The National 'Sixty' Special Receiver

With Alignment Procedure
See Schematic
SECTION 1 - DESCRIPTION

1.0 GENERAL

Your NC "SIXTY" SPECIAL, as illustrated in figure 1-1, is an AC-DC superheterodyne communications receiver designed to receive AM (voice or music) and CW (code-telegraphy) signals. Its frequency range is from 540 kc through 31 mc inclusive and provides coverage for all signals from standard broadcast through the 10-meter amateur band.

1.1 DESIGN CONSIDERATIONS

Although the NC "SIXTY" SPECIAL is primarily designed for use by Amateur Radio Operators and Short-wave Listeners, its excellent broadcast reception, audio reproduction, and contemporary cabinet styling make it a fine home receiver. The built-in loudspeaker is perfectly matched to the enclosure in order to provide the best possible sound reproduction for a receiver of this size. The cabinet is finished in light and dark blue and is styled to blend well in any surroundings. The receiver rests on four rubber feet that provide sonic isolation and protect the surface on which it sits.

The total frequency range covered by your NC "SIXTY" SPECIAL is divided into four bands, whose frequency coverage is given in Table I.

<p>| TABLE I |</p>
<table>
<thead>
<tr>
<th>BAND</th>
<th>FREQUENCY COVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>550 kc to 1600 kc</td>
</tr>
<tr>
<td>2</td>
<td>1.6 mc to 4.5 mc</td>
</tr>
<tr>
<td>3</td>
<td>4.0 mc to 12.0 mc</td>
</tr>
<tr>
<td>4</td>
<td>10.5 mc to 31.0 mc</td>
</tr>
</tbody>
</table>

Of special interest to the "HAM" or "SWL" is the electrical bandspread feature of your NC
14 CONTROLS AND DIALS

As Figure 8.1, the controls and dials used on the "NEC" SETTY" SPECS are identified and their function are described.

15. INITIAL SETTINGS

For the "NEC" SETTY" SPECS, the following are set up for operation as follows:

1. BANDSWITCH control—adjusted to the desired band or 500 position.
2. DIAL,CW/AM,SWITCH—on CW position.
3. RANGESPAN switch—on OFF position.
4. TRANSMIT-AIR switch—on OFF position.
5. DIAL C.W./AM,AR/AM switch—on ON position.
6. ADDRESS control—on in 500 position.

The following procedures will make sure that the keying is off and the phone is in operation when the key is pressed. The....

16. TUNING

Station selection of the "NEC" SETTY" SPECS is accomplished by setting the BANDSWITCH control to the desired band or 500 position, removing the dial and tuning control from the appropriate position, adjusting the DIAL control to the desired station, and adjusting the TUNING control to the desired station.
Figure 3-1: AE "West" Special Controls and Switches
TO REPLACE
BAND SPREAD DIAL
CORD ASSEMBLY

SET CAPACITOR
AT MAXIMUM MESH

LOOP CORD
AS SHOWN

FASTEN SPRING
HERE

START HERE

LOOP CORD
2½ TURNS AROUND SHAFT
Alignment Procedure

You will need an RF Signal Generator (.455 MHz - 40 MHz). The generator must also be able to output a modulated AM output. An Oscilloscope is desirable but not necessary, if you have a good ear then you don’t need one.

**WARNING:** This is a HOT CHASSIS radio. Use an ungrounded Isolation Transformer to power the radio.

**Set the Band Selector to 1 (Standard Broadcast)**

1. Connect the high side of the generator through a .01 mfd capacitor to the stator plates of the front section of the TUNING capacitor. Low side to the chassis. Set the generator to .455 MHz, and modulate the signal. Connect the Oscilloscope to the speaker terminals. Set the Band Selector to Band #1 and set the Tuning Dial to 1000. Adjust both Bottom and Top slugs of the IF transformers T1 and T2 for the loudest or greatest deflection on the scope.  
2. Connect the high side of the generator to the antenna terminal and the low side to ground.  
3. Set the generator to .550 MHz and set the tuning dial to .550 MHz. Referring to the picture of the chassis, adjust Trimmer Cap #1A for maximum output.  
4. Set the generator to 1.5 MHz and the Tuning Dial to 1.5 MHz. Adjust Trimmer Cap #1B for maximum output.
Set the Band Selector to 2.
1. Set the generator to 1.6 MHz and the Tuning Dial to 1.6 MHz. Adjust Trimmer Cap #2A for maximum output.
2. Set the generator to 4.5 MHz and the Tuning Dial to 4.5 MHz. Adjust Trimmer Cap #2B for maximum output.

Set the Band Selector to 3.
1. Set the generator to 4.0 MHz and the Tuning Dial to 4 MHz. Adjust T3A and Trimmer Cap #3A for maximum output.
2. Set the generator to 12.0 MHz and the Tuning Dial to 12 MHz. Adjust Trimmer Cap #3B for maximum output.

Set the Band Selector to 4.
1. Set the generator to 11 MHz and the Tuning Dial to 11 MHz. Adjust T4A and Trimmer Cap #4A for maximum output.
2. Set the generator to 28 MHz and the Tuning Dial to 28 MHz. Adjust T4B and Trimmer Cap #4B for maximum output.

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After making all the adjustments, I select different bands and tune to WWV verifying the needle is on the correct frequency. To get them dead on you will have to adjust the Trimmer Caps in group A then readjust the Caps in group B. Remember, Bands 3 and 4 work in conjunction with the Trimmer Cap bank A along with coils T3A and T4A.