14,495 kHz.

There will be quite a number of other spurious signals that are below the equivalent of 0.1 microvolt but which can be found without an antenna connected if –vl circuitry hard.

Should you have any spurious signal reception that appears worse than the above discussion, contact our Customer Service Department at once.

ALC ADJUSTMENT

Equipment Required

1 Audio Signal Generator
2 Dummy Load
3 VTVM
4 Power Supply Extender Cable or 200PS

Procedure

1. Remove the top cover of the transceiver.
2. Remove the shield which is fastened to the metal bracket which supports the receiver input tuning coils and to the rear lip of the chassis. (This permits access to the ALC trimmer capacitor which is located in the now exposed groove, just to the right of center.)
3. Connect the dummy load to the antenna connector.
4. Connect the Audio Signal Generator to the mike input receptacle and adjust it for 1500 cycles at .03 VAC.
5. Connect power to the transceiver using power supply extender cable.
6. Place the bandswitch in the highest band.
7. Connect the +DC probe of the VTVM to the accessible lead of the 1000 ohm resistor which is to the right and forward of the ALC trimmer capacitor and set the VTVM on its most sensitive scale.
8. Place the function switch in Trans and advance the mike gain control until the VTVM reads about mid-scale.
9. Adjust the ALC trimmer capacitor until a minimum reading is obtained on the VTVM. The ALC circuit will now be properly adjusted.

73,
Clint Call W60FT
Customer Service Mgr
ATLAS RADIO, INC.

HIGH-SWR PROTECT CIRCUIT ADJUSTMENT
FOR 210X

Equipment Required

1 Audio Signal Generator
2 Power Supply Extender Cable or 200PS

Procedure

1. Perform ALC adjustment procedure and bias adjustment.
2. Remove the two bolts from the top sides of the PA heat sink and open the heat sink case to permit access to the power amplifier circuitry.
3. Connect power to transceiver using power supply extender cable.
4. Connect audio signal generator to mike input receptacle and adjust for 1500 cycles at .03 VAC.
5. Place bandswitch in 20 meter band (14 MHZ).
6. Place function switch in Trans. NOTE: Leave antenna open circuited.
7. Advance mike gain control fully clockwise.
8. Advance SWR adjust* until ammeter on front panel indicates 6 amps.

The SWR Protect Circuit is now correctly adjusted.

73,
Clint Call W60FT
Customer Service Mgr.
ATLAS RADIO, INC.

The SWR adjust is a sub miniature potentiometer located on the far left side of the PA circuitry.

S-METER ADJUSTMENT
PROCEDURE

Equipment Needed

1 RF Signal Generator
2 Power Supply Extender Cable or 200PS

Procedure

1 Remove top cover of transceiver to permit access to S-meter ,adjust R220.
2 Connect power using extender cable.
3 Place function switch in REC and band switch in 3.5 MHz (80 meter) position.
4 Connect output of RF signal generator to antenna connector of transceiver and adjust sig. generator to 3.7 MHz at 30 uv output.
5 Advance RF gain control fully clockwise.
6 Tune transceiver for greatest deflection of S-meter.
7 Adjust R220 for a reading of S9.

S-meter will now indicate correctly.

NOTE:
S-meter adjust R220 is located just behind the front panel dimmer switch, under and just to the left of the dial drum, on the PC-200 board.

73,
Clint Call W60FT
Customer Service Manager
ATLAS RADIO, INC.

TRANSMITTER INPUT FILTER ADJUSTMENT

Equipment Required

1 Audio Signal Generator
2 Dummy Load Wattmeter
3 PC Board Right Angle Adapter
4 Power Supply Extender Cable or 200PS
5 200 ohm Resistor

Procedure

1 Remove top cover of transceiver. Remove PC-100 (or PC-120) Board from edge connector and reinsert, using PC Board Right Angle Adapter. This allows access to PC-900 Trimmer Capacitors. CAUTION: Be sure to reinsert PC-100 (or PC-120) such that pin one makes to pin one, etc. Reversal of the board will cause severe damage to chassis wiring.
2 Connect Dummy Load Wattmeter to antenna output connector.
3 Connect power to transceiver using power supply extender cable.
4 Connect audio signal generator to mike input receptacle and adjust to 1500 cycles at .03 VAC.
5 Place bandswitch in lowest band (see note two). Jumper C901 on PC-900 board, using 200 ohm resistor. (see note three)
6 Tune transceiver to center of band.
7 Place function switch in Trans and advance mike gain control fully clockwise.
8 Adjust C902 for maximum indication on Wattmeter.
9 Place function switch in REC.
10 Remove jumper resistor from C901 and jumper C902.
11 Place function switch in Trans and adjust C901 for maximum indication on wattmeter.
12 Place function switch in REC.

The lowest band is now properly adjusted. Using the above procedure, adjust each pair of trimmers
in turn for their appropriate band. (see note 1)

Note 1: The jumper resistor need only be used on 7 MHz band and below.
Note 2: Later model sets use fixed components on 7 MHz bands and below and tuning is only needed on 14 MHz band and above.
Note 3: The correct pair of trimmers can be located easily, by tracing the connections from the band switch section nearest the PC-900 Board.

73
Clint Call W60FT
Customer Service Mgr.

F ILTER ROLL-OFF ADJUSTMENT
PROCEDURE

Equipment Needed

1 Audio Signal Generator with output adjustable to .03 VAC
2 Dummy Load Wattmeter
3 Power Supply Jumper Cable, or 200PS

Procedure

1 Remove bottom cover plate of transceiver.
2 Connect power, using jumper cable.
3 Connect output of Audio Generator tom Mike Input receptacle.
4 Set Side Band selector switch to Norm.
5 Set Band switch to lowest band.
6 Set Audio Generator to 1500 CPS at .03 VAC.
7 Place transceiver in Xmit, and advance Mike Gain setting until output is 40 W. ,Without disturbing Mike Gain setting, readjust Audio Generator to 300 CPS at .03 VAC.
8 Adjust C603* (located on Carrier Osc. board) until output reads 10 W.
9 Switch Sideband selector switch to Opp and adjust C602* until output reads 10 W.
10 Reset Audio Generator to 1500 CPS at .03 VAC and check that output reads 40 W in both Norm and Opp. positions of sideband selector switch. Repeat steps 6 through 12 as necessary.

Roll-off will now be set correctly

73
Clint Call W60FT
Customer Service-Mgr.
ATLAS RADIO, Inc.

* Early operating manuals designate these as C607 and C608, respectively.

CARRIER NULL (SUPPRESSION) ADJUSTMENT

EQUIPMENT NEEDED

1 Dummy Load
2 VTVM
3 Power Supply Extender Cable or 200PS

PROCEDURE

1 Remove top cover of transceiver.
2 Connect dummy load to antenna connector.
3 Connect power to transceiver using extender cable.
4 Place bandswitch in lowest band.
5 Place function switch in TRANS.(do not connect mike to input.)
6 Measure RF output at center lead of antenna connector; if output is greater than .1VAC proceed with step #7.
7 Carefully adjust C103 and R101 alternately for lowest reading on VTVM. C103 is located at the upper rear of the PC-100 board And R101 is just forward of C103 and L102 (toroid). (On the PC-120 board R101 is forward and above C103).

NOTE:

If the lowest reading obtainable is greater than .2 VAC mixer diodes D101 through D104 should be replaced.

73
Clint Call W60FT
Customer Service Mgr.

POWER AMPLIFIER BIAS ADJUSTMENT

Equipment Required

1 Dummy Load
2 Power Supply Extender Cable or 200PS.
3

Procedure

1 Connect dummy load to antenna connector.
2 Connect power to transceiver using extender cable.
3 Place bandswitch in lowest band.
4 Place function switch in CW.
5 Advance Mike Gain Control fully clockwise for about 10 seconds to allow finals to reach normal operating temperature.
6 Turn Mike Gain Control full CCW.
7 Place function switch in Transmit.
8 Adjust Bias adjust R515 for a reading of 1/4 to 1/2 amp on ampmeter.

Note 1:
Bias adjust R515 is a screwdriver adjustment which can be reached through the small hole in the center, left of the heat sink.
CAUTION: Bias settings in excess of 1/2 amp will cause distortion and may result in damage to the final PA transistors

Note 2:
Carrier null adjustment should be performed before attempting to adjust PA bias.

73
Clint Call W60FT
Customer Service Mgr.
ATLAS RADIO, INC.

RECEIVER INPUT FILTER ADJUSTMENT

Equipment Required

1 RF Signal Generator
2 Power Supply Extender Cable or 200PS
3 Plastic Hex tuning wand

Procedure

1 Remove top cover of transceiver.
2 Connect power to transceiver using extender cable.
3 Connect output of RF Signal Generator to antenna connector.
4 Place bandswitch in lowest band.
5 Tune transceiver to center of band.
6 Place function switch in Rec.
7 Advance RF gain control fully clockwise.
8 Set output of RF Signal Generator to 10 uv and tune for greatest indication on S-meter.
9 Adjust top, then bottom slug of appropriate receiver input coil for greatest S-meter indication.

NOTE:
Receiver input coils are located behind and under the dial drum. The lowest band is farthest to the left and the highest band is furthest to the right. Later sets use fixed tuning for 40 meters and below requiring tuning on 20 meters and above only.

73,
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VFO DIAL ALIGNMENT

Equipment Required

1 Power Supply Extender Cable or 200PS
2 DD-6 Digital Dial or Signal Generator

Procedure

1 Remove top cover of transceiver to permit access to VFO trimmer capacitors, which are located along the right side of the dial drum. NOTE: On earlier sets the trimmer capacitors are reached through holes in the VFO cover plate under the bottom cover of the transceiver.
2 Connect power to transceiver using power supply extender cable.
3 Rotate tuning know until dial indicates exactly 200 * and set Dial Set to center position.
4 Place function switch in Rec. and connect DD-6 Digital Dial.
5 Place bandswitch in desired band and adjust corresponding trimmer capacitor-,',,* until DD-6 indicates exactly as dial indication

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On model 215 and 215X, the 160 meter band (1.8 MHz) should be aligned with the dial set at 1800.
The frequency is normally printed adjacent to the trimmer capacitor; if it is not the lowest frequency band trimmer is located nearest the front panel and the next higher band trimmer just behind it, etc.
NOTE: If using RF signal generator in lieu of DD-6, adjust trimmer capacitor to zero-beat with signal generator.

MODIFYING THE ATLAS 2101 FOR AMPLITUDE MODULATION (AM) TRANSMISSION

This fairly simple operation will provide for carrier insertion in transmit mode with the Atlas transceiver. and permits AM transceivers to copy voice transmissions from the Atlas. Carrier output will be 10 to 15 watts., and will be very clear provided the Mic. Gain is not turned up to the point of over modulation. Reception of an AM signal with the Atlas will still require tuning his carrier for zero beat, but this is a relatively small inconvenience. and the modification described here does make it possible for an AM station to work the Atlas.
The original Atlas circuit has an ALC (Automatic Level Control) concentric with the Mic. Gain control. The ALC control has a knurled aluminium knob. Ale is a convenience which helps prevent over modulation,, but is not really a necessity,, and may be dispensed with if AM transmission is desired.
First remove the cabinet and locate the dual potentiometers that are the Mic. Gain and* ALC controls. The rear section is the Mic. Gain. and front section is ALC control.

Step 1 - Locate the blue and white/green wires that go to the center and upper lugs. respectively. of the front control. Unsolder these wires and tape the ends individually so they will not short circuit with anything. They will no longer be used, and can be tucked away into the chassis corner.

Step 2 - Connect a 10K 1/4 watt resistor from the center lug down to terminal #7 of the PC-100 edge connector. This will require splicing an extension wire to the resistor. Solder the splice and then cover the entire wire and resistor with a plastic sleeving. as illustrated. to prevent short circuiting.

Step 3 - Connect a second 10K 1/4 watt resistor from the upper lug down to terminal #22 of the PC-100 edge connector. This will also require splicing and soldering an extension wire to the resistor. Put plastic sleeving over the entire resistor and wire leads. as illustrated. to prevent shorts.
Use caution when soldering to all terminals. Do a neat and careful job., and inspect for shorts or solder bridges to other terminals or to the chassis.

Step 4 - A 10K or 15K resistor will be found g oing from the Function switch to the upper lug on the rear section of the dual pot. (Mic. Gain). Unsolder or cut the resistor loose at the potentiometer lug. Shorten the resistor lead by.3/8 to 1/2 inch., and splice a 1N4148 or 1N914 silicon diode to the resistor. Observe polarity as illustrated. with the cathode end$ black band Pointing upward. Solder the splice carefully with a small iron using just enough heat to make a good solder job. Place a piece of plastic sleeving over both the diode and resistor to prevent shorts. Then solder the top end of the diode to the upper lug,, where the resistor formerly went. Be sure the cathode end. black band,, is connected to the potentiometer lug, as illustrated.
Step 5- Adjustment Procedure. It will be necessary to make a minor adjustment of the carrier frequency on both **"NORM"** and "OPP" sidebands. **"NORM"** on the sideband selector switch is the one normally used in the amateur bands, being Lower Sideband (LSB) on 160. 75. and 40 meters.. and Upper Sideband (USB) on 20.. 153 and 10 meters.
The trimmers- that adjust carrier frequency are located on PC-600 alongside the speaker$ and are accessible from the bottom side of the transceiver, as illustrated*

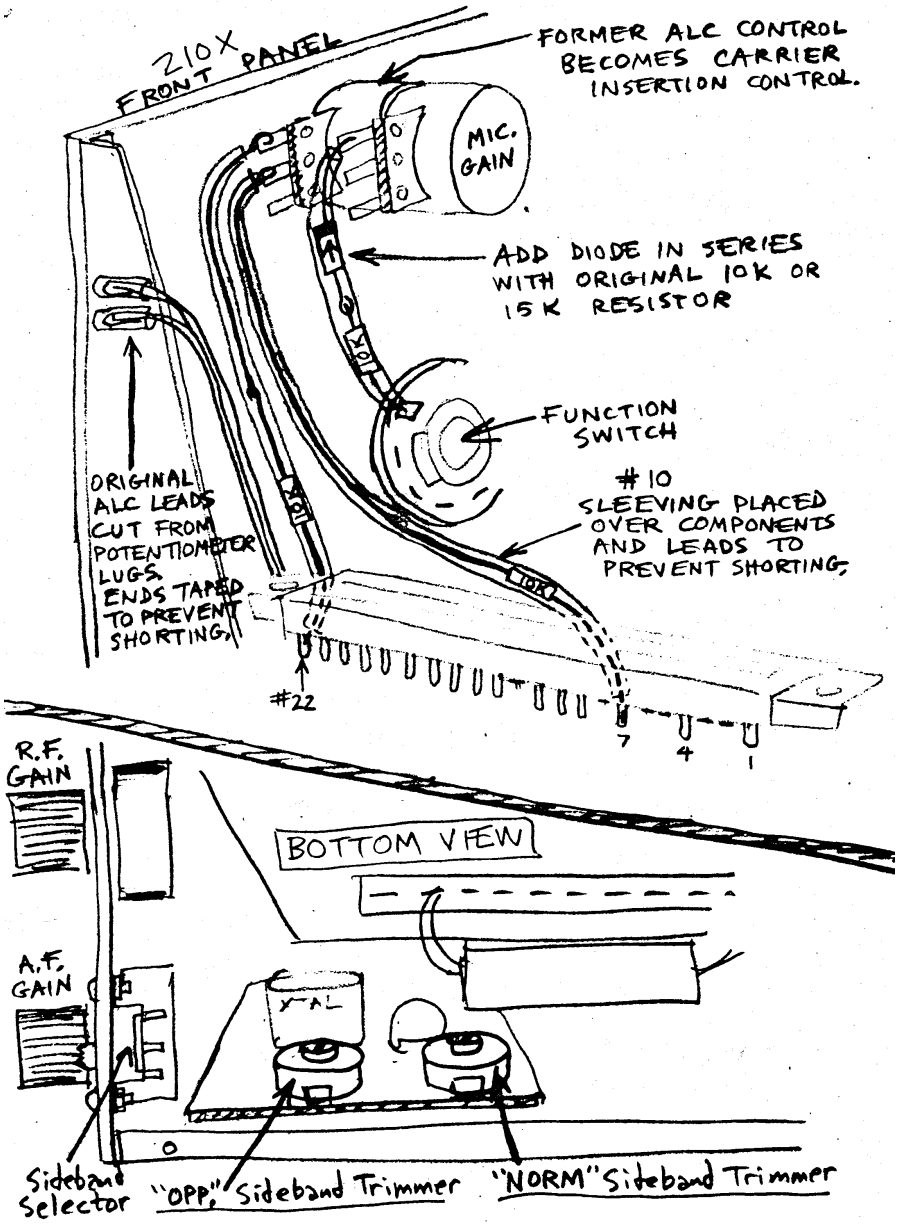
(a) Connect the transceiver to A dummy load. or if none is available connect to a properly matched antenna for the band to be used. Before turning the set on. move the bandswitch to the desired band$ set Sideband selector to "NORM" position. and turn both Mic, Gain and Carrier Insertion (formerly ALC) to full counterclockwise position. (CCW).

(b) Switch to "TRANS" mode with the Function switch. Do not go to the "CW" position. just to **"TRANS".** Note that the ammeter reading in very small about 1/4 amp. If it reads more than 1/2 amp. (half of the first increment) the P.A. Bias needs adjustment. This is done with a small screwdriver through the adjusting hole on back of the heat sink below the driver transistor. Set it for about 1/4 amp. resting current, Carrier insertion must be at minimum CCW.

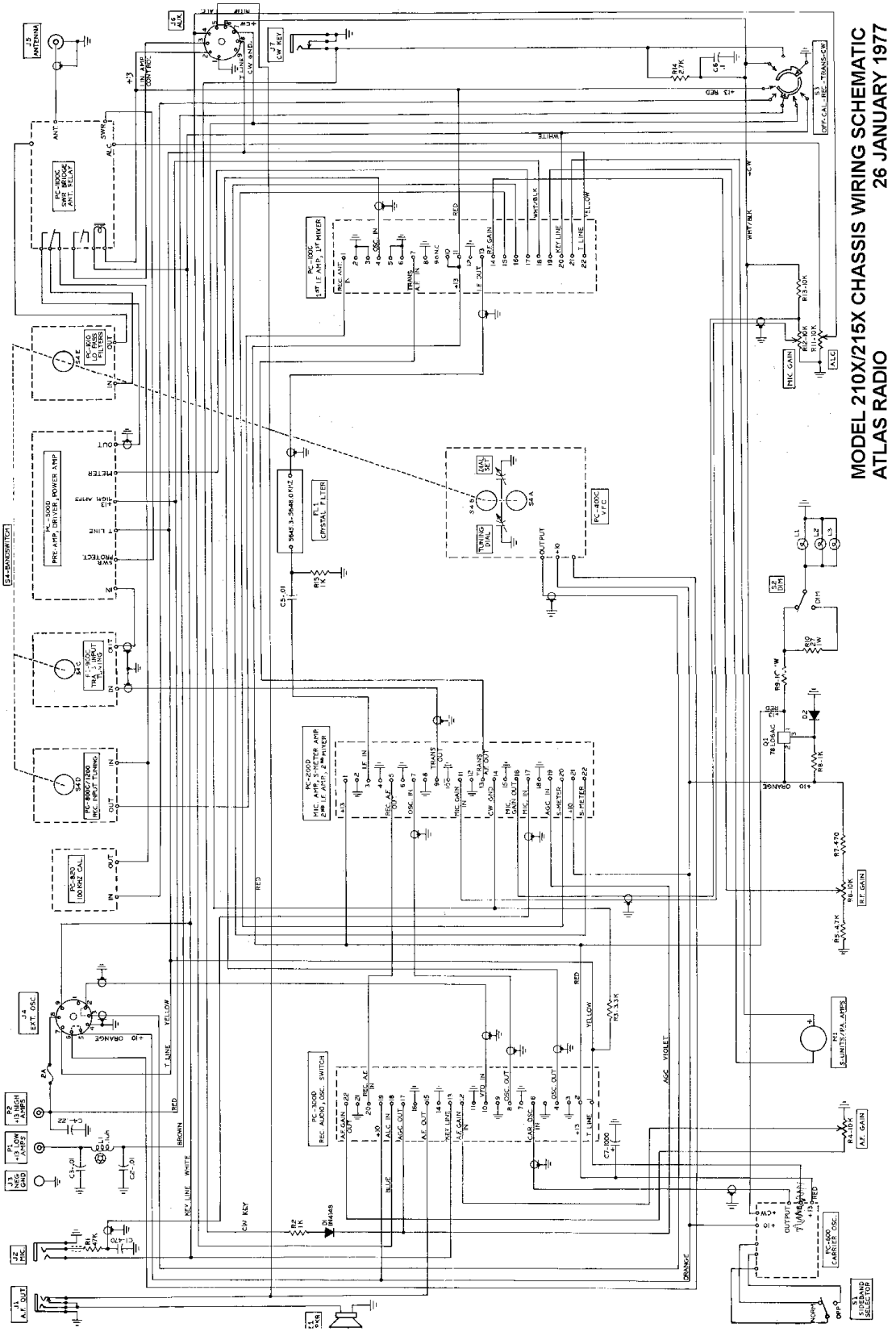
(c) Now advance the Carrier Insertion control until the ammeter reads 3 amps. If you cannot reach 3 amps. with the control, adjust the NORM carrier * freq. trimmer until you can. Move the trimmer slowly$ and in the direction that increases the ammeter reading. If you can reach 3 amps before the control is fully clockwise. adjust the carrier freq. trimmer for a lower ammeter reading until you can just make 3 amps. at full clockwise setting of the carrier insertion control.

(d) Repeat step (c) on the "OPP" sideband.

Step 6 - Modulation Control. Advance the Mic, Gain until the ammeter kicks upward slightly when speaking,, to 4 amps., or so. Modulating heavier than this will produce reports of distortion on the signal.



CAUTION: Do not insert more than 3 amps of carrier, an indicated on the ammeter. More than this will cause excessive heating of the P.A. output transistors, and can lead to their failure. Watch the heat sink temperature, and be sure it does not get so hot that you can't hold your hand on it.


MODEL 210X/215X CHASSIS WIRING SCHEMATIC
ATLAS RADIO
26 JANUARY 1977