



IMPROVE PERFORMANCE

WITH THE

HAMMARLUND

CRYSTAL CALIBRATOR



The new NC-100 Crystal Calibrator provides three points every 100 KCs within the range of the receiver. The NC-100 employs stable low-loss 100 KCs quartz crystal and 820k potentiometer. Trimmer capacitor provides adjustment for zero beat signal at any frequency standard (AMM).

Price:

PE-35657-4, General range — \$15.00

PE-35657-1a, 1

NC-100-129, Variable range — \$17.00

PE-35657-1a, 100 SP-600 — \$17.00

INSTRUCTIONS FOR INSTALLATION OF HAMMARLUND NC-100 CALIBRATOR IN HAMMARLUND HQ AND SP-600 SERIES COMMUNICATIONS RECEIVERS AND GENERAL COMMUNICATIONS RECEIVERS

GENERAL COMMUNICATIONS RECEIVERS

The NC-100 Calibrator Unit measures 1 1/2" x 2" x 2 1/2" high overall including tubes and crystal. It may be mounted in any position or location where space is available on the receiver chassis. Avoid locations close to hot tubes.

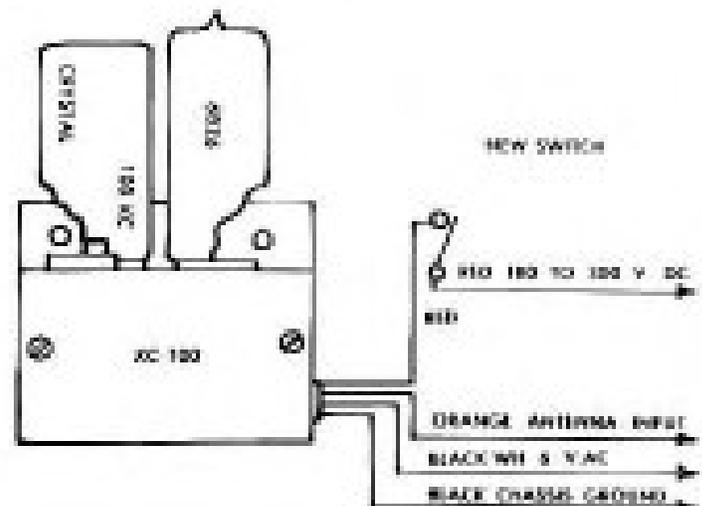
Two mounting holes, 1/4" in centers, are provided in the flange of the calibrator shield cover. These holes will accommodate #6 machine screws.

Remove the receiver from its cabinet or rack and assemble the calibrator unit to the chassis. Loosen and install the toggle switch furnished with the unit and its indicator switch plate on the face panel, or wherever desired.

Trim the wire leads of the unit to the correct length, strip and tin the ends to provide for connections as shown in the accompanying sketch. The portion cut from the red wire may be used to connect from the switch to the nearest point in the chassis where B+ potential is available. The toggle switch will require a 15/32 inch or 1/2 inch diameter hole.

Allow the normal warm-up time for the receiver and tune for a signal of known frequency, such as WWV or 5.0 mc, and with the beat frequency oscillator of the receiver turned off, adjust the trimmer on the NC-100 calibrator for zero beat against the 5.0 mc signal. This should be done while the tone modulation of the standard frequency signal is off.

Replace the receiver in its cabinet or rack. No further adjustment of the NC-100 unit should be required under normal service conditions.



The calibrator in conjunction with the beat oscillator of the receiver should provide good signal strength at every 100 kc interval within the tuning range of the receiver.

The orange antenna lead wire from the calibrator is isolated within the unit by a series B+ seal capacitor and may be permanently connected to the antenna input of the receiver without affecting its normal performance.

HQ SERIES RECEIVERS

The XC-100 Calibrator Unit is designed so that it may be easily installed on the top of the tuning unit shield cover employing the mounting plate adaptors provided with the calibrator kit.

To install same on the HQ type receiver, remove the three screws at each end of the front panel and the three screws on the rear of the cabinet thus removing the receiver from the cabinet or rack.

Remove the two rear screws of the tuning unit shield cover. Assemble the calibrator unit to the mounting plate adaptors provided with the kit using the flat head screws, nuts and washers supplied.

Remove the assembly of the calibrator unit adaptors mounted to the top of the tuning unit shield using the previously removed screws and with the lead wires turned toward the left side of the receiver removed from the front.

Pass the four lead wires of the calibrator through the hole in the rear duct of the chassis. Unsolder the two leads of the present positive switch and remove the switch from the front panel of the receiver. Remove same with the new switch supplied with the calibrator kit, insuring the new three position plate under the nut on the front panel.

Draw the wire leads of the unit to the correct length, strip and tin the ends to provide for connections as shown in the accompanying sheet. Make the electrical connections indicated in the sheet. Unsolder the lead wires of the receiver from the original control wire switch and transfer the lead wires to the new switch installation. Make certain the switch is connected as shown, including the two ground connections, which may be made with a portion of the wire cut off from the calibrator lead wires.

Replace the receiver in the cabinet or rack and replace the front panel screws. Note that the rear screws should be oriented to avoid crossing of the calibrator lead wires. The two other back-side screws should be replaced.

SP-600 SERIES RECEIVERS

The XC-100 Calibrator Unit is designed to mount under the two rear screws on the right side of the RF tube plate adjacent to the power transformer in all SP-600 receivers.

The crystal used in the calibrator has an operating temperature range of from minus 40 to plus 70 degrees C.

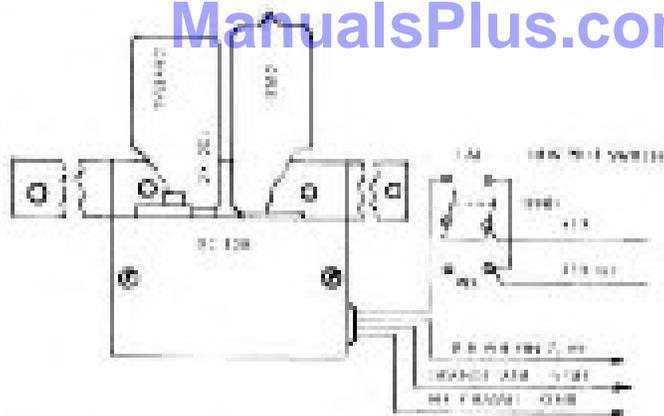
Assemble the calibrator unit to the mounting plate, employing the flat head screws, lock washers and nuts supplied with the kit. Carefully remove the 895A tube and crystal from the calibrator unit and remove the two screws from the RF tube plate. Secure the unit in position using these same screws.

Pass the black white, black and red wires of the unit down between the tuning unit and the chassis to the underside of the chassis. Keep the orange lead wire up and to the rear of the chassis for direct connection to the antenna input of the receiver.

Draw the wire leads of the unit to the receiver length, strip and tin the ends and solder the connections as follows:

Connect the black white lead to Ra 2 or Socket V12, and the black lead to chassis ground. Connect the orange lead to the ungrounded side of the antenna input. This lead is isolated by a series 0.1 mfd capacitor within the unit and may be left permanently connected to the antenna input without affecting the normal performance of the receiver.

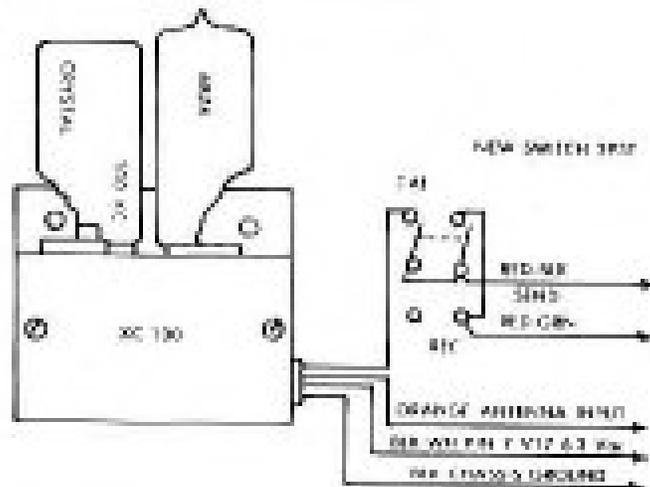
Remove the control wire switch, W, from the front panel and carefully unsolder the two leads connected to it. Using these same leads and the red lead wire from the calibrator, construct the new reversible three position switch provided with the kit as shown in the accompanying diagram. Note that in wiring this switch, the terminals are reversed in direction with respect to the switch handle. The red lead should be connected to the terminal on the opposite end from the keypress slot. After wiring the switch, install same with the new three position switch plate under the nut on the front panel. Replace the tube and crystal in the calibrator.



Allow the normal warmup time for the receiver and tune for a signal of known frequency, such as WWV at 5.0 mc. and with the best frequency adjustment of the receiver turned ON, adjust the tuning unit of the XC-100 calibrator for best beat against the 5.0 mc signal. This should be done while the tune modulator of the standard frequency signal is off. No further adjustment of the XC-100 unit should be required under normal service conditions.

The calibrator in conjunction with the best adjustment of the receiver should provide good signal strength at every 100 kc. interval within the tuning range of the receiver.

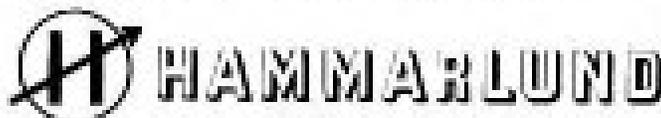
The orange antenna lead wire from the calibrator is isolated within the unit by a series 0.1 mfd capacitor and may be permanently connected to the antenna input of the receiver without affecting its normal performance.



Allow the normal warmup time for the receiver and tune for a signal of known frequency, such as WWV at 5 mc. and with the best frequency adjustment turned off, adjust the receiver as the XC-100 calibrator for best beat against the 5.0 mc signal. This should be done while the tune modulator of the standard frequency signal is off.

Replace the receiver in its cabinet or rack. No further adjustment of the XC-100 unit should be required under normal service conditions.

The calibrator in conjunction with the best adjustment of the receiver should provide good signal strength at every 100 kc. interval within the tuning range of the receiver.



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- REVISIONS

APPROVED 10-26-55
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 5-21-67D

APP. *[Signature]*

**INSTRUCTIONS FOR INSTALLATION OF 100 KC CALIBRATOR TYPE XC-100
 IN COMMUNICATIONS RECEIVERS**

THE XC-100 CALIBRATOR MEASURES ONLY 1 5/8" x 2" x 3 1/8" HIGH, OVER-ALL, INCLUDING TUBE AND CRYSTAL. IT MAY BE MOUNTED IN ANY POSITION OR LOCATION WHERE THIS SPACE IS AVAILABLE. IT SHOULD NOT BE LOCATED TOO CLOSE TO VERY HOT TUBES, SUCH AS RECTIFIER AND OUTPUT TUBES. TWO MOUNTING HOLES ON 1 3/8" CENTERS ARE PROVIDED IN THE FLANGE OF THE SHIELD COVER. THESE HOLES WILL ACCOMMODATE NO. 6 SCREWS. AFTER DECIDING ON A SUITABLE PLACE FOR MOUNTING THE UNIT, REMOVE THE RECEIVER FROM ITS CABINET AND SECURE THE UNIT IN CHASSIS. LOCATE AND INSTALL THE TOGGLE SWITCH, FURNISHED WITH THE UNIT, AND ITS ON-OFF PLATE ON THE FRONT PANEL OR WHEREVER DESIRED. DRESS THE WIRE LEADS OF THE UNIT AND CUT, STRIP AND TIN THE ENDS TO THE REQUIRED LENGTHS FOR CONNECTIONS AS SHOWN IN THE SKETCH BELOW. THE PART CUT FROM THE RED WIRE MAY BE USED TO CONNECT FROM THE SWITCH TO THE NEAREST POINT WHERE B VOLTAGE IS AVAILABLE. THE TOGGLE SWITCH WILL MOUNT IN A 15/32" OR 1/2" DIA. HOLE. AFTER THE UNIT HAS BEEN INSTALLED, ALLOW THE RECEIVER TO WARM UP AND TUNE IN A SIGNAL OF KNOWN FREQUENCY, SUCH AS WWV ON 5 MC AND WITH THE BEAT OSC "OFF" ADJUST THE CALIBRATOR TRIMMER FOR ZERO BEAT. THIS SHOULD BE DONE WHILE THE MODULATION OF THE STANDARD FREQUENCY SIGNAL IS OFF. REPLACE THE RECEIVER IN ITS CABINET. THE CALIBRATOR, IN CONJUNCTION WITH THE BEAT OSC SHOULD GIVE GOOD STRENGTH SIGNALS AT EVERY 100 KC INTERVAL WITHIN THE RANGE OF THE RECEIVER.

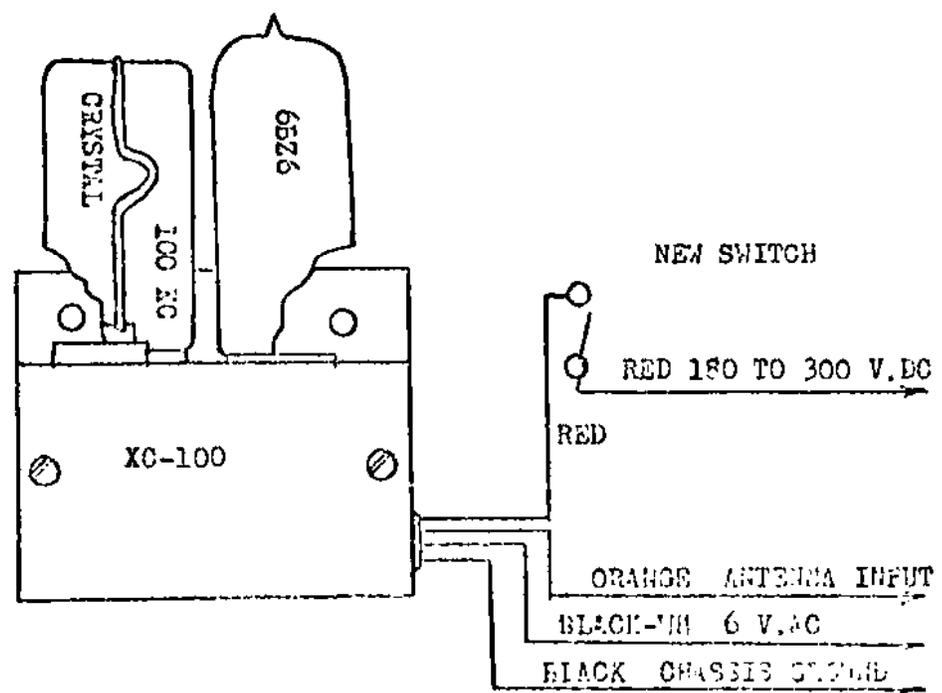
THE ORANGE ANTENNA LEAD IS ISOLATED WITHIN THE UNIT BY A SERIES 8 MUF CAPACITOR AND MAY BE PERMANENTLY CONNECTED TO THE ANTENNA INPUT WITHOUT AFFECTING THE NORMAL PERFORMANCE OF THE RECEIVER.

ALL DIMENSIONS IN INCHES
 DO NOT SCALE THIS DRAWING

TOLERANCES
 FRACTIONS: ± —
 DECIMALS: ± —
 ANGLES: ± —
 UNLESS OTHERWISE SPECIFIED
 SCALE

TITLE: INSTRUCTIONS FOR INSTALLATION OF XC-100 CRYSTAL CALIBRATOR IN COMM. RECV. TYPES
MATERIAL: —
FINISH: —
HAMMARLUND
 NEW YORK
 DRAWN J.O.T.
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 APPROVED *[Signature]*

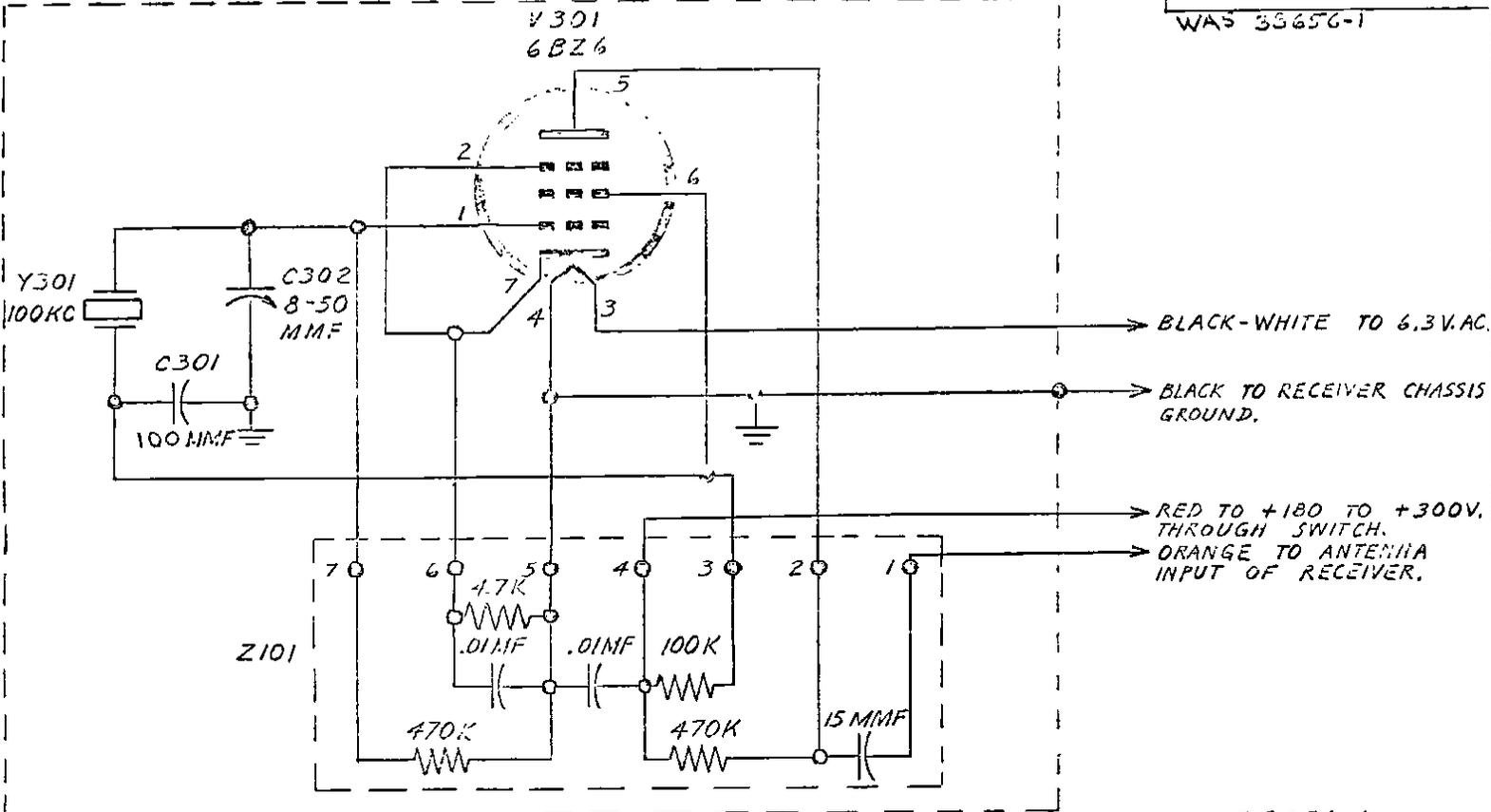
PART NO. *OLD 100 38658* ITEM DESCRIPTION MAT. FIN.



WAS 38658
 No. 2000-100000

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No. 38656-1
WAS 38656-1



OLD NO. 38656-1

REV. NO.	DATE	DESCRIPTION	PART NO.	ITEM	MAT.	FIN.
0						
1	9/26/57	RC NETWORK				
2	9/26/57	REDRAWN WITH NETWORK				
3	10-18-58	REVISION				
4	5-21-59	REVISION				

TOLERANCES
 FRACTIONS: ± —
 DECIMALS: ± —
 ANGLES: ± —
 UNLESS OTHERWISE SPECIFIED
 SCALE ———

TITLE: **CIRCUIT DIAGRAM - XC-100**
 MATERIAL: _____
 FINISH: _____
HAMMARLUND
 NEW YORK

FIRST MADE FOR
XC-100
 DRAWN **AL. PALO**
 CHECKED _____
 APPROVED _____