





## ALIGNMENT

The HA-1200 has been fully aligned at the factory before shipment to you and does not normally require further adjustment. When necessary, however, the transceiver may be aligned as indicated.

### TEST EQUIPMENT REQUIRED

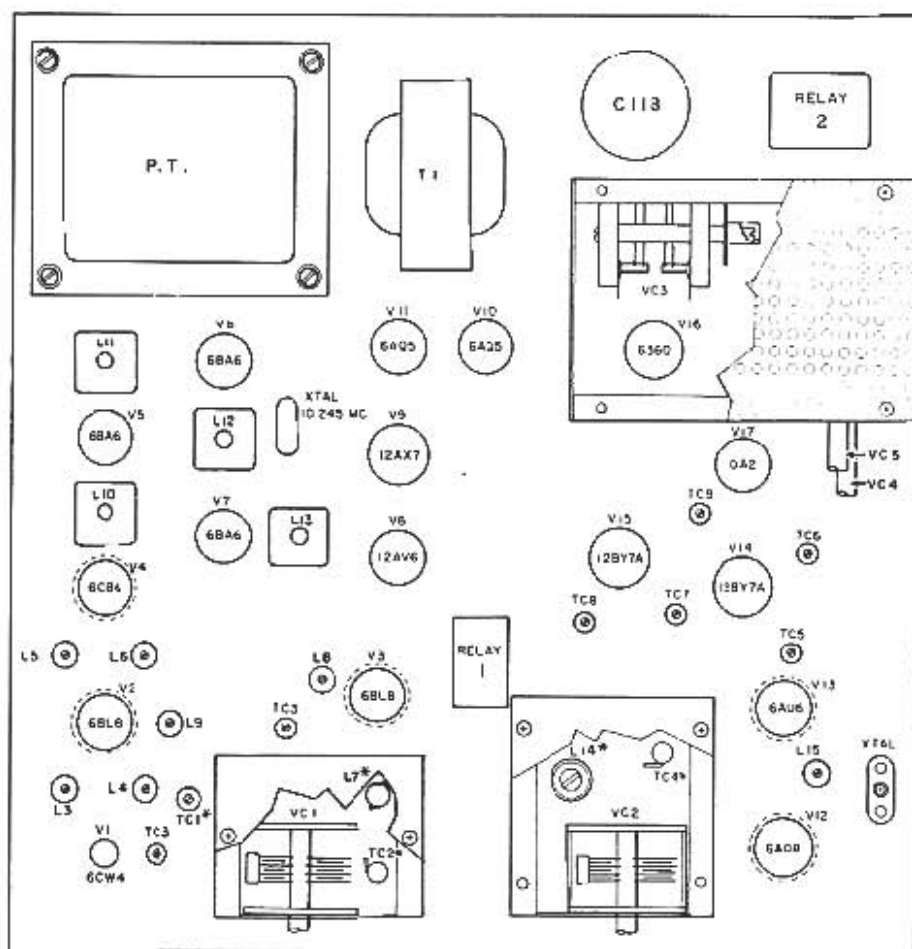
|                                  |                              |
|----------------------------------|------------------------------|
| Calibrated RF Signal Generator   | 50 ohm, 25 watt dummy load   |
| VTVM (10 megohm input or higher) | Non-metallic alignment tools |
| 0-100 DC milliamper meter        |                              |

### SET CONTROLS AS FOLLOWS

AF GAIN ..... 1/2 clockwise  
 SQUELCH ..... Full counter-clockwise  
 POWER ..... ON  
 SPOT ..... OFF

VFO-XTAL ..... VFO  
 FINAL ..... 1/2 rotation  
 LOAD ..... 1/2 rotation  
 PLATE TUNE (VC-3\*) ..... Fully opened

\* Located in final amplifier enclosure.



\* ADJUSTED FROM UNDERSIDE OF CHASSIS

FIGURE 7 TUBE LOCATION AND ALIGNMENT POINTS

TABLE 3. RECEIVER ALIGNMENT

| STEP                                    | S, G, COUPLING<br>AND<br>INPUT SIGNAL | AC VTVM<br>CONNECTIONS                       | REC<br>TUNING | ADJUST                                                                   | INDICATION                         |
|-----------------------------------------|---------------------------------------|----------------------------------------------|---------------|--------------------------------------------------------------------------|------------------------------------|
| S-meter<br>zero                         | No signal                             | -----                                        | 144 Mc        | S-ZERO<br>(on rear of<br>chassis)                                        | "O"<br>on S-meter                  |
| Align<br>10.7 Mc<br>and<br>455 Kc<br>IF | Pin 1<br>of<br>V4<br>10.7 Mc          | Across speaker<br>or SPKR<br>terminals       | 144 Mc        | L10<br>L11<br>L12<br>L13<br>(Adjust top and<br>bottom of each<br>IF can) | Maximum<br>output on<br>AC VTVM    |
| Align<br>44-45 Mc<br>IF bandpass        | ANT terminals<br>44 Mc                | Across speaker<br>or SPKR<br>terminals       | 144 Mc        | L5                                                                       | Maximum<br>output on<br>AC VTVM    |
|                                         | ANT terminals<br>45 Mc                |                                              | 148 Mc        | L6                                                                       |                                    |
| Calibrate<br>REC<br>TUNING<br>dial      | ANT terminals<br>144 Mc               | Across speaker<br>or SPKR<br>terminals       | 144 Mc        | L7                                                                       | Maximum<br>output on<br>AC VTVM    |
|                                         | ANT terminals<br>148 Mc               |                                              | 148 Mc        | TC-2                                                                     |                                    |
| Frequency<br>Injection<br>level         | ANT terminals<br>144 Mc               | Across<br>speaker<br>or<br>SPKR<br>terminals | 144 Mc        | L8                                                                       | Maximum<br>output<br>on<br>AC VTVM |
|                                         | ANT terminals<br>148 Mc               |                                              | 148 Mc        | L8 Link *                                                                |                                    |
|                                         | ANT terminals<br>146 Mc               |                                              | 146 Mc        | L9                                                                       |                                    |
| 144-148 Mc<br>bandpass                  | ANT terminals<br>144 Mc               | Across speaker<br>or SPKR<br>terminals       | 144 Mc        | L3                                                                       | Maximum<br>output<br>on<br>AC VTVM |
|                                         | ANT terminals<br>148 Mc               |                                              | 148 Mc        | L4                                                                       |                                    |
| Antenna<br>input<br>circuit             | ANT terminals<br>144 Mc               | Across speaker<br>or SPKR<br>terminals       | 144 Mc        | L1, TC1                                                                  | Maximum<br>output<br>on<br>AC VTVM |
|                                         | ANT terminals<br>148 Mc               |                                              | 148 Mc        | L2, TC3                                                                  |                                    |

\*If L8 Link is cemented in place, adjustment is not necessary.

## TRANSMITTER VFO

IMPORTANT: Do not attempt to align the VFO section unless the receiver portion of the HA-1200 is accurately calibrated or some means of accurate frequency measurement equipment is available.

1. Set all controls as indicated for receiver alignment.
2. Set SPOT switch to "ON".
3. Follow procedure given in Table 4.

TABLE 4. VFO ALIGNMENT

| VFO TUNING<br>DIAL SETTING | REC TUNING<br>DIAL SETTING | ADJUST* | INDICATION                               |
|----------------------------|----------------------------|---------|------------------------------------------|
| 144 Mc                     | 144 Mc                     | L14     | Unmodulated tone as<br>heard on receiver |
| 148 Mc                     | 148 Mc                     | TC-4    | Unmodulated tone as<br>heard on receiver |

\*Adjustments should be repeated to insure calibration is correct at both ends of dial.

4. Set SPOT switch to "OFF".

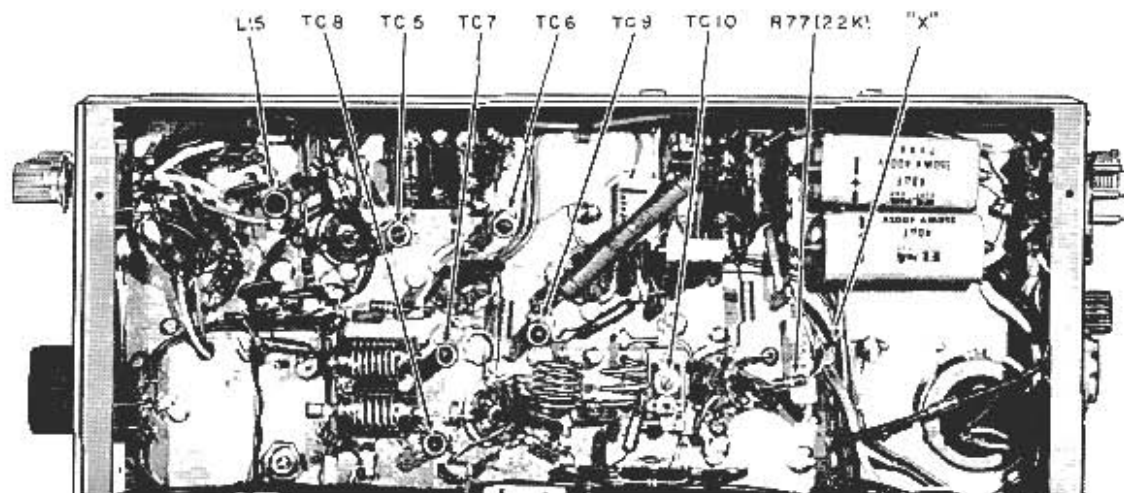


FIGURE 8 TRANSMITTER ALIGNMENT POINTS

## TRANSMITTER

Before proceeding with the transmitter alignment, the Final Amplifier (V16) screen resistor R77 (22K) must be disconnected from the B+ supply at point "X". A 0-100 DC milliamper meter must also be inserted in series with the V16 plate supply lead. Depress the microphone's push-to-talk switch momentarily while performing each alignment step.

**IMPORTANT:** ATTEMPTING TO TUNE TRANSMITTER WITHOUT A PROPER ANTENNA LOAD CAN DAMAGE THE FINAL AMPLIFIER OUTPUT CIRCUITS.

1. Connect a push-to-talk high impedance microphone to the MIC jack.
2. Connect a 50-ohm, 25-watt dummy load to the ANTENNA coax connector.

TABLE 5. TRANSMITTER ALIGNMENT

| PURPOSE                                                                                                       | DC VTVM CONNECTIONS           | VFO DIAL SETTING | ADJUST | INDICATION                                               |
|---------------------------------------------------------------------------------------------------------------|-------------------------------|------------------|--------|----------------------------------------------------------|
| Buffer                                                                                                        | Pin 1, V13                    | 146.0 Mc         | L15    | Maximum - DC                                             |
| 1st Tripler                                                                                                   | Junction of L16 and R72 (47K) | 144.5 Mc         | TC-5   | Maximum - DC                                             |
| 2nd Tripler                                                                                                   | Junction of L17 and R74 (47K) | 144.5 Mc         | TC-7   | Maximum - DC                                             |
| Doubler                                                                                                       | Junction of RFC and R76       | 147.0 Mc         | TC-9   | Maximum - DC                                             |
|                                                                                                               |                               | 147.0 Mc         | TC-10  | Maximum - DC                                             |
| NOTE: Before continuing with the transmitter alignment, reconnect the screen resistor R77 (22K) to point "X". |                               |                  |        |                                                          |
| FINAL AMPLIFIER                                                                                               | -----                         | 146.0 Mc         | VC-3*  | Minimum plate current as indicated on 0-100 DC ma. meter |
| Pi-Network                                                                                                    | -----                         | 146.0 Mc         | VC-4   | Maximum indication on front panel Relative Power Meter   |
|                                                                                                               |                               |                  | VC-5   |                                                          |

\* Located in Final amplifier enclosure.

The Transmitter alignment is now complete. The 0-100 DC milliamper meter should be removed, and the V16 plate supply lead returned to the B+ line at point "X".