



# IMPROVE PERFORMANCE

WITH THE

## HAMMARLUND

### CRYSTAL CALIBRATOR



The new XC-100 Crystal Calibrator provides check points every 100 KCs within the range of the receiver. The XC-100 employs variable low-value 100 KCs quartz crystal and 8725 pentode. Frequency capacitor provides adjustment for zero beat against precision frequency standard (MNF).

Price

PL-2007-243 (External range) — \$16.00

PL-2007-242

XC-100 (25' Variable Range) — \$17.00

PL-2007-244 (no MNF) — \$17.00

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

##### GENERAL COMMUNICATIONS RECEIVERS

The XC-100 Calibrator Unit measures 1 7/8" x 2" x 3 1/2" high overall including tube 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.

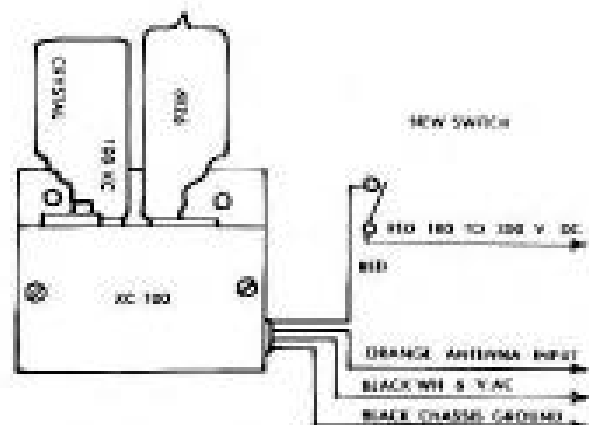
Two mounting holes, 1/4" in diameter, are provided in the flange of the calibrator shield cover. These holes will accommodate #10 machine screws.

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 E - potential is available. The toggle switch will require in a 15/32 inch or 5/16 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 best frequency available of the receiver turned off, adjust the trimmer on the XC-100 calibrator for zero beat against the 5.0 mc signal. This should be done while the audio modulation 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 available of the receiver should provide equal signal strength at every 100 kc. interval within the tuning range of the receiver.

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

## HQ SERIES RECEIVERS

The XC-100 Collector Unit is designed so that it may be easily installed on the top of the "wing set" shield cover employing the mounting plate sockets provided with the collector kit.

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

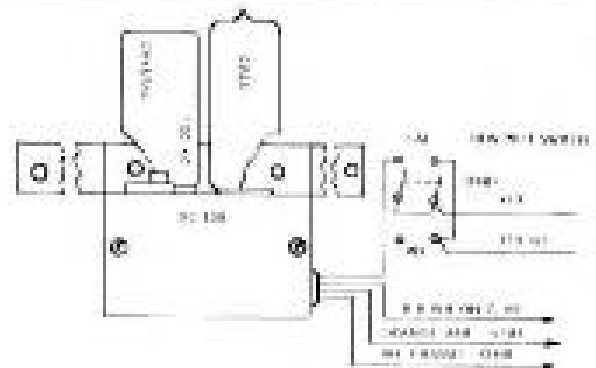
Remove the two rear screws of the wing set shield cover. Assemble the collector unit to the mounting plate sockets provided with the kit using the flat head screws, nuts and washers supplied.

Secure the assembly of the collector and adapter mounted to the top of the wing set shield using the previously removed screws and with the lead wires turned toward the left side of the receiver toward from the front.

Pass the four lead wires of the collector through the holes in the rear skirt of the chassis. Disconnect the two leads of the ground receiver switch and remove the switch from the front panel of the receiver. Reconnect same with the new switch supplied with the collector kit, ensuring the new three position slide under the nut on the front panel.

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 sheet. Make the electrical connections indicated in the sheet. Disconnect the lead wires of the receiver from the original antenna lead wires and transfer the lead wires to the new switch including make certain the switch is connected as shown, including the two ground connections, which may be made with a portion of the wire for all four of the receiver lead wires.

Replace the receiver in the cabinet or rack and replace the front panel screws. Note that the rear screws should be oriented in correct direction of the collector lead wires. The two other back side screws should be replaced.



Allow the normal warm-up time for the receiver and tune for a signal of known frequency, such as WWV at 5.0 mc, and with the best frequency available of the receiver turned off, adjust the trimmer on the XC-100 collector for zero beat against the 5.0 mc signal. This should be done while the tune knob/rotation of the standard frequency signal is off. No further adjustment of the XC-100 unit should be required under normal receiver conditions.

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

The change antenna lead wire from the collector is isolated with the unit by a series of lead capacitors and may be permanently connected to the antenna input of the receiver without affecting its normal performance.

## SP-600 SERIES RECEIVERS

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

The crystal used in the collector may be operating temperature range of from minus 40 to plus 70 degrees C.

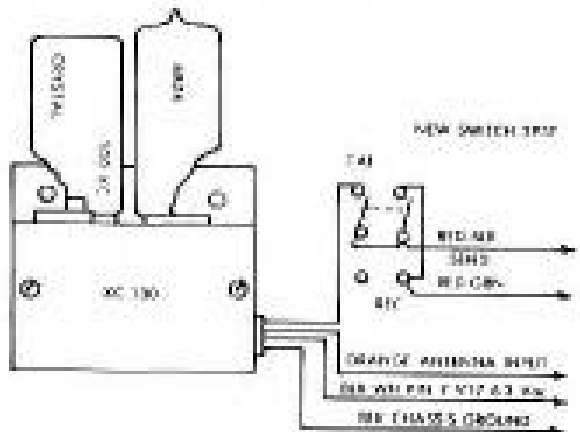
Assemble the collector unit to the mounting plate, employing the flat head screws, lock washers and nuts supplied with the kit. Carefully remove the 500K tube and crystal from the collector and read remove the two screws from the RF tube plate. Secure the unit in position using these same screws.

Pass the black white, black and red wires of the unit down to raise the wing set 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.

Trim the wire leads of the unit to the required lengths, strip and tin the ends and solder the connections as follows:

Connect the black white lead to the P or Sector VII, 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 of lead capacitors within the unit and may be left permanently connected to the antenna input without affecting the normal performance of the receiver.

Remove the seal-retainer screws from the front panel and carefully provide the two leads connected to it. Using these same leads and the red lead wire from the collector, connect the new two-pole, three position switch provided with the kit as shown in the accompanying diagram. Note that for wiring this switch, the terminals are marked in direction with respect to the switch handle. The red lead should be connected to the bracket on the opposite end from the keyway slot. After wiring the switch, install same with the new three position switch plate under the nut on the front panel. Reconnect the tube and crystal to the collector.



Allow the normal warm-up time for the receiver and tune for a signal of known frequency, such as WWV at 5.0 mc, and with the best frequency available of the receiver turned off, adjust the trimmer on the XC-100 collector for zero beat against the 5.0 mc signal. This should be done while the tune knob/rotation of the standard frequency signal is off.

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

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



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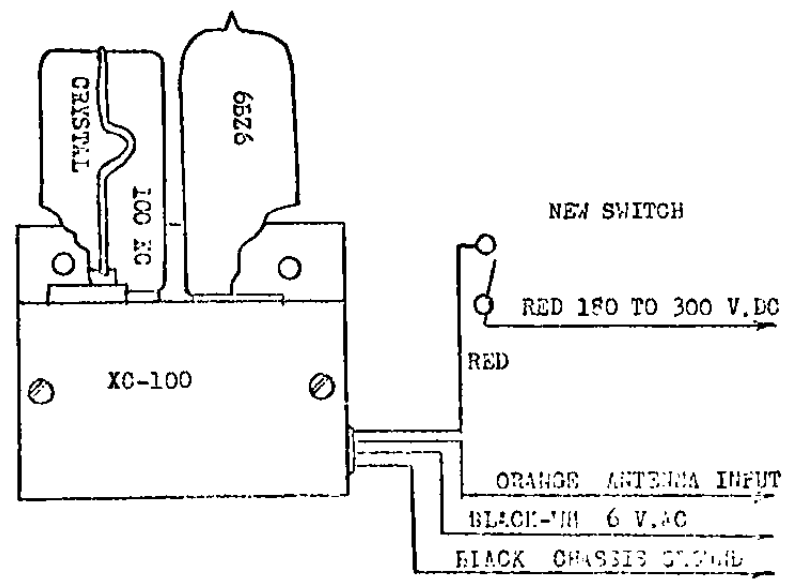
MANUFACTURING DEPARTMENT

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<p>DESCRIPTION</p>		
CHECKED	DRAWN J.C.T.	
APPROVED		

**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 BOLTS 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.



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DO NOT SCALE THIS DRAWING

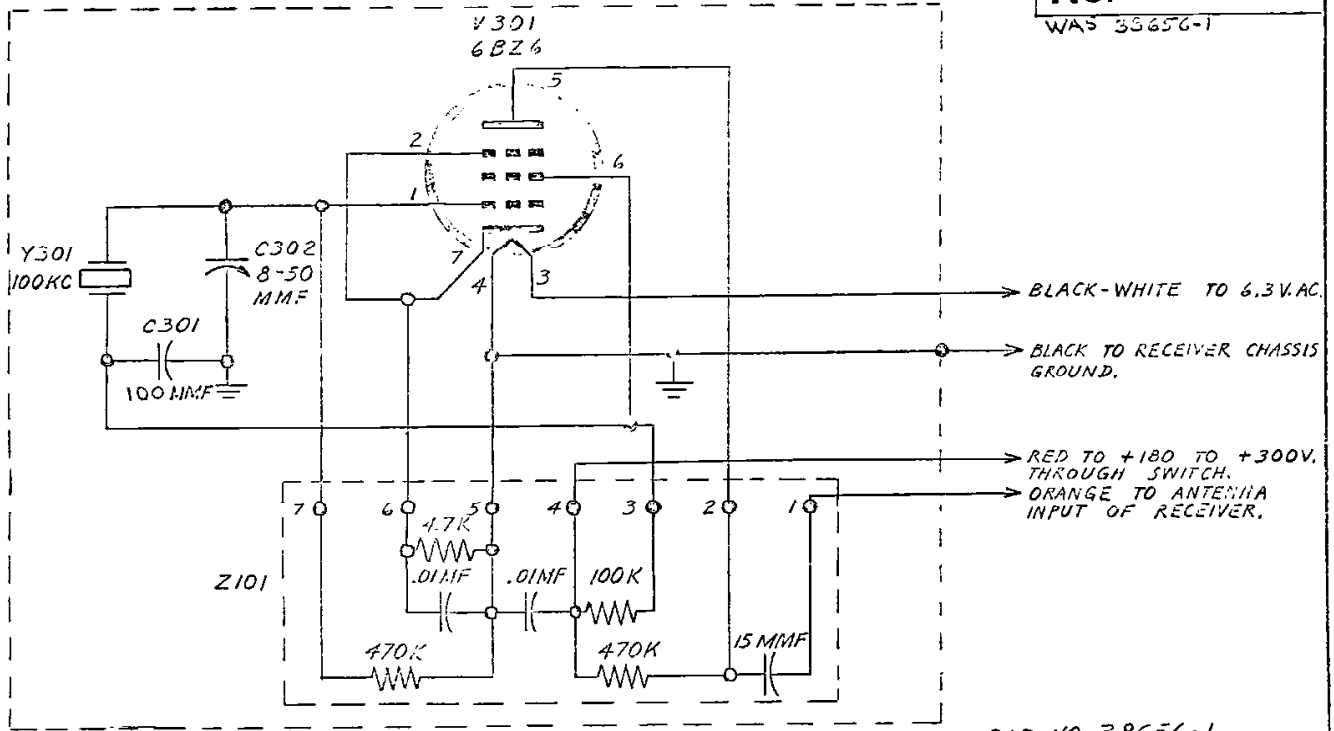
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